UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

FORM 10-K
WASHINGTON, DC 20549

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 FOR THE TRANSITION PERIOD FROM TO**

Commission File Number: 001-36247

Meta Materials Inc.

(Exact Name of Registrant as Specified in its Charter)

Nevada **(State or other jurisdiction of incorporation or organization)**	**74-3237581** **(I.R.S. Employer Identification No.)**
60 Highfield Park Drive, Dartmouth, Nova Scotia, Canada **(Address of principal executive offices)**	**B3A 4R9** **(Zip Code)**

Registrant's telephone number, including area code: (902) 482-5729

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	**MMAT**	**Nasdaq Capital Market**

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ☐ NO ☒

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act. YES ☐ NO ☒

Indicate by check mark whether the Registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for a such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. YES ☒ NO ☐

Indicate by check mark whether the Registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for a such shorter period that the Registrant was required to submit such files). YES ☒ NO ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☐

If an emerging growth company, indicate by a check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on June 30, 2022, was $371,634,314.

The number of shares of Registrant's Common Stock outstanding as of March 20, 2023 is 382,152,643.

DOCUMENTS INCORPORATED BY REFERENCE

The information called for by Part III of this Form 10-K will be included in an amendment to this Form 10-K, which will be filed within 120 days after the registrant's fiscal year ended.

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. All statements contained in this Annual Report on Form 10-K other than statements of historical fact, including statements regarding our future results of operations and financial position, its business strategy and plans, and its objectives for future operations, are forward-looking statements. The words "believe," "may," "will," "estimate," "continue," "anticipate," "intend," “potential," “expect," and similar expressions are intended to identify forward-looking statements. We have based these forward-looking statements largely on our current expectations and projections about future events and trends that we believe may affect our financial condition, results of operations, business strategy, short-term and long-term business operations and objectives, and financial needs. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in Part I, Item 1A, "Risk Factors" in this Annual Report on Form 10-K. Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for us to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the future events and trends discussed in this Annual Report on Form 10-K may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

Item 1. Business.

Business Overview

Meta Materials Inc. (also referred to herein as the "Company", "META®", "META" "we", "us", "our", or "Resulting Issuer") is a developer of high-performance functional materials and nanocomposites. We are developing materials that we believe can improve the performance and efficiency of many current products as well as allow new products to be developed that cannot otherwise be developed without such materials. We believe META is positioned for growth, by pioneering a new category of intelligent surfaces, which will allow us to become the metamaterials industry leader. We enable our potential customers across a range of industries - consumer electronics, 5G communications, healthcare, aerospace, automotive, and clean energy - to deliver improved products to their customers. For example, our nano-optic metamaterial technology provides anti-counterfeiting security features for Central Bank customers and currencies and authentication for Global brands. We currently have over 500 active patent documents, of which 315 patents have issued.

Our principal executive office is located at 60 Highfield Park Drive, Dartmouth, Nova Scotia, Canada.

At META, we create nanostructures on the surfaces that everyone is surrounded by and interacts with - windows, windshields, screens on our devices, even the glasses we wear on our heads – and we believe that the materials we are developing can open up an entirely new world of performance and efficiency.

We specialize in the design and fabrication of metamaterials, a new class of multi-functional surfaces that require less raw material and energy compared to traditional solutions and are able to do things that were previously unachievable.

- We help aerospace companies to keep their pilots and passengers safe from laser strikes.
- We help defense companies to equip aircraft with lighter weight, more efficient solar technology.
- We help cellular communications companies embed nanostructures that turn glass windows into 5G antennas and reflectors to receive, amplify or distribute cellular signals.
- We are exploring opportunities with auto industry leaders to de-ice and defog LiDAR, Radar and Camera sensors using a fraction of the energy currently needed without affecting the core sensor function.
- We are exploring opportunities with battery OEMs applications to increase the safety and performance of lithium-ion batteries using a fraction of the materials or replacing them with nanocomposites that are several times more stable under heat than conventional materials.

META in the last decade has developed and acquired a portfolio of intellectual property, and we are now moving toward commercializing products at a performance and price point combination that we believe have the potential to be disruptive in multiple market verticals. Our platform technology includes holography, lithography, electro-optics, nano-optics, battery materials, and medical wireless sensing. In 2021, we acquired the assets and IP which comprise ARfusion®, our platform technology for smart, augmented reality (AR) prescription eyewear, and we added nano-optic security products with the acquisition of Nanotech Security Corp. In 2022, we acquired nanoporous ceramic battery separator technology and high-speed vacuum coating capabilities. The underlying approach that powers our platform technologies comprises advanced materials, metamaterials and functional surfaces. These materials include structures that are patterned in ways that manipulate light, heat, and electromagnetic waves in unusual ways. Our advanced structural design technologies and scalable manufacturing methods provide a path to broad commercial opportunities in aerospace and defense, automotive, energy, healthcare, consumer electronics, and data transmission.

Throughout 2022, we focused our resources on the pilot scale manufacturing of our *NANOWEB*® transparent conductive film applications, expansion of our production capacity in our ARfusion® smart lenses for AR eyewear, as well as the banknote and brand security lines, and more aggressive design, development and pre-clinical testing of certain medical products.

We have product concepts currently in various stages of development with multiple potential customers in diverse market verticals. Our business model is to co-develop innovative products or applications with industry leaders that add value. This approach enables us to understand market dynamics and ensure the relevance and need for our products.

META's customers can benefit from:

1. Speed of Discovery.
    - Rapid design**:** Using artificial intelligence and machine learning to mine our library of nanopatterns allows META to create functional prototypes much faster than traditional chemical synthesis.
    - Multi-physics modeling: Our analysis tools allow us to build rapid prototypes in software to model how changing one parameter affects the entire system before implementation in physical form, saving millions of dollars in trial and error prototypes as compared to our competitor's traditional chemical synthesis.
    - Mass customization: Bringing together our core capabilities—holography, lithography, wireless sensing, battery materials and coating technologies—into a device or system allows us to create a smart material that performs multiple functions.
2. Manufacturing at Scale.
    - Large area solutions: Our manufacturing facilities house proprietary production equipment that can produce nanocomposites with dimensions suitable for use in many high-volume applications such as vehicles and energy.
    - High volume production: Our nanofabrication and coating technologies allow new materials to be produced at high speed and large quantities (e.g. batch wise or roll-to-roll) enabling META to fabricate metamaterial products at higher volume than our competitors with semi-conductor quality.
    - Quality: The very precise and demanding quality standards of advanced nanofabrication is why META adheres to the ISO 9001 Quality Management System ("QMS") standard.
3. Breakthrough Performance.
    - Multi-functional applications: We are a technology platform company that can design and build multi-functional products uniquely combining more than one capability across a customer application – e.g. a head-mounted display (holography) with an electrochromic dimmable surface (lithography) into an ophthalmic grade casted lens (ARfusion).
    - Breakthrough solutions: Our advanced capabilities in both design and manufacturing of metamaterials are why some of the world's best-known companies consider us to co-develop breakthrough solutions.

What is a Metamaterial?

Over the past 20 years, techniques for producing nanostructures have matured, resulting in a wide range of groundbreaking solutions that can control light, heat, and electromagnetic waves at very small scales. Some of the areas of advancement that have contributed to these techniques are photonic crystals, nanolithography, plasmonic phenomena and nanoparticle manipulation. From these advances, a new branch of material science has emerged – metamaterials. Metamaterials are composite structures, consisting of conventional materials such as metals and plastics, which are engineered by scientists to exhibit new or enhanced properties relating to reflection, refraction, diffraction, filtering, conductance and other properties that have the potential for multiple commercial applications.

A metamaterial typically consists of a multitude of structured unit nano-cells that are comprised of multiple individual elements. These are referred to as meta-atoms. The individual elements are usually arranged in periodic patterns that, together, can manipulate light, heat, or electromagnetic waves. Development strategies for metamaterials and functional surfaces focus on structures that produce unusual and exotic electromagnetic properties by manipulating light and other forms of energy in ways that have never been naturally possible. They gain their properties not as much from their composition as from their exactingly designed structures. The precise shape, geometry, size, orientation, and arrangement of these nanostructures affect the light and other electromagnetic waves to create material properties that are not easily achievable with conventional materials.

Controlling light, heat, electricity, and radio waves have played key roles in technological advancements throughout history. Advances in electrical and electromagnetic technologies, semiconductors, wireless communications, lasers, and computers have all been made possible by challenging the understanding of how light and other types of energy naturally behave, and how it is possible to manipulate them.

Holography Technology

Holography is a technique where collimated visible wavelength lasers are used to directly write an interference pattern inside the volume of light-sensitive material (photopolymer) in order to produce highly transparent optical filters and holographic optical elements. For

some product lines that require large surface areas, this is combined with a proprietary scanning technique, where the lasers, optically or mechanically, directly write nano-patterns to cover large surface areas with nanometer accuracy.

META's principal products that employ holography technology are its metaAIR® laser glare protection eyewear, metaAIR® laser glare protection films for law enforcement and holoOPTIX® notch filters. META co-developed its metaAIR® laser glare protection eyewear product with Airbus S.A.S. It has been engineered to provide laser glare protection for pilots, military and law enforcement using META's holography technology. metaAIR® is a holographic optical filter developed using nano-patterned designs that block and deflect specific colors or wavelengths of light. META launched metaAIR® with strategic and exclusive distribution partner, Satair, a wholly owned Airbus company and started producing and selling metaAIR® in April 2019. The scale-up and specification for the raw photopolymer material used to produce the eyewear was successfully finalized in late 2019 and commercialized in 2020. META launched its laser glare protection films for law enforcement use in late 2020. These films are designed to be applied to face shields and helmet visors providing the wearer with the same type of laser glare eye protection afforded to pilots by metaAIR® glasses while preserving peripheral vision critical to law enforcement duties. holoOPTIX® notch filters are optical filters that selectively reject a portion of the spectrum, while transmitting all other wavelengths. They are used in applications where it is necessary to block light from a laser, as in machine vision applications and in confocal or multi-photon microscopy, laser-based fluorescence instrumentation, or other life science applications. We commercially launched holoOPTIX® notch filters in November 2020.

META has additional products in development that utilize its proprietary holography technology. Included in the holoOPTIX® family of products are holographic optical elements ("HOEs"). HOEs are a core component in the display of augmented reality smart glasses products, as well as (in their larger version) in Heads-Up Displays ("HUDs"), in automobiles and aircraft.

Additionally, our ARfusion® technology combines precision cast lens fabrication tools with functional metamaterials and volume holograms, to provide AR wearable developers with a platform for seamlessly integrating smart technologies into thin lightweight prescription glasses. To achieve widespread commercial adoption and ultimately become as ubiquitous as smartphones, AR glasses must be comfortable, affordable, natural looking, and easy to use. A successful solution needs to achieve high-quality images and a large field of view (FOV) in a fashionable, compact form factor, without adding excess weight. This means that the smart technologies (displays, filters, active dimming) must be embedded within a rugged, cast prescription lens.

Our ARfusion® system was first developed by a Swiss company, Interglass Technology ("Interglass"), which we acquired in February 2021. Interglass designed the automated lens casting system as a more sustainable solution to producing prescription lenses, using a fraction of the material and energy compared to conventional processes. The lenses were directly cast into the final correction using an extensive library of reusable front and back molds. Acrylic monomer injected between the two molds is cured with UV light in seconds. The molds are automatically separated, and the lens substrate is ready in as quick as 1 minute, with no cleaning, polishing or post-production for a simple corrective lens. To accommodate precisely formed and embedded smart AR elements in prescription lenses, ARfusion® produces an optimized, minimal thickness, semi-finished blank lens, ready to be ground to the final curvature on standard ophthalmic processing equipment.

In a traditional cast plastic lens, up to 80% of the original lens blank material is wasted as the prescription is ground into the blank. With the same amount of material, ARfusion® can produce several optimized semi-finished lenses. In a standard thermal process, curing of semi-finished lens blanks for up to 50 hours requires much more energy and process time compared to the UV curable materials and associated processes used by ARfusion®.

Lithography Technology

Lithography is a process commonly used in the fabrication of integrated circuits, in which a light-sensitive polymer (photoresist), is exposed and developed to form 3D relief images on the substrate, typically a silicon wafer of up to 300mm (11.8 inches) in diameter. In order to meet the performance, fabrication-speed, and/or cost criteria required for many potential applications that require large area and low cost nanopatterning, we have developed a new nanolithography method called "Rolling Mask" lithography (registered trademark RML®), which combines the best features of photolithography, soft lithography and roll-to-plate/roll-to-roll printing capability technologies. Rolling Mask Lithography utilizes a proprietary UV light exposure method where a master pattern is provided in the form of a cylindrical mask. These master patterns are designed by us and over the years they have become part of a growing library of patterns, enriching the intellectual property ("IP") of the Company. The nanostructured pattern on the mask is then rolled over a flat surface area writing a nano-pattern into the volume of a photoresist, creating patterned grooves, metal is then evaporated and fills the patterned grooves. The excess metal is then removed by a known post-process called lift-off. The result is conductive metal mesh-patterned surface (registered trademark NANOWEB®) that is not visible to the unaided eye, and which can be fabricated onto any glass or plastic transparent surface in order to offer high transparency, high conductivity and low haze smart materials.

Our current principal prototype product in lithography technology is transparent conductive film, NANOWEB®. The lithography division operates out of our wholly owned U.S. subsidiary, Metamaterial Technologies USA Inc. ("MTI US"). MTI US can produce meter-long samples of NANOWEB®, at a small volumes scale, for industry customers/partners. Throughout 2021 and 2022, we have been ordering and upgrading our equipment at MTI US's California facility to efficiently supply NANOWEB® samples in larger volumes. In early 2022, we installed our first roll-to-roll, NANOWEB® pilot scale production line at our Pleasanton, California facility. The line is configured for 300mm-wide rolls of substrate. Our roll-to-roll production now matches or exceeds functional performance of wafer-based samples. We have achieved cosmetic uniformity and transparency in our samples and they now exceed customer specifications for transmission, haze and sheet resistance.

There are six NANOWEB®-enabled applications that are currently in early stages of development including:

- NANOWEB® for Transparent EMI Shielding.
- NANOWEB® for Transparent Antennas.
- NANOWEB® for 5G Signal Enhancement.
- NANOWEB® for Touch Screen Sensors.
- NANOWEB® for Solar Cells.
- NANOWEB® for Transparent Heating to de-ice and de-fog.

We have entered into a collaboration agreement with Crossover Solutions Inc. to assist with commercialization of the NANOWEB® enabled products and applications for the automotive industry and with ADI Technologies to help secure contracts with the US Department of Defense.

Nano-optic Structures and Color-shifting Foils

During 2021 we acquired Nanotech Security Corp. "Nanotech" which specializes in designing, originating, recombining, and mass-producing nanotechnology-based films with application for a wide variety of products and markets. Nanotech develops and produces nano-optic structures and color-shifting foils used in authentication and brand protection applications including banknotes, secure government documents, and commercial branding. Our nano-optic security technology platforms include:

- *KolourOptik®*, a patented visual technology that is exclusive to the government and banknote market and combines sub-wavelength nanostructures and microstructures to create modern overt security features with a unique and customizable optical effect. KolourOptik® pure plasmonic color pixels produce full color, 3D depth, and movement used in security stripes and threads that are nearly impossible to replicate.
- *LiveOptik™*, a patented visual technology that utilizes innovative nano-optics one tenth the size of traditional holographic structures to create next generation overt security features customized to Nanotech's customers' unique requirements. LiveOptik™ delivers multi-color, 3D depth, movement and image switches for secure brand protection stripes, threads and labels that are nearly impossible to replicate.
- *LumaChrome™* optical thin film security features are manufactured using precision engineered nanometer thick layers of metals and ceramics to form filters designed to uniquely manipulate visible and non-visible light. This unique manipulation of light properties is used to create specialized security features in the form of threads, stripes, and patches that are applied to banknotes and other secure documents. By using sophisticated electron beam and sputtered deposition methods, Nanotech precisely controls the construction and inherent properties to provide custom color-shifting solutions. An individual looking at these threads, stripes and patches sees an obvious color shift (e.g. green to magenta) when the document or bank note is tilted or rotated.

Wireless Sensing and Radio Wave Imaging Technology

META's Wireless Sensing platform uses infrared and radio frequency (RF) transmitters and receivers to collect and measure a variety of biological information enabling non-invasive and safe medical diagnostics. The platform requires the ability to cancel reflections (anti-reflection) from the skin to reduce the natural impedance the skin provides to such signals and increase the Signal-to-Noise Ratio ("SNR") of certain diagnostic instruments used in conjunction with the platform. This reflection-cancelling requirement is satisfied using META's proprietary metamaterial films that employ patterned designs, printed on metal-dielectric structures on flexible substrates that act as anti-reflection (impedance-matching) coatings when placed over the human skin in combination with medical diagnostic modalities, such as MRI, ultrasound systems, non-invasive glucometers etc.

We are developing a number of medical products that employ this proprietary technology, which are subject to FDA approval prior to marketing as described in more detail below. glucoWISE®, is in development as a completely non-invasive glucose measurement device. It is being developed first as a tabletop system for use in the home or clinic, followed by a portable, pocket-size product and ultimately as a wearable. In magnetic resonance imaging (MRI), increasing the SNR by orders of magnitude has been demonstrated to produce much higher resolution images with significant increases in imaging speed resulting in better patient throughput and potentially more accurate diagnoses in imaging clinics. For example, we began developing metaSURFACE™ (also known as radiWISE™) an innovation which allows an improvement in SNR of up to 40 times for MRI scans. The metaSURFACE™ device consists of proprietary non-ferrous metallic and dielectric layers that are exactingly designed to interact (resonate) with radio waves increasing the SNR. META is also researching the use of its Radio Wave Imaging technology in breast cancer and stroke diagnosis. We also are developing wireless sensing and radio wave imaging applications from our London, UK and Athens, Greece offices.

During 2022, we developed new prototypes utilizing glucoWISE® technology for new pre-clinical studies and human trials. These prototypes are for a non-invasive glucose monitor that incorporates metamaterial antireflective film as well as dual radio wave and optical sensors which provides for enhanced signal penetration through the skin.

Battery Materials

We acquired the assets and IP of Optodot Corporation, a developer of advanced materials technologies in June 2022, and we began focusing on developing and licensing ceramic separator technology for lithium-ion batteries. The separator is a critical component for battery performance and safety. Ceramic coated *plastic* separators (CCS) are widely used today. They are prone to failure at high temperatures, leading to battery fires thus aggravating a tenuous safety profile as energy density and battery size increase. Our next-generation NPORE®is the world's first flexible, free-standing ceramic nanoporous membrane separator for lithium-ion batteries. NPORE® separators eliminate the use of plastic substrate, provide superior functionality and outstanding heat resistance for current and next generation lithium-ion batteries. NPORE®all-ceramic separators (CSP) offer increased safety and performance by eliminating the plastic layer entirely, and exhibit less than 1% heat shrinkage at temperatures up to 200 degrees C. Our third generation electrode coated separators (ECS) combine what are presently two discrete functions in Lithium-ion batteries and offer a simpler, faster, lower-cost assembly process compatible with current and future battery chemistries (siliconanode, lithium metal, and solid state).

The global market for Lithium-ion battery separators was estimated at $5.1 billion in 2021 and is projected to reach $9.0 billion in 2025 (Source: Yano Research Institute Ltd.). Separator shipments were about 5.5 billion square meters in 2021 and are projected to reach 15.9 billion square meters in 2025 (Source: SNE Research). About 15 million square meters are required per GWh of battery capacity.

Additionally, electric vehicle (EV) consumers desire increased range and fast charging to get back on the road quickly. Storing more energy relative to weight and volume and accepting higher charge rates increase the requirements for material performance, stability, and safety. Wider EV adoption demands improved material utilization along the supply chain.

In April 2022, we acquired UK-based Plasma App Ltd., developer of a proprietary, high-speed, pulsed plasma deposition technology. With the combination of these acquired technologies, we plan to develop new battery materials and manufacturing techniques to address all these challenges. PLASMAfusion® high-speed vacuum coating technology has been used to produce prototype NCORE™ thin polymer-metal composite copper current collectors, significantly reducing weight, with a fuse-like feature for increased safety. Lighter batteries increase energy density and vehicle range. Lower copper content makes battery production and recycling more sustainable.

High Speed Coating

PLASMAfusion® is a first of its kind, patented manufacturing platform technology developed by our Oxford, UK based Plasma App Ltd, a wholly owned subsidiary which was acquired during 2022. PLASMAfusion® enables high speed coating of any solid material on any substrate. It uniquely enables doping, multilayering, or mixing of materials in vacuum with controlled stoichiometry distribution within the deposited film at low substrate temperature.

We expect to apply PLASMAfusion® to the metallization step in our roll-to-roll production process for NANOWEB® films as well as KolourOptik® security films. This is expected to significantly accelerate line speed and increase annual capacity. Large scale and efficient metallization is a critical step for volume production of NANOWEB® and many other high volume potential applications such

as lithium-ion battery components. Large scale metallization is expected to leverage capital equipment investment and substantially reduce cost per square meter of output. META intends to continue to industrialize and scale up PLASMAfusion® including applications for its high volume factory in Thurso, Quebec. Additionally, PLASMAfusion® will be available for licensing and co-development for strategic partners.

PLASMAfusion® creates unprecedented new high-performance nanocomposites in real time by using multiple, time sequenced targets. We believe this is a unique process enabler, likely to facilitate META's entry into multiple high-growth markets. High energy beam deposition of materials, at low temperature, without solvents and other toxic chemicals, promises highly sustainable, breakthrough performance. Compared to traditional coating technologies, we estimate PLASMAfusion® is approximately 60x more energy efficient compared to Plasma Laser Deposition (PLD) and 8x more efficient compared to Magnetron Sputtering to produce each 100nm of coating on each square cm area of the substrate, while also offering higher adhesion, deposition rates, and overall coating uniformity.

PLASMAfusion® enables design of surfaces and a path to industrial surface manufacturing for a variety of applications including batteries, semiconductors and metamaterials, printed circuit boards and protective optical coatings.

Electro-Optic and IR

We produce high-precision thin film coatings, optics, holographic and lithographic gratings, and optomechanical assemblies for ultraviolet, visible, and infrared applications. For example, we are developing an advanced, electro-optical motion imagery system with applications in the aerospace and defense sectors, and for potential smart city, disaster recovery, wildlife preservation and natural resource monitoring applications.

Customers

Our customers are OEM providers in multiple industries including aerospace, automotive, consumer electronics, communications, energy, banknote and brand security, and medical devices. We organize our development and support efforts around these different vertical markets to enable us to effectively penetrate these markets and to develop products specific to the needs of these OEM customers.

Marketing and Sales

We operate under a Business-to-Business model. Our marketing and sales functions are organized to support and grow this operating model. We utilize a combination of field-based and in-house selling resources to promote and sell our standard off-the-shelf products and a vertical market focused Business Development group to develop and support long-term customer relationships in the vertical market of interest. Our marketing efforts are focused on technical education of our customer base regarding our products, support of a meaningful presence at trade shows and industry events and routine production of collateral materials to support our sales and business development efforts throughout the year.

Manufacturing

We employ a hybrid model for manufacturing our high-performance functional materials and nanocomposites.

We provide research scale production of our products in-house to our customers in the lithography and holography business areas. We are scaling up pilot scale production of in our Pleasanton and Highfield Park facilities. We have current capacity in our Thurso facility to produce 7.5 million square meters per year of our banknote security and brand security product at commercial scale and we are expanding this capacity. In certain instances where volume warrants, we will make available on a license basis, our equipment and proprietary processes to our customers or to third party contractors to produce our products for their needs.

We are constantly improving and investing in our manufacturing capabilities and the associated quality control and resource planning infrastructure. We hold ISO9001 certification for our Highfield Park facility and our Thurso facility.

Research And Development

We operate in a rapidly evolving industry subject to significant technological change and new product introductions and enhancements. We believe that our continued commitment to research and development is a critical element of our ability to introduce new and enhanced products and technologies. In 2022 we invested approximately twenty-five percent (25%) of our operating expenses in our research and development efforts and these activities are integral to maintaining and enhancing our competitive position. We also increasingly seek to deploy our resources to solve fundamental challenges that are both common to, and provide competitive advantage across, our high-performance functional materials and nanocomposites.

We believe that our success depends in part on our ability to achieve the following in a cost-effective and timely manner:

- Enable our OEM customers to integrate our functional films into their products.
- Develop new technologies that meet the changing needs of the vertical markets we have chosen to pursue.
- Improve our existing technologies to enable growth into new application areas; and expand our intellectual property portfolio.

Intellectual Property

During 2022, we significantly expanded our patent and trademark portfolios in a wide range of applications including holography, lithography, wireless sensing technology, nano-optic structures as well as battery safety, battery separator technology, and high-speed coating capabilities. We added more than 10 patent documents from the Plasma acquisition, and 101 patent documents from the Optodot acquisition. We currently have over 500 active patent documents, of which 315 patents have issued, compared with 269 active patent documents and 163 issued patents one year ago. Our patent portfolio is comprised of 126 patent families, of which 68 include at least one issued patent. During 2022 we also filed 44 trademark registration applications and 15 trademarks were registered, resulting in a total of 60 registered trademarks and 98 pending applications. We believe that our combination of patents, trademarks, and trade secrets provides us with an important competitive advantage, marketing benefits, and licensing revenue opportunities.

Regulation

We are subject to significant regulation by local, state, federal and international laws in all jurisdictions in which we operate. Compliance with these requirements can be costly and time consuming. We believe that our operations, products, services, and actions substantially comply with applicable regulations in all jurisdictions. However, the risk of non-compliance cannot be eliminated and therefore there is no assurance that future costs related to these regulations will not be incurred. There is also the possibility that regulations will be retroactively applied, interpreted, or applied differently to our operations, products, services, and actions which will require significant time and resources.

The development, testing, manufacturing, marketing, post-market surveillance, distribution, advertising, and labeling of certain medical devices are subject to regulation in the United States by the Center for Devices and Radiological Health of the U.S. Food and Drug Administration (FDA) under the Federal Food, Drug, and Cosmetic Act (FDCA) and comparable state and foreign regulatory agencies. FDA defines a medical device as an instrument, apparatus, implement, machine, contrivance, implant, in vitro reagent, or other similar or related article, including any component part or accessory, which is (i) intended for use in the diagnosis of disease or other conditions, or in the cure, mitigation, treatment, or prevention of disease, in man or other animals, or (ii) intended to affect the structure or any function of the body of man or other animals and which does not achieve any of its primary intended purposes through chemical action within or on the body of man or other animals and which is not dependent upon being metabolized for the achievement of any of its primary intended purposes. Medical devices to be commercially distributed in the United States must receive from the FDA either clearance of a premarket notification, known as 510(k), or premarket approval pursuant to the FDC Act prior to marketing, unless subject to an exemption.

In the U.S., if we market our products for medical purposes, such products would be subject to regulation by the FDA under premarket and post-market control as medical devices, unless an exemption applies, and we would be required to obtain either prior 510(k) clearance or prior premarket approval from the FDA before commercializing the product. Obtaining the requisite regulatory approvals can be expensive and may involve considerable delay. Some countries have regulatory review processes that are substantially longer than U.S. processes. Failure to obtain regulatory approval in a timely manner and meet all of the local regulatory requirements where we plan to market our products could prevent us from marketing products in such countries or subject us to sanctions and fines. Changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time during the development or marketing of our products.

FDA classifies medical devices into one of three classes. Devices deemed to pose lower risk to the patient are placed in either class I or II, which, unless an exemption applies, requires the manufacturer to submit a premarket notification requesting FDA clearance for commercial distribution pursuant to Section 510(k) of the FDCA. This process, known as 510(k) clearance, requires that the manufacturer demonstrate that the device is substantially equivalent to a previously cleared and legally marketed 510(k) device or a “pre-amendment” class III device for which premarket approval applications (“PMAs”) have not been required by the FDA. This FDA review process typically takes from four to twelve months, although it can take longer. Most Class I devices are exempted from this 510(k) premarket submission requirement. If no legally marketed predicate can be identified for a new device to enable the use of the 510(k) pathway, the device is automatically classified under the FDCA as Class III, which generally requires premarket approval, or PMA approval. However, the FDA can reclassify or use “de novo classification” for a device that meets the FDCA standards for a Class II device, permitting the device to be marketed without PMA approval. To grant such a reclassification, FDA must determine that the

FDCA's general controls alone, or general controls and special controls together, are sufficient to provide a reasonable assurance of the device's safety and effectiveness. The de novo classification route is generally less burdensome than the PMA approval process. Devices deemed by the FDA to pose the greatest risk, such as life-sustaining, life-supporting, or implantable devices, or those deemed not substantially equivalent to a legally marketed predicate device, are placed in class III. Class III devices typically require PMA approval. To obtain PMA approval, an applicant must demonstrate the reasonable safety and effectiveness of the device based, in part, on data obtained in clinical studies. All clinical studies of investigational medical devices to determine safety and effectiveness must be conducted in accordance with the FDA's investigational device exemption ("IDE") regulations, including the requirement for the study sponsor to submit an IDE application to the FDA, unless exempt, which must become effective prior to commencing human clinical studies. PMA reviews generally last between one and two years, although they can take longer. Both the 510(k) and the PMA processes can be expensive and lengthy and may not result in clearance or approval. If we are required to submit our products for premarket review by the FDA, we may be required to delay marketing and commercialization while we obtain premarket clearance or approval from the FDA. There would be no assurance that we could ever obtain such clearance or approval.

All medical devices that are regulated by the FDA are also subject to the quality system regulation. Obtaining the requisite regulatory approvals, including the FDA quality system inspections that are required for PMA approval, can be expensive and may involve considerable delay. The regulatory approval process for such products may be significantly delayed, may be significantly more expensive than anticipated, and may conclude without such products being approved by the FDA. Without timely regulatory approval, we will not be able to launch or successfully commercialize such diagnostic products. Changes to the current regulatory framework, including the imposition of additional or new regulations, could arise at any time during the development or marketing of our products. This may negatively affect our ability to obtain or maintain FDA or comparable regulatory clearance or approval of our products in the future. In addition, regulatory agencies may introduce new requirements that may change the regulatory requirements for us or our customers, or both.

If our products become subject to FDA regulation as medical devices, the regulatory clearance or approval and the maintenance of continued and postmarket regulatory compliance for such products will be expensive, time-consuming, and uncertain both in timing and outcome. Commercialization of such regulated medical devices can increase our exposure under additional laws. For example, medical device companies are subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business and may constrain the financial arrangements and relationships through which we research, as well as sell, market and distribute any medical products for which we obtain marketing authorization. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, data privacy and security, and transparency laws and regulations related to payments and other transfers of value made to physicians and other healthcare providers. If our operations are found to be in violation of any of such laws or any other governmental regulations that apply, we may be subject to penalties, including, without limitation, administrative, civil, and criminal penalties, damages, fines, disgorgement, the curtailment or restructuring of operations, integrity oversight and reporting obligations, exclusion from participation in federal and state healthcare programs and imprisonment.

Additionally, we must comply with complex foreign and U.S. laws and regulations, such as the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act, and other local laws prohibiting corrupt payments to governmental officials, anti-competition regulations and sanctions imposed by the U.S. Office of Foreign Assets Control, and other similar laws and regulations. Violations of these laws and regulations could result in fines and penalties, criminal sanctions, restrictions on our business conduct, and on our ability to offer our products in one or more countries, and could also materially affect our brand, our ability to attract and retain employees, our international operations, our business, and our operating results. As we continue to expand our business into multiple international markets, our success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations. Any of these risks could harm our international operations and negatively impact our sales, adversely affecting our business, results of operations, financial condition, and growth prospects.

Human Capital Resources

As of February 28, 2023, we had 239 employees. Approximately 86% of our employees are located in Canada and the United States. Of the total workforce, 114 employees are involved in research and development; 45 employees are involved in operations, manufacturing, service and quality assurance; and 80 employees are involved in sales and marketing, information technology, general management and other administrative functions.

Available Information

Our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those reports and proxy and information statements are accessible free of charge on our website at www.metamaterial.com as soon as reasonably practicable after we electronically file such material with, or furnish them to, the SEC. The SEC also maintains an internet site that

contains reports, proxy and information statements and other information regarding our filings at www.sec.gov. The reference to our company website does not constitute incorporation by reference of the information contained at the site.

Business Combinations

Torchlight RTO

On December 14, 2020, the Company (formerly known as "Torchlight Energy Resources, Inc." or "Torchlight") and its subsidiaries, Metamaterial Exchangeco Inc. (formerly named 2798832 Ontario Inc., "Canco") and 2798831 Ontario Inc. ("Callco"), entered into an Arrangement Agreement (the "Arrangement Agreement") with Metamaterial Inc. ("MMI"), an Ontario corporation headquartered in Nova Scotia, Canada, to acquire all of the outstanding common stock of MMI by way of a statutory plan of arrangement (the "Arrangement") under the Business Corporations Act (Ontario), on and subject to the terms and conditions of the Arrangement Agreement (the "Torchlight RTO"). On June 25, 2021, we implemented a reverse stock split, changed our name from "Torchlight Energy Resources, Inc." to "Meta Materials Inc." and changed our trading symbol from "TRCH" to "MMAT". On June 28, 2021, following the satisfaction of the closing conditions set forth in the Arrangement Agreement, the Arrangement was completed.

On June 28, 2021, and pursuant to the completion of the Arrangement Agreement, we began trading on the Nasdaq Capital Market under the symbol "MMAT" while MMI common stock was delisted from the Canadian Securities Exchange ("CSE"). At the same time, Metamaterial Exchangeco Inc., a wholly owned subsidiary of META, started trading under the symbol "MMAX" on the CSE. Certain previous shareholders of MMI elected to convert their common stock of MMI into exchangeable shares in Metamaterial Exchangeco Inc. These exchangeable shares, which can be converted into common stock of META at the option of the holder, are similar in substance to common shares of META and have been included in the determination of outstanding common shares of META.

For accounting purposes MMI, the legal subsidiary, has been treated as the accounting acquirer and we the legal parent, have been treated as the accounting acquiree. The transaction has been accounted for as a reverse acquisition in accordance with ASC 805 *Business Combination*. Accordingly, the consolidated financial statements are a continuation of MMI consolidated financial statements prior to June 28, 2021 and exclude the balance sheets, statements of operations and comprehensive loss, statement of changes in stockholders' equity and statements of cash flows of Torchlight prior to June 28, 2021. See note 4 of our audited consolidated financial statements for additional information.

On December 14, 2022, we distributed all of our 165,472,241 outstanding shares of Common Stock of Next Bridge Hydrocarbons Inc. ("Next Bridge") to holders of our Series A Non-Voting Preferred Stock on a pro rata basis. Next Bridge was originally incorporated in Nevada on August 31, 2021 as OilCo. Holdings, Inc. (and changed its name to Next Bridge Hydrocarbons, Inc. pursuant to its Amended and Restated Articles of Incorporation filed on June 30, 2022) and was previously our wholly owned subsidiary. Immediately after the distribution, Next Bridge became an independent company, and as a result, we have deconsolidated the financial results of Next Bridge from our consolidated financial results from December 14, 2022 onwards. See note 5 of our audited consolidated financial statements for additional information on this transaction.

Nanotech acquisition

On August 5, 2021, we announced the signing of a definitive agreement to acquire Nanotech. On October 5, 2021, a wholly owned subsidiary of META purchased 100% of Nanotech's common stock at CA$1.25 per share. In addition, the transaction price included the settlement of certain Nanotech share awards outstanding immediately prior to the closing of the agreement, including the repurchase and cancellation of 303,391 Nanotech restricted share units ("RSU") at a purchase price of CA$1.25 per RSU and the settlement of 4,359,000 Nanotech in-the-money stock options at a purchase price equal to CA$1.25 per option, less the exercise price thereof. The consideration payable to securityholders under the arrangement was payable in cash, resulting in a total purchase price of $72.1 million.

Nanotech is incorporated under the laws of British Columbia, Canada. Nanotech's head office is located at #505 - 3292 Production Way, Burnaby, BC, Canada V5A 4R4. In addition, Nanotech owns and operates a manufacturing facility located in Thurso, Quebec.

Plasma App Ltd acquisition

On April 1, 2022, we completed the purchase of 100% of the issued and outstanding shares of Plasma App Ltd. ("PAL"). PAL is the developer of PLASMAfusion®, a proprietary manufacturing platform technology, which enables high speed coating of any solid material on any type of substrate. PAL's team is located at the Rutherford Appleton Laboratories in Oxford, UK.

We issued an aggregate of 9,677,419 shares of our common stock to PAL's shareholders at closing, representing a number of shares of common stock equal to $18,000,000 divided by $1.86 (the volume weighted average price for the ten trading days ending on March 31, 2022), with an additional deferral of common stock equal to $2,000,000 divided by $1.86 to be issued subject to satisfaction of certain claims and warranties.

Optodot acquisition

We completed an asset purchase agreement with Optodot Corporation ("Optodot") on June 22, 2022). Optodot, based in Devens, Massachusetts, USA, is a developer of advanced materials technologies for the battery and other industries.

The consideration transferred included the following: A cash payment of $3,500,000 as well as unrestricted common stock equal to $37,500,000 divided by our common stock's daily volume weighted average trading price per share on the Nasdaq Capital Market for a period of twenty trading days ending on June 21, 2022 and restricted common stock, subject to milestones as set forth in the Purchase Agreement, equal to $7,500,000 divided by the daily volume weighted average trading price per share of our Common Stock on the Nasdaq Capital Market for the consecutive period of twenty trading days ending on June 21, 2022.

Item 1A. Risk Factors.

The following factors could materially affect our business, financial condition or results of operations and should be carefully considered in evaluating us and our business, in addition to other information presented elsewhere in this report.

SUMMARY OF RISK FACTORS

Below is a summary of the principal factors that could materially harm our business, operating results and/or financial condition, impair our future prospects or cause the price of our common stock to decline. This summary does not address all of the risks that we face. Additional discussion of the risks summarized in this risk factor summary, and other risks that we face, can be found below after the summary of risk factors and should be carefully considered, together with other information in this Annual Report on Form 10-K and our other filings with the Securities and Exchange Commission ("SEC") before making an investment decision regarding our common stock.

- We have a limited operating history, which can make it difficult for investors to evaluate our operations and prospects and may increase the risks associated with investing in us.
- We have a history of net losses, and we expect to continue to incur losses for the foreseeable future. If we ever achieve profitability, we may not be able to sustain it.
- We expect to continue to incur losses from operations and negative cash flows, which raise substantial doubt about our ability to continue as a going concern.
- We will need additional financing to execute our business plan and fund operations, for which additional financing may not be available on reasonable terms or at all.
- Our ability to obtain financing, if and when necessary, may be impaired by such factors as the capital markets and our limited operating history.
- We may be unable to develop new products, applications, and end markets for our products.
- Our research and marketing development activities and investments may not result in profitable, commercially viable or successfully produced and marketed products.
- Disruption in supply from our single source supplier of our holographic raw materials may cause a material adverse effect on our Holography-related products.
- Impairment of our goodwill or other intangible assets could materially and adversely affect our business, operating results, and financial condition.
- We depend on our OEM customers and system integrators to incorporate our products into their systems.
- Our revenues may be concentrated in a few customers, and if we lose any of these customers, or these customers do not pay us, our revenues could be materially adversely affected.
- Our agreements with various national governments and suppliers to such governments subject us to unique risks.
- We are subject to the Foreign Corrupt Practices Act and similar anti-bribery and anti-corruption laws, as well as governmental export and import controls, all of which could subject us to liability or impair our ability to compete in international markets.
- We may experience delays in providing sufficient product for future testing of our products due to ongoing supply chain limitations.
- Change in laws, regulations or guidelines relating to our business plan and activities could adversely affect our business.
- If we are unable to make acquisitions, or successfully integrate them into our business, our results of operations and financial condition could be adversely affected.
- The regulatory approval process for our medical products in the United States and other countries around the world is time-consuming and complicated, and we may not obtain the approval required to market a product within the timeline required, or at all. Additionally, we may lose regulatory approval and/or our products may become subject to new and anticipated foreign regulations.

- Development of medical devices and related operations are subject to extensive government regulation and oversight both in the United States and abroad, and our failure to comply with applicable requirements could harm our business.
- Healthcare policy changes, including recently enacted legislation reforming the U.S. healthcare system, could harm our business, financial condition, and results of operations.
- If coverage and reimbursement from third-party payors for procedures using our medical products, if authorized by a regulatory authority, significantly decline, physicians, hospitals, and other healthcare providers may be reluctant to use our products and our sales may decline.
- If we or our contractors fail to comply with healthcare and other governmental regulations, we could face substantial fines and penalties and our business, results of operations and financial condition could be adversely affected.
- If we fail to obtain and maintain necessary regulatory clearances, approvals, or certifications for our products, or if clearances, approvals or certifications for future products and indications are delayed or not issued, our commercial operations would be harmed.
- We are exposed to risks that our employees, consultants, or other commercial partners and business associates may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements.
- Compliance with environmental laws and regulations could be expensive, and failure to comply with these laws and regulations could subject us to significant liability.
- Our insurance coverage strategy may not be adequate to protect us from all business risks.
- The risk of loss of our intellectual property, trade secrets or other sensitive business or customer confidential information or disruption of operations due to cyberattacks or data breaches could negatively impact our financial results.
- Cybersecurity breaches and information technology failures could harm our business by increasing our costs and negatively impacting our business operations.
- Changes in laws or regulations relating to privacy, information security and data protection, or any actual or perceived failure by us to comply with such laws and regulations or any other obligations, could adversely affect our business.
- We are subject to taxation-related risks in multiple jurisdictions, and the adoption and interpretation of new tax legislation, tax regulations, tax rulings, or exposure to additional tax liabilities could materially affect our business, financial condition and results of operations.
- Our ability to use our deferred tax assets to offset future taxable income is subject to certain limitations, which may have a material impact on our business, financial condition or results of operations.

Risks Related to our Business

We have a limited operating history, which can make it difficult for investors to evaluate our operations and prospects and may increase the risks associated with investing in us.

We have incurred recurring consolidated net losses since our inception and expects our operating costs to continue to increase in future periods as we expend substantial financial and other resources on, among other things, business and headcount expansion in operations, sales and marketing, research and development, and administration as a public company. These expenditures may not result in additional revenues or the growth of our business. If we fail to grow revenues or to achieve profitability while our operating costs increase, our business, financial condition, results of operations and growth prospects will be materially, adversely affected.

We are expected to be subject to many of the risks common to early-stage enterprises for the foreseeable future, including challenges related to laws, regulations, licensing, integrating and retaining qualified employees; making effective use of limited resources; achieving market acceptance of existing and future products; competing against companies with greater financial and technical resources; acquiring and retaining customers; and developing new solutions; and challenges relating to identified material weaknesses in internal control.

We have a history of net losses, and we expect to continue to incur losses for the foreseeable future. If we ever achieve profitability, we may not be able to sustain it.

We have incurred losses from operations since our inception and expect to continue to incur losses from operations for the foreseeable future. We reported net losses of $79.1 million and $91.0 million for the years ended December 31, 2022 and 2021, respectively. As a

result of these losses, as of December 31, 2022, we had an accumulated deficit of $207.5 million. We expect to continue to incur significant sales and marketing, research and development, regulatory and other expenses as we grow our business. In addition, we expect our general and administrative expenses to increase due to the additional costs associated with being a public company. The net losses that we incur may fluctuate significantly from period to period. We will need to generate significant additional revenue in order to achieve and sustain profitability. Even if we achieve profitability, we cannot be sure that we will remain profitable for any substantial period of time.

We expect to continue to incur losses from operations and negative cash flows, which raise substantial doubt about our ability to continue as a going concern.

We anticipate incurring additional losses until such time, if ever, we can achieve profitability. Substantial additional financing will be needed to fund our development, marketing and sales activities and generally to commercialize our technology. These factors raise substantial doubt about our ability to continue as a going concern.

We will seek to obtain additional capital through the issuance of debt or equity financings or other arrangements to fund operations; however, there can be no assurance we will be able to raise needed capital under acceptable terms, if at all. The sale of additional equity may dilute existing shareholders and newly issued shares may contain senior rights and preferences compared to currently outstanding shares of common stock. Issued debt securities may contain covenants and limit our ability to pay dividends or make other distributions to shareholders. If we are unable to obtain such additional financing, future operations would need to be scaled back or discontinued. Due to the uncertainty in our ability to raise capital, we believe that there is substantial doubt as to our ability to continue as a going concern.

We will need additional financing to execute our business plan and fund operations, which additional financing may not be available on reasonable terms or at all.

We will need to raise additional capital to expand the commercialization of our products, fund our operations and further our research and development activities. We will pursue sources of additional capital through various financing transactions or arrangements, including the sale/leaseback of certain properties, joint venturing of projects, debt financing, equity financing, or other means. We may not be successful in identifying suitable financing transactions in the time period required or at all, and we may not obtain the capital we require by other means.

Our ability to obtain financing, if and when necessary, may be impaired by such factors as the capital markets and our limited operating history.

Any additional capital raised through the sale of equity may dilute the ownership percentage of our stockholders. Raising any such capital could also result in a decrease in the fair market value of our equity securities because our assets would be owned by a larger pool of outstanding equity. The terms of securities we issue in future capital transactions may be more favorable to our new investors, and may include preferences, superior voting rights and the issuance of other derivative securities, and issuances of incentive awards under equity employee incentive plans, which may have a further dilutive effect.

In addition, we may incur substantial costs in pursuing future capital financing, including investment banking fees, legal fees, accounting fees, securities law compliance fees, printing and distribution expenses and other costs. We may also be required to recognize non-cash expenses in connection with certain securities we may issue, which may adversely impact our financial condition.

If we are unable to maintain effective disclosure controls and procedures, our business, financial position and results of operations could be adversely affected

We are subject to the periodic reporting requirements of the Exchange Act. We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Our management has concluded that a material weakness in our internal control over financial reporting exists at December 31, 2022. Management has further concluded that this material weakness resulted in our disclosure controls and procedures not being effective as of December 31, 2022. Please see Item 9A of Part II, Controls and Procedures, for more information about the material weakness that we identified.

We may be unable to develop new products, applications, and end markets for our products.

Our future success will depend in part on our ability to generate sales of our products as well as generating development revenue. Current and potential customers may have substantial investment in, and know-how related to our technologies. Customers may be reluctant to change from incumbent suppliers or cease using their own solutions, or our products may miss the design and procurement cycles of our customers. Many target markets have historically been slow to adopt new technologies. These markets often require long testing and qualification periods or lengthy government approval processes before admitting new suppliers or adopting new technologies.

Introduction of new products and product enhancements will require that we effectively transfer production processes from research and development to manufacturing and coordinate efforts with those suppliers to achieve increased production volume rapidly. If we are unable to implement this strategy to develop new applications and end markets for products or develop new products, the business, financial condition, results of operations and growth prospects could be materially adversely affected. In addition, any newly developed or enhanced products may not achieve market acceptance or may be rendered obsolete or less competitive by the introduction of new products by other companies.

Our research and marketing development activities and investments may not result in profitable, commercially viable or successfully produced and marketed products.

Although we, ourselves and through our investments, are committed to researching and developing new markets and products and improving existing products, there can be no assurances that such research and market development activities will prove profitable or that the resulting markets and/or products, if any, will be commercially viable or successfully produced and marketed. A failure in the demand for products to materialize as a result of competition, technological change or other factors could have a material adverse effect on the business, results of operations and financial condition of the companies in which we have or will invest in, and consequently, on us.

Disruption in supply from our single source supplier of our holographic raw materials may cause a material adverse effect on our Holography-related products.

We purchase our holographic raw materials from a tier 1 German manufacturer, which is a single source supplier. Disruption in supply from this supplier for any number of factors may cause a material adverse effect on our Holography-related products, which would negatively impact our financial condition and results of operations.

Impairment of our goodwill or other intangible assets could materially and adversely affect our business, operating results, and financial condition.

Events or changes in circumstances, such as declines in our stock price or market capitalization, could increase the likelihood that we will be required to recognize an impairment charge against our goodwill and/or intangible assets. In particular, these or other adverse events or changes in circumstances may affect the estimated undiscounted future operating cash flows expected to be derived from our goodwill and intangible assets. We have recently experienced substantial declines in our stock price, and continued weakness or further declines in our stock price increase the likelihood that we may be required to recognize impairment charges. Any impairment charges could have a material adverse effect on our operating results and net asset value in the quarter in which we recognize the impairment charge. We cannot provide assurances that we will not in the future be required to recognize impairment charges. Please see Item 7 of Part II, Management's Discussion and Analysis of Financial Condition and Results of Operation – *Goodwill*, for more information.

For example, a sustained decline in market capitalization below book value is an indicator that goodwill and other intangible assets should be tested for impairment under ASC 350 *Intangibles – Goodwill and Other.* During the period from January 1, 2022 to December 31, 2022, our stock price ranged between a high of $2.95 and a low of $0.63 and as of December 31, 2022 our market capitalization was $431.1 million and the book value of our goodwill was $281.7 million. While our market capitalization exceeded the book value of our goodwill as of December 31, 2022, as of March 17, 2023, our market capitalization is approximately $191.1 (based on a closing price of $0.50 per share) million and the book value of our goodwill is $281.7 million, and as such we may be required to recognize an impairment loss in the future if the drop in our market capitalization is deemed to be sustained.

We depend on our OEM customers and system integrators to incorporate our products into their systems.

Our revenues depend, in part, on our ability to maintain existing and secure new OEM customers. Our revenues also depend, in part, on the ability of our current and potential OEM customers and system integrators to incorporate our products into their systems, and to sell such systems successfully. Limited marketing resources, reluctance to invest in research and development and other factors affecting these OEM customers and third-party system integrators could have a substantial impact upon demand for our products, and in turn upon our revenues and financial results. If OEM customers or integrators are not able to adapt existing tools or develop new systems to

take advantage of the features and benefits of our products or if they perceive us to be an actual or potential competitor, then the opportunities to expand our revenues and increase our margins may be severely limited or delayed. In addition, some of our OEM customers are developing their own competitive products. If they are successful, this may reduce our revenues from these customers.

Our revenues may be concentrated in a few customers, and if we lose any of these customers, or these customers do not pay us, our revenues could be materially adversely affected.

We rely on a few customers for a significant portion of our revenues. For the year ended December 31, 2022, revenue from one customer accounted for $8.6 million or 84% of total revenue.

We currently derive a significant portion of our revenue from contract services with a G10 central bank. Although we are developing a new security feature under a framework contract with this customer, there can be no assurance that this project will be successful, or that will result in long-term production revenue for this security feature.

Our agreements with various national governments and suppliers to such governments subject us to unique risks.

We must comply with, and are affected by, laws and regulations relating to the award, administration, and performance of various national government contracts. Awards received from such governments may be cancelled or lose funding. Such government contracting parties may require us to increase or decrease production of certain products sold to such governments due to changes in strategy, priorities or other reasons, which could impact production of other products or sales to other customers to meet the requirements of such governments. In addition, such governments routinely retain rights to intellectual property developed in connection with government contracts. Such governments could exercise these rights in certain circumstances in the future, which could have the effect of decreasing the benefit we are able to realize commercially from such intellectual property.

National government agencies routinely audit and investigate government contractors and can decrease or withhold certain payments when it deems systems subject to its review to be inadequate. Additionally, any costs found to be misclassified may be subject to repayment. If an audit or investigation uncovers improper or illegal activities, we may be subject to civil or criminal penalties and administrative sanctions, including reductions of the value of contracts, contract modifications or terminations, forfeiture of profits, suspension of payments, penalties, fines and suspension, or prohibition from doing business with such governments. In addition, we could suffer serious reputational harm if allegations of impropriety were made against it. Any such imposition of penalties, or the loss of such government contracts, could materially adversely affect our business, financial condition, results of operations and growth prospects

We are subject to the Foreign Corrupt Practices Act and similar anti-bribery and anti-corruption laws, as well as governmental export and import controls, all of which could subject us to liability or impair our ability to compete in international markets.

Our business activities may be subject to the U.S. Foreign Corrupt Practices Act (the FCPA), and similar anti-bribery or anti-corruption laws, regulations or rules of other countries in which we operate. These laws generally prohibit companies and their employees and third-party business partners, representatives and agents from engaging in corruption and bribery, including offering, promising, giving or authorizing the provision of anything of value, either directly or indirectly, to a government official or commercial party in order to influence official action, direct business to any person, gain any improper advantage, or obtain or retain business. The FCPA also requires public companies to make and keep books and records that accurately and fairly reflect the transactions of the corporation and to devise and maintain an adequate system of internal accounting controls. Our business is heavily regulated and therefore involves significant interaction with government officials, including potentially officials of non-U.S. governments.

In addition to our own employees, we may in the future leverage third parties to conduct our business abroad, such as obtaining government licenses and approvals. We and our third-party business partners, representatives and agents may have direct or indirect interactions with officials and employees of government agencies, state-owned or affiliated entities and we may be held liable for the corrupt or other illegal activities of our employees, our third-party business partners, representatives and agents, even if we do not explicitly authorize such activities. There is no certainty that our employees or the employees of our third-party business partners, representatives and agents will comply with all applicable laws and regulations, particularly given the high level of complexity of these laws. Violations of these laws and regulations could result in whistleblower complaints, adverse media coverage, investigations, loss of export privileges, debarment from U.S. government contracts, substantial diversion of management’s attention, significant legal fees and fines, severe criminal or civil sanctions against us, our officers, or our employees, disgorgement and other sanctions and remedial measures, and prohibitions on the conduct of our business. Any such violations could include prohibitions on our ability to offer our products in one or more countries and could materially damage our reputation, our brand, our international expansion efforts, our ability to attract and retain employees, and our business, prospects, operating results, financial condition and stock price.

The U.S. and various foreign governments have imposed controls, export license requirements and restrictions on the import or export of certain products, technologies, and software. We must export our products in compliance with U.S. export controls and we may not always be successful in obtaining necessary export licenses. Our failure to obtain required import or export approval for our products or limitations on our ability to export or sell our products imposed by these laws may harm our international and domestic revenues. Noncompliance with these laws could have negative consequences, including government investigations, penalties and reputational harm.

Changes in our products or changes in export, import and economic sanctions laws and regulations may delay our introduction of new products in international markets, prevent our customers from deploying our products internationally or, in some cases, prevent the export or import of our products to or from certain countries altogether. In addition to the tariffs imposed by the U.S. Government on certain items imported from China, it is possible that additional sanctions or restrictions may be imposed by the United States on items imported into the United States from China. Similarly, in addition to the tariffs imposed by China on certain items imported from the United States, it is possible that additional sanctions or restrictions may be imposed by China on items imported into China from the United States. Any such measures could further adversely affect our ability to sell our products to existing or potential customers and harm our ability to compete internationally and grow our business. In addition, generally, tariffs may materially increase the cost of our raw materials and finished goods, may negatively impact our margins as we may not be able to pass on the additional cost through increasing the prices of our products, and may cause the contraction of certain industries, including the Industrial market. Any change in export or import regulations or legislation, shift or change in enforcement, or change in the countries, persons or technologies targeted by these regulations, could result in decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations. In such event, our business, financial condition, results of operations and growth prospects could be materially adversely affected.

We may experience delays in providing sufficient product for future testing of our products due to ongoing supply chain limitations.

Due to current supply chain disruptions, our contract manufacturing organizations may experience an inability to manufacture and produce sufficient quantities of our products as we progress through our regulatory testing and/or approval. Should this happen, we may not be able to provide sufficient quantities of our products which could delay our ability to bring products to market. Such a delay would cause us to use more capital than currently planned which may have a material adverse effect on our projected timing of product launches and financials.

Change in laws, regulations or guidelines relating to our business plan and activities could adversely affect our business.

Our current and proposed operations are subject to a variety of laws, regulations and guidelines relating to production, the conduct of operations, transportation, storage, health and safety, medical device regulation and the protection of the environment. These laws and regulations are broad in scope and subject to evolving interpretations, which could require us to incur substantial costs associated with compliance or alter certain aspects of our business plan. In addition, violations of these laws, or allegations of such violations, could disrupt certain aspects of our business plan and result in a material adverse effect on certain aspects of our planned operations.

As an example, we launched a new product metaAIR® in March 2019 to provide laser glare protection to pilots in the airline industry. Currently, metaAIR® is not subject to any Federal Aviation Administration regulations. However, metaAIR® has yet to receive FDA approval/clearance and could become subject to evolving regulation by governmental authorities as the metaAIR® market evolves further.

If we are unable to make acquisitions, or successfully integrate them into our business, our results of operations and financial condition could be adversely affected.

We have completed a number of acquisitions during our operating history. We have spent and may continue to spend significant resources identifying and pursuing future acquisition opportunities. Acquisitions involve numerous risks including: (1) difficulties in integrating the operations, technologies and products of the acquired companies; (2) the diversion of management's attention from other business concerns; and (3) the potential loss of key employees of the acquired companies. Failure to achieve the anticipated benefits of any prior and future acquisitions or to successfully integrate the operations of the acquired companies could have a material and adverse effect on our business, financial condition, and results of operations. Any future acquisitions could also result in potentially dilutive issuance of equity securities, acquisition or divestiture-related write-offs or the assumption of debt and contingent liabilities.

The regulatory approval process for our medical products in the United States and other countries around the world is time-consuming and complicated, and we may not obtain the approval required to market a product within the timeline required, or at all. Additionally, we may lose regulatory approval and/or our products may become subject to new and unanticipated foreign regulations.

Our wireless sensing technologies to enhance MRI and glucoWISE® non-invasive glucose-monitoring are under research and development. We have performed many pre-clinical experiments and we are preparing to perform clinical experiments as needed to continue the development of the related products. These products have not yet entered the clinical phase, and we have not engaged with any regulatory authorities regarding any medical uses subject to regulatory approval processes. We can provide no assurance that any clinical trials we commence will be successful, or that we will be successful in obtaining any regulatory approvals for any medical products we may develop in the future.

Development of medical devices and related operations are subject to extensive government regulation and oversight both in the United States and abroad, and our failure to comply with applicable requirements could harm our business.

Any medical devices that we may develop in the future and related operations are subject to extensive regulation in the United States and elsewhere, including by the FDA and by the FDA's foreign counterparts. The FDA and foreign regulatory agencies regulate, among other things, with respect to medical devices: design, development, manufacturing, and release; laboratory, preclinical, and clinical testing; labeling, packaging, content, and language of instructions for use and storage; product safety and efficacy claims; establishment, registration, and device listing; marketing, sales, and distribution; pre-market clearances, approvals, and certifications; service operations; record keeping procedures; advertising and promotion; recalls and field safety corrective actions; post-market surveillance, including reporting of deaths or serious injuries and malfunctions that, if they were to recur, could lead to death or serious injury; post-market studies; and product import and export.

The regulations to which we are subject are complex and have tended to become more stringent over time. Regulatory changes could result in restrictions on our ability to carry on or expand our operations, higher than anticipated costs or lower than anticipated sales. The FDA and foreign counterparts enforce these regulatory requirements through, among other means, periodic unannounced inspections and periodic reviews of public marketing and promotion materials. We do not know whether we will be found compliant in connection with any future FDA or foreign counterparts' inspections or reviews. Failure to comply with applicable regulations could jeopardize our ability to sell our medical devices and result in enforcement actions such as: warning letters; untitled letters; fines; injunctions; civil penalties; termination of distribution; recalls or seizures of products; delays in the introduction of products into the market; total or partial suspension of production; refusal to grant future clearances, approvals, or certifications; withdrawals or suspensions of current approvals or certifications, resulting in prohibitions on sales of our medical devices; and in the most serious cases, criminal penalties.

Legislative or regulatory reforms in the United States or other countries may make it more difficult and costly for us to obtain regulatory clearances, approvals, or certifications for our products or to manufacture, market, or distribute our products after clearance, approval, or certification is obtained.

From time to time, legislation is drafted and introduced in Congress that could significantly change the statutory provisions governing the regulation of medical devices. In addition, the FDA may change its clearance and approval policies, adopt additional regulations, or revise existing regulations, or take other actions, which may prevent or delay approval or clearance of our future products under development or impact our ability to modify our currently cleared products on a timely basis. The FDA's and other regulatory authorities' policies may change, and additional government regulations may be promulgated that could prevent, limit, or delay regulatory clearance or approval of our product candidates. We cannot predict the likelihood, nature, or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

Healthcare policy changes, including recently enacted legislation reforming the U.S. healthcare system, could harm our business, financial condition, and results of operations.

In the United States, there have been, and continue to be, a number of legislative initiatives to contain healthcare costs. In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act (ACA) was enacted in the United States, which made a number of substantial changes in the way healthcare is financed by both governmental and private insurers. We expect additional state and federal healthcare policies and reform measures to be adopted in the future. Any of these could make it more difficult and costly for us to obtain regulatory clearances or approvals for our products or to manufacture, market, or distribute our products after clearance or approval is obtained. Any such reforms could have a material adverse effect on our industry generally and on our customers. In addition, any healthcare reforms that expand the government's role in the U.S. healthcare industry may result in decreased sale of our products and lower reimbursement by payors for procedures using our products, any of which could affect demand for our products and/or result in additional pricing pressure, which in turn could impact our ability to successfully commercialize our products and could have an adverse material effect on our business, financial condition, and results of operations. Changes and reforms in the EU and other countries where we may decide to commercialize could have similar effects.

If coverage and reimbursement from third-party payors for procedures using our medical products, if authorized by a regulatory authority, significantly decline, physicians, hospitals, and other healthcare providers may be reluctant to use our products and our sales may decline.

In the United States, healthcare providers who purchase medical products generally rely on third-party payors, including Medicare, Medicaid, and private health insurance plans, to pay for all or a portion of the cost of the medical products that we may commercialize upon regulatory approval or clearance. Any decline in the amount payors are willing to reimburse our medical products, if cleared or approved for commercial use and distribution, may make it difficult for customers to adopt our products and could create additional pricing pressure for us. We may be unable to sell our products on a profitable basis if third-party payors deny coverage or reduce their current levels of reimbursement.

To contain costs of new technologies, governmental healthcare programs and third-party payors are increasingly scrutinizing new and existing treatments by requiring extensive evidence of favorable clinical outcomes. Physicians, hospitals, and other healthcare providers may not purchase our products if they do not receive satisfactory reimbursement from these third-party payors for the cost of using our products. If third-party payors issue non-coverage policies or if our customers are not reimbursed at adequate levels, this could adversely affect sales of our products. Outside of the United States, reimbursement systems vary significantly by country. The marketability of our products may suffer if government and commercial third-party payors fail to provide adequate coverage and reimbursement. Even if favorable coverage and reimbursement status is attained, less favorable coverage policies and reimbursement rates may be implemented in the future.

If we or our contractors fail to comply with healthcare and other governmental regulations, we could face substantial fines and penalties and our business, results of operations and financial condition could be adversely affected.

We are subject to certain federal, state, and foreign fraud and abuse laws, health information privacy and security laws, and transparency laws regarding payments and other transfers of value made to physicians and other healthcare professionals that could subject us to substantial penalties. Additionally, any challenge to, or investigation into, our practices under these laws could cause adverse publicity and be costly to respond to, and thus could harm our business. Our arrangements with physicians, hospitals and medical centers could expose us to broadly applicable fraud and abuse laws and other laws and regulations that may restrict the financial arrangements and relationships through which we may market, sell, and distribute our medical products after we receive the applicable marketing authorization. Our employees, consultants, and commercial partners may engage in misconduct or other improper activities, including

non-compliance with regulatory standards and requirements. Federal and state healthcare laws and regulations that may affect our ability to conduct business, include, without limitation:

- FDA, Department of Justice, and other government authority prohibitions against the advertisement, promotion, and labeling of our products for off-label uses, or uses outside the specific indications approved by the FDA;
- the federal Anti-Kickback Statute, which broadly prohibits, among other things, any person from knowingly and willfully offering, soliciting, receiving, or providing remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order, or recommendation of, any good or service for which payment may be made under federal healthcare programs, such as Medicare or Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it to have committed a violation;
- the federal False Claims Act, which prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, false claims, or knowingly using false statements, to obtain payment from the federal government. These laws have been interpreted to apply to arrangements between medical device manufacturers, on the one hand, and prescribers, purchasers, and other healthcare-related professionals on the other. They can apply to manufacturers who provide inaccurate information on coverage, coding, and reimbursement of their products to persons who bill third-party payors. In addition, medical device companies have been prosecuted or faced civil and criminal liability under these laws for a variety of alleged promotional and marketing activities, including violations of the federal Anti-Kickback Statute and engaging in off-label promotion that caused claims to be submitted for non-covered off-label uses. Private individuals can bring False Claims Act "qui tam" actions, on behalf of the government and such individuals, commonly known as "whistleblowers," may share in amounts paid by the entity to the government in fines or settlement;
- HIPAA, which among other things, also created criminal liability for knowingly and willfully falsifying or concealing a material fact or making a materially false statement in connection with the delivery of or payment for healthcare benefits, items or services. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making, or causing to be made, false statements relating to healthcare matters;
- the federal Civil Monetary Penalties Law, which prohibits, among other things, offering or transferring remuneration to a federal healthcare beneficiary that a person knows or should know is likely to influence the beneficiary's decision to order or receive items or services reimbursable by the government from a particular provider or supplier;
- the FCPA and other local anti-corruption laws that apply to our international activities;
- the federal Physician Payment Sunshine Act (Open Payments) and its implementing regulations, which require applicable manufacturers of covered drugs, devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the Centers for Medicare & Medicaid Services (CMS) information related to payments or other transfers of value made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors), non-physician healthcare professionals (such as physician assistants and nurse practitioners, among others) and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members;
- analogous state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers or patients; state laws that require medical device companies to comply with the industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws that require medical device manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm customers, state laws, governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts; and state laws related to insurance fraud in the case of claims involving private insurers.
- the scope and enforcement of each of the laws applicable to our business and products are uncertain and subject to rapid change in the current environment of healthcare reform. The U.S. Department of Justice has increased its scrutiny of interactions between manufacturers and healthcare providers, which has led to a number of investigations, prosecutions, convictions, and settlements in the healthcare industry. Responding to a government investigation is time and resource intensive and may cause harm to our business and reputation even if we are able to successfully defend against it. Any action brought against us for violations of these laws or regulations, even successfully defended, could cause us to incur

significant legal expenses and divert our management's attention from the operation of our business. We may be subject to private "qui tam" actions brought by individual whistleblowers on behalf of the federal or state governments.

If our operations are found to be in violation of any of the federal, state and foreign laws described above or any other current or future fraud and abuse or other healthcare laws and regulations that apply to us, we may be subject to penalties, including significant criminal, civil, and administrative penalties, damages, fines, imprisonment for individuals, exclusion from participation in government programs, such as Medicare and Medicaid, and we could be required to curtail or cease our operations. Any of the foregoing consequences could seriously harm our business and our financial results.

If we fail to obtain and maintain necessary regulatory clearances, approvals, or certifications for our products, or if clearances, approvals or certifications for future products and indications are delayed or not issued, our commercial operations would be harmed.

Our medical products are subject to extensive regulation by the FDA in the United States and by regulatory agencies in other countries outside of the United States. Government regulations specific to medical devices are wide ranging and govern, among other things:

- Product design, development, and manufacture.
- Laboratory, preclinical and clinical testing, labeling, packaging, storage, and distribution.
- Premarketing clearance, approval, or certification.
- Record keeping.
- Product marketing, promotion and advertising, sales, and distribution.
- Post marketing surveillance, including reporting of deaths or serious injuries and recalls and correction and removals.

Before a new medical device, or a new intended use for an existing product, can be marketed in the United States, a company must first submit and receive 510(k) clearance pursuant to Section 510(k) of the Food, Drug and Cosmetic Act (FDCA), approval of a PMA by the FDA, or grant of a de novo classification request from the FDA, unless an exemption applies.

In the 510(k) clearance process, the FDA must determine that a proposed device is "substantially equivalent" to a device legally on the market, known as a "predicate" device, in order to clear the proposed device for marketing. To be "substantially equivalent," the proposed device must have the same intended use as the predicate device, and either have the same technological characteristics as the predicate device or have different technological characteristics and not raise different questions of safety or effectiveness than the predicate device. Clinical data is sometimes required to support substantial equivalence. In the PMA approval process, the FDA must determine that a proposed device is safe and effective for its intended use based on extensive data, including technical, pre-clinical, clinical trial, manufacturing, and labeling data. The PMA process is typically required for devices for which the 510(k) process cannot be used and that are deemed to pose the greatest risk, such as life sustaining, life supporting, or implantable devices. In the de novo classification process, a manufacturer whose novel device under the FDCA would otherwise be automatically classified as Class III and require the submission and approval of a PMA prior to marketing is able to request down-classification of the device to Class I or Class II on the basis that the device presents a low or moderate risk. If the FDA grants the de novo classification request, the applicant will receive authorization to market the device. This device type may be used subsequently as a predicate device for future 510(k) submissions. Modifications to products that are approved through a PMA application generally need prior FDA approval of a PMA supplement. Similarly, some modifications made to products cleared through a 510(k) submission may require a new 510(k) clearance, or such modification may put the device into Class III and require PMA approval or the grant of a de novo classification request.

The PMA approval, 510(k) clearance, and de novo classification processes can be expensive, lengthy, and uncertain. Any delay or failure to obtain necessary regulatory approvals, clearances or certifications would have a material adverse effect on our business, financial condition, and results of operations.

The FDA and foreign bodies can delay, limit, or deny clearance, approval, or certification of a device for many reasons, including:

- our inability to demonstrate to the satisfaction of the FDA or the applicable regulatory entity or notified body that our products are safe or effective for their intended uses or substantially equivalent to a predicate device;
- the disagreement of the FDA or the applicable foreign body with the design, conduct or implementation of our clinical trials or investigations or the analyses or interpretation of data from pre-clinical studies or clinical trials or investigations;
- serious and unexpected adverse device effects experienced by participants in our clinical trials or investigations;

- the data from our pre-clinical studies and clinical trials or investigations may be insufficient to support clearance, de novo classification, approval, or certification, where required;
- our inability to demonstrate that the clinical and other benefits of the device outweigh the risks;
- the applicable regulatory authority or notified body may identify significant deficiencies in our manufacturing processes, facilities, or analytical methods or those of our third-party contract manufacturers;
- the potential for approval policies or regulations of the FDA or applicable foreign regulatory bodies to change significantly in a manner rendering our clinical data or regulatory submissions insufficient for clearance, de novo classification, approval, or certification; and
- the FDA or foreign regulatory authorities or bodies may audit our clinical trial or investigation data and conclude that the data is not sufficiently reliable to support approval, clearance, or certification.

Upon commercialization of any medical devices for which we receive FDA clearance or approval, we are required to investigate all product complaints we receive, and timely file reports with the FDA, including MDRs that require that we report to regulatory authorities if our products may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if the malfunction were to recur. If these reports are not submitted in a timely manner, regulators may impose sanctions and we may be subject to product liability or regulatory enforcement actions, including warning letters, untitled letters, fines, civil penalties, recalls, seizures, operating restrictions, denial of requests for 510(k) clearance or premarket approval of new products, new intended uses or modifications to existing products, withdrawal of current 510(k) clearances or premarket approvals, and narrowing of approved or cleared product labeling, all of which could harm our business. In addition, the FDA may provide notice of and conduct additional inspections, such as “for cause” inspections, of our business, sites, and facilities as part of its review process. Similar requirements may apply in foreign countries.

If we initiate a correction or removal action for our products to reduce a significant risk to health posed by our products, we would be required to submit a publicly available correction and removal report to the FDA and, in many cases, similar reports to other regulatory agencies. This report could be classified by the FDA as a device recall which could lead to increased scrutiny from the FDA, other international regulatory agencies, and our customers regarding the quality and safety of our products. Furthermore, the submission of these reports could be used by competitors against us and cause physicians to delay or cancel orders, which could harm our reputation.

The FDA and the Federal Trade Commission (FTC) also regulate the advertising, promotion, and labeling of our products to ensure that the claims we make are consistent with our regulatory authorizations, that there is adequate and reasonable scientific data to substantiate the claims, and that our promotional labeling and advertising is neither false nor misleading in any respect. If the FDA or FTC determines that any of our advertising or promotional claims are misleading, not substantiated, or not permissible, we may be subject to enforcement actions, including adverse publicity and/or warning letters, and we may be required to revise our promotional claims and make other corrections or restitutions.

The FDA, state authorities, and foreign counterparts have broad investigation and enforcement powers. Our failure to comply with applicable regulatory requirements could result in enforcement action by the FDA, state agencies, or foreign counterparts, which may include any of the following sanctions:

- adverse publicity, warning letters, fines, injunctions, consent decrees, and civil penalties;
- repair, replacement, refunds, recalls, termination of distribution, administrative detention, or seizure of our products;
- operating restrictions, partial suspension, or total shutdown of production; lawsuit
- denial of our requests for marketing authorizations or certifications for new products, new intended uses, or modifications to existing products;
- withdrawal of marketing authorizations or certifications that have already been granted; and
- criminal prosecution.

If any of these events were to occur, our business and financial condition could be harmed. In addition, the FDA’s and other regulatory authorities’ policies may change and additional government regulations may be enacted that could prevent, limit, or delay regulatory approval of our products. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval or certification that we may have obtained and we may not achieve or sustain profitability, which would adversely affect our business, financial condition, and results of operations.

We are exposed to risks that our employees, consultants, or other commercial partners and business associates may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements.

We are exposed to the risk that our employees, consultants, and other commercial partners and business associates may engage in fraudulent or illegal activity. Misconduct by these parties could include intentional, reckless, or negligent conduct or other unauthorized activities that violate the regulations of the FDA and other regulators (both domestic and foreign), including those laws requiring the reporting of true, complete, and accurate information to such regulators, manufacturing standards, healthcare fraud and abuse laws, and regulations in the United States and internationally or laws that require the true, complete, and accurate reporting of financial information or data. In particular, sales, marketing, and business arrangements in the healthcare industry, including the sale of medical devices, are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing, and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs, and other business arrangements. It is not always possible to identify and deter misconduct by our employees, consultants, and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws or regulations. If any such actions are instituted against us and we are not successful in defending ourselves or asserting our rights, those actions could result in the imposition of significant fines or other sanctions, including the imposition of civil, criminal, and administrative penalties, damages, monetary fines, possible exclusion from participation in Medicare, Medicaid, and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of operations, any of which could adversely affect our business, financial condition and results of operations. Whether or not we are successful in defending against such actions or investigations, we could incur substantial costs, including legal fees and reputational harm, and divert the attention of management in defending ourselves against any of these claims or investigations.

Compliance with environmental laws and regulations could be expensive, and failure to comply with these laws and regulations could subject us to significant liability.

Our research and development and manufacturing operations involve the use of some hazardous substances and are subject to a variety of federal, state, local, and foreign environmental laws and regulations relating to the storage, use, discharge, disposal, remediation of, and human exposure to, hazardous substances and the sale, labeling, collection, recycling, treatment, and disposal of products containing hazardous substances. Liability under environmental laws and regulations can be joint and several and without regard to fault or negligence. Compliance with environmental laws and regulations may be expensive and noncompliance could result in substantial liabilities, fines and penalties, personal injury and third-party property damage claims and substantial investigation and remediation costs. Environmental laws and regulations could become more stringent over time, imposing greater compliance costs, and increasing risks and penalties associated with violations. We cannot assure you that violations of these laws and regulations will not occur in the future or have not occurred in the past as a result of human error, accidents, equipment failure or other causes. The expense associated with environmental regulation and remediation could harm our financial condition and operating results.

Our insurance coverage strategy may not be adequate to protect us from all business risks.

We will require insurance coverage for numerous risks related to our business. Although our management believes that the events and amounts of liability covered by our insurance policies will be reasonable, taking into account the risks relevant to our business, and the fact that agreements with users contain limitations of liability, there can be no assurance that such coverage will be available or sufficient to cover claims to which we may become subject. If insurance coverage is unavailable or insufficient to cover any such claims, our financial resources, results of operations and prospects could be adversely affected.

The risk of loss of our intellectual property, trade secrets or other sensitive business or customer confidential information or disruption of operations due to cyberattacks or data breaches could negatively impact our financial results.

Cyberattacks or data breaches could compromise confidential, business-critical information, cause disruptions in our operations, expose us to potential litigation, or harm our reputation. We have important assets, including intellectual property, trade secrets, and other sensitive, business-critical and/or confidential information which may be vulnerable to such incidents. While we are in the process of implementing a cybersecurity program that is continually reviewed, maintained, and upgraded, no assurance can be made that we are invulnerable to cyberattacks and data breaches which, if significant, could negatively impact our business and financial results.

Cybersecurity breaches and information technology failures could harm our business by increasing our costs and negatively impacting our business operations.

We rely extensively on information technology systems, including internet sites, computer software, data hosting facilities and other hardware and platforms, some of which are hosted by third parties, to assist in conducting our business. Our information technology systems, as well as those of third parties we use in our business operations, may be vulnerable to a variety of evolving cybersecurity

risks, such as those involving unauthorized access or control, malicious software, data privacy breaches by employees or others with authorized access, cyber or phishing-attacks, ransomware and other security issues. Moreover, cybersecurity threat actors, whether internal or external, are becoming more sophisticated and coordinated in their attempts to access companies' information technology systems and data, including the information technology systems of cloud providers and other third parties with whom we conduct our business.

Changes in laws or regulations relating to privacy, information security and data protection, or any actual or perceived failure by us to comply with such laws and regulations or any other obligations, could adversely affect our business.

Personal privacy, information security and data protection are significant issues worldwide. The regulatory framework governing the collection, use, and other processing of personal data and other information is rapidly evolving. The United States federal and various state and foreign governments have adopted or proposed requirements regarding the collection, distribution, use, security and storage of personally identifiable information and other data relating to individuals, and federal and state consumer protection laws are being applied to enforce regulations related to the online collection, use and dissemination of data.

The costs of compliance with and other burdens imposed by laws, regulations, standards and other actual or asserted obligations relating to privacy, data protection and information security may be substantial, and they may require us to modify our data processing practices and policies. Any actual or alleged noncompliance with any of these laws, regulations, standards, and other actual or asserted obligations may lead to claims and proceedings by governmental actors and private parties, and significant fines, penalties or liabilities.

We are subject to taxation-related risks in multiple jurisdictions, and the adoption and interpretation of new tax legislation, tax regulations, tax rulings, or exposure to additional tax liabilities could materially affect our business, financial condition and results of operations.

We are a U.S. parented multinational group subject to income and other taxes in Canada, the United States, the United Kingdom, and other jurisdictions in which we do business. As a result, our provision for (benefit from) income taxes is derived from a combination of applicable tax rates in the various jurisdictions in which we operate. Significant judgment is required in determining our global provision for (benefit from) income taxes, value added and other similar taxes, deferred tax assets or liabilities and in evaluating our tax positions on a worldwide basis. It is possible that our tax positions may be challenged by tax authorities, which may have a significant impact on our global provision for (benefit from) income taxes. If such a challenge were to be resolved in a manner adverse to us, it could have a material adverse effect on our business, financial condition and results of operations.

Recent or future changes to U.S., Canadian, United Kingdom and other non-U.S. tax laws could impact the tax treatment of our earnings. For example, the Inflation Reduction Act of 2022, enacted on August 16, 2022, imposes a one-percent non-deductible excise tax on repurchases of stock that are made by U.S. publicly traded corporations on or after January 1, 2023. In addition, as of January 1, 2022, the Tax Cuts and Jobs Act of 2017 requires research and experimental expenditures attributable to research conducted within the United States to be capitalized and amortized ratably over a five-year period. Any such expenditures attributable to research conducted outside the United States must be capitalized and amortized over a 15-year period. We generally conduct our international operations through wholly owned subsidiaries and report our taxable income in various jurisdictions worldwide based upon our business operations in those jurisdictions. The intercompany relationships between our legal entities are subject to complex transfer pricing regulations administered by taxing authorities in various jurisdictions. Although we believe we are compliant with applicable transfer pricing and other tax laws in the United States, Canada, the United Kingdom and other relevant countries, due to changes in such laws and rules, we may have to modify our international structure in the future, which will incur costs and may adversely affect our business, financial condition and results of operations.

If U.S., Canadian, United Kingdom or other non-U.S. tax laws change further, if our current or future structures and arrangements are challenged by a taxing authority, or if we are unable to appropriately adapt the manner in which we operate our business, we may have to undertake further costly modifications to our international structure, which may cause our tax liabilities to increase and adversely affect our business, financial condition and results of operations.

Our ability to use our deferred tax assets to offset future taxable income is subject to certain limitations, which may have a material impact on our business, financial condition or results of operations.

As of December 31, 2022, a valuation allowance has been recorded against our deferred tax assets that are more likely than not to be realized in the U.S. federal and state tax jurisdictions. We assess the available positive and negative evidence to estimate if sufficient future taxable income will be generated to utilize the existing deferred tax assets. Certain of our deferred tax assets may expire unutilized or underutilized, which could prevent us from offsetting future taxable income. We continue to assess the realizability of our deferred tax assets in the future. Future adjustments in our valuation allowance may be required, which may have a material impact on our quarterly and annual operating results.

Risks Related to Intellectual Property

If we fail to protect and enforce our intellectual property rights and our confidential information, our business could be adversely affected.

We rely on a combination of nondisclosure agreements and other contractual provisions and patent, trade secret and copyright laws to protect our technologies, products, product development and manufacturing activities from unauthorized use by third parties. Our patents do not cover all of our technologies, systems, products and product components and our competitors or others may design around our patented technologies. We cannot guarantee that these mechanisms will adequately protect our technology and intellectual property, nor can we guarantee that a court will enforce our intellectual property rights.

In addition, the laws and enforcement regimes of certain countries do not protect our technology and intellectual property to the same extent as do the laws and enforcement regimes of the U.S. In certain jurisdictions, we may be unable to protect our technology and intellectual property adequately against unauthorized use, which could adversely affect our business.

We may become involved in material legal proceedings in the future to enforce or protect our intellectual property rights, which could harm our business.

From time to time, we may identify products that we believe infringes on our patents and may have to initiate litigation to enforce our patent rights against those products. Litigation stemming from such disputes could harm our ability to gain new customers, who may postpone licensing decisions pending the outcome of the litigation or who may, as a result of such litigation, choose not to adopt our technologies. Such litigation may also harm our business relationships with existing customers, who may, because of such litigation, cease making royalty or other payments to us or challenge the validity and enforceability of our patents or the scope of our related agreements.

In addition, the costs associated with legal proceedings are typically high, relatively unpredictable and not completely within our control. These costs may be materially higher than expected, which could adversely impair our working capital, affect our operating results and lead to volatility in the price of our common stock. Whether or not determined in our favor or ultimately settled, litigation would divert managerial, technical, legal and financial resources from our business operations. Furthermore, an adverse decision in any of these legal actions could result in a loss of our proprietary rights, subject us to significant liabilities, require us to seek licenses from others, limit the value of our technology or otherwise negatively impact the price of our common stock, business and financial position, results of operations and cash flows.

Even if we prevail in a legal action, significant contingencies may exist to the settlement and final resolution, including the scope of the liability of each party, our ability to enforce judgments against the parties, the ability and willingness of the parties to make any payments owed or agreed upon, and the dismissal of the legal action by the relevant court, none of which are completely within our control. Parties that may have financial obligations to us could be insolvent or decide to alter their business activities or corporate structure, which could affect our ability to collect royalties from such parties.

Our technologies may infringe on the intellectual property rights of others, which could lead to costly disputes or disruptions.

Various business segments in which we operate are characterized by frequent allegations of intellectual property infringement. Any allegation of infringement could be time consuming and expensive to defend or resolve, result in substantial diversion of management resources, cause suspension of operations or force us to enter into royalty, license, or other agreements rather than dispute the merits of such allegation. Furthermore, third parties making such claims may be able to obtain injunctive or other equitable relief that could block our ability to further develop or commercialize some or all of our technologies, and the ability of our customers to develop or commercialize their products incorporating our technologies, in the U.S. and abroad. If patent holders or other holders of intellectual property initiate legal proceedings, we may be forced into protracted and costly litigation. We may not be successful in defending such litigation and may not be able to procure any required royalty or license agreements on acceptable terms or at all.

Risk Related to Industry Adoption of our Products

We cannot provide assurance that markets will accept our various products at the expected market penetration rates, which may adversely affect our business operations and financial position.

We launched our first product, a laser glare protection eyewear named metaAIR®, in March 2019, with a primary focus on the aviation market. We have co-developed this product with Airbus through a strategic partnership. Airbus further extended its support by introducing us to Satair, an Airbus-owned company, which became the global distribution partner for metaAIR® to the aviation market.

Since 2016, Airbus and Satair have invested a total of $2,000,000 for the product development and exclusive distribution rights to metaAIR®.

Despite our close collaboration with the Airbus Group and future plans for marketing and sales expansion, there can be no assurance that the aviation market will accept the metaAIR® product at the expected market penetration rates and a slower than forecasted market acceptance may have a material adverse effect on Holography laser glare protection related products and our financial position.

Slower than forecasted market acceptance of Lithography related products, partially in the automotive market, may have a material adverse effect on our financial position.

Our NANOWEB® applications have not yet reached the required manufacturing scale to enable us to address the volume demands of a number of our target vertical markets. We currently have only our first pilot scale, 300mm wide, roll-to-roll line, and we will need to add additional capacity and wider substrates to support our target applications. Broader sales and production are expected to be launched in two to three years' time after successful completion of automotive and other vertical market product qualification and product introductions. We believe that the automotive market is a strategic high growth opportunity however, despite our close collaboration with automotive partners, there can be no assurance that the automotive market will accept the NANOWEB® product at the expected market penetration rates and a slower than forecasted market acceptance may have a material adverse effect on Lithography de-icing/de-fogging, transparent antenna and other related products and our financial position.

If products incorporating our technologies are used in defective products, we may be subject to product liability or other claims.

If our technology is used in defective or malfunctioning products, we could be sued for damages, especially if the defect or malfunction causes physical harm to people. While we will endeavor to carry product liability insurance, contractually limit our liability and obtain indemnities from our customers, there can be no assurance that we will be able to obtain insurance at satisfactory rates or in adequate amounts or that any insurance and customer indemnities will be adequate to defend against or satisfy any claims made against us. The costs associated with legal proceedings are typically high, relatively unpredictable and not completely within our control. Even if we consider any such claim to be without merit, significant contingencies may exist, similar to those summarized in the above risk factor concerning intellectual property litigation, which could lead us to settle the claim rather than incur the cost of defense and the possibility of an adverse judgment. Product liability claims in the future, regardless of their ultimate outcome, could have a material adverse effect on our business, financial condition and reputation, and on our ability to attract and retain customers.

We participate in markets that are subject to rapid technological change and require significant research and development expenses to develop and maintain products that can achieve market acceptance.

We operate in a rapidly evolving industry subject to significant technological change and new product introductions and enhancements. Our future performance depends in part on the successful development, introduction and market acceptance of new and enhanced products that address these changes and current and potential customer requirements. To the extent customers defer or cancel orders for existing products due to a slowdown in demand or in the expectation of a new product release, or if there is any delay in development or introduction of our new products or enhancements of our products, our business and financial conditions, results of operations, and growth prospects would be materially adversely affected. We also may not be able to develop the underlying core technologies necessary to create new products and enhancements, or to license these technologies from third parties.

Risks Related to Facilities and Human Resources

We have ongoing environmental costs, which could have a material adverse effect on our financial position or results of operations.

Certain of our operations and assets are subject to extensive environmental, health and safety regulations, including laws and regulations related to waste disposal and remediation of contaminated sites. The nature of our operations and products, including the raw materials we handle, exposes us to the risk of liabilities, obligations or claims under these laws and regulations due to the production, storage, use, transportation and sale of materials that can adversely impact the environment or cause personal injury, including, in the case of chemicals, unintentional releases into the environment. Environmental laws may have a significant effect on the costs of use, transportation and storage of raw materials and finished products, as well as the costs of storage, transportation and disposal of wastes.

The ultimate costs and timing of environmental liabilities are difficult to predict. Liabilities under environmental laws relating to contaminated sites can be imposed retroactively and on a joint and several basis. One liable party could be held responsible for all costs at a site, regardless of fault, percentage of contribution to the site or the legality of the original disposal. We could incur significant costs, including clean-up costs, natural resource damages, civil or criminal fines and sanctions and third-party lawsuits claiming, for example, personal injury and/or property damage, as a result of past or future violations of, or liabilities under, environmental or other laws.

In addition, future events, such as changes to or more rigorous enforcement of environmental laws, could require us to make additional expenditures, modify or curtail our operations and/or install additional pollution control equipment. It is possible that regulatory agencies may enact new or more stringent clean-up standards for chemicals of concern, including chlorinated organic products that we manufacture. This could lead to expenditures for environmental remediation in the future that are additional to existing estimates.

We may incur claims relating to our use, manufacture, handling, storage or disposal of hazardous materials.

Our research and development and manufacturing processes require the transportation, storage and use of hazardous materials, including chemicals, and may result in the generation of hazardous waste. National and local laws and regulations in many of the jurisdictions in which we operate impose substantial potential liability for the improper use, manufacture, handling, storage, transportation and disposal of hazardous materials as well as for land contamination, and, in some cases, this liability may continue over long periods of time. Despite our compliance efforts, we cannot eliminate the risk of industrial accidents that may lead to discharges or releases of hazardous materials and any resultant injury, property damage or environmental contamination from these materials. For example, real properties that we owned or used in the past or that we own or use now or in the future may contain detected or undetected contamination resulting from our operations at those sites or the activities of prior owners or occupants. We may suffer from expenses, claims or liability which may fall outside of or exceed our insurance coverage.

Furthermore, changes to current environmental laws and regulations may impose further compliance requirements on us that may impair our research, development and production efforts as well as our other business activities. New and evolving regulatory requirements include producer responsibility frameworks and regulations related to addressing climate change or other emerging environmental areas. Increased environment, health and safety laws, regulations and enforcement could result in substantial costs and liabilities to us and could subject our use, manufacture, handling, storage, transportation, and disposal of hazardous materials to additional constraints. Consequently, compliance with these laws could result in capital expenditures as well as other costs and liabilities, thereby adversely affecting business, financial position and results of operations.

Our failure to comply with applicable laws and regulations material to our operations, such as export control, environmental and climate related laws and regulations, or the inability to timely obtain requisite approvals necessary for the conduct of our business, such as fab land and construction approvals, could harm our business and operational results or subject us to potential significant legal liability.

Because we engage in manufacturing activities in multiple jurisdictions and conduct business with our customers located worldwide, such activities are subject to a myriad of governmental regulations. Our failure to comply with any such laws or regulations, as amended from time to time, and our failure to comply with any information and document sharing requests from the relevant authorities in a timely manner could result in:

- Significant penalties and legal liabilities, such as the denial of import or export permits or third party private lawsuits, criminal or administrative proceedings;
- The temporary or permanent suspension of production of the affected products;
- The temporary or permanent inability to procure or use certain production critical chemicals or materials;
- Unfavorable alterations in our manufacturing, assembly and test processes.;
- Challenges from our customers that place us at a significant competitive disadvantage, such as loss of actual or potential sales contracts in case we are unable to satisfy the applicable legal standard or customer requirement.;
- Restrictions on our operations or sales;
- Loss of tax benefits, including termination of current tax incentives, disqualification of tax credit application and repayment of the tax benefits that we are not entitled;
- Damages to our goodwill and reputation

Complying with applicable laws and regulations, such as environmental and climate related laws and regulations, could also require us, among other things, to do the following: (a) purchase, use or install remedial equipment; (b) implement remedial programs such as climate change mitigation programs; (c) modify our product designs and manufacturing processes, or incur other significant expenses such as obtaining renewable energy sources, renewable energy certificates or carbon credits, substitute raw materials or chemicals that may cost more or be less available for our operations.

Our inability to timely obtain approvals necessary for the conduct of our business could impair our operational and financial results. For example, if we are unable to timely obtain environmental related approvals needed to undertake the development and construction of a

new fab or expansion project, then such inability may delay, limit, or increase the cost of our expansion plans that could also in turn adversely affect our business and operational results. In light of increased public interest in environmental issues, our operations and expansion plans may be adversely affected or delayed responding to public concern and social environmental pressures even if we comply with all applicable laws and regulations.

Delays in setting up facilities or receiving required permits could have an adverse effect on our financial position.

We are in the process of moving into a larger facility suitable to host the scale-up of production relating to Holography and Lithography. Lithography requires specific local government approvals to allow use of certain chemicals and their disposal. Any delay in setting up the facility and receiving permits may impact launch and/or development of related products and may have a material adverse effect on related products and consequently on our financial position.

We are highly dependent on our key personnel, and if we are not successful in attracting and retaining highly qualified personnel, we may not be able to successfully implement our business strategy.

Our ability to successfully manage and grow the business and to develop new products depends, in large part, on our ability to recruit and retain qualified employees, particularly highly skilled technical, sales, service, management, and key staff personnel. Competition for qualified resources is intense and other companies may have greater resources available to provide substantial inducements and to offer more competitive compensation packages. If we are not successful in attracting and retaining highly qualified personnel, it could have a material adverse effect on our business, financial condition, and results of operations.

Our results of operations could be adversely affected by labor shortages, turnover, labor cost increases and inflation.

A number of factors may adversely affect the labor force available to us in one or more of our geographies, including high employment levels, increasing market wages and other compensation costs, federal unemployment subsidies, and other government regulations, which include laws and regulations related to workers' health and safety, wage and hour practices and immigration. These factors can also impact the cost of labor. Increased turnover rates within our employee base can lead to decreased efficiency and increased costs, such as increased overtime to meet demand and increased wage rates to attract and retain employees. An overall labor shortage or lack of skilled labor, increased turnover or labor inflation could have a material adverse effect on results of operations.

Certain directors and officers may be subject to conflicts of interest.

Certain of our directors and officers may be involved in other business ventures through their direct and indirect participation in corporations, partnerships, joint ventures, etc. that may become potential competitors of the technologies, products and services we intend to provide. Situations may arise in connection with potential acquisitions or opportunities where the other interests of these directors' and officers' conflict with or diverge from our interests. In accordance with applicable corporate law, directors who have a material interest in or who are a party to a material contract or a proposed material contract with us are required, subject to certain exceptions, to disclose that interest and generally abstain from voting on any resolution to approve the contract. In addition, the directors and officers are required to act honestly and in good faith with a view to our best interests. However, in conflict-of-interest situations, our directors and officers may owe the same duty to another company and will need to balance their competing interests with their duties to us. Circumstances (including with respect to future corporate opportunities) may arise that may be resolved in a manner that is unfavorable to us.

Risks Related to Legal Matters

We are, and may in the future become, subject to various legal proceedings and claims that arise in or outside the ordinary course of business and which could adversely affect our business.

We are, and may in the future become, subject to various legal proceedings and claims that arise in or outside the ordinary course of business. We cannot predict the outcome of these proceedings or provide an estimate of potential damages, if any. We believe that the claims in the securities class actions are without merit and intend to defend against them vigorously. Regardless, failure by us to obtain a favorable resolution of the claims set forth in the complaints could require us to pay damage awards or otherwise enter into settlement arrangements for which our insurance coverage may be insufficient. Any such damage awards or settlement arrangements in current or future litigation could have a material adverse effect on our business, operating results or financial condition. Even if plaintiffs' claims are not successful, defending against class action litigation is expensive and could divert management's attention and resources, all of which could have a material adverse effect on our financial condition and operations, operating results and financial condition and negatively affect the price of our common stock. In addition, such lawsuits may make it more difficult for us to finance our operations in the future. See Part 1, Item 3, "Legal Proceedings" in this Annual Report on Form 10-K for more information regarding our legal proceedings.

Current and future investigations by the SEC have and could continue to have an adverse impact on our business.

We are cooperating and intend to continue to cooperate with the SEC's investigation as described elsewhere in this Annual Report on Form 10-K. Investigations can be inherently uncertain and their results and timing cannot be predicted. Regardless of the outcome, SEC investigations have and could continue to have an adverse impact us by resulting in legal costs, diversion of management resources, and other negative factors. SEC investigations could also result in reputational harm to us, which, among other things, may limit our ability to obtain new customers and enter into new agreements with our existing customers, or our ability to obtain financing, and have a material adverse effect on our current and future business, financial condition, results of operations and prospects. See Part 1, Item 3, "Legal Proceedings" in this Annual Report on Form 10-K for more information regarding the SEC's investigation.

Risks Related to our Common Stock

You may experience future dilution as a result of future equity offerings or other equity issuances.

We will have to raise additional capital in the future. To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may be lower than the price you paid per share. In addition, investors purchasing shares or other securities in the future could have rights superior to those of other investors. Any such issuance could result in substantial dilution to investors.

Subject to various spending levels approved by our board of directors, our management will have broad discretion in the use of the net proceeds from our capital raises and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from our capital raises, and our stockholders will not have the opportunity as part of their investment decision to assess whether the net proceeds from our capital raises are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from our capital raises, their ultimate use may vary substantially from their currently intended use. You may not agree with our decisions, and our use of the proceeds from our capital raises may not yield any return to stockholders. Our failure to apply the net proceeds of our capital raises effectively could compromise our ability to pursue our growth strategy and we might not be able to yield a significant return, if any, on our investment of those net proceeds. Stockholders will not have the opportunity to influence our decisions on how to use our net proceeds from our capital raises. Pending their use, we may invest the net proceeds from our capital raises in interest and non-interest-bearing cash accounts, short-term, investment-grade, interest-bearing instruments and U.S. government securities. These temporary investments are not likely to yield a significant return.

An active, liquid and orderly trading market may not be sustained for our common stock, and, as a result, it may be difficult for you to sell your shares of our common stock.

The trading market for our common stock on the Nasdaq Capital Market may not be sustained. If the market for our common stock is not sustained, it may be difficult for you to sell your shares of common stock at an attractive price or at all. We cannot predict the prices at which our common stock will trade. It is possible that in one or more future periods our results of operations may not meet the expectations of public market analysts and investors, and, as a result of these and other factors, the price of our common stock may fall.

Our failure to satisfy certain Nasdaq listing requirements may result in our common stock being delisted from the Nasdaq Capital Market, which could eliminate the trading market for our common stock.

On March 20, 2023, we received written notice ("The Bid Price Letter") from The Nasdaq Stock Market LLC ("Nasdaq") indicating that we are not in compliance with the $1.00 minimum bid price requirement for continued listing on The Nasdaq Capital Market, as set forth in Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Rule"). In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we have a period of 180 calendar days, or until September 18, 2023, to regain compliance with the Bid Price Rule. To regain compliance, the closing bid price of our common stock must meet or exceed $1.00 per share for a minimum of ten consecutive business days during this 180-day period. The Bid Price Letter was a notice of deficiency, not delisting, and does not currently affect the listing or trading of shares of our common stock on The Nasdaq Capital Market, which continues to trade under the symbol "MMAT." We intend to continue actively monitoring the closing bid price of shares of our common stock and may, if appropriate, consider implementing available options to regain compliance with the Bid Price Rule.

If we do not regain compliance within the allotted compliance periods, including any extensions that may be granted by Nasdaq, Nasdaq will provide notice that our common stock will be subject to delisting. We would then be entitled to appeal that determination to a Nasdaq hearings panel. If the stock is delisted, we may trade on the over-the-counter market, or even in the pink sheets, which would significantly decrease the liquidity of an investment in our common stock. In addition, the stock may be deemed to be penny stock. If

our common stock is considered penny stock, we would be subject to rules that impose additional sales practices on broker-dealers who sell our securities. For example, broker-dealers would have to make a special suitability determination for the purchaser and have received the purchaser's written consent to the transaction prior to sale. Also, a disclosure schedule must be prepared prior to any transaction involving a penny stock and disclosure is required about sales commissions payable to both the broker-dealer and the registered representative and current quotations for the securities. Monthly statements are also required to be sent disclosing recent price information for the penny stock held in the account and information on the limited market in penny stock. Because of these additional obligations, some brokers may be unwilling to effect transactions in penny stocks. This could have an adverse effect on the liquidity of our common stock and the ability of investors to sell the common stock.

If equities or industry analysts do not publish research or reports about our company, or if they issue adverse or misleading opinions regarding us or our stock, our stock price and trading volume could decline.

The trading market for our common stock will rely in part on the research and reports that industry or financial analysts publish about us or our business. If no or few analysts commence coverage of us or if such coverage is not maintained, the market price for our stock may be adversely affected. Our stock price also may decline if any analyst who covers us issues an adverse or erroneous opinion regarding us, our business model, our intellectual property or our stock performance, or if our operating results fail to meet analysts' expectations. If one or more analysts cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our stock price or trading volume to decline and possibly adversely affect our ability to engage in future financings.

The market price of our common stock has been and may continue to be volatile, and the value of your investment could decline significantly.

The trading price of our common stock has been and is likely to continue to be volatile. The trading price of our common stock since June 28, 2021 (the date of completion of the Arrangement) up to March 17, 2023, has ranged from a high of $ 7.96 to a low of $0.48. Factors that have caused, and could continue to cause, fluctuations in the trading price of our common stock include, but are not limited to, the following:

- sales of our common stock, or securities exercisable for or convertible into our common stock, or the perception that such sales or conversions could occur in the future;
- the impact of the COVID-19 pandemic and other public health crises, including on macroeconomic conditions and our business, results of operations and financial condition;
- price and volume fluctuations in the overall stock market from time to time;
- changes in operating performance, stock market valuations and volatility in the market prices of other industry peers;
- actual or anticipated quarterly variations in our results of operations or those of our competitors;
- actual or anticipated changes in our growth rate relative to our competitors;
- announcements by us or our competitors of acquisitions, new products, significant contracts, commercial relationships or capital commitments;
- manufacturing, labor or supply interruptions;
- developments with respect to intellectual property rights;
- developments with respect to litigation;
- our ability to develop and market new and enhanced products on a timely basis;
- commencement of, or our involvement in, litigation;
- major changes in our board of directors or management;
- changes in governmental regulations or in the status of our regulatory approvals;
- actual or perceived privacy, data protection or cybersecurity breaches or incidents;
- the trading volume of our common stock;
- failure of financial analysts to maintain coverage of us, changes in financial estimates by any analysts who follow us, or our failure to meet these estimates or the expectations of investors;
- fluctuations in the values of companies perceived by investors to be comparable to and peers of us;

- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections; and
- general economic conditions and slow or negative growth of related markets.

The stock market in general, and market prices for the securities of similar companies in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common stock, regardless of our operating performance, which might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate. In several recent situations when the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation. If any of our stockholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management and materially adversely affect our results of operations. We currently have ongoing lawsuits. See Part 1, Item 3, "Legal Proceedings" in this Annual Report on Form 10-K for more information regarding these lawsuits and the SEC's investigation.

Future sales and issuances of a substantial number of shares of our common stock or rights to purchase common stock by our stockholders in the public market could result in additional dilution of the percentage ownership of our stockholders and cause our stock price to fall.

If our stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline.

We have and will continue to issue equity, convertible securities or other securities to investors in public and private offerings. In addition, we currently have effective resale shelf registration statements which enable the selling stockholders thereunder to sell shares in the public market pursuant thereto.

We also have outstanding as of December 31, 2022, warrants to purchase 39,920,919 shares of our common stock at a weighted average exercise price of $1.93 per share. These warrants include 37,037,039 warrants issued in the June 2022 registered direct offering with an exercise price of $1.75 per share that are now eligible for exercise, and, if exercised, will have a dilutive effect on the percentage ownership held by holders of our common stock.

Further, additional capital will be needed in the future to continue our planned operations, including commercialization efforts, expanded research and development activities and costs associated with operating a public company. To raise capital, we may sell common stock, convertible securities or other equity securities in one or more transactions at prices and in a manner, we determine from time to time. If we sell common stock, convertible securities or other equity securities, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences and privileges senior to the holders of our common stock. Additional issuances and sales of our common stock, including shares of our common stock available for issuance to our employees, directors and consultants, or a perception that such shares will be sold in the public market, could result in additional dilution and the trading price of our common stock could decline.

We may issue preferred stock whose terms could adversely affect the voting power or value of our common stock.

Our board of directors is authorized, without further stockholder action, and subject to Nasdaq rules, to issue preferred stock in one or more series and to designate the dividend rate, voting rights and other rights, preferences and restrictions of each such series. The terms of one or more classes or series of preferred stock could adversely impact the voting power or value of our common stock. Also, we might grant holders of preferred stock the right to elect some number of our directors in all events or on the happening of specified events or the right to veto specified transactions. Similarly, the repurchase or redemption rights or liquidation preferences we might assign to holders of preferred stock could affect the residual value of our common stock.

Anti-takeover provisions in our articles of incorporation and bylaws, as amended, as well as provisions in Nevada law, might discourage, delay, or prevent a change of control of us or changes in our management and, therefore, depress the trading price of our securities.

Our articles of incorporation and bylaws, as amended, as well as provisions in Nevada law, contain provisions that could have the effect of rendering more difficult or discouraging an acquisition deemed undesirable by our board. Our corporate governance documents include provisions:

- authorizing blank check preferred stock, which could be issued with voting, liquidation, dividend and other rights superior to our common stock;

- limiting the liability of, and providing indemnification to, our directors, including provisions that require us to advance payment for defending pending or threatened claims;
- limiting the ability of our stockholders to call and bring business before special meetings and to take action by written consent in lieu of a meeting;
- controlling the procedures for the conduct and scheduling of board and stockholder meetings;
- limiting the determination of the number of directors on our board and the filling of vacancies or newly created seats on the board to our Board then in office; and
- providing that directors may be removed by stockholders at any time.

These provisions, alone or together, could delay hostile takeovers and changes in control or changes in our management.

As a Nevada corporation, we are also subject to provisions of Nevada corporate law, including Section 78.411, et seq. of the Nevada Revised Statutes, which, among other things, prohibits a publicly-held Nevada corporation from engaging in a business combination with an interested stockholder, generally a person which together with its affiliates owns, or within the last two years has owned, 10% of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner, and, unless otherwise provided in our articles of incorporation or by-laws, restricts the ability of an acquiring person to obtain a controlling interest of 20% or more of our voting shares. Our articles of incorporation and by-laws, as amended, do not contain any provision which would currently keep the change of control restrictions of Section 78.378 from applying to it.

The existence of the foregoing provisions and anti-takeover measures could limit the price that investors might be willing to pay in the future for shares of our common stock. They could also deter potential acquirers of us, thereby reducing the likelihood that our stockholders could receive a premium for their common stock in an acquisition.

We are a smaller reporting company. We cannot be certain whether the reduced disclosure requirements applicable to smaller reporting companies will make our common stock less attractive to investors or otherwise limit our ability to raise additional funds.

As of December 31, 2022, we are a "smaller reporting company" under applicable U.S. securities regulations. A smaller reporting company is a company that, as of the last business day of its most recently completed second fiscal quarter, has (i) an aggregate market value of the company's voting stock held by non-affiliates, or public float, of less than $250 million or (ii) less than $100 million in revenue and less than $700 million in public float. In addition, a smaller reporting company is able to provide simplified executive compensation disclosures in our filings and has certain other reduced disclosure obligations in our SEC filings, including, among other things, only being required to provide two years of audited financial statements in annual reports. Reduced disclosure in our SEC filings due to our status as a smaller reporting company may make it harder for investors to analyze our results of operations and financial prospects.

We have not paid cash dividends in the past and have no immediate plans to pay dividends.

Our current plan is to reinvest earnings, if any, to cover operating costs and otherwise remain competitive. We do not plan to pay any cash dividends with respect to our securities in the foreseeable future. We cannot assure you that we would, at any time, generate sufficient surplus cash that would be available for distribution to the holders of our common stock as a dividend. Therefore, you should not expect to receive cash dividends on our common stock.

General Risk Factors

We are exposed to fluctuations in currency exchange rates.

Our revenues and expenses are denominated in U.S. dollars, Canadian dollars, EURO, and Great British Pounds, and therefore are exposed to significant currency exchange fluctuations. Recent events in the global financial markets have been coupled with increased volatility in the currency markets. Fluctuations in the exchange rate between the U.S. dollar, the Canadian dollar and the British Pound may have a material adverse effect on our business, financial condition, and operating results. We may, in the future, establish a program to hedge a portion of our foreign currency exposure with the objective of minimizing the impact of adverse foreign currency exchange movements. With appropriate risk management and oversight this may be able to offset future risk, however a hedging strategy will result in additional operating costs.

Operating as a public company requires us to incur substantial costs and requires substantial management attention. In addition, certain members of our management team have limited experience managing a public company.

As a public company, we incur substantial legal, accounting and other expenses that we did not incur as a private company. For example, we are subject to the reporting requirements of the Exchange Act, the applicable requirements of the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the rules and regulations of the SEC and the listing standards of the Nasdaq Stock Market. For example, the Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business, financial condition and results of operations. We are also required to maintain effective disclosure controls and procedures and internal control over financial reporting. Compliance with these rules and regulations has increased and will continue to increase our legal and financial compliance costs and increase demand on our systems. In addition, as a public company, we may be subject to stockholder activism, which can lead to additional substantial costs, distract management and impact the manner in which we operate our business in ways we cannot currently anticipate. As a result of disclosure of information in filings required of a public company, our business and financial condition will become more visible, which may result in threatened or actual litigation, including by competitors.

Additionally, certain members of our management team have limited experience managing a publicly traded company, interacting with public company investors and complying with the increasingly complex laws pertaining to public companies. Our management team may not successfully or efficiently manage our transition to being a public company subject to significant regulatory oversight and reporting obligations under the federal securities laws and the continuous scrutiny of securities analysts and investors. These obligations and constituents will require significant attention from our senior management and could divert their attention away from the day-to-day management of our business, which could adversely affect our business, financial condition and results of operations.

Increased scrutiny of our environmental, social and governance responsibilities and practices may result in additional costs, liability risks, and may adversely impact our reputation, our ability to attract and retain a skilled workforce and willingness of customers and suppliers to do business with us.

Investor advocacy groups, institutional investors, proxy advisory services, stockholders, government, regulators, employees, customers and other stakeholders are increasingly focused on environmental, social and governance (“ESG”) practices of companies. Additionally, public interest and legislative pressure related to public companies’ ESG practices continues to grow. If our ESG practices fail to meet regulatory requirements or investor or other stakeholders' evolving expectations and standards for responsible business practices in numerous areas, including climate change and greenhouse gas emissions, environmental stewardship, support for communities where we operate, human and civil rights, director and employee diversity, human capital management, employee health and safety practices, product quality and safety, data security, supply chain management, regulatory compliance corporate governance and transparency and employing ESG strategies within business operations, our brand, reputation and employee retention may be negatively impacted and customers and suppliers may be unwilling to do business with us. As we work to align our ESG practices with industry standards, we will be dealing with uncertainties and risks resulting from the forward-looking nature of many ESG issues, In addition, we will continue to expand our disclosures in these areas and doing so may result in additional costs and require additional resources to monitor, report, and comply with our various ESG practices. If we fail to adopt ESG standards or practices as quickly as stakeholders desire, report on our ESG efforts or practices accurately, or satisfy the expectations of stakeholders, our reputation, business, financial performance and growth may be adversely impacted.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive office is located at 60 Highfield Park Drive, Dartmouth, Nova Scotia, Canada.

Our principal facilities include the following:

Location	Lease expiration	Approximate size (sqft)	Primary functions
Boxborough, Massachusetts	September 30, 2023	4,414	Administration
Highfield Park, Dartmouth, Nova Scotia	August 31, 2031	68,000	Administration, Research and Development, and Production
Pleasanton, California	September 30, 2026	19,506	Research and Development and Production
London, United Kingdom	October 19, 2027	742	Research and Development
Burnaby, British Columbia	April 30, 2025	7,860	Administration and Research and Development
Thurso, Quebec	Owned	105,000	Production and Research and Development
Maroussi, Athens	October 31, 2031	15,457	Research and Development
Oxford, United Kingdom	June 30, 2023	1,065	Research and Development
Columbia, Maryland	August 31, 2033	11,642	Research and Development and Production
Billerica, Boston	March 31, 2028	12,655	Research and Development and Production

Item 3. Legal Proceedings.

In December 2022 we completed the spin-off of our oil and gas assets and operations by distributing shares of common stock of our wholly owned subsidiary, Next Bridge, to the holders of our Series A Preferred Stock. All previously disclosed legal proceedings relating to our oil and gas assets and related operations were assumed by NBH and no longer involve us.

SEC Subpoena

In September 2021, we received a subpoena from the Securities and Exchange Commission, Division of Enforcement, in a matter captioned In the Matter of Torchlight Energy Resources, Inc. The subpoena requests that we produce certain documents and information related to, among other things, the merger involving Torchlight Energy Resources, Inc. and Metamaterial Inc. We are cooperating and intend to continue to cooperate with the SEC's investigation. We can offer no assurances as to the outcome of this investigation or its potential effect, if any, on us or our results of operation.

Securities Class Action

On January 3, 2022, a putative securities class action lawsuit was filed in the U.S. District Court for the Eastern District of New York captioned Maltagliati v. Meta Materials Inc., et al., No. 1:21-cv-07203, against us, our Chief Executive Officer, our Chief Financial Officer, Torchlight's former Chairman of the Board of Directors, and Torchlight's former Chief Executive Officer. On January 26, 2022, a similar putative securities class action lawsuit was filed in the U.S. District Court for the Eastern District of New York captioned McMillan v. Meta Materials Inc., et al., No. 1:22-cv-00463. The McMillan complaint names the same defendants and asserts the same claims on behalf of the same purported class as the Maltagliati complaint. The complaints, purportedly brought on behalf of all purchasers of our publicly traded securities from September 21, 2020 through and including December 14, 2021, assert claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 (the "Exchange Act") arising primarily from a short-seller report and statements related to our business combination with Torchlight. The complaints seek unspecified compensatory damages and reasonable costs and expenses, including attorneys' fees. On July 15, 2022, the Court consolidated these actions under the caption In re Meta Materials Inc. Securities Litigation, No. 1:21-cv-07203, appointed lead plaintiffs and approved the lead plaintiffs' selection of lead counsel. Lead plaintiffs filed a consolidated complaint on August 29, 2022. We moved to dismiss that complaint on October 13, 2022. The motion was fully briefed on January 12, 2023. The Court held a hearing on the motion to dismiss on February 27, 2023 and took the motion under submission.

Shareholder Derivative Action

On January 14, 2022, a shareholder derivative action was filed in the U.S. District Court for the Easter District of New York captioned Hines v. Palikaras, et al., No. 1:22-cv-00248. The complaint names as defendants certain of our current officers and directors, certain former Torchlight officers and directors, and us (as nominal defendant). The complaint, purportedly brought on behalf of the Company, asserts claims under Section 14(a) of the Exchange Act, contribution claims under Sections 10(b) and 21D of the Exchange Act, and various state law claims such as breach of fiduciary duties and unjust enrichment. The complaint seeks, among other things, unspecified compensatory damages in favor of the Company, certain corporate governance related actions, and an award of costs and expenses to the derivative plaintiff, including attorneys' fees. On March 9, 2022, the Court entered a stipulated order staying this action until there is a ruling on a motion to dismiss in the securities class action.

Westpark Capital Group

On July 25, 2022, WestPark Capital Group, LLC filed a complaint in Los Angeles County Superior Court against us for breach of contract, alleging that it is owed a $450,000 commission as a placement agent with respect to our June 2022 registered direct offering. On August 31, 2022, we filed an answer to the complaint. We dispute that WestPark Capital Group placed the investor in the direct registered offering and is owed a commission.

Item 4. Mine Safety Disclosures.

Not Applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Market Information for Common Stock

Our common stock is quoted on the NASDAQ Stock Market LLC ("NASDAQ") under the symbol, "MMAT". As of December 31, 2022, we had outstanding common shares of 362,247,867 which includes 79,605,384 Exchangeable Shares held by certain shareholders in Canada and which are traded on the Canadian Securities Exchange ("CSE") under the symbol "MMAX", and that are exchangeable for shares of MMAT on a 1-for-1 basis.

The Exchangeable Shares were listed in connection with the completion of the Torchlight RTO where former holders of Metamaterial Inc.'s common shares (that were previously traded on the CSE) were entitled to receive 1.845 of our common shares for each previously held common share of Metamaterial Inc. or in Exchangeable Shares of a wholly-owned subsidiary of META that reflect the same exchange ratio on issuance.

Holders of Record

As of December 31, 2022, there were 154 holders of record of the Company's common stock listed on NASDAQ the majority of our common stock is held by brokers and other institutions on behalf of stockholders, accordingly, we are unable to estimate the total number of beneficial owners of our common stock.

Holders of our common stock are entitled to one vote for each share held of record on all matters submitted to a vote of stockholders.

Holders of our common stock have no preemptive rights and no right to convert their common stock into any other securities. There are no redemption or sinking fund provisions applicable to the common stock.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock. We currently intend to retain any future earnings and do not expect to pay any dividends in the foreseeable future. Any future determination to declare cash dividends will be made at the discretion of our Board, subject to applicable laws, and will depend on a number of factors, including our financial condition, results of operations, capital requirements, contractual restrictions, general business conditions, and other factors that our Board may deem relevant.

Issuer Purchases of Equity Securities

None.

Recent Sales of Unregistered Securities

There were no unregistered securities issued by us during the fiscal year 2022 not previously reported on a Form 8-K or Form 10-Q.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with its consolidated financial statements and related notes, each included elsewhere in this Annual Report on Form 10-K. This discussion contains forward-looking statements based upon current plans, expectations and beliefs that involve risks and uncertainties. Our actual results and the timing of certain events could differ materially from those anticipated in or implied by these forward-looking statements as a result of several factors, including those discussed in the section titled "Risk Factors" included under Part I, Item 1A and elsewhere in this Annual Report. See "Cautionary Note Regarding Forward-Looking Statements" in this Annual Report.

This Report on Form 10-K contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this Report on Form 10-K, including logos, artwork and other visual displays, may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend for our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by any other companies.

OVERVIEW

Meta Materials Inc. (also referred to herein as the "Company", "META", "we", "us", "our", or "Resulting Issuer") is a developer of high-performance functional materials and nanocomposites specializing in metamaterial research and products, nanofabrication, and computational electromagnetics. Our principal executive office is located at 60 Highfield Park Drive, Dartmouth, Nova Scotia, Canada.

BUSINESS AND OPERATIONAL HIGHLIGHTS

Throughout 2022, we emphasized new investments in pilot scale manufacturing of our NANOWEB® applications, expansion of our production capacity in our banknote and brand security lines, and more aggressive design, development and testing of our broad array of medical products. For more information regarding our business, see Part I, Item I (Business). of this Form 10-K.

As of December 31, 2022, we have substantially completed the construction of our Highfield Park Facility in Dartmouth, Nova Scotia and expanding our facility in Thurso, Quebec.

Nasdaq Potential Delisting

On March 20,2023, we received a notice (the "Notice") from The Nasdaq Stock Market LLC (the "Nasdaq Exchange") informing us that for the last 30 consecutive business days, the bid price of our common stock had closed below $1.00 per share, which is the minimum required closing bid price for continued listing on the Nasdaq Exchange pursuant to Listing Rule 5450(a)(1). The Notice has no immediate effect on our Nasdaq listing or trading of our common stock. We have 180 calendar days, or until September 18, 2023 (the "Compliance Date"), to regain compliance. To regain compliance, the closing bid price of our common stock must be at least $1.00 per share for a minimum of ten consecutive business days. If we do not regain compliance by the Compliance Date, we may be eligible for additional 180 days to regain compliance or if we are otherwise not eligible, we may request a hearing before a Nasdaq Hearings Panel.

Known Trends and Uncertainties

Inflation

A prolonged period of inflation in Europe, for energy costs in particular, could cause shortages or material cost increases for certain key raw materials, for which we depend on European suppliers. In particular, shortages or cost increases in certain polymers used in our Holography products could result in higher costs for these products that may not be able to be passed on to our customers.

Inflation in North America, for labor costs and transportation costs in particular, could elevate our costs of hiring new team members and cause increases in our labor costs for existing team members. In addition, rising transportation costs are likely to increase our costs for shipping our products and the costs associated with our material purchases. Further, inflation could cause increases in the cost of routine borrowing for the purchase of equipment.

Vehicle Electrification

The transition from internal combustion engine (ICE) vehicles to electric vehicles (EVs) may be accelerated by recent disruptions in global oil supply, reduced investment in new domestic oil exploration, and increased government support for domestic EV production, battery and battery materials supply chain, and EV charging infrastructure. This may increase the opportunity for META to scale up battery materials production, acquire new battery component customers, and obtain government funding for capital projects. It could also accelerate demand for certain of our NANOWEB® products targeting EV's.

Global Chip Shortage

A global shortage of computer chips has triggered significant delays in product launches in the automotive industry. Should these shortages continue, META could experience on-going delays in orders for our NANOWEB® applications from this vertical market since these products are intended to be incorporated into planned new models.

Expanding Operations, Facilities and Staffing

META is expanding capacity and facilities to support a growing range of market opportunities. This includes a new headquarters facility in Dartmouth, Nova Scotia; expanded production capacity in Thurso, Quebec; and new development facilities in Maryland for Electro Optics and IR, and in Massachusetts for the Battery Materials team. These activities require capital investments, increased overhead for leased facilities, and higher operating expenses for personnel additions. The timing of new customer programs and revenues associated with these expansions is uncertain and META will require additional financing to support the related cash consumption.

Expanding Focus and Emphasis on Information Technology

With the rapid growth of our global business, our data protection and cyber security needs have become a significant element of our business. Failure on our part to invest in the tools, equipment and personnel required to adequately manage these elements could result in regulatory issues, claims by customers and potential financial liabilities. Further, customer prospects identifying such failures could decide to delay or abandon orders from us.

NANOWEB® Capacity

Our NANOWEB® products have not yet reached the required manufacturing scale to enable us to address the volume demands of a number of our target vertical markets. We must either design, develop and procure additional internal capacity to produce NANOWEB® in higher volume and larger formats or identify outsourced suppliers capable of producing our designs. Internal capacity expansion may require higher capital expenditures and faces risk of supply chain delays. Outsourced production may increase variable costs and put pressure on gross margins as we scale volumes.

Recent Acquisitions

Plasma App Ltd

On April 1, 2022, we completed the purchase of 100% of the issued and outstanding shares of Plasma App Ltd. ("PAL"). PAL is the developer of PLASMAfusion®, a proprietary manufacturing platform technology, which enables high speed coating of any solid material on any type of substrate. PAL's team is located at the Rutherford Appleton Laboratories in Oxford, UK.

We issued an aggregate of 9,677,419 shares of our common stock to PAL's shareholders at closing, representing a number of shares of common stock equal to $18,000,000 divided by $1.86 (the volume weighted average price for the ten trading days ending on March 31, 2022), with an additional deferral of common stock equal to $2,000,000 divided by $1.86 to be issued subject to satisfaction of certain claims and warranties.

Optodot

We completed an asset purchase agreement with Optodot Corporation ("Optodot") on June 22, 2022. Optodot, based in Devens, Massachusetts, USA, is a developer of advanced materials technologies for the battery and other industries.

The consideration transferred included the following: A cash payment of $3,500,000 as well as unrestricted common stock equal to $37,500,000 divided by our common stock's daily volume weighted average trading price per share on the Nasdaq Capital Market for a period of twenty trading days ending on June 21, 2022 and restricted common stock, subject to milestones as set forth in the Purchase

Agreement, equal to $7,500,000 divided by the daily volume weighted average trading price per share of our Common Stock on the Nasdaq Capital Market for the consecutive period of twenty trading days ending on June 21, 2022.

RESULTS OF OPERATIONS

We have incurred recurring losses to date, and we anticipate incurring additional losses until such time, if ever, we can achieve profitability. Substantial additional financing will be needed to fund our development, marketing and sales activities and generally to commercialize our technology, and we expect to raise additional capital through various financing transactions or arrangements, including sale/leaseback of certain properties, joint venturing of projects, debt financing, equity financing, or other means. These factors raise substantial doubt about our ability to continue as a going concern. Our financial statements have been prepared assuming that we will continue as a going concern and, accordingly, do not include adjustments relating to the recoverability and realization of assets and classification of liabilities that might be necessary should we be unable to continue in operation.

Revenue and Gross Profit

Our revenue is generated from product sales as well as development revenue. We recognize revenue when we satisfy performance obligations under the terms of our contracts, and control of our products is transferred to our customers in an amount that reflects the consideration we expect to receive from our customers in exchange for those products or services.

Product Sales

Product sales include products, components, and samples sold to our customers. Revenue from the sale of prototypes and finished products is recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of goods. We consider whether there are other obligations in the contract that are separate performance obligations to which a portion of the transaction price needs to be allocated. In determining the transaction price for the sale of prototypes, we consider the effects of variable consideration, the existence of significant financial components, non-cash consideration and consideration payable to the customer (if any).

Development Revenue

Development Revenue consists of revenues from contract services and research services, including non-recurring engineering services. Revenue from development activities is recognized over time, using an output method to measure progress towards complete satisfaction of the research activities and whether associated performance obligations identified within each contract have been satisfied.

Cost of Goods Sold

Cost of Goods Sold consists of direct material used in production, depreciation expenses of machinery and equipment used in production, salaries and benefits relating to the production staff, and other overhead costs allocated to production.

	Year ended December 31,			
	2022	2021	Change	
	$	$	$	%
Product sales	1,211,746	407,915	803,831	197%
Development revenue	8,988,421	3,674,602	5,313,819	145%
Total Revenue	10,200,167	4,082,517	6,117,650	150%
Cost of goods sold	3,036,190	675,973	2,360,217	349%
Gross Profit	7,163,977	3,406,544	3,757,433	110%
Gross Profit percentage	70%	83%	-13%	

Product Sales

The increase in product sales of $0.8 million for the year ended December 31, 2022, as compared to the same period of 2021, is primarily due to increase in sales revenue from our nanoimprint-lithography revenue - banknotes applications.

Development Revenue

The increase in development revenue for the year ended December 31, 2022, of $5.3 million compared to the year ended December 31, 2021, is mainly due to our nanoimprint-lithography revenue - banknotes applications during 2022 of $6.8 million, offset by $1.5 million decrease due to the completion of certain development contracts in 2021. We derive a significant portion of our revenue from contract

services with a confidential G10 central bank. In 2021, we acquired Nanotech which had a development contract for up to $41.5 million over a period of up to five years. These contract services incorporate both nano-optic and optical thin film technologies and are focused on developing authentication features for future banknotes.

Cost of Goods Sold

The increase in cost of goods sold for the year ended December 31, 2022, of $2.4 million compared to the year ended December 31, 2021, is mainly due our production cost associated with the nanoimprint-lithography revenue - banknotes applications.

Gross Profit

The increase in gross profit for the year ended December 31, 2022, of $3.8 million compared to the year ended December 31, 2021, is again mainly due to our increased revenue from contract services with a confidential G10 central bank during 2022.

Operating expenses

	Year ended December 31,			
	2022 $	2021 $	Change $	%
Operating Expenses				
Selling & Marketing	6,244,883	2,267,354	3,977,529	175%
General & Administrative	61,543,282	29,699,601	31,843,681	107%
Research & Development	22,640,495	9,497,427	13,143,068	138%
Total operating expenses	90,428,660	41,464,382	48,964,278	118%

Selling & Marketing

The increase in selling & marketing expenses for the year ended December 31, 2022, of $4.0 million compared to the year ended December 31, 2021, is mainly due to a $3.1 million increase in salaries and benefits, including a $0.5 million increase in non-cash equity compensation due to increases in headcount in the latter part of 2021, and early part of 2022, to acquire talent and grow the sales and marketing team. The remaining increase of $0.9 million is due to increases in travel and other sales and marketing costs year over year.

General & Administrative

The increase in general & administrative expenses for the year ended December 31, 2022 ,of $31.8 million compared to the year ended December 31, 2021, is primarily due to a $15.1 million increase in salaries and benefits including a $6.8 million increase in non-cash equity compensation due to 1) management and support functions growth to keep pace with our overall growth and acquisitions, 2) the acquisition of Nanotech in Q4 2021, PAL and Optodot in Q2 2022, and 3) Contractors hired in Q3 2021, to manage the disposition of our O&G assets, a $7.9 million increase in professional fees due to the ongoing SEC investigation and lawsuits, acquisition related costs and consulting fees, $5.2 million in depreciation and amortization expenses mainly due to acquired intangible assets in Q4 2021, as part of the Nanotech acquisition as well as the increase in depreciation expense due to acquired equipment in different facilities, a $1.5 million increase in insurance and stock exchange costs associated with our listing on Nasdaq in June 2021, a $0.5 million increase in rent due to lease expansion of different locations, and $1.4 million increase in travel, subscription and other expenses.

Research & Development

The increase in research & development expenses for the year ended December 31, 2022, of $13.1 million compared to the year ended December 31, 2021, is primarily due to an $8.1 million increase in salaries and benefits including a $4.1 million increase in non-cash equity compensation due to increase in our head count through all locations as a result of (i) expansion in facilities and laboratories, and (ii) the acquisition of Nanotech in Q4 2021, PAL and Optodot in Q2 2022, a $2.0 million increase in R&D materials, Intellectual Property

maintenance fees and consulting expense, a $1.3 million in rent due to lease expansion in different R&D facilities in Canada, USA and Greece, as well as a $1.7 million increase in travel, depreciation, subscription and other expenses.

Other Expenses

	Year ended December 31,			
	2022 $	2021 $	Change $	%
Other expenses, net:				
Interest expense, net	(174,234)	(1,106,445)	932,211	-84%
Loss on foreign exchange, net	(2,054,447)	(205,882)	(1,848,565)	898%
Gain on deconsolidation of subsidiaries	3,990,737	—	3,990,737	100%
Loss on financial instruments, net	—	(40,540,091)	40,540,091	-100%
Other expenses, net	(3,433,757)	(11,939,068)	8,505,311	-71%
Total other expense, net	(1,671,701)	(53,791,486)	52,119,785	-97%

Interest Expense, net

The decrease in net interest expense for the year ended December 31, 2022, of $0.9 million compared to the year ended December 31, 2021, is primarily due to settlement of the convertible debentures and promissory notes in the first half of year 2021.

Loss on Foreign Exchange, net

The change in net loss on foreign exchange of $1.8 million for the year ended December 31, 2022 compared to the year ended December 31, 2021, is primarily driven by revaluations of intercompany balances in different currencies, mainly as a result of the devaluation of different currencies against the US dollar during 2022.

Gain on deconsolidation of wholly-owned subsidiary

A gain of $4.0 million for the year ended December 31, 2022 was recognized as a result of the deconsolidation of Next Bridge on December 14, 2022. The gain is comprised of the recognition of a note receivable at estimated fair value from Next Bridge for $2.2 million and a $1.8 million gain resulting from the derecognition of Next Bridge working capital (or a decrease in our consolidated net liabilities) on December 14, 2022. See note 5 to the Consolidated Financial Statements for further details.

Loss on Financial Instruments, net

No loss on financial instruments was recorded for the year ended December 31, 2022, as there were no revaluations of financial instruments during the period. The losses in 2021 were due to non-cash gains/losses resulting from remeasurement of the fair value of convertible financial liabilities at each balance sheet date or on conversion date using the fair value option.

Other expenses, net

The decrease in other expenses of $8.5 million for the year ended December 31, 2022,, as compared to the year ended December 31, 2021, is primarily due to a reduction of $10.3 million in costs incurred in relation to certain drilling activity we carried out at our O&G properties, to remain in compliance with all aspects of our lease obligations and to satisfy the Continuous Drilling Clause ("CDC") with University Lands net of $1.5 million decrease in cash and non-cash government grants received.

Deferred Tax recovery

	Year ended December 31,			
	2022 $	2021 $	Change $	%
Income tax recovery	5,834,160	852,063	4,982,097	585%

Income Tax recovery

The increase in our income tax recovery for the year ended December 31, 2022 of $5.0 million, as compared to the year ended December 31, 2021, was driven by:

a) utilization of previously fully reserved tax assets in relation to the Optodot acquisition. We recognized a deferred tax liability as of acquisition date of $4.9 million in accordance with ASC Topic 740, and in conjunction, reduced our valuation allowance resulting in a net income tax recovery of $4.9 million.

b) income tax recovery of $0.1 million as a result of purchase price allocation adjustments in relation to the Nanotech and PAL acquisitions and subsequent recovery.

We have provided a valuation allowance for various jurisdictions as a result of our historical net losses. We continue to assess our future taxable income by jurisdiction based on our recent historical operating results, the expected timing of reversal of temporary differences, various tax planning strategies that we may be able to implement, the impact of potential operating changes on our business and our forecast results from operations in future periods based on available information at the end of each reporting period.

To the extent that we are able to reach the conclusion that deferred tax assets are realizable based on any combination of the above factors in a single, or multiple, taxing jurisdictions, a reversal of the related portion of our existing valuation allowances may occur.

We have not yet been able to establish profitability or other sufficient significant positive evidence, to conclude that our deferred tax assets are more likely than not to be realized. Therefore, we continue to maintain a valuation allowance against our deferred tax assets.

LIQUIDITY AND CAPITAL RESOURCES

Liquidity risk is the risk that we will not meet our financial obligations as they become due after use of currently available cash. We have a planning and budgeting process to monitor operating cash requirements, including amounts projected for capital expenditures, which are adjusted as input variables change. These variables include, but are not limited to, our ability to plan for and generate revenue from current and prospective customers, our general and administrative requirements and the availability of equity or debt capital and government funding. As these variables change, we may be required to issue equity or obtain debt financing.

On December 31, 2022, we had cash, cash equivalents and short-term investments of $11.8 million including $1.7 million in restricted cash and $Nil in short-term investments compared to $50.3 million in cash, cash equivalents and short-term investments on December 31, 2021, including $0.8 million in restricted cash and $2.9 million in short-term investments.

During the year ended December 31, 2022, our principal sources of liquidity included $46.3 million of net proceeds obtained through the issuance of common stock and warrants, proceeds from a below-market capital government loan of $1.1 million and revenue of approximately $10.2 million.

During the year ended December 31, 2022, our primary uses of liquidity included $26.5 million in salaries, $25.1 million mainly in legal, consulting, investor relations, auditing and accounting fees, $19.6 million in capital expenditures, $4.6 million in acquisitions cost, $4.0 million in rent and utilities, $3.5 million in R&D material and patent fees, $3.1 million in travel, advertising, travel show cost and dues and subscriptions, and $2.5 million in insurance.

June 2022 Registered Direct Offering

On June 24, 2022, we entered into a securities purchase agreement, as amended and restated on June 27, 2022, with certain institutional investors (the "SPA") for the purchase and sale in a registered direct offering of 37,037,039 shares of our common stock at a purchase price of $1.35 per share and warrants to purchase 37,037,039 shares at an exercise price of $1.75 per share. This resulted in gross proceeds from the offering of $50.0 million and net proceeds of $46.3 million.

Shelf Registration

On November 9, 2022, we filed a "universal" shelf registration statement File No. (333-268282) on Form S-3 allowing us to issue certain securities with an aggregate offering price not to exceed $250 million. This registration statement was declared effective by the SEC on November 18, 2022.

On February 10, 2023, we entered into a sales agreement (the "ATM Agreement") with investment banks to establish an "at-the-market" offering program under which we may sell up to an aggregate of $100 million of shares of common stock (the "ATM Shares") from

time to time. The sales agents are entitled to compensation at a fixed commission rate of 3.0% of the gross proceeds of each sale of shares of our common stock.

Under the ATM Agreement, we set the parameters for the sale of ATM Shares, including the number of ATM Shares to be issued, the time period during which sales are requested to be made, limitations on the number of ATM Shares that may be sold in any one trading day and any minimum price below which sales may not be made. Sales of the ATM Shares, if any, under the ATM Agreement may be made in transactions that are deemed to be "at-the-market offerings" as defined in Rule 415 under the Securities Act.

As of March 20, 2023, we have sold an aggregate of 17,573,969 shares of our common stock pursuant to the ATM Agreement for aggregate gross proceeds of approximately $10.5 million.

Going Concern

In accordance with Accounting Standards Codification ("ASC") 205-40, going concern, we evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about our ability to continue as a going concern within one year after the date that the consolidated financial statements included in this Form 10-K are issued. This evaluation initially does not take into consideration the potential mitigating effect of management's plans that have not been fully implemented as of the date the financial statements are issued. When substantial doubt exists under this methodology, management evaluates whether the mitigating effect of its plans sufficiently alleviates substantial doubt about our ability to continue as a going concern. The mitigating effect of management's plans, however, is only considered if both (1) it is probable that the plans will be effectively implemented within one year after the date that the financial statements are issued, and (2) it is probable that the plans, when implemented, will mitigate the relevant conditions or events that raise substantial doubt about the entity's ability to continue as a going concern within one year after the date that the consolidated financial statements are issued. In performing its analysis, management excluded certain elements of its operating plan that cannot be considered probable. Under ASC 205-40, the receipt of potential funding from future partnerships, equity or debt issuances, potential achievement of milestones from customer agreements and reductions in workforce cannot be considered probable at this time because these plans are not entirely within our control and/or have not been approved by our Board of Directors as of the date of issuance of the consolidated financial statements.

Our expectation to generate operating losses and negative operating cash flows in the future and the need for additional funding to support our planned operations, raise substantial doubt regarding our ability to continue as a going concern. Management's plans to alleviate the conditions that raise substantial doubt include reduced spending, and the pursuit of additional capital. Management has concluded the likelihood that its plan to successfully obtain sufficient funding from one or more of these sources, or adequately reduce expenditures, while highly possible, is less than probable. Accordingly, we have concluded that substantial doubt exists about our ability to continue as a going concern for a period of at least 12 months from the date of issuance of the consolidated financial statements.

The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities in the ordinary course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of the uncertainties described above.

The following table summarizes META's cash flows for the periods presented:

	Year ended December 31,	
	2022	2021
Net cash used in operating activities	(62,244,794)	(34,764,911)
Net cash (used in) provided by investing activities	(19,472,250)	65,144,545
Net cash provided by financing activities	46,367,012	15,655,863
Net (decrease) increase in cash, cash equivalents and restricted cash	(35,350,032)	46,035,497

Net cash used in operating activities

During the year ended December 31, 2022, net cash used in operating activities of $62.2 million was primarily driven by a net loss of $79.1 million for the period, and non-cash adjustments of $17.2 million mainly due to depreciation and amortization of $9.3 million, stock-based compensation of $13.9 million, and unrealized foreign exchange loss of $2.1 million offset by $4.0 million gain on deconsolidation of Next Bridge, and $5.8 million deferred income tax recovery, along with other less material line items. In addition, there was $0.4 million cash used by working capital primarily due to a $5.4 million increase of trade and other payables, offset by decrease in prepaid and other current assets $4.8 million, along with other changes in working capital.

During the year ended December 31, 2021, net cash used in operating activities of $34.8 million was primarily driven by a $91.0 million net loss reported for the year, and non-cash adjustments of $51.6 million mainly due to $40.5 million in fair value losses on financial instruments, $8.1 million stock based compensation and non-cash consulting fees, $3.7 million in depreciation, amortization and impairment, and non-cash interest and accretion of $0.9 million, along with other less material line items. Change in operating assets and liabilities totaled $4.7 million primarily due to a $6.9 million increase of trade and other payables.

Net cash (used in) provided by investing activities

During the year ended December 31, 2022, net cash used in investing activities of $19.5 million was primarily driven by proceeds from short-term investments of $2.8 million and proceeds from below-market capital government loan of $1.1 million offset by $19.6 million of capital expenditure associated with the construction of the Highfield Park Facility in Canada as well as the equipment purchases for our facility in Pleasanton, California, United States and $3.5 million cash consideration for the Optodot acquisition.

During the year ended December 31, 2021, net cash provided by investing activities of $65.1 million was primarily driven by cash acquired as a result of the Torchlight RTO of $147.0 million, offset by $66.1 million in cash paid for the Nanotech acquisition, $2.9 million purchase of short-term investments, $11.7 million in property plant and equipment purchases associated with the construction of the Highfield Park Facility as well as equipment purchases for both the Highfield Park and Pleasanton facilities, and a $1.1 million increase in intangibles as a result of capitalized legal cost for certain patents, as well as the acquisition of certain intellectual property assets from Interglass Technology AG (Switzerland).

Net cash provided by financing activities

During the year ended December 31, 2022, net cash provided by financing activities of $46.4 million was primarily driven by the cash obtained through the proceeds from the issuance of common stock and warrants through the Securities Purchase Agreements with institutional investors for the purchase and sale in a registered direct offering, $0.4 million from stock option exercises net of $0.6 million loan repayments.

During the year ended December 31, 2021, net cash provided by financing activities of $15.7 million was primarily driven by $10.0 million in proceeds received from the issuance of unsecured convertible promissory notes to Torchlight, subsequently eliminated upon consolidation at December 31, 2021, $4 million in proceeds from the issuance of unsecured convertible promissory notes to an affiliate that was subsequently converted into common stock during the year and $1.4 million in proceeds from options and warrants exercise net of $1.1 million loan repayments.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The preparation of financial statements in conformity with U.S. GAAP requires us to make estimates, judgments and assumptions that affect the amounts reported in the consolidated financial statements. These estimates, judgments and assumptions are evaluated on an ongoing basis. We base our estimates on historical experience and on various other assumptions that we believe are reasonable at that time, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ materially from those estimates. The accounting policies that reflect our more significant estimates, judgments and assumptions and which we believe are the most critical to aid in fully understanding and evaluating our reported financial results include the following:

Going Concern

The accompanying consolidated financial statements have been prepared on a going concern basis of accounting, which contemplates continuity of operations, realization of assets and liabilities and commitments in the normal course of business. The accompanying consolidated financial statements do not reflect any adjustments that might result if we are unable to continue as a going concern. In connection with the preparation of the consolidated financial statements for the years ended December 31, 2022 and 2021, we conducted an evaluation as to whether there were conditions and events, considered in the aggregate, which raised substantial doubt as to our ability to continue as a going concern within one year after the date of the issuance of such financial statements, and concluded that substantial doubt existed as to our ability to continue as a going concern as further discussed in Note 2 to the consolidated financial statements.

Under ASC 205-40, the receipt of potential funding from future partnerships, equity or debt issuances, potential achievement of milestones from customer agreements and reductions in workforce cannot be considered probable at this time because these plans are not entirely within our control and/or have not been approved by our Board of Directors as of the date of issuance of the consolidated financial statements.

Our expectation to generate operating losses and negative operating cash flows in the future and the need for additional funding to support our planned operations, raise substantial doubt regarding our ability to continue as a going concern. Management's plans to alleviate the conditions that raise substantial doubt include reduced spending, and the pursuit of additional capital. Management has concluded the likelihood that its plan to successfully obtain sufficient funding from one or more of these sources, or adequately reduce expenditures, while highly possible, is less than probable.

Goodwill

We have one operating segment in accordance with ASC 280 *Segment Reporting*. We have similarly determined that we have one reporting unit, to which all goodwill is assigned, in accordance with ASC 350 *Intangibles – Goodwill and Other.*

Goodwill represents the excess of the purchase price in a business combination over the fair value of net tangible and intangible assets acquired. The carrying amount of goodwill is periodically reviewed for impairment and at a minimum annually and whenever events or changes in circumstances indicate that the carrying value of this asset may not be recoverable.

We first perform a qualitative assessment to test the reporting unit's goodwill for impairment. Based on the qualitative assessment, if it is determined that the fair value of our reporting unit is more likely than not (i.e. a likelihood of more than 50 percent) to be less than its carrying amount, the quantitative assessment of the impairment test is performed. In the quantitative assessment, we compare the fair value of our reporting unit to its carrying value. If the fair value of the reporting unit exceeds its carrying value, goodwill is not considered impaired and we are not required to perform further testing. If the carrying value of the net assets of the reporting unit exceeds its fair value, then an impairment loss equal to the difference, but not exceeding the total carrying value of goodwill allocated to the reporting unit, would be recorded.

For example, a sustained decline in market capitalization below book value is an indicator that goodwill and other intangible assets should be tested for impairment under ASC 350 *Intangibles – Goodwill and Other.* During the period from January 1, 2022 to December 31, 2022, our stock price ranged between a high of $2.95 and a low of $0.63 and as of December 31, 2022 our market capitalization was $431.1 million and the book value of our goodwill was $281.7 million. While our market capitalization exceeded the book value of our goodwill as of December 31, 2022, as of March 17, 2023, our market capitalization is approximately $191.1 (based on a closing price of $0.50 per share) million and the book value of our goodwill is $281.7 million, and as such we may be required to recognize an impairment loss in the future if the drop in our market capitalization is deemed to be sustained.

Next Bridge Note Receivable

Notes receivable consists of an amount due from Next Bridge, which was previously a wholly-owned subsidiary of Meta, until the completion of the spin-off transaction on December 14, 2022. One note is partially secured by a combination of Meta’s common shares and an interest in the Orogrande Project Property. The note receivables have been recognized at their fair value, as of December 14, 2022, subsequent to the deconsolidation of Next Bridge from our consolidated financial results.

We have assessed the fair value of the notes receivable on the deconsolidation date in accordance with ASC 820, Fair Value Measurement. In particular, we assessed the likelihood of our ability to receive the aggregate amount of the $24.2 million of notes receivable and determined that except for the security interest in our shares held by the Pledgor for the secured loan, the other collateral is not substantive and therefore should not serve as the basis for concluding that that loan is well secured and collateralized; the other loan is unsecured. As a result, we reserved $22 million of the Next Bridge note receivables, resulting in $2.2 million being shown on our balance sheet as of December 31, 2022.

At subsequent reporting periods to December 14, 2022, including December 31, 2022, the note is measured net of any credit losses in accordance with ASC 326 Financial Instruments – Credit Losses. If our judgment regarding these note receivables is incorrect and such notes are repaid in full or in an amount more than we show on our balance sheet, we will record a recovery of these notes upon receiving repayment. See note 5 for further details.

We are currently in negotiations with Next Bridge to extend the maturity date of each Next Bridge note receivable.

Revenue recognition – Our revenue is generated from product sales as well as development revenue. We recognize revenue when it satisfies performance obligations under the terms of its contracts, and control of its products is transferred to its customers in an amount that reflects the consideration we expect to receive from our customers in exchange for those products or services.

Revenue from the sale of prototypes and finished products is recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of goods. We consider whether there are other obligations in the contract that are separate performance obligations to which a portion of the transaction price needs to be allocated. In determining the transaction price for the

sale of prototypes, we consider the effects of variable consideration, the existence of significant financial components, non-cash consideration and consideration payable to the customer (if any).

Revenue from development activities is recognized over time, using an output method to measure progress towards complete satisfaction of the research activities and whether associated performance obligations identified within each contract have been satisfied.

Acquired intangibles - In accordance with ASC 805 *Business Combinations*, we allocate the purchase price of acquired companies to the tangible and intangible assets acquired and the liabilities assumed based on their estimated fair values. Such valuations may require management to make significant estimates and assumptions, especially with respect to intangible assets. Acquired intangible assets consist of acquired technology and customer relationships. In valuing acquired intangible assets, we make assumptions and estimates based in part on projected financial information, which makes assumptions and estimates inherently uncertain, particularly for early-stage technology companies. The significant estimates and assumptions used by us in the determination of the fair value of acquired intangible technology assets include the revenue growth rate and the discount rate. The significant estimates and assumptions used by us in the determination of the fair value of acquired customer contract intangible assets include the revenue growth rate and the discount rate.

As a result of the judgments that need to be made, we obtain the assistance of independent valuation firms. We complete these assessments as soon as practical after the closing dates. Any excess of the purchase price over the estimated fair values of the identifiable net assets acquired is recorded as goodwill.

Although we believe the assumptions and estimates of fair value we have made in the past have been reasonable and appropriate, they are based in part on historical experience and information obtained from the management of the acquired companies and are inherently uncertain and subject to refinement. Unanticipated events and circumstances may occur that may affect the accuracy or validity of such assumptions, estimates or actual results. As a result, during the measurement period, which may be up to one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill, if the changes are related to conditions that existed at the time of the acquisition. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments, based on events that occurred subsequent to the acquisition date, are recorded in our consolidated statements of operations and comprehensive loss.

Business combinations - We allocate the fair value of purchase consideration to the tangible assets acquired, liabilities assumed, and intangible assets acquired based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill to reporting units based on the expected benefit from the business combination. Allocation of purchase consideration to identifiable assets and liabilities affects the amortization expense, as acquired finite-lived intangible assets are amortized over the useful life, whereas any indefinite-lived intangible assets, including goodwill, are not amortized. During the measurement period, which is not to exceed one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed, with the corresponding offset to goodwill. Upon the conclusion of the measurement period, any subsequent adjustments are recorded to earnings. Acquisition-related expenses are recognized separately from business combinations and are expensed as incurred.

Commitments and contractual obligations

For a description of our commitments and contractual obligations, please see “note 25 – Leases” as well as “note 26 – Commitments and contingencies” in the notes to the Consolidated Financial Statements of this Form 10-K.

Off-balance sheet arrangements

Off-balance sheet firm commitments relating to an outstanding letter of credit amounted to approximately $0.5 million as of December 31, 2022 which is secured by a performance security guarantee cover issued by Export Development of Canada. Further, this guarantee/standby letter of credit expires on October 5, 2023. Please see “note 26 – Commitments and contingencies” in the notes to the Consolidated Financial Statements of this Form 10-K. We do not maintain any other off-balance sheet arrangements.

Recent accounting pronouncements

For a description of recent accounting pronouncements, including the expected dates of adoption and estimated effects, if any, on our Consolidated Financial Statements, please see “note 2 – Significant accounting policies” in the notes to the Consolidated Financial Statements of this Form 10-K.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

This item is not required for a smaller reporting company.

Item 8. Financial Statements and Supplementary Data.

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Meta Materials Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Meta Materials Inc. and subsidiaries (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for each of the years in the two-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the two-year period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

Going Concern

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 2 to the consolidated financial statements, the Company has suffered recurring losses from operations and requires additional financing to fund its operations, which raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are also described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB)and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Acquisition date fair value of a developed technology intangible asset in the acquisition of Plasma App Ltd.

As discussed in Note 4 to the consolidated financial statements, on April 1, 2022, the Company completed the purchase of 100% of the issued and outstanding shares of Plasma App Ltd. for $16,989,246. The acquisition was accounted for as a business combination. The Company allocated the consideration transferred based upon the fair value of the assets acquired and liabilities assumed on the acquisition date. This resulted in the recognition of a developed technology intangible asset of $12,600,000. As discussed in Note 4 to

the consolidated financial statements, the significant estimates and assumptions used by the Company in the determination of the fair value of the acquired developed technology intangible asset includes the revenue growth rate and the discount rate.

We identified the evaluation of the acquisition date fair value of the developed technology intangible asset in the acquisition of Plasma App Ltd. as a critical audit matter. Specifically, the assessment of the revenue growth rate and discount rate assumptions used in estimating the acquisition date fair value involved a high degree of subjective auditor judgment. In addition, the estimated fair value was sensitive to possible changes to the above estimates and assumptions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the revenue growth rate by comparing to publicly available market data. We involved valuation professionals with specialized skills and knowledge, who assisted in:

- Evaluating the Company's discount rate assumption, by recalculating it using a discount rate range that was independently developed using publicly available market data for comparable entities.
- Evaluating the discount rate applied to the developed technology intangible asset by comparing it to the weighted average return on assets acquired in the Plasma App Ltd. business combination and the internal rate of return of the Plasma App Ltd. business combination.

Acquisition date fair value of a developed technology intangible asset in the acquisition of assets of Optodot Corporation

As discussed in Note 4 to the consolidated financial statements, on June 22, 2022, the Company completed an asset purchase agreement with Optodot Corporation to acquire certain assets related to patents and intellectual property for the battery and other industries. The total consideration was $53,633,267. The acquisition was accounted for as a business combination. The Company allocated the consideration transferred based upon the fair value of the assets acquired and liabilities assumed on the acquisition date. This resulted in the recognition of a developed technology intangible asset of $23,300,000. As discussed in Note 4 to the consolidated financial statements, the significant estimates and assumptions used by the Company in the determination of the fair value of the acquired developed technology intangible asset includes the revenue growth rate and the discount rate.

We identified the evaluation of the acquisition date fair value of the developed technology intangible asset in the acquisition of assets of Optodot Corporation as a critical audit matter. Specifically, the assessment of the revenue growth rate and discount rate assumptions used in estimating the acquisition date fair value involved a high degree of subjective auditor judgment. In addition, the estimated fair value was sensitive to possible changes to the above estimates and assumptions.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the revenue growth rate by comparing to publicly available market data. We involved valuation professionals with specialized skills and knowledge, who assisted in:

- Evaluating the Company's discount rate assumption, by recalculating it using a discount rate range that was independently developed using publicly available market data for comparable entities.
- Evaluating the discount rate applied to the developed technology intangible asset by comparing it to the weighted average return on assets acquired in the Optodot Corporation business combination and the internal rate of return of the Optodot Corporation business combination.

/s/ KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

We have served as the Company's auditor since 2019.

Vaughan, Canada
March 23, 2023

Item 1. Financial Statements

META MATERIALS INC.
CONSOLIDATED BALANCE SHEETS

	As of December 31, 2022	As of December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 10,090,858	$ 46,645,704
Restricted cash	1,720,613	788,768
Short-term investments	—	2,875,638
Grants receivable	—	175,780
Accounts and other receivables	902,718	1,665,700
Notes receivable	2,211,900	—
Inventory	468,027	265,718
Prepaid expenses and other current assets	7,202,099	3,451,367
Assets held for sale	—	75,500,000
Due from related parties	8,461	10,657
Total current assets	22,604,676	131,379,332
Intangible assets, net	56,313,317	28,971,824
Property, plant and equipment, net	42,674,699	27,018,114
Operating lease right-of-use assets	5,576,824	6,278,547
Goodwill	281,748,466	240,376,634
Total assets	$ 408,917,982	$ 434,024,451
Liabilities and stockholders' equity		
Current liabilities		
Trade and other payables	$ 16,694,211	$ 13,335,470
Current portion of long-term debt	483,226	491,278
Current portion of deferred revenues	730,501	779,732
Current portion of deferred government assistance	799,490	846,612
Preferred stock liability	—	75,500,000
Current portion of operating lease liabilities	967,126	663,861
Asset retirement obligations	—	21,937
Total current liabilities	19,674,554	91,638,890
Deferred revenues	479,808	637,008
Deferred government assistance	319,017	3,038
Deferred tax liabilities	3,253,985	324,479
Long-term operating lease liabilities	3,375,031	3,706,774
Funding obligation	180,705	268,976
Long-term debt	3,070,729	2,737,171
Total liabilities	30,353,829	99,316,336
Stockholders' equity		
Common stock - $0.001 par value; 1,000,000,000 shares authorized, 362,247,867 shares issued and outstanding at December 31, 2022, and $0.001 par value; 1,000,000,000 shares authorized, 284,573,316 shares issued and outstanding at December 31, 2021	340,425	262,751
Additional paid-in capital	590,962,866	463,136,404
Accumulated other comprehensive loss	(5,242,810)	(296,936)
Accumulated deficit	(207,496,328)	(128,394,104)
Total stockholders' equity	378,564,153	334,708,115
Total liabilities and stockholders' equity	$ 408,917,982	$ 434,024,451

Commitments and contingencies (note 26)
Subsequent events (note 27)

The accompanying notes are an integral part of these consolidated financial statements

META MATERIALS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

	Year ended December 31,	
	2022	**2021**
Revenue:		
Product sales	$ 1,211,746	$ 407,915
Development revenue	8,988,421	3,674,602
Total revenue	10,200,167	4,082,517
Cost of goods sold	3,036,190	675,973
Gross profit	7,163,977	3,406,544
Operating expenses:		
Selling & marketing	6,244,883	2,267,354
General & administrative	61,543,282	29,699,601
Research & development	22,640,495	9,497,427
Total operating expenses	90,428,660	41,464,382
Loss from operations	(83,264,683)	(38,057,838)
Interest expense, net	(174,234)	(1,106,445)
Loss on foreign exchange, net	(2,054,447)	(205,882)
Gain on deconsolidation of wholly-owned subsidiary	3,990,737	—
Loss on financial instruments, net	—	(40,540,091)
Other expenses, net	(3,433,757)	(11,939,068)
Total other expense, net	(1,671,701)	(53,791,486)
Loss before income taxes	(84,936,384)	(91,849,324)
Income tax recovery	5,834,160	852,063
Net loss	$ (79,102,224)	$ (90,997,261)
Other comprehensive (loss) income net of tax		
Foreign currency translation loss	(4,945,874)	(321,663)
Fair value gain on changes of own credit risk	—	680,611
Total other comprehensive (loss) income	(4,945,874)	358,948
Comprehensive loss	$ (84,048,098)	$ (90,638,313)
Basic and diluted loss per share [(1)]	$ (0.24)	$ (0.39)
Weighted average number of shares outstanding - basic and diluted [(1)]	328,350,452	232,898,398

(1) Retroactively restated for the year ended December 31, 2021 for the Torchlight reverse acquisition ("Torchlight RTO")

The accompanying notes are an integral part of these consolidated financial statements

META MATERIALS INC.

CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Income (loss)	Accumulated Deficit	Total Stockholders' Equity
	Shares	Amount				
Balance, January 1, 2021	154,163,975	$ 132,347	$ 29,022,977	$ (655,884)	$ (37,396,843)	$ (8,897,403)
Net loss	—	—	—	—	(90,997,261)	(90,997,261)
Other comprehensive income	—	—	—	358,948	—	358,948
Conversion of promissory notes	20,391,239	20,391	23,635,974	—	—	23,656,365
Conversion of secured debentures	14,155,831	14,156	22,104,626	—	—	22,118,782
Conversion of unsecured debentures	5,105,338	5,105	5,764,370	—	—	5,769,475
Conversion of long-term debt	124,716	125	221,718	—	—	221,843
Conversion of payable to related party	150,522	151	225,835	—	—	225,986
Exercise of stock options	4,786,927	4,787	1,288,476	—	—	1,293,263
Exercise of warrants	361,729	362	122,108	—	—	122,470
Exercise of broker warrants	82,494	83	16,173	—	—	16,256
Effect of reverse acquisition	82,813,994	82,814	369,378,596	—	—	369,461,410
Shares issued in lieu of operating lease liability	1,832,989	1,833	2,780,135	—	—	2,781,968
Stock-based compensation	603,562	597	8,575,416	—	—	8,576,013
Balance, December 31, 2021	284,573,316	$ 262,751	$ 463,136,404	$ (296,936)	$ (128,394,104)	$ 334,708,115
Net loss	—	—	—	—	(79,102,224)	(79,102,224)
Other comprehensive loss	—	—	—	(4,945,874)	—	(4,945,874)
Issuance of common stock and warrants	37,037,039	37,037	49,962,963	—	—	50,000,000
Stock issuance costs	—	—	(3,680,666)	—	—	(3,680,666)
Exercise of stock options	1,688,538	1,688	447,023	—	—	448,711
Settlement of restricted stock units	658,538	659	(18,686)	—	—	(18,027)
Exercise of warrants	1,623,700	1,624	167,950	—	—	169,574
Issuance of stock in connection with acquisitions	36,443,684	36,444	67,086,069	—	—	67,122,513
Stock-based compensation	223,052	222	13,861,809	—	—	13,862,031
Balance, December 31, 2022	362,247,867	$ 340,425	$ 590,962,866	$ (5,242,810)	$ (207,496,328)	$ 378,564,153

(1) Retroactively restated from the earliest period presented for the Torchlight reverse acquisition ("Torchlight RTO")

The accompanying notes are an integral part of these consolidated financial statements

META MATERIALS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year ended December 31,	
	2022	2021
Cash flows from operating activities:		
Net loss	$ (79,102,224)	$ (90,997,261)
Adjustments to reconcile net loss to net cash used in operating activities:	—	
Non-cash finance income	(135,524)	(471,689)
Non-cash interest expense	403,317	902,940
Non-cash lease expense	1,608,992	439,791
Deferred income tax	(5,834,160)	(852,063)
Depreciation and amortization	9,272,074	3,491,493
Impairment of assets	108,004	237,013
Unrealized foreign currency exchange loss	2,050,029	407,352
Loss on financial instruments, net	—	40,540,091
Gain on deconsolidation of wholly-owned subsidiary	(3,990,737)	—
Change in deferred revenue	(129,679)	(679,541)
Non-cash government assistance	(3,047)	(544,932)
Gain on sale of assets	(783)	—
Loss on debt settlement	—	19,253
Stock-based compensation	13,184,396	1,576,849
Non-cash consulting expense	677,638	6,513,378
Changes in operating assets and liabilities	(353,090)	4,652,415
Net cash used in operating activities	(62,244,794)	(34,764,911)
Cash flows from investing activities:		
Purchases of intangible assets	—	(1,133,894)
Purchases of property, plant and equipment	(19,587,511)	(11,655,417)
Proceeds from sale of property, plant and equipment	39,140	—
Proceeds from (Purchases of) short-term investments	2,811,152	(2,889,852)
Proceeds from below-market capital government loan	1,071,862	—
Acquisition of business, net of cash acquired	(3,486,906)	(66,131,025)
Loan advance pursuant to deconsolidation	(319,987)	—
Proceeds from reverse takeover	—	146,954,733
Net cash (used in) provided by investing activities	(19,472,250)	65,144,545
Cash flows from financing activities:		
Proceeds from long-term debt	—	1,127,151
Proceeds from the issuance of common stock and warrants	50,000,000	
Stock issuance costs paid on the issuance of common stock and warrants	(3,680,666)	—
Repayments of long-term debt	(552,579)	(1,090,047)
Proceeds from government grants	—	223,384
Proceeds from unsecured promissory notes	—	13,963,386
Proceeds from stock option exercises	448,711	1,293,263
Repurchases of common stock for income tax withheld upon settlement of restricted stock units	(18,027)	—
Proceeds from warrant exercises	169,574	138,726
Net cash provided by financing activities	46,367,013	15,655,863
Net (decrease) increase in cash, cash equivalents and restricted cash	(35,350,031)	46,035,497
Cash, cash equivalents and restricted cash at beginning of the year	47,434,472	1,395,683
Effects of exchange rate changes on cash, cash equivalents and restricted cash	(272,970)	3,292
Cash, cash equivalents and restricted cash at end of the year	$ 11,811,471	$ 47,434,472
Supplemental cash flow information		
Accrued purchases of property, equipment and patents	2,270,887	1,692,969
Right-of-use assets obtained in exchange for lease liabilities	288,499	3,590,148
Right-of-use assets and prepaid expenses recognized in exchange for common stock	—	2,149,381
Settlement of liabilities in common stock	—	51,992,451
Interest paid on debt	—	64,528

The accompanying notes are an integral part of these consolidated financial statements

1. Corporate information

Meta Materials Inc. (also referred to herein as the "Company", "META", "we", "us", "our", or "Resulting Issuer") is a smart materials and photonics company specializing in metamaterial research and products, nanofabrication, and computational electromagnetics. Our registered office is located at 85 Swanson Road, Boxborough, Massachusetts 01719 and our principal executive office is located at 60 Highfield Park Drive, Dartmouth, Nova Scotia, Canada.

On December 14, 2020, we (formerly known as "Torchlight Energy Resources, Inc." or "Torchlight") and our subsidiaries, Metamaterial Exchangeco Inc. (formerly named 2798832 Ontario Inc., "Canco") and 2798831 Ontario Inc. ("Callco"), entered into an Arrangement Agreement (the "Arrangement Agreement") with Metamaterial Inc., an Ontario corporation headquartered in Nova Scotia, Canada ("MMI"), to acquire all of the outstanding common stock of MMI by way of a statutory plan of arrangement (the "Arrangement") under the Business Corporations Act (Ontario), on and subject to the terms and conditions of the Arrangement Agreement (the "Torchlight RTO"). On June 25, 2021, we implemented a reverse stock split. On June 28, 2021, following the satisfaction of the closing conditions set forth in the Arrangement Agreement, the Arrangement was completed, and we changed our name from "Torchlight Energy Resources, Inc." to "Meta Materials Inc." and changed our trading symbol from "TRCH" to "MMAT".

On June 28, 2021, and pursuant to the completion of the Arrangement Agreement, we began trading on the Nasdaq Capital Market under the symbol "MMAT" while MMI common stock was delisted from the Canadian Securities Exchange ("CSE") and at the same time, Metamaterial Exchangeco Inc., a wholly-owned subsidiary of META, started trading under the symbol "MMAX" on the CSE. Certain previous shareholders of MMI elected to convert their common stock of MMI into exchangeable shares in Metamaterial Exchangeco Inc. These exchangeable shares, which can be converted into common stock of META at the option of the holder, are similar in substance to common shares of META and have been included in the determination of outstanding common shares of META.

For accounting purposes, the legal subsidiary, MMI, has been treated as the accounting acquirer and the Company, the legal parent, has been treated as the accounting acquiree. The transaction has been accounted for as a reverse acquisition in accordance with ASC 805 *Business Combinations*. Accordingly, these consolidated financial statements are a continuation of MMI consolidated financial statements prior to June 28, 2021 and exclude the balance sheets, statements of operations and comprehensive loss, statement of changes in stockholders' equity and statements of cash flows of Torchlight prior to June 28, 2021. See note 4 for additional information.

On December 14, 2022, we distributed all of the 165,472,241 outstanding shares of Common Stock of Next Bridge Hydrocarbons Inc. ("Next Bridge"), incorporated in Nevada on August 31, 2021, as OilCo. Holdings, Inc., as a wholly owned subsidiary of META, (and changed its name to Next Bridge Hydrocarbons, Inc. pursuant to its Amended and Restated Articles of Incorporation filed on June 30, 2022), on a pro rata basis to holders of our Series A Non-Voting Preferred Stock. Immediately after the distribution, Next Bridge became an independent company, and as a result, we have deconsolidated the financial results of Next Bridge from our consolidated financial results from December 14, 2022 onwards. See note 5 for additional information on this transaction.

2. Going Concern

At each reporting period, we evaluate whether there are conditions or events that raise substantial doubt about our ability to continue as a going concern within one year after the date that the financial statements are issued. Our evaluation entails analyzing prospective operating budgets and forecasts for expectations of our cash needs and comparing those needs to the current cash and cash equivalent balances. We are required to make certain additional disclosures if we conclude substantial doubt exists and it is not alleviated by our plans or when our plans alleviate substantial doubt about our ability to continue as a going concern.

In accordance with Accounting Standards Codification ("ASC") 205-40, going concern, we evaluated whether there are conditions and events, considered in the aggregate, that raise substantial doubt about our ability to continue as a going concern within one year after the date that these consolidated financial statements are issued. This evaluation initially does not take into consideration the potential mitigating effect of management's plans that have not been fully implemented as of the date the financial statements are issued. When substantial doubt exists under this methodology, management evaluates whether the mitigating effect of its plans sufficiently alleviates substantial doubt about our ability to continue as a going concern. The mitigating effect of management's plans, however, is only considered if both (1) it is probable that the plans will be effectively implemented within one year after the date that the financial statements are issued, and (2) it is probable that the plans, when implemented, will mitigate the relevant conditions or events that raise substantial doubt about the entity's ability to continue as a going concern within one year after the date that these consolidated financial statements are issued. In performing its analysis, management excluded certain elements of its operating plan that cannot be considered probable.

We have incurred net losses of $79.1 million and $91.0 million for the years ended December 31, 2022 and 2021, respectively, and have an accumulated deficit of $207.5 million as of December 31, 2022. Our expectation to generate operating losses and negative operating cash flows in the future and the need for additional funding to support our planned operations, raise substantial doubt regarding our ability to continue as a going concern for a period of one year after the date that these consolidated financial statements are issued. Management's plans to alleviate the conditions that raise substantial doubt include reduced spending, and the pursuit of additional capital. Management has concluded the likelihood that its plan to successfully obtain sufficient funding from one or more of these sources, or adequately reduce expenditures, while highly possible, is less than probable because these plans are not entirely within our control and/or have not been approved by our Board of Directors as of the date of these consolidated financial statements.. If we are unsuccessful in obtaining financing, we will be required to assess alternative forms of action. Accordingly, we have concluded that substantial doubt exists about our ability to continue as a going concern for a period of at least 12 months from the date of issuance of these consolidated financial statements.

The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and satisfaction of liabilities in the ordinary course of business. The financial statements do not include any adjustments relating to the recoverability and classification of recorded asset amounts or the amounts and classification of liabilities that might result from the outcome of the uncertainties described above. These adjustments may be material.

3. Significant accounting policies

Basis of presentation – These consolidated financial statements and related notes are presented in accordance with accounting principles generally accepted in the United States of America ("US GAAP"). Our fiscal year-end is December 31. The consolidated financial statements include the accounts of Meta Materials Inc. and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated on consolidation.

Functional currency – Items included in the consolidated financial statements of each of META and its subsidiaries are measured using the currency of the primary economic environment in which the entity operates (the 'functional currency').

Reporting currency – The reporting currency of META is in US Dollars. The consolidated financial statements, and the financial information contained herein, are reported in US dollars, except share amounts or as otherwise stated, as we believe this results in more relevant and reliable information for its financial statement users.

- ***transactions and balances*** – Foreign currency transactions are recorded into the functional currency using the exchange rates prevailing at the dates of the associated transactions. Foreign exchange gains and losses resulting from the settlement of such transactions and from the measurement at period end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognized in the statement of operations.
- ***translation*** – The results and financial position of all subsidiaries that have a functional currency different from the presentation currency are translated into the presentation currency as follows:
- Company's assets and liabilities are translated at the closing rate at the date of the balance sheet;
- Company's income and expenses are translated at average exchange rates;
- Company's resulting exchange differences are recognized in other comprehensive income, a separate component of equity.

Use of estimates – The preparation of these consolidated financial statements in conformity with US GAAP requires management to make estimates and certain assumptions that affect the amounts reported in these consolidated financial statements and accompanying notes. Actual results could differ from these estimates. Significant items subject to such estimates and assumptions include the valuation of goodwill, the valuation of net assets acquired via business combinations, and the preparation of the consolidated financial statements on a going concern basis.

Cash and cash equivalents – We consider all highly liquid investments with a maturity of three months or less when purchased to be cash equivalents.

Inventory – Inventory is measured at the lower of cost and net realizable value. Cost is determined using the first-in, first-out method (FIFO) for all inventory. Inventory consumed during research and development activities is recorded as a research and development expense.

Notes receivable

- Notes receivable consists of an amount due from Next Bridge, which was previously a wholly-owned subsidiary of Meta, until the completion of the spin-off transaction on December 14, 2022. The note is partially secured by a combination of Meta's common shares and an interest in the Orogrande Project Property. The note receivable has been recognized at its fair value as part of the deconsolidation of Next Bridge from our consolidated financial results. At subsequent reporting periods, the note will be measured net of any credit losses in accordance with ASC 326 *Financial Instruments – Credit Losses*. See note 5 for further details. As all amounts on our notes receivable and all accrued interest are due in 2023, we have not recorded an allowance for losses on notes receivable as of December 31, 2022.

Long-lived assets – Long-lived assets, such as property, plant and equipment, and intangible assets subject to amortization, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If circumstances require a long-lived asset or asset group be tested for possible impairment, we first compare undiscounted cash flows expected to be generated by that asset or asset group to its carrying amount. If the carrying amount of the long-lived asset or asset group is not recoverable on an undiscounted cash flow basis, an impairment is recognized to the extent that the carrying amount exceeds its fair value. Fair value is determined through various valuation techniques including discounted cash flow models, quoted market values and third-party independent appraisals, as considered necessary.

Assets held for sale – Assets held for sale are measured at the lower of their carrying amount or fair value less cost to sell. Such amounts have been derecognized as part of the deconsolidation of Next Bridge on December 14, 2022.

Goodwill – Goodwill represents the excess of the purchase price in a business combination over the fair value of net tangible and intangible assets acquired. The carrying amount of goodwill is periodically reviewed for impairment (at a minimum annually) and whenever events or changes in circumstances indicate that the carrying value of this asset may not be recoverable.

We first perform a qualitative assessment to test the reporting unit's goodwill for impairment. Based on the qualitative assessment, if it is determined that the fair value of our reporting unit is more likely than not (i.e., a likelihood of more than 50 percent) to be less than its carrying amount, the quantitative assessment of the impairment test is performed. In the quantitative assessment, we compare the fair value of our reporting unit to its carrying value. If the fair value of the reporting unit exceeds its carrying value, goodwill is not considered impaired and we are not required to perform further testing. If the carrying value of the net assets of the reporting unit exceeds its fair value, then an impairment loss equal to the difference, but not exceeding the total carrying value of goodwill allocated to the reporting unit, would be recorded.

Acquired intangibles – In accordance with ASC 805 *Business Combinations*, we allocate the purchase price of acquired companies to the tangible and intangible assets acquired and the liabilities assumed based on their estimated fair values. Such valuations may require management to make significant estimates and assumptions, especially with respect to intangible assets. Acquired intangible assets consist of acquired technology and customer relationships. In valuing acquired intangible assets, we make assumptions and estimates based in part on projected financial information, which makes assumptions and estimates inherently uncertain, particularly for early-stage technology companies. The significant estimates and assumptions used by us in the determination of the fair value of acquired intangible technology assets include the revenue growth rate and the discount rate. The significant estimates and assumptions used by us in the determination of the fair value of acquired customer contract intangible assets include the revenue growth rate and the discount rate.

As a result of the judgments that need to be made, we obtain the assistance of independent valuation firms. We complete these assessments as soon as practical after the closing dates. Any excess of the purchase price over the estimated fair values of the identifiable net assets acquired is recorded as goodwill.

Business combinations - We allocate the fair value of purchase consideration to the tangible assets acquired, liabilities assumed and intangible assets acquired based on their estimated fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill to reporting units based on the expected benefit from the business combination. Allocation of purchase consideration to identifiable assets and liabilities affects the amortization expense, as acquired finite-lived intangible assets are amortized over the useful life, whereas any indefinite-lived intangible assets, including goodwill, are not amortized. During the measurement period, which is not to exceed one year from the acquisition date, we record adjustments to the assets acquired and liabilities assumed, with the corresponding offset to goodwill. Upon the conclusion of the measurement period, any subsequent adjustments are recorded to earnings. Acquisition-related expenses are recognized separately from business combinations and are expensed as incurred.

Leases - We are a lessee in several non-cancellable operating leases for buildings. We account for leases in accordance with ASC 842 *Leases*. We determine if an arrangement is or contains a lease at contract inception. We recognize a right-of-use (ROU) asset and a lease liability at the lease commencement date.

For operating leases, the lease liability is initially and subsequently measured at the present value of the unpaid lease payments at the lease commencement date. Lease expense for lease payments is recognized on a straight-line basis over the lease term. For finance leases, the lease liability is initially measured in the same manner and date as for operating leases and is subsequently measured at amortized cost using the effective-interest rate method.

The ROU asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for lease payments made at or before the lease commencement date, plus any initial direct costs incurred less any lease incentives received. The ROU asset is subsequently measured throughout the lease term at the carrying amount of the lease liability, plus initial direct costs, plus (minus) any prepaid (accrued) lease payments, less the unamortized balance of lease incentives received.

We do not record leases on our consolidated balance sheet with a term of one year or less. We elected a package of transition practical expedients, which included not reassessing whether any expired or existing contracts are or contain leases, not reassessing the lease classification of expired or existing leases, and not reassessing initial direct costs for existing leases. We also elected a practical expedient to not separate lease and non-lease components.

Government grants and assistance – Government grants are recognized at their fair value in the period when there is reasonable assurance that the conditions attaching to the grant will be met and that the grant will be received. Grants are recognized as income over the periods necessary to match them with the related costs that they are intended to compensate. When the grant relates to an asset, it is recognized as income over the useful life of the depreciable asset by way of government assistance.

We also receive interest-free repayable loans from the Atlantic Canada Opportunities Agency ("ACOA"), a government agency. The benefit of the loan at a below-market rate of interest is treated as a government grant, measured as the difference between proceeds received and the fair value of the loan based on prevailing market interest rates. The fair value of the components, being the loan and the government grant, must be calculated initially in order to allocate the proceeds to the components. The valuation is complex, as there is no active trading market for these items and is based on unobservable inputs.

Revenue recognition – Our revenue is generated from product sales as well as development revenue. We recognize revenue when it satisfies performance obligations under the terms of its contracts, and control of its products is transferred to its customers in an amount that reflects the consideration we expect to receive from its customers in exchange for those products or services.

Revenue from the sale of prototypes and finished products is recognized at the point in time when control of the asset is transferred to the customer, generally on delivery of goods. We consider whether there are other obligations in the contract that are separate performance obligations to which a portion of the transaction price needs to be allocated. In determining the transaction price for the sale of prototypes, we consider the effects of variable consideration, the existence of significant financial components, non-cash consideration and consideration payable to the customer (if any).

Revenue from development activities is recognized over time, using an output method to measure progress towards complete satisfaction of the research activities and associated performance obligations identified within each contract have been satisfied.

Deferred revenue – Consist of fees invoiced or paid by our customers for which the associated performance obligations have not been satisfied and revenue has not been recognized based on our revenue recognition criteria described above.

Deferred revenue is reported in a net position on an individual contract basis at the end of each reporting period and is classified as current in the consolidated balance sheet when the revenue recognition associated with the related customer payments and invoicing is expected to occur within one year of the balance sheet date and as long-term when the revenue recognition associated with the related customer payments and invoicing is expected to occur more than one year from the balance sheet date.

Fair value measurements – We use valuation approaches that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible. We determine fair value based on assumptions that market participants would use in pricing an asset or liability in the principal or most advantageous market. When considering market participant assumptions in fair value measurements, the following fair value hierarchy distinguishes between observable and unobservable inputs, which are categorized in one of the following levels:

- Level 1 inputs: Unadjusted quoted prices in active markets for identical assets or liabilities accessible to the reporting entity at the measurement date.
- Level 2 inputs: Other than quoted prices included in Level 1 inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the asset or liability.
- Level 3 inputs: Unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at measurement date.

Fair value option – Under the Fair Value Option Subsections of ASC Subtopic 825-10, *Financial Instruments* – Overall, we have the irrevocable option to report certain financial assets and financial liabilities at fair value on an instrument-by-instrument basis, with changes in fair value reported in the statement of operations. Any changes in the fair value of liabilities resulting from changes in instrument-specific credit risk are reported in other comprehensive income.

Research and development – Research and development activities are expensed as incurred.

Basic and diluted earnings (loss) per share – Basic earnings (loss) per common share is computed by dividing net income (loss) available to common stockholders by the weighted average number of common shares outstanding during the period. Diluted earnings (loss) per common share gives effect to all dilutive potential common stock outstanding during the period including stock options, deferred stock units ("DSUs"), Restricted Share Units ("RSUs"), and warrants which are calculated using the treasury stock method,

and convertible debt instruments using the if-converted method. Diluted earnings (loss) per common share excludes all dilutive potential shares if their effect is anti-dilutive.

Stock based compensation – We recognize compensation expense for equity awards based on the grant date fair value of the award. We recognize stock-based compensation expense for awards granted to employees that have a graded vesting schedule based on a service condition only on a straight-line basis over the requisite service period for each separately vesting portion of the award as if the award was, in substance, multiple awards (the "graded-vesting attribution method"), based on the estimated grant date fair value for each separately vesting tranche. For equity awards with a graded vesting schedule and a combination of service and performance conditions, we recognize stock-based compensation expense using a graded-vesting attribution method over the requisite service period when the achievement of a performance-based milestone is probable, based on the relative satisfaction of the performance condition as of the reporting date.

For stock-based awards granted to consultants and non-employees, compensation expense is recognized using the graded-vesting attribution method over the period during which services are rendered by such consultants and non-employees until completed.

The measurement date for each tranche of employee awards is the date of grant, and stock-based compensation costs are recognized as expense over the employees' requisite service period, which is the vesting period.

We estimate the grant date fair value of awards using the Black-Scholes option pricing model and estimate the number of forfeitures expected to occur. We may use other pricing models when applicable such as Monte-Carlo simulation. See note 13 for our assumptions used in connection with option grants made during the periods covered by these consolidated financial statements.

Income taxes – Income taxes are accounted for under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss carry forwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. A valuation allowance is established to reduce deferred tax assets if it is more likely than not that the related tax benefits will not be realized.

Authoritative guidance for uncertainty in income taxes requires that we recognize the financial statement benefit of a tax position only after determining that the relevant tax authority would more likely than not sustain the position following an examination. Management has reviewed our tax positions and determined there were no uncertain tax positions requiring recognition in the consolidated financial statements. Company tax returns remain subject to Federal, Provincial and State tax examinations. Generally, the applicable statutes of limitation are three to four years from their respective filings.

Recently adopted accounting pronouncements

ASU 2019-12

Effective January 1, 2021, we adopted ASU 2019-12 on a prospective basis. The new standard was issued in December 2019 with the intent of simplifying the accounting for income taxes. The accounting update removes certain exceptions to the general principles in Accounting Standards Codification (ASC) Topic 740 *Income Taxes* and provides simplification by clarifying and amending existing guidance. The adoption of this ASU did not have a material impact on our consolidated financial statements.

ASU 2020-09

In October 2020, the FASB issued ASU 2020-09, Debt (Topic 470): Amendments to SEC Paragraphs Pursuant to SEC Release No. 33-10762. The amendments in ASU 2020-09 amend rules focused on the provision of material, relevant, and decision-useful information regarding guarantees and other credit enhancements and eliminate prescriptive requirements that have imposed unnecessary burdens and incentivized issuers of securities with guarantees and other credit enhancements to offer and sell those securities on an unregistered basis. The adopted amendments relate to the financial disclosure requirements for guarantors and issuers of guaranteed securities registered or being registered in Rule 3-10 of Regulation S-X, and affiliates whose securities collateralize securities registered or being registered in Rule 3-16 of Regulation S-X. The amendments in ASU 2020-09 are effective for public business entities for annual periods beginning after December 15, 2020. We adopted ASU 2020-09 on January 1, 2021 and its adoption did not have a material effect on our consolidated financial statements and related disclosures.

ASU 2020-10

In October 2020, the FASB issued ASU 2020-10, *Codification Improvements*, which updated various codification topics by clarifying or improving disclosure requirements to align with the SEC's regulations. The amendments in ASU 2020-10 are effective for annual periods beginning after December 15, 2020, for public business entities. We adopted ASU 2020-10 on January 1, 2021 and its adoption did not have a material effect on our consolidated financial statements and related disclosures.

ASU 2021-04

In April 2021, the FASB issued ASU 2021-04, *Earnings Per Share* (Topic 260). This guidance clarifies and reduces diversity in an issuer's accounting for modifications or exchanges of freestanding equity-classified written call options due to a lack of explicit guidance in the FASB Codification. This guidance is effective for the Company's interim and annual reporting periods beginning after December 15, 2021. We adopted ASU 2021-04 on January 1, 2022 and its adoption did not have a material effect on our consolidated financial statements and related disclosures.

ASU 2021-10

In November 2021, the FASB issued ASU 2021-10, *Government Assistance* (Topic 832): Disclosure by Business Entities about Government Assistance, which improves the transparency of government assistance received by most business entities by requiring the disclosure of: (1) the types of government assistance received; (2) the accounting for such assistance; and (3) the effect of the assistance on a business entity's financial statements. This guidance is effective for the Company's interim and annual reporting periods beginning after December 15, 2021. We adopted ASU 2021-10 on January 1, 2022 and its adoption did not have a material effect on our consolidated financial statements and related disclosures.

ASU 2022-03

In June 2022, the FASB issued ASU 2022-03, which amends Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions ("ASU 2022-03"). ASU 202203 clarifies guidance for fair value measurement of an equity security subject to a contractual sale restriction and establishes new disclosure requirements for such equity securities. We elected to early adopt ASU 2022-03 on January 1, 2022, and applied the amendment in measuring consideration transferred in the acquisition of the assets and IP of Optodot Corporation. As a result, we have not applied a discount for lack of marketability associated with the shareholder specific restriction for shares issued as consideration in the Optodot acquisition. See note 4.

Accounting pronouncements not yet adopted

ASU 2021-08

In October 2021, the FASB issued ASU 2021-08, *Business Combinations* (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers, which clarifies that an acquirer of a business should recognize and measure contract assets and contract liabilities in a business combination in accordance with ASC Topic 606, *Revenue from Contracts with Customers*. This guidance will be effective for our interim and annual reporting periods beginning after December 15, 2022. We do not anticipate the adoption of this standard on January 1, 2023 will have a material effect on our consolidated financial statements and related disclosures.

4. Acquisitions

Plasma acquisition

On April 1, 2022, we completed the purchase of 100% of the issued and outstanding shares of Plasma App Ltd. ("PAL"). PAL is the developer of PLASMAfusion®, a proprietary manufacturing platform technology, which enables high speed coating of any solid material on any type of substrate. PAL's team is located at the Rutherford Appleton Laboratories in Oxford, UK.

At closing, we issued to PAL's shareholders an aggregate of 9,677,419 shares of our common stock, representing a number of shares of common stock equal to $18,000,000 divided by $1.86 (the volume weighted average price for the ten trading days ending on March 31, 2022) with an additional deferral of common stock equal to $2,000,000 divided by $1.86 to be issued subject to satisfaction of certain claims and warranties. The acquisition was accounted for as a business combination in accordance with ASC 805.

Deferred Consideration

We are obligated to issue to PAL shareholders an aggregate of 1,075,268 shares of our common stock on October 1, 2023, subject to reductions arising from general and specific claims and warranties that might arise of more than $20,000 and less than or equal to $2,000,000. The number of shares were calculated as $2,000,000 divided by $1.86 (the volume weighted average price for the ten trading days ending on March 31, 2022). We have classified the deferred consideration in the consolidated statement of changes in stockholders' equity since the number of shares to be issued is contractually specified in the agreement and is not contingent on a future event or condition being met.

We recorded provisional estimated fair values for the assets purchased, liabilities assumed and purchase consideration as of the date of the acquisition during the second quarter of 2022, resulting in goodwill of $10.1 million. The determination of fair value required management to make significant estimates and assumptions based on information that was available at the time the consolidated financial statements were prepared.

As of December 31, 2022, we have made the following changes, based on information as of the acquisition date, to the provisional purchase price allocation previously disclosed in the condensed consolidated interim financial statements for the three and nine months ended September 30, 2022 in Form 10-Q:

- We have increased intangibles by $5.9 million.
- We have reduced goodwill by $2.7 million.
- We recognized a deferred tax liability of $3.2 million.

The following table presents the provisional purchase price allocation as of December 31, 2022:

		Amount (USD)
Fair value of common stock issued (1)	$	15,290,320
Fair value of deferred consideration (2)		1,698,926
	$	16,989,246
Net assets of PAL:		
Cash and cash equivalents	$	13,822
Other assets		36,104
Intangibles		12,600,000
Deferred tax liability		(3,150,000)
Goodwill		7,489,320
	$	16,989,246

(1) The fair value of the common stock issued or to be issued was determined by multiplying 9,677,419 shares, calculated as per the purchase agreement, by the closing share price on April 1, 2022 of $1.60. We recognized $9,677 in common stock and $15,280,645 in additional paid in capital in the consolidated statements of changes in stockholders' equity.

(2) The estimated fair value of the deferred consideration on acquisition date was determined by multiplying 1,075,268 shares, calculated as per the purchase agreement, by the closing share price on April 1, 2022 of $1.60. We recognized the full amount in additional paid in capital in the consolidated statements of changes in stockholders' equity.

Acquired intangible assets totaling $12.6 million relate to a developed technology intangible asset. The significant estimates and assumptions used by the Company in the determination of the fair value of the acquired developed technology intangible asset includes the revenue growth rate and the discount rate.

The goodwill resulting from the transaction is attributable to assembled workforce, synergies, technical know-how and expertise.

The estimated fair value of acquired assets and liabilities was measured as at the acquisition date based on a valuation report provided by a third-party valuation expert. The preliminary purchase price allocation is subject to change as additional information becomes available concerning the tax basis of the assets acquired. Any additional adjustments to the purchase price allocation will be made as soon as practicable but no later than one year from the date of acquisition.

Revenue and net losses from the PAL acquisition since the acquisition date included in the consolidated statements of operations and comprehensive loss for the year ended December 31, 2022 were $Nil and $1 million respectively.

Unaudited pro forma results of operations for the years ended December 31, 2022 and 2021 are included below as if the Plasma acquisition occurred on January 1, 2021. This summary of the unaudited pro forma results of operations is not necessarily indicative of what our results of operations would have been had PAL been acquired at the beginning of 2021, nor does it purport to represent results of operations for any future periods.

	Year ended December 31, 2022			Year ended December 31, 2021		
	META excluding PAL	PAL	Total	META	PAL	Total
Revenue	$ 10,200,167	$ —	$ 10,200,167	$ 4,082,517	$ —	$ 4,082,517
Loss from operations	(81,818,759)	(567,475)	(82,386,234)	(38,057,838)	(16,822)	(38,074,660)
Net loss	(78,147,504)	(76,271)	(78,223,775)	(90,997,261)	(16,822)	(91,014,083)
Add back: acquisition cost	264,883	16,663	281,546	—	—	—
Deduct: additional depreciation and amortization	—	(1,178,859)	(1,178,859)	—	(1,178,859)	(1,178,859)
Adjusted net loss	$ (77,882,621)	$ (1,238,467)	$ (79,121,087)	$ (90,997,261)	$ (1,195,681)	$ (92,192,942)

Acquisition cost includes legal, accounting, and other professional fees related to the Plasma acquisition.

Optodot acquisition

On June 22, 2022, we completed an asset purchase agreement with Optodot Corporation ("Optodot"), a developer of advanced materials technologies, to acquire certain assets related to patents and intellectual property for the battery and other industries.

Consideration transferred consisted of the following:

- Cash payment of $3,500,000.
- Unrestricted common stock equal to $37,500,000 divided by the daily volume weighted average trading price per share of our common stock on the Nasdaq Capital Market for the consecutive period of twenty trading days ending on June 21, 2022.
- Restricted common stock equal to $7,500,000 divided by the daily volume weighted average trading price per share of our Common Stock on the Nasdaq Capital Market for the consecutive period of twenty trading days ending on June 21, 2022. The restricted stock is subject to certain vesting milestones as set forth in the Purchase Agreement and outlined below.

The acquisition was accounted for as a business combination in accordance with ASC 805. The transaction was structured as a tax-free re-organization pursuant to Internal Revenue Code Section 368(a)(1)(c). Accordingly, the tax basis of net assets acquired retain their carryover tax basis and holding period.

We recorded provisional estimated fair values for the assets purchased, liabilities assumed and purchase consideration as of the date of the acquisition during the second quarter of 2022, resulting in goodwill of $32.2 million. The determination of fair value required management to make significant estimates and assumptions based on information that was available at the time the consolidated financial statements were prepared.

As of December 31, 2022, we have made the following changes, based on information as of the acquisition date, to the provisional purchase price allocation previously disclosed in the condensed consolidated interim financial statements for the three and nine months ended September 30, 2022 in Form 10-Q:

- We have increased intangibles by $1.8 million
- We have increased goodwill by $3.1 million
- We recognized a deferred tax liability of $4.9 million.

The following table presents the revised purchase price allocation:

		Amount
Fair value of unrestricted common stock issued or to be issued (1)	$	41,791,115
Fair value of restricted common stock issued (2)		8,342,152
Cash consideration		3,500,000
Total consideration	$	53,633,267
Net assets of Optodot:		
Intangibles		23,300,000
Deferred tax liability		(4,893,000)
Goodwill		35,226,267
	$	53,633,267

(1) The fair value of the unrestricted common stock issued or to be issued was determined by multiplying 22,348,190 shares, calculated as per the purchase agreement, by the closing share price on June 22, 2022 of $1.87. We have issued 22,305,221 shares on the closing date of June 22, 2022 and 42,969 shares are yet to be issued. As of December 31, 2022, we recognized $22,305 in common stock and $41,768,810 in additional paid in capital in the consolidated statements of changes in stockholders' equity.

(2) The fair value of the restricted common stock issued was determined by multiplying 4,461,044 shares, calculated as per the purchase agreement, by the closing share price on June 22, 2022 of $1.87. The restricted common stock is subject to vesting as follows:

a) Two thirds or 2,974,029 shares shall be subject to the limitations on transfer until the earlier of (A) META's achievement of at least $5,000,000 in revenue, from any third-party source, to the extent resulting from the sale or license of Optodot IP during the year ended June 22, 2023 and (B) June 22, 2023;

b) One third or 1,487,015 shares shall be subject to the limitations on transfer until the earlier of (A) META's achievement of at least $10,000,000 in revenue, from any third-party source, to the extent resulting from the sale or license of Optodot IP during the year ended June 22, 2024 and (B) June 22, 2024;

We applied the requirements of ASU 2022-03 in measuring the share consideration transferred.

Deferred Consideration

Based on the terms of the agreement outlined above and our consideration of ASC 805, we have classified the deferred consideration in the consolidated statement of changes in stockholders' equity since the restricted shares have been already issued and the restriction will be removed at the end of the period specified.

Acquired intangible assets totaling $23.3 million relate to a developed technology intangible asset. The significant estimates and assumptions used by the Company in the determination of the fair value of the acquired developed technology intangible asset includes the revenue growth rate and the discount rate.

The goodwill resulting from the transaction is attributable to assembled workforce, synergies, technical know-how and expertise.

The preliminary purchase price allocation is subject to change as additional information becomes available concerning the tax basis of the assets acquired. Any additional adjustments to the purchase price allocation will be made as soon as practicable but no later than one year from the date of acquisition.

The estimated fair value of acquired assets and liabilities has been measured as at the acquisition date based on a valuation report provided by a third-party valuation expert.

Revenue and net losses from the Optodot acquisition since the acquisition date included in the consolidated statements of operations and comprehensive loss for the year ended December 31, 2022 were $0.9 million and $nil respectively.

Unaudited pro forma results of operations for the years ended December 31, 2022 and 2021 are included below as if the Optodot acquisition occurred on January 1, 2021. This summary of the unaudited pro forma results of operations is not necessarily indicative of what our results of operations would have been had Optodot been acquired at the beginning of 2021, nor does it purport to represent results of operations for any future periods.

	Year ended December 31, 2022			Year ended December 31, 2021		
	META excluding Optodot	Optodot	Total	META	Optodot	Total
Revenue	$ 10,120,865	$ 121,174	$ 10,242,038	$ 4,082,517	$ 127,090	$ 4,209,607
Loss from operations	(80,158,252)	(2,816,441)	(82,974,694)	(38,057,838)	(3,475,074)	(41,532,912)
Net loss	(76,075,095)	(2,731,989)	(78,807,085)	(90,997,261)	4,652,718	(86,344,543)
Add back: acquisition cost	700,404	97,712	798,116	—	—	—
Deduct: additional depreciation and amortization	—	(2,330,000)	(2,330,000)	—	(2,330,000)	(2,330,000)
Adjusted net loss	$ (75,374,692)	$ (4,964,277)	$ (80,338,969)	$ (90,997,261)	$ 2,322,718	$ (88,674,543)

Acquisition cost includes legal, accounting, and other professional fees related to the Optodot acquisition.

Torchlight RTO

As discussed in note 1, on June 28, 2021, we completed the acquisition of Torchlight Energy Resources, Inc. June 28, 2021. Pursuant to ASC 805 *Business Combinations*, the transaction was accounted for as a reverse acquisition. Consideration transferred was measured to be $358 million and the difference between the consideration transferred and fair value of net assets resulted in the recognition of goodwill of $213 million.

During the year ended December 31, 2022, we finalized the purchase price allocation to the individual assets acquired and liabilities assumed using the acquisition method. There were no further changes to the purchase price allocation, as disclosed in the audited consolidated financial statements and notes for the years ended December 31, 2021 and 2020.

The following table summarizes the allocation of the purchase price to the net assets acquired based on the respective fair value of the acquired assets and liabilities:

	Amount
Fair value of deemed issuance of MMI's stock – Common Stock	$ 82,814
Fair value of deemed issuance of MMI's stock – Additional paid in capital	357,206,830
Fair value of Torchlight's outstanding warrants – Additional paid in capital	2,773,778
Fair value of Torchlight's outstanding options – Additional paid in capital	9,397,988
Total Effect on Equity	369,461,410
Effective settlement of notes payable by MMI to Torchlight	(11,322,637)
	$ 358,138,773
Net assets (liabilities) of Torchlight:	
Cash and cash equivalents	$ 143,381,229
Other assets	3,906,290
Oil and natural gas properties	72,600,000
Preferred stock liability	(72,600,000)
Accounts payable	(2,496,510)
Other liabilities	(21,937)
Goodwill	213,369,701
	$ 358,138,773

As of December 31, 2021, the acquired oil and natural gas properties were classified as assets held for sale. We estimated the fair value of the O&G assets by obtaining a valuation study performed by a third party valuation firm. The valuation concluded an implied enterprise value as of December 31, 2021 to be between $55.1 million and $109.0 million. We recorded the fair value of the Orogrande Project property at $72.0 million and the fair value of the Hazel Project property at $3.5 million, totaling a value of $75.5 million. The deconsolidation of Next Bridge resulted in the disposition of the O&G assets and the extinguishment of the Preferred stock liability. See note 5.

Nanotech acquisition

On August 5, 2021, we announced the signing of a definitive agreement to acquire Nanotech Security Corp. (“Nanotech”). On October 5, 2021, a wholly-owned subsidiary of META purchased 100% of Nanotech’s common stock at CA$1.25 per share. In addition, the transaction price included the settlement of certain Nanotech share awards outstanding immediately prior to the closing of the agreement, including the repurchase and cancellation of 303,391 Nanotech restricted share units ("RSU") at a purchase price of CA$1.25 per RSU and the settlement of 4,359,000 Nanotech in-the-money stock options at a purchase price equal to CA$1.25 per option, less the exercise price thereof. The consideration payable to securityholders under the arrangement was payable in cash, resulting in a total purchase price of $72.1 million. The acquisition was accounted for as a business combination in accordance with ASC 805.

We finalized the purchase accounting for this acquisition during the post-acquisition annual measurement period in accordance with ASC 805. The impact of finalization of the purchase accounting associated with this acquisition was not material to the accompanying consolidated financial statements for the years ended December 31, 2022 and 2021.

The following table summarizes the allocation of the revised purchase price to the net assets acquired based on the respective fair value of the acquired assets and liabilities:

		Amount
Consideration paid to acquire Nanotech outstanding common stock	$	69,214,652
Consideration paid to repurchase Nanotech restricted stock units		300,610
Consideration paid to repurchase Nanotech stock options		2,612,035
	$	72,127,297
Net assets (liabilities) of Nanotech:		
Cash and cash equivalents	$	5,974,254
Accounts receivable		741,783
Trade payables		(1,349,139)
Prepaid expenses		271,741
Inventory		126,326
Property and equipment		14,771,456
Intangibles		25,309,847
Deferred tax liability		(1,933,998)
Goodwill		28,215,027
	$	72,127,297

5. Deconsolidation of Next Bridge subsidiaries and Notes Receivable

On December 14, 2022, we distributed all of the issued and outstanding common shares of Next Bridge. Immediately after the distribution, Next Bridge became an independent public reporting company.

As a result, from December 14, 2022 onwards, Next Bridge is no longer our wholly-owned subsidiary and we have retained no ownership interest in Next Bridge. We have deconsolidated Next Bridge's financial results from our consolidated financial statements in accordance with ASC 810 *Consolidation*.

In deconsolidating the financial results of Next Bridge from our consolidated financial results, we have recognized a gain on deconsolidation in our consolidated statement of operations and comprehensive loss of $4.0 million during the year ended December 31, 2022, consisting of:

- The net impact of derecognizing Next Bridge working capital amounts for $1.8 million (or a decrease in our consolidated net liabilities); and
- The recognition, at fair value, of a note receivable from Next Bridge for $2.2 million.

Amounts owing from Next Bridge as of December 31, 2022 include:

a. An October 2021 secured promissory note (the 2021 Note”) principal amount of $15 million. The 2021 Note bears interest at 8% per annum, and matures March 31, 2023 (the “2021 Note Maturity Date”); provided, however, that if Next Bridge raises $30 million or more in capital through debt or equity or a combination thereof by the 2021 Note Maturity Date, the 2021 Note Maturity Date will be extended to October 3, 2023 and the 2021 Note would be amortized in six equal monthly installments. If an event of default has occurred and is continuing, interest on the 2021 Note may accrue at the default rate of 12% per annum. The outstanding principal of the 2021 Note, together with all accrued interest thereon, becomes due on the 2021 Note Maturity Date. The 2021 Note is secured by a security interest in (i) a Stock Pledge Agreement dated as of September 30, 2021 between Gregory McCabe (the “Pledgor”)

and us (the “Stock Pledge Agreement”) for 1,515,000 shares of our common shares that are owned directly and beneficially by the Pledgor, and (b) pursuant to a Deed of Trust, Mortgage, Security Agreement, Fixture Filing, Financing Statement and Assignment of Production dated as of September 30, 2021 made by Wolfbone Investments, LLC (an affiliate of the Pledgor) for our benefit (the “Security Agreement”), a 25% working interest beneficially owned by the Pledgor in the Orogrande Project Property as defined in the Security Agreement.

b. An unsecured note receivable for principal amount of $5 million (the "2022 Note"). The 2022 Note is due and payable on the 2021 Maturity Date unless extended as described below. The 2022 Note bears interest at a fixed rate of 8% per annum if no event of default exists, and at a fixed rate of 12% per annum if an event of default exists. Under the 2022 Note, if Next Bridge raises $30 million or more in capital through debt or equity or a combination thereof by the 2021 Maturity Date, the maturity date will be extended to October 3, 2023 and the 2022 Note would be paid in six equal monthly installments

c. Accrued interest on the 2021 Note and 2022 Note totaling $1.6 million as of December 31, 2022.

d. Certain costs borne by us in effecting the deconsolidation to which we expect to be reimbursed by Next Bridge

We estimated and measured the fair value of the amount receivable from Next Bridge to be $2.2 million as of December 14, 2022. In estimating fair value, the key assumption used was our share price as of the date of deconsolidation, since a portion of amounts owing from Next Bridge are secured by the Stock Pledge Agreement.

6. Related party transactions

As of December 31, 2022, and December 31, 2021, receivables due from a related party (Lamda Guard Technologies Ltd, or “LGTL”) were $8,461 and $10,657, respectively.

7. Inventory

Inventory consists of photosensitive materials, lenses, laser protection film and finished eyewear, and is comprised of the following:

	As of December 31,	
	2022	2021
Raw materials	$ 490,077	$ 196,868
Supplies	11,345	8,886
Work in process	51,589	30,636
Finished goods	42,058	29,328
Inventory provision	(127,042)	—
Total inventory	$ 468,027	$ 265,718

We have a contract with a primary raw material supplier which outlines certain restrictions for use of the associated materials. Raw material inventory as at December 31, 2022 includes $0.4 million (2021 - $Nil) that is restricted.

We have expensed nominal amount of restricted raw materials inventory to research and development expense during the year ended December 31, 2022 (2021 - $0.2 million).

During the year ended December 31, 2022, the Company recognized $0.8 million (2021 - $0.2 million) of inventory in cost of goods sold in the consolidated statements of operations and comprehensive loss.

During the year ended December 31, 2022, the Company recorded write-downs related to inventory in costs of goods sold of $0.1 million, related to inventory deemed to be obsolete in comparison to nil in 2021.

8. Prepaid expenses and other current assets

Prepaid expenses and other current assets consist of the following:

	As of December 31,	
	2022	2021
Prepaid expenses	$ 2,835,660	$ 1,262,112
Other current assets	365,583	683,044
Taxes receivable	4,000,856	1,506,211
Total prepaid expenses and other current assets	$ 7,202,099	$ 3,451,367

9. Property, plant and equipment, net

Property, plant and equipment consist of the following:

	Useful life (years)	As of December 31, 2022	2021
Land	N/A	$ 439,309	$ 469,317
Building	25	5,063,091	5,509,403
Computer equipment	3-5	775,736	262,320
Computer software	1	606,729	277,717
Manufacturing equipment	2-5	22,701,761	17,762,405
Office furniture	5-7	660,549	525,961
Leasehold improvements	2	2,172,134	236,251
Enterprise Resource Planning software	5	197,648	211,149
Assets under construction	N/A	20,337,338	8,872,695
		52,954,295	34,127,218
Accumulated depreciation and impairment		(10,279,596)	(7,109,104)
		$ 42,674,699	$ 27,018,114

Depreciation expense was $3.6 million and $1.8 million for the year ended December 31, 2022 and 2021, respectively.

Impairment expense was $0.1 million and $0.3 million for the year ended December 31, 2022 and 2021, respectively.

Land and building were acquired as part of the Nanotech acquisition.

Manufacturing equipment additions include roll-to-roll manufacturing equipment for the NANOWEB® pilot scale production line at our facility in Pleasanton, California.

Assets under construction include $18.4 million in costs related to ongoing construction work at the Highfield Park and the Thurso facility as well as $1.9 million of equipment in transit.

Property, plant and equipment is pledged as security under a General Security Agreement (a “GSA”) signed in favor of the Royal Bank of Canada (“RBC”) on July 14, 2014, which is related to the Company’s corporate bank account and credit card and includes all property, plant and equipment and intangible assets.

10. Intangible Assets and Goodwill

Intangibles

Intangibles consist of the following:

	Useful life (years)	As of December 31, 2022	2021
Patents	5-10	$ 42,111,143	$ 7,839,182
Trademarks		124,845	132,636
Developed technology	20	13,976,668	14,931,377
Customer contract	5	9,598,348	10,253,983
		65,811,004	33,157,178
Accumulated amortization and impairment		(9,497,687)	(4,185,354)
		$ 56,313,317	$ 28,971,824

Amortization expense was $5.7 million and $1.7 million for the years ended December 31, 2022 and 2021, respectively.

Developed technology and customer contract represent the acquired intangibles as part of the Nanotech acquisition in late 2021.

During the year ended December 31, 2022, we recognized patent additions of $12.6 million in acquired patents as part of the PAL acquisition and $23.3 million in acquired patents as part of the Optodot acquisition. These amounts remain subject to change as the purchase price allocations for the associated business combination accounting remains provisional See Note 4.

Goodwill

Goodwill at December 31, 2021	$ 240,376,634
Additions from business combination	42,343,552
Purchase price Allocation adjustments	1,446,639
Effect of foreign exchange on goodwill	(2,418,359)
Goodwill at December 31, 2022	$ 281,748,466

We perform the annual impairment test for goodwill at year-end, by comparing the reporting unit's fair value to its carrying amount, including goodwill, as of December 31, 2022, using the market approach to determine fair value. All goodwill has been allocated to one reporting unit. As the reporting unit's fair value exceeded its carrying amount, we determined that goodwill was not impaired. The key assumption used to calculate the recoverable amount of goodwill as of December 31, 2022 was our share price.

11. Long-term debt

	As of December 31, 2022	As of December 31, 2021
ACOA Business Development Program ("BDP") 2012 interest-free loan with a maximum contribution of CA$500,000, repayable in monthly repayments commencing October 1, 2015, of CA$5,952 until June 1, 2023. Loan repayments were temporarily paused effective April 1, 2020, until January 1, 2021, as a result of the COVID-19 outbreak. As of December 31, 2022, the amount of principle drawn down on the loan, net of repayments is CA$ 35,714.29 (2021 - CA$ 107,142.86).	$ 25,880	$ 80,390
ACOA Atlantic Innovation Fund ("AIF") 2015 interest-free loan with a maximum contribution of CA$ 3,000,000. Annual repayments, commencing June 1, 2021, are calculated as a percentage of gross revenue for the preceding fiscal year, at Nil when gross revenues are less than CA$1,000,000, 5% when gross revenues are less than CA$10,000,000, and greater than CA$1,000,000, and CA$500,000 plus 1% of gross revenues when gross revenues are greater than CA$10,000,000. As of December 31, 2022, the amount or principal drawn down on the loan, net of repayments, is CA$,2661,293 (2021 - CA$ 2,924,615).	1,449,493	1,666,764
ACOA BDP 2018 interest-free loan with a maximum contribution of CA$3,000,000, repayable in monthly repayments commencing June 1, 2021, of CA$31,250 until May 1, 2029. As of December 31, 2022, the amount of principal drawn down on the loan, net of repayments, is CA$2,406,250 (2021 - CA$2,781,250).	1,136,556	1,319,130
ACOA PBS 2019 interest-free loan with a maximum contribution of CA$100,000, repayable in monthly repayments commencing June 1, 2021, of CA$1,400 until May 1, 2027. As of September 30, 2022, the amount of principal drawn down on the loan, net of repayments, is CA$73,611. (2021 - CA$90,278).	34,750	42,011
ACOA Regional Relief and Recovery Fund ("RRRF") 2020 interest-free loan with a maximum contribution of CA$390,000, repayable on monthly repayments commencing April 1, 2023 of CA$11,000 until April 1, 2026. As at December 31, 2022, the amount of principle drawn down on the loan is CA$390,000 (2020 - CA$390,000).	159,642	120,154
Economic Development Agency of Canada for the Regions of Quebec (EDC) 2022 interest-free loan with a maximum contribution of CA$2,000,000 (CA$1,000,000 for building renovations and CA$1,000,000 for acquisition of equipment for Nanotech). Repayable in 60 monthly installments of CA$ 24,236, with the first repayment due Dec 31, 2025. As of December 31, 2022, the amount of principal drawn down of this funding was CA$1,454,167 with CA$1,012,569, treated as a loan and CA$441,598, treated as Deferred government assistance (See Note 19).	747,634	—
	3,553,955	3,228,449
Less: current portion	483,226	491,278
	$ 3,070,729	$ 2,737,171

[1] We were required to maintain a minimum balance of positive equity throughout the term of the loan. However, on November 14, 2019, ACOA waived this requirement for the period ending June 30, 2019 and for each period thereafter until the loan is fully repaid.

[2] The carrying amount of the ACOA AIF loan is reviewed each reporting period and adjusted as required to reflect management's best estimate of future cash flows, discounted at the original effective interest rate.

[3] A portion of the ACOA BDP 2018 loan was used to finance the acquisition and construction of manufacturing equipment resulting in $425,872 was recorded as deferred government assistance, which is being amortized over the useful life of the associated equipment. We recorded amortization expense of $3,047 and $145,739 for the years ended December 31, 2022 and 2021, respectively, as government assistance in the consolidated statements of operations and comprehensive loss.

12. Capital stock

Common stock

Authorized: 1,000,000,000 common shares, $0.001 par value.

All references to numbers of common shares and amounts in the consolidated statements of changes in stockholder's equity and in the notes to the consolidated financial statements have been retroactively restated to reflect as if the Torchlight RTO had taken place as of the beginning of the earliest period presented.

- The number of common shares issued pre-Torchlight RTO have been multiplied by the 1.845 Torchlight conversion ratio.
- The amounts of common shares issued pre-Torchlight RTO were calculated by multiplying the number of shares by 0.001 and the 1.845 Torchlight conversion ratio and the difference were recognized in additional paid in capital.

During the year ended December 31, 2022, 1,988,629 warrants were exercised to purchase 1,623,700 common shares where most warrant holders elected cashless exercise and consequently, the difference of 364,929 shares was withheld to cover the exercise cost.

During the year ended December 31, 2022, 1,688,538 stock options were exercised to purchase an equal number of common shares. In addition, 673,944 restricted stock units ("RSUs") have vested and settled into 658,538 common shares. The difference of 15,406 RSUs were withheld to cover the tax obligation from certain employees.

During the year ended December 31, 2022, we issued 9,677,419 common stock as consideration in relation to the PAL acquisition and 26,766,265 as consideration in relation to the Optodot acquisition (note 4).

During the year ended December 31, 2022, we issued 223,052 common shares at $1.87 as a compensation to a service provider in relation to the Optodot acquisition.

During the year ended December 31, 2021, we converted unsecured convertible promissory notes of $23,656,365, secured convertible debentures of $22,118,782, and unsecured convertible debentures of $5,769,475 into common stock. We remeasured the financial liabilities at fair value as of respective conversion dates and recognized a non-cash realized loss of $39,486,830. We subsequently reclassified the remeasured liabilities into equity and recognized $39,652 in common stock and $51,504,970 in additional paid in capital. The number of shares issued was calculated as the total outstanding principal and interest of each liability divided by the conversion price stated in each respective instrument's agreement.

During the year ended December 31, 2021, we converted long-term debt of $221,843 and due to related party of $225,986 into common stock. We recorded the common stock issued at fair value using our share price at the time of conversion. We recognized $276 in common stock and $447,553 in additional paid in capital. The resulting net loss calculated as the difference between the fair value of common stock and the carrying value of the liabilities of $19,330 was recorded in other income in the consolidated statements of operations and comprehensive loss. The number of shares issued was calculated as the total outstanding principal and interest of each liability multiplied by the agreed upon conversion price.

During the year ended December 31, 2021, we issued 286,292 common shares at CA$0.58 per share as compensation in exchange for a fairness opinion obtained with respect to the Torchlight RTO. We paid CA$90,000 in cash in 2020 and agreed to settle the remaining CA$90,000 in common stock. We recognized the share-based payment in trade and other payables in 2020 until the shares were issued in 2021.

During the year ended December 31, 2021, and pursuant to the Torchlight RTO, we recognized $369,631,002 in equity as the fair value of 82,813,994 common shares that were deemed to have been issued to Torchlight as part of the Torchlight RTO (note 4).

During the year ended December 31, 2021, we issued 148,368 common shares as stock-based compensation at $3.37 per share to a service provider. The total amount of $500,000 was recorded as prepaid expenses and is being amortized over the period of service.

During the year ended December 31, 2021, we issued 125,000 common shares as stock-based compensation at $5.27 per share for a total of $658,750 as partial compensation for a fairness opinion obtained with respect to the Nanotech acquisition. We paid the remaining $511,406 in cash.

Registered direct offering

On June 24, 2022, we entered into a securities purchase agreement, as amended and restated on June 27, 2022, with certain institutional investors (the "SPA") for the purchase and sale in a registered direct offering of 37,037,039 shares of our common stock at a purchase price of $1.35 per share and warrants to purchase 37,037,039 shares at an exercise price of $1.75 per share. This resulted in gross proceeds from the offering of $50 million and net proceeds of $46.3 million.

The gross proceeds were allocated between common stock and accompanying warrants based on their relative fair values. The fair value of common stock was calculated based on the closing share price on June 27, 2022 of $1.15. The fair value of the warrants was estimated using the Black-Scholes option pricing model. Accordingly, we have allocated $27.9 million as the fair value of common stock and $18.5 million as the fair value of warrants.

The warrants became exercisable six months after the date of issuance, expire five and a half years from the date of issuance and have an exercise price of $1.75 per share of common stock. We have evaluated the warrants as either equity-classified or liability-classified instruments based on an assessment of the warrants' specific terms and applicable authoritative guidance in ASC 480, "Distinguishing Liabilities from Equity" and ASC 815, "Derivatives and Hedging". We have concluded that the warrants are considered indexed to our common shares and as such they have been classified as equity.

On November 9, 2022, we filed a registration statement (File No. 333-268282) on form S-3 allowing us to issue securities with aggregate offering price not to exceed $250 million. This registration statement was declared effective by the SEC on November 18, 2022.

As of December 31, 2022, no shares of our common stock have been sold under this registration statement.

Warrants

On June 28, 2021 and pursuant to the completion of Torchlight RTO, each MMI warrant was converted into 1.845 META warrants and the exercise price was updated to be CA$0.49. Also, as part of the Torchlight RTO, Torchlight outstanding warrants of 853,278 underwent a reverse stock split at a ratio of 2:1 resulting in warrants of 430,380 and for an amount being recorded at $2,773,779 in additional paid in capital as part of the consideration transferred.

The following table summarizes the changes in warrants of the Company:

	Year ended December 31,			
	2022		2021	
	Number of warrants	Amount	Number of warrants [1]	Amount [1]
Balance, beginning of year	5,278,846	$ 6,959,800	3,144,272	$ 419,027
Issued	37,337,039	18,714,297	2,153,500	3,831,124
Exercised	(1,988,629)	(253,741)	(449,306)	(64,130)
Expired	(706,337)	(101,163)	—	—
Fair value of deemed issuance to Torchlight	—	—	430,380	2,773,779
Balance, end of year	39,920,919	$ 25,319,193	5,278,846	$ 6,959,800

[1] All references to numbers of warrants have been retroactively restated to reflect as if Torchlight RTO had taken place as of the beginning of the earliest period presented. The numbers of warrants issued pre-CPM RTO have been divided by 2, multiplied by the 2.75 CPM conversion ratio and the 1.845 Torchlight conversion ratio. There were no warrants issued post CPM RTO except for Torchlight warrants. All references to numbers of broker warrants have been retroactively restated to reflect as if Torchlight RTO had taken place as of the beginning of the earliest period presented. The numbers of broker warrants issued pre-CPM RTO have been multiplied by the 2.75 CPM conversion ratio and the 1.845 Torchlight conversion ratio. There were no broker warrants issued post CPM RTO.

During the year ended December 31, 2022, we granted 300,000 five-year warrants to purchase common stock to external consultants as stock-based compensation. The warrants have an exercise price of $1.18 per share, based on the closing price of our common stock on May 10, 2022.

On June 27, 2022, we issued 37,037,039 warrants which are exercisable six months after the date of issuance, expire five and a half years from the date of issuance and have an exercise price of $1.75 per share of common stock as part of the registered direct offering.

During the year ended December 31, 2021, we granted 2,153,500 five-year warrants to purchase common stock to external consultants as stock-based compensation.

The fair value of 1,153,500 warrants issued during the year ended December 31, 2021 was estimated to be $3,129,208 using the Black-Scholes option pricing model. The total amount has been recorded in General & Administrative expense in the consolidated statements of operations and comprehensive loss.

The fair value of 1,000,000 warrants issued during the year ended December 31, 2021 was estimated to be $701,910 using the Monte Carlo Simulation model. The total amount has been recorded in General & Administrative expense in the consolidated statements of operations and comprehensive loss.

The fair value of warrants and broker warrants that were issued and estimated using the Black-Scholes option pricing model have the following inputs and assumptions:

	Year ended December 31,	
	2022	2021
Weighted average grant date fair value	0.53	3.73
Weighted average expected volatility	89%	91%
Weighted average risk-free interest rate	3.18%	0.87%
Weighted average dividend yield	0.00%	0.00%
Weighted average forfeiture rate	0.00%	0.00%
Weighted average term of warrants	5 years	4.36 years

The fair value of warrants that were issued and estimated using the Monte Carlo Simulation have the following inputs and assumptions:

	Year ended December 31,
	2021
Weighted average risk-free interest rate	0.42%
Weighted average expected volatility	80.00%
Weighted average term of warrants	5 years

13. Stock-based payments

On December 3, 2021, the shareholders of the Company approved the 2021 Equity Incentive Plan to utilize the 3,500,000 shares reserved and unissued under the Torchlight 2015 Stock Option and Grant Plan and the 6,445,745 shares reserved and unissued under the MMI 2018 Stock Option and Grant plan to set the number of shares reserved for issuance under the 2021 Equity Incentive Plan at 34,945,745 shares.

The 2021 Equity Incentive Plan allows the grants of non-statutory stock options, restricted stock, restricted stock units ("RSUs"), stock appreciation rights, performance units and performance shares to employees, directors, and consultants.

DSU Plan

Each unit is convertible at the option of the holder into one common share of the Company.

On March 28, 2013, we implemented a Deferred Stock Unit (DSU) Plan for its directors, employees and officers. Directors, employees and officers are granted DSUs of the Company with immediate vesting as a form of compensation. Each unit is convertible at the option of the holder into one common share of the Company. Eligible individuals are entitled to receive all DSUs (including dividends and other adjustments) no later than December 1st of the first calendar year commencing after the time of termination of their services.

The following table summarizes the change in DSUs of the Company:

	Number of DSUs (#) [1]	Weighted Average grant date fair value
Outstanding, December 31, 2020	3,455,224	$ 0.08
Granted	191,802	2.70
Outstanding, December 31, 2021	3,647,026	$ 0.22
Granted	263,160	1.71
Outstanding, December 31, 2022	3,910,186	$ 0.32

[1] All references to numbers of DSUs have been retroactively restated to reflect as if the Torchlight RTO had taken place as of the beginning of the earliest period presented. The numbers of DSUs issued pre-CPM RTO have been multiplied by the 2.75 CPM conversion ratio and the 1.845 Torchlight conversion ratio.

As of December 31, 2022, there was $Nil unrecognized compensation cost related to unvested DSUs.

RSU Plan

Each RSU unit is convertible at the option of the holder into one common share of the Company upon meeting the vesting conditions.

Total stock-based compensation expense related to RSUs included in the consolidated statements of operations was as follows:

	Year ended December 31,	
	2022	2021
Cost of sales	$ 544,468	$ —
Selling & marketing	376,449	—
General & administrative	1,631,995	517,869
Research & development	2,101,035	—
	$ 4,653,947	$ 517,869

As of December 31, 2022, the unrecognized compensation cost related to unvested RSUs was $5,723,616 (2021 - $Nil). This cost will be recognized over the next four years.

The following table summarizes the change in outstanding RSUs:

	Number of RSUs #	Weighted Average grant date fair value
Outstanding, December 31, 2020	—	$ —
Granted	300,000	6.43
Outstanding, December 31, 2021	300,000	$ 6.43
Granted	7,207,261	1.45
Forfeited	(326,395)	1.60
Vested and settled	(673,944)	1.15
Outstanding, December 31, 2022	6,506,922	$ 1.71
Vested but not yet settled, December 31, 2022	482,486	$ 4.47

Employee Stock Option Plan

Each stock option is convertible at the option of the holder into one common share of the Company.

During the year ended December 31, 2021, the Company's existing MMI options were converted at a ratio of 1.845 META options for each MMI option pursuant to the Torchlight RTO. Also, as part of the Torchlight RTO, Torchlight outstanding options of 3,000,000 underwent a reverse stock split at a ratio of 2:1 resulting in outstanding options of 1,500,000 and an amount of $9,397,988 was recorded in additional paid in capital as part of the consideration transferred.

Total stock-based compensation expense included in the consolidated statements of operations was as follows:

	Year ended December 31,	
	2022	2021
Selling & marketing	$ 195,041	$ 34,735
General & administrative	5,930,518	544,530
Research & development	2,490,979	479,715
	$ 8,616,538	$ 1,058,980

As of December 31, 2022, the unrecognized compensation cost related to unvested stock options was $4,133,287 (2021 - $493,577). This cost will be recognized over the next four years.

The following table summarizes the change in outstanding stock options of the Company:

	Number of options # [1]	Average exercise price per stock option	Average exercise remaining contractual term (years)	Aggregate intrinsic value
Outstanding, December 31, 2020	24,477,507	$ 0.33	8.36	$ 688,952
Exercised	(4,486,965)	0.36		
Forfeited	(85,901)	0.34		
Fair value of deemed issuance to Torchlight	1,500,000	2.22		
Outstanding, December 31, 2021	21,404,641	$ 0.46	7.34	$ 56,924,556
Granted	14,318,993	1.41		
Exercised	(1,688,538)	0.27		
Forfeited	(440,052)	1.02		
Outstanding, December 31, 2022	33,595,044	$ 0.80	9.31	$ 17,611,251
Exercisable, December 31, 2022	24,327,577	$ 0.71	8.23	$ 14,917,424

Below is a summary of the outstanding options as of December 31, 2022 and December 31, 2021:

	As of December 31,			
	2022		2021	
Range of exercise price	Number outstanding #	Number exercisable #	Number outstanding # [1]	Number exercisable # [1]
$0.12 - $0.27	18,128,657	15,549,318	19,954,641	11,781,030
$0.89 - $1.00	2,984,668	1,822,394	375,000	325,000
$1.17 - $1.26	2,782,704	932,082	—	—
$1.31 - $1.58	6,729,904	3,054,672	—	—
$1.97 - 2.00	2,969,111	2,969,111	1,075,000	1,125,000
	33,595,044	24,327,577	21,404,641	13,231,030

The fair value of options granted was estimated at the grant date using the following weighted-average assumptions:

	Year ended December 31,	
	2022	2021
Weighted average Grant date fair value	0.81	6.27
Weighted average expected volatility	81%	84%
Weighted average risk-free interest rate	2.56%	0.73%
Weighted average expected life of the options	4.19 years	1 year

Where possible, we use the simplified method to estimate the expected term of employee stock options. We do not have adequate historical exercise data to provide a reasonable basis for estimating the expected term for the current share options granted. The simplified method assumes that employees will exercise share options evenly between the period when the share options are vested and ending on the date when the options would expire.

The expected volatility reflects the assumption that the historical volatility over a period similar to the life of the options is indicative of future trends, which may not necessarily be the actual outcome.

14. Income taxes

Loss before income taxes was as follows:

	Year ended December 31,	
	2022	2021
Local	$ (58,490,568)	$ (30,552,839)
Foreign	(26,445,816)	(61,296,485)
Loss before income taxes	$ (84,936,384)	$ (91,849,324)

Income tax provision was as follows:

	Year ended December 31,	
	2022	2021
Current tax expense:		
Local	$ 1,256	$ 800
Foreign	—	—
Current tax expense	1,256	800
Deferred tax benefit:		
Local	(4,893,000)	—
Foreign	(942,416)	(852,863)
Deferred tax benefit	(5,835,416)	(852,863)
Income tax recovery	$ (5,834,160)	$ (852,063)

We have determined the deferred tax position in accordance with ASC Topic 740, *Income Taxes*, resulting in recognition of deferred tax liabilities for future reversing of taxable temporary differences primarily for intangible assets. This resulted mainly in a preliminary net deferred tax liability of $4.9 million from the Optodot acquisition, which includes the carryover basis of historical recognized deferred tax assets, liabilities and valuation allowance. The net deferred tax liabilities allowed us to utilize certain previously fully reserved deferred tax assets. Accordingly, we recognized a reduction to our valuation allowance resulting in a net tax benefit of $4.9 million for the year ended December 31, 2022.

The income tax provision differs from the amount computed by applying the federal income tax rate of 21% for 2021 (2020 - 21%) to the loss before income taxes as a result of the following differences:

	Year ended December 31,	
	2022	2021
Tax computed at federal statutory rate	$ (17,836,641)	$ (19,288,357)
State income taxes, net of federal benefit	(1,428,381)	(1,075,114)
Capital loss	(7,192,458)	—
Share-based compensation	—	2,289,214
Unrealized loss on Fair Value Through Profit and Loss liabilities	—	11,752,697
Other permanent items	(3,750,116)	(114,799)
Foreign currency and other	185,860	929,664
Research and development credit	(319,137)	—
Foreign rate differential	(1,484,069)	(4,889,797)
Provision to return	1,595,074	—
Deferred true-ups	1,525,095	—
Change in valuation allowance	22,870,613	9,544,429
Income tax recovery	$ (5,834,160)	$ (852,063)

The tax effects of temporary differences that give rise to significant portions of the deferred tax assets and deferred tax liabilities are as follows:

	As of December 31,	
	2022	2021
Deferred tax assets		
Non-capital losses	$ 30,527,370	$ 25,110,497
Capital loss carryforward	7,228,389	—
Stock-based compensation	5,718,562	—
Allowance for doubtful accounts	4,609,247	—
Research and development tax credits	2,824,760	1,972,694
Research and development expense capitalization	2,198,314	—
Reserves and other accruals	1,144,703	—
Operating lease right-of-use assets	808,717	—
Intangible assets	72,895	69,964
Other assets	37,426	46,725
Total gross deferred tax assets	55,170,383	27,199,880
Less: valuation allowance	(41,688,855)	(18,659,901)
	13,481,528	8,539,979
Deferred tax liabilities		
Intangible assets	(12,355,386)	(6,276,390)
Property, plant and equipment	(2,791,147)	(2,226,741)
Long-term operating lease liabilities	(1,234,015)	—
Long-term debt	(189,260)	(251,646)
Funding obligation	(112,974)	(109,681)
Other liabilities	(52,731)	—
	(16,735,513)	(8,864,458)
Net deferred tax liability	$ (3,253,985)	$ (324,479)

At December 31, 2022, we have a net operating loss carryforward ("NOLs") of approximately $111.4 million (2021: $91.3 million) that can be used to offset future taxable income, and such NOLs, as well as timing differences from certain financial instruments, result in a gross deferred tax asset of approximately $55.2 million (2021: $27.2 million). These NOLs begin to expire in 2028.

In evaluating its valuation allowance, we consider all available positive and negative evidence, including projected future taxable income and recent financial performance. Due to uncertainty with respect to the ultimate realizability of these deferred tax assets, we have recorded a valuation allowance of approximately $41.7 million at December 31, 2022, (2021: $18.7 million) against our deferred tax assets.

15. Net loss per share

The following table sets forth the calculation of basic and diluted net loss per share during the periods presented:

	Year ended December 31,	
	2022	2021
Numerator:		
Net loss	$ (79,102,224)	$ (90,997,261)
Denominator:		
Weighted-average shares, basic	328,350,452	232,898,398
Weighted-average shares, diluted	328,350,452	232,898,398
Net loss per share		
Basic	(0.24)	(0.39)
Diluted	(0.24)	(0.39)

The following potentially dilutive shares were not included in the calculation of diluted shares above as the effect would have been anti-dilutive:

	As of December 31,	
	2022	2021
Options	33,595,044	21,404,641
Warrants	39,920,919	5,278,846
RSUs	6,506,922	300,000
DSUs	3,910,186	3,647,026
	83,933,071	30,630,513

16. Additional cash flow information

The net changes in operating assets and liabilities consist of the following:

	As of December 31,	
	2022	2021
Grants receivable	$ 172,765	$ 149,798
Inventory	(319,116)	325,657
Accounts and other receivables	287,320	(880,613)
Prepaid expenses and other current assets	(4,799,174)	(2,100,370)
Trade payables	5,410,515	6,906,375
Due to related party	(108,102)	(78,940)
Operating lease Right-of-use Asset	(231)	1,018,691
Operating lease liabilities	(997,067)	(688,183)
	$ (353,090)	$ 4,652,415

17. Fair value measurements

We use a fair value hierarchy, based on the relative objectivity of inputs used to measure fair value, with Level 1 representing inputs with the highest level of objectivity and Level 3 representing the lowest level of objectivity.

The fair values of cash and cash equivalents, restricted cash, short-term investments, grants and accounts receivable, due from related parties and trade and other payables approximate their carrying values due to the short-term nature of these instruments. The current portion of long-term debt has been included in the below table.

The fair value of our note receivable from Next Bridge is classified at Level 3 in the fair value hierarchy. See Note 5 for further details.

The fair values of the funding obligation, operating lease liabilities, and long-term debt would be classified at Level 3 in the fair value hierarchy, as each instrument is estimated based on unobservable inputs including discounted cash flows using the market rate, which is subject to similar risks and maturities with comparable financial instruments as at the reporting date.

Carrying values and fair values of financial instruments that are not carried at fair value are as follows:

	2022		2021	
Financial liability	**Carrying value**	**Fair value**	**Carrying value**	**Fair value**
Funding obligation	$ 180,705	$ 85,411	$ 268,976	$ 170,338
Operating lease liabilities	4,342,157	5,666,940	4,370,635	6,149,369
Long-term debt	3,553,955	2,663,460	3,228,449	2,303,648

18. Revenue

We have one operating segment based on how management internally evaluates separate financial information, business activities and management responsibility.

Revenue is disaggregated as follows:

	Year ended December 31,	
	2022	**2021**
Product sales	$ 1,211,746	$ 407,915
Contract revenue [1]	8,809,119	3,427,938
Other development revenue	179,302	246,664
Development revenue	8,988,421	3,674,602
	$ 10,200,167	$ 4,082,517

[1] A portion of contract revenue represents previously recorded deferred revenue that was recognized as revenue after satisfaction of performance obligations either through passage of time or after completion of specific performance milestones. Refer to note 19 for outstanding contracts.

Customer concentration

A significant amount of our revenue is derived from contracts with major customers. For the years ended December 31, 2022 and December 31, 2021, revenue from one customer (a G10 central bank) accounted for $8.6 million or 84% and $1.8 million or 45% respectively of total revenue.

We currently derive a significant portion of our revenue from contract services with a G10 central bank. In 2021, we were awarded a development contract for up to $41.5 million over a period of up to five years, from this same G10 central bank customer. In 2022, we were awarded a $4.3 million purchase order under this contract. These contract services incorporate both nano-optic and optical thin film technologies and are focused on developing authentication features for future banknotes.

19. Deferred revenue

Deferred revenue consists of the following:

	As of December 31,	
	2022	2021
Satair A/S-exclusive rights [1]	$ 575,770	$ 717,615
Satair A/S-advance against PO [2]	459,539	490,929
LM Aero-MetaSOLAR commercialization [3]	—	92,698
Breakthrough Starshot Foundation [4]	75,000	75,000
Innovate UK-R&D tax credit	—	18,588
Other deferred revenue	100,000	21,910
	1,210,309	1,416,740
Less: current portion	(730,501)	(779,732)
	$ 479,808	$ 637,008

[1] On September 18, 2018, we signed an exclusive distribution agreement with Satair A/S for a term of 10 years. According to this agreement, the Company grants Satair A/S the exclusive right to sell, market, and distribute eyewear and visor products incorporating metamaterial-based laser protection technology that are developed or manufactured by the Company for use in aviation, military, and defense. On September 13, 2018, we received a fee of $1,000,000 for the exclusive distribution rights granted under this agreement and the payment was recognized as deferred revenue on the consolidated balance sheets. It will be accounted as development revenue over a period of 8 years and no repayment of the $1,000,000 is required if the contract termination is after the 8th anniversary of the effective date. During the year ended December 31, 2022, we have recognized $99,629 (2021: $102,269) as development revenue related to this agreement.

[2] On July 20, 2018, we received a purchase order for MetaVisor (eyewear/eye protection) from Satair A/S for $2,000,000. On November 7, 2018, we received a partial advance payment of $500,000 against this purchase order. We have set up a guarantee/standby letter of credit with RBC. In the event we fail to deliver the product as per the contract or refuse to accept the return of the product as per the buyback clause of the contract or fails to repay the advance payment in accordance with the conditions of the agreement signed with Satair on September 18, 2018, Satair shall draw from the letter of credit with RBC. As at December 31, 2022, no amount has been drawn from the letter of credit with RBC. Refer to note 26 for information regarding the letter of credit.

[3] On April 26, 2017, we received $4,150,000 from Lockheed Martin Aeronautics Corporation (“LM Aero”) in relation to the Offset Project Agreement (“OPA”). The purpose of the OPA was to document the agreement between LM Aero and the Company with respect to our planned growth through R&D and commercialization activities using the MetaSOLAR technology as well as the contribution that LM Aero made to us in return for our effective assistance in obtaining credit arising from the project as set forth in the OPA. We have set up an irrevocable standby letter of credit with RBC. In the event we fail to meet the obligations under the OPA, LM Aero shall draw from the letter of credit with RBC. The performance obligations for the milestone are satisfied through-out the period. During the year ended December 31, 2022, we have recognized $93,000 (2021: $562,531) as development revenue related to this agreement.

[4] On March 1, 2020, we entered into a research agreement with Breakthrough Starshot Foundation LLC under the project “Lightsail” for $150,000. We received $75,000 on March 6, 2020 which has been recorded as part of deferred revenue.

20. Deferred government assistance

a) Grants receivable

	As of December 31, 2022	2021
ACOA-PBS [1]	$ —	$ 8,069
Co-Op wage subsidy [2]	—	7,318
Canada Emergency Wage Subsidy [3]	—	122,940
Innovate UK – Diabet [4]	—	13,790
NSBI - Export development program [5]	—	23,663
	$ —	$ 175,780

[1] On November 21, 2018, ACOA approved two non-repayable contribution of $37,679 each to the Company under Business Development Program – Productivity and Business skills (“PBS”) for the cost to create product and commercialization strategies.

[2] During 2021, we applied for and received grants related to co-op students and recent graduates under the Nova Scotia Co-Op Subsidy, Graduate To Opportunity Program ("GTO") and Venture for Canada program ("VFC").

[3] During 2021, we received the 2020 outstanding balance of $233,446 as well as recognized $443,494 government assistance from Canada Emergency Wage subsidy ("CEWS") as other income in the consolidated statements of operations and comprehensive loss, of which $321,547 has been received.

[4] On February 13, 2019, Innovate UK approved a grant to MediWise for the project “Diabet – Innovate wrist device for high accuracy non-invasive blood glucose monitoring”. During 2022, we received $nil (2021: $132,288) in relation to the grant and in recognized government assistance of $nil (2021: $110,125) as other income in the consolidated statements of operations and comprehensive loss.

[5] On December 15, 2021, we applied for NSBI - Export development program and recognized $23,663 as other income in the consolidated statements of operations and comprehensive loss.

b) Deferred government assistance

	As of December 31, 2022	2021
SDTC [1]	$ 799,490	$ 846,612
Deferred government assistance [2]	319,017	3,038
	1,118,507	849,650
Less: current portion	(799,490)	(846,612)
	$ 319,017	$ 3,038

[1] On May 15, 2018, we entered into an agreement with the Canada Foundation for Sustainable Development Technology Canada (“SDTC”) for $4.2 million. The contribution provides funding for eligible costs incurred relating to the further development and demonstration of technology related to solar cells in connection with the project entitled “Enabling solar flight a testing ground for lightweight and efficient solar panels”. On March 30, 2021, we have received an additional 5% contribution from SDTC of $0.2 million. During the year ended December 31, 2022, we have recognized $Nil (2021: $0.2 million) as government assistance in the consolidated statements of operations and comprehensive loss.

[2] On November 10, 2022, we entered into an agreement with the Economic Development Agency of Canada for the Regions of Quebec (“EDC”) for $1.5 million. The contribution provides funding for eligible costs incurred relating to improvement of the Thurso facilities and the acquisition of digital production equipment. On December 20, 2022, we have received approximately $1.1 million of the total contribution and as of December 31, 2022 we have recognized $0.4 million in deferred government assistance. During the year ended December 31, 2022, we have recognized $Nil (2021: $Nil) as government assistance in the consolidated statements of operations and comprehensive loss.

c) Government assistance recognized in the consolidated statements of operations and comprehensive loss

	Year ended December 31,	
	2022	2021
Innovative UK	$ —	$ 161,990
Payroll subsidies	77,075	741,322
Amortization of deferred government assistance	3,047	145,739
R&D tax credit	138,410	—
Fair value gain on initial recognition of ACOA loans	—	236,021
SDTC	—	448,894
	$ 218,532	$ 1,733,966

21. Interest expense, net

	Year ended December 31,	
	2022	2021
Non-cash interest accretion	$ (403,317)	$ (904,925)
Interest & bank charges	133,518	(220,460)
Interest income	95,565	18,940
	$ (174,234)	$ (1,106,445)

22. Loss on financial instruments, net

	Year ended December 31,	
	2022	2021
Loss on unsecured convertible promissory notes – Bridge loan	$ —	$ (19,163,417)
Loss on unsecured convertible promissory notes – Torchlight notes	—	(343,197)
Loss on secured convertible debentures	—	(16,957,029)
Loss on unsecured convertible debentures	—	(4,076,448)
	$ —	$ (40,540,091)

No loss on financial instruments for the years ending December 31, 2022 and December 31, 2021 represent non-cash losses resulting from remeasurement of the fair value of convertible financial liabilities at each balance sheet date or on conversion date using the fair value option.

Each of the above referenced promissory notes and debentures included a conversion feature, exercisable at the option of the debt holder. For accounting purposes, each of these conversion features is an embedded derivative in the note or debenture. We elected to account for fluctuations in (a) the value of the liabilities driven by interest rate volatility and our credit risk and (b) the embedded derivatives driven by fluctuations in the Company's common stock share price using a method known as Fair Value option. This accounting method calls for the Company to measure the fair value of the convertible financial liabilities at each balance sheet date and to record any fluctuations in the values that as non-cash adjustments relating to instrument specific credit risk in the other comprehensive income and non-cash adjustments relating to other factors in the statements of operations. If, as in the case of the liabilities described above, the debt is converted, the valuations and any adjustments are to be recorded as of the date of such conversion.

The Fair Value option also provides that the total revaluation adjustment be recorded in Common Stock and additional paid in capital thus having no impact on stockholders' equity despite the recording of the loss in the statement of operations.

23. Other expenses, net

	Year ended December 31, 2022	2021
O&G assets maintenance cost [1]	$ (3,859,851)	$ (14,155,851)
Government Assistance (note 20)	218,532	1,733,966
Other income	72,038	8,850
Fair value gain on long-term debt	56,185	2,278
Fair value gain on funding obligation (note 24)	79,339	471,689
	$ (3,433,757)	$ (11,939,068)

[1] We incurred costs in relation to certain drilling activity carried out at its Oil and Gas properties, to remain in compliance with all aspects of our lease obligations and to satisfy the Continuous Drilling Clause ("CDC") with University Lands.

Subsequent to December 14, 2022, these oil and gas assets, and the associated lease obligations, are no longer owned by us, as they formed part of the net assets deconsolidated as part of the Next Bridge spin-off (see note 5).

24. Funding obligation

	As of December 31, 2022	2021
Outstanding obligation [1]	$ 959,835	$ 1,025,398
Fair value of interest-free component [2]	(852,573)	(855,060)
Principal adjusted for interest-free component	107,262	170,338
Accumulated non-cash interest accretion	73,443	98,638
Carrying amount	180,705	268,976
Less current portion	—	—
	$ 180,705	$ 268,976

[1] In June 2019, we entered into a statement of work (“SOW”) with a third party for the purchase of manufacturing equipment. The SOW was initiated based on the Industrial and Regional Benefits general investment funding between the third party and the Government of Canada. We received the funds in two tranches after achieving two milestones as per the SOW. The funds are repayable, commencing three years from date of receipt, based on 10% of revenue from the sale of holographic film that is produced using the related manufacturing equipment paid for under this funding obligation.

In June 2019, we achieved the first milestone and received CA$325,000 and in October 2019, we achieved the second milestone and received CA$975,000. We have not sold holographic film related to this SOW to date.

[2] The amounts received under the agreement have been recorded at fair value by applying the effective interest rate method on the dates the funding was received, using an estimated market interest rate of 15%. During the year ended December 31, 2021, we elected to bring the market interest rate to current rates and increased it to 19.17%. Following management discussions, the revenue generation ability from the manufacturing equipment bought under the funding obligation was reduced, resulting in a longer repayment period. The combination of these two changes prompted us to recognize a gain of $79,339 for the year ended December 31, 2022 (2021, $471,004) in the consolidated statements of operations and comprehensive loss.

25. Leases

We lease properties in USA, Canada, United Kingdom, and Greece for production, research and development and administration.

Total operating lease expense included in the consolidated statements of operations and comprehensive loss is as follows:

	Year ended December 31,	
	2022	2021
Operating lease expense	$ 2,057,157	$ 546,197
Short term lease expense	584,645	229,475
Variable and other lease expense	263,500	92,862
Total	$ 2,905,302	$ 868,534

We completed our evaluation of the provisions of ASC 842 "*Leases*" and elected the practical expedient to not capitalize any leases with initial terms of less than twelve months on our balance sheet and include them as short-term lease expense in the consolidated statements of operations and comprehensive loss.

Future minimum payments under non-cancelable operating lease obligations were as follows as of December 31, 2022:

2023	$ 1,261,249
2024	1,263,455
2025	1,153,305
2026	994,967
Thereafter	2,892,472
Total minimum lease payments	7,565,448
Less: interest	(3,223,291)
Present value of net minimum lease payments	4,342,157
Less: current portion of lease liabilities	(967,126)
Total long-term lease liabilities	$ 3,375,031

Supplemental balance sheet information related to leases is as follows:

	Year ended December 31,	
	2022	2021
Weighted Average Remaining Lease Term	5 years	5 years
Weighted Average Discount Rate	17.17 %	17.85%

26. Commitments and contingencies

Legal Matters

SEC Subpoena

In September 2021, we received a subpoena from the Securities and Exchange Commission, Division of Enforcement, in a matter captioned In the Matter of Torchlight Energy Resources, Inc. The subpoena requests that we produce certain documents and information related to, among other things, the merger involving Torchlight Energy Resources, Inc. and Metamaterial Inc. We are cooperating and intend to continue to cooperate with the SEC's investigation. We can offer no assurances as to the outcome of this investigation or its potential effect, if any, on us or our results of operation.

Securities Class Action

On January 3, 2022, a putative securities class action lawsuit was filed in the U.S. District Court for the Eastern District of New York captioned Maltagliati v. Meta Materials Inc., et al., No. 1:21-cv-07203, against us, our Chief Executive Officer, our Chief Financial Officer, Torchlight's former Chairman of the Board of Directors, and Torchlight's former Chief Executive Officer. On January 26, 2022, a similar putative securities class action lawsuit was filed in the U.S. District Court for the Eastern District of New York captioned McMillan v. Meta Materials Inc., et al., No. 1:22-cv-00463. The McMillan complaint names the same defendants and asserts the same claims on behalf of the same purported class as the Maltagliati complaint. The complaints, purportedly brought on behalf of all purchasers of our publicly traded securities from September 21, 2020 through and including December 14, 2021, assert claims under Sections 10(b) and 20(a) of the Securities Exchange Act of 1934 (the "Exchange Act") arising primarily from a short-seller report and statements related to our business combination with Torchlight. The complaints seek unspecified compensatory damages and reasonable costs and expenses, including attorneys' fees. On July 15, 2022, the Court consolidated these actions under the caption In re Meta Materials Inc. Securities Litigation, No. 1:21-cv-07203, appointed lead plaintiffs and approved the lead plaintiffs' selection of lead counsel. Lead plaintiffs filed a consolidated complaint on August 29, 2022. We moved to dismiss that complaint on October 13, 2022. The motion was fully briefed on January 12, 2023. The Court held a hearing on the motion to dismiss on February 27, 2023 and took the motion under submission.

Shareholder Derivative Action

On January 14, 2022, a shareholder derivative action was filed in the U.S. District Court for the Easter District of New York captioned Hines v. Palikaras, et al., No. 1:22-cv-00248. The complaint names as defendants certain of our current officers and directors, certain former Torchlight officers and directors, and us (as nominal defendant). The complaint, purportedly brought on behalf of the Company, asserts claims under Section 14(a) of the Exchange Act, contribution claims under Sections 10(b) and 21D of the Exchange Act, and various state law claims such as breach of fiduciary duties and unjust enrichment. The complaint seeks, among other things, unspecified compensatory damages in favor of the Company, certain corporate governance related actions, and an award of costs and expenses to the derivative plaintiff, including attorneys' fees. On March 9, 2022, the Court entered a stipulated order staying this action until there is a ruling on a motion to dismiss in the securities class action.

Westpark Capital Group

On July 25, 2022, WestPark Capital Group, LLC filed a complaint in Los Angeles County Superior Court against us for breach of contract, alleging that it is owed a $450,000 commission as a placement agent with respect to our June 2022 direct offering. On August 31, 2022, we filed an answer to the complaint. We dispute that WestPark Capital Group placed the investor in the direct offering and is owed a commission.

Contractual Commitments and Purchase Obligations

a) During 2018, we arranged a guarantee/standby letter of credit with RBC in favor of Satair A/S for $500,000 in relation to an advance payment received. In the event we fail to deliver the product as per the contract or refuse to accept the return of the product as per the buyback clause of the contract or fails to repay the advance payment in accordance with the conditions of the agreement signed with Satair on September 18, 2018, Satair shall draw from the letter of credit with RBC. Borrowings from the letter of credit with RBC are repayable on demand. The letter of credit from RBC is secured by a performance security guarantee cover issued by Export Development of Canada. Further, this guarantee/standby letter of credit expires on October 5, 2023. As of December 31, 2022, no amount has been drawn from the letter of credit with RBC.

b) On December 8, 2016, we entered into a cooperation agreement with a large aircraft manufacturer to co-develop laser protection filters for space and aeronautical civil and military applications, metaAIR®, and support the setup of manufacturing facilities for product certification and development. The cooperation agreement includes financial support provided to us in the form of

non-recurring engineering costs of up to $4 million to be released upon agreement of technical milestones in exchange for a royalty fee due by us on gross profit after sales and distribution costs. The total royalty fee to be paid may be adjusted based on the timing of our sales and the amount ultimately paid to us by this large aircraft manufacturer to support the development.

c) Certain nano-optic products are subject to a 3% sales royalty in favor of Simon Fraser University ("SFU") where certain elements of the nano-optic technology originated. Royalties were $1,575 during the twelve months ended December 31, 2022 (2021 - nil). In 2014, the Company's wholly owned subsidiary, Nanotech, prepaid royalties that would offset against future royalties owed as part of the transfer of the intellectual property from SFU, of which $195,441 remains prepaid as at December 31, 2022 (December 31, 2021 - $197,016).

d) Product revenue associated with six patents acquired by Nanotech is subject to royalties. We agreed to share 10% of any revenues related to the patents received from a specific customer for a period of two years and ongoing royalties of 3% to 6% on other revenues derived from the patents for a period of five years. There were no royalties during the year ended December 31, 2022.

e) On September 1, 2022, we entered into an operating lease agreement for the space of approximately 11,642 Square Footage for an office in a building located in Columbia, Maryland, USA. This was not recognized as an operating lease in 2022, as we have not yet occupied premises as of December 31, 2022, due to ongoing construction with a lease term of 132 months onwards with an option to renew the lease for an additional 5 years. There are step-up lease payments for each 12-month period from lease commencement, with the first 12 months fully abated.

f) On October 1, 2022, we entered into an operating lease agreement for the space of approximately 12,655 Square Feet on the 2nd Floor of Building One, in two separate sections: Phase 1: 8,097 Rentable Square Footage; and Phase 2: 4,558 Rentable Square Footage in a commercial building located in Billerica, Massachusetts, USA. This was not recognized as an operating lease in 2022, as we have not yet occupied either premise as of December 31, 2022, due to ongoing renovations. The lease terms are 5 years and 6 months for both spaces commencing from the delivery date in which each space will be made readily available. Lease payments are to commence from the delivery date for each Phase until the end of the lease term with an option to renew the lease for an additional 5 years. Annual Lease payments will be $18.00 per Square Feet in the Lease Year 1, $18.50 per Square Foot in Lease Year 2, $19.00 per Square Foot in Lease Year 3, $19.50 per Square Foot in Lease Year 4, and $20.00 per Square Feet in Lease Year 5

g) As of December 31, 2022, we have on-going commitments for leases and maintenance contracts as follow:

2023	$	267,210
2024		557,747
2025		569,240
2026		583,795
Thereafter		5,207,113
	$	7,185,105

27. Subsequent events

On February 10, 2023, we entered into a sales agreement (the "ATM Agreement") with an investment bank with the establishment of an “at-the-market” offering program under which we may sell up to an aggregate of $100.0 million of shares of common stock (the “ATM Shares”) from time to time. The sales agents are entitled to compensation at a fixed commission rate of 3.0% of the gross proceeds of each sale of shares of our common stock.

Under the ATM Agreement, we set the parameters for the sale of ATM Shares, including the number of ATM Shares to be issued, the time period during which sales are requested to be made, limitations on the number of ATM Shares that may be sold in any one trading day and any minimum price below which sales may not be made. Sales of the ATM Shares, if any, under the ATM Agreement may be made in transactions that are deemed to be “at-the-market offerings” as defined in Rule 415 under the Securities Act.

As of March 20, 2023, we have sold an aggregate of 17,573,969 shares of our common stock pursuant to the ATM Agreement for aggregate gross proceeds of approximately $10.5 million.

Subsequent to December 31, 2022, 1,042,000 stock options were exercised, 1,288,789 RSUs have vested and settled and 39,278 RSUs have been forfeited.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

None.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Management, with the participation of the Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of December 31, 2022. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based on the evaluation of our disclosure controls and procedures as of December 31, 2022, our Chief Executive Officer and Chief Financial Officer concluded that, as of such date, our disclosure controls and procedures were not effective due to a material weakness in our internal control over financial reporting as described below.

However, giving full consideration to the remaining material weakness, we have concluded that the consolidated financial statements included in the Annual Report on Form 10-K present fairly, in all material respects, our financial position, the results of our operations and our cash flows for each of the periods presented in conformity with U.S. generally accepted accounting principles.

Management’s Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining effective internal control over financial reporting, as such term is defined in Securities Exchange Act Rules 13a-15(f) and 15d-15(f). Our internal control over financial reporting is a process designed by and under the supervision of our management, including our Chief Executive Officer and Chief Financial Officer, and effected by our management and other personnel, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with U.S. generally accepted accounting principles.

Our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2022, using the criteria set forth in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on the results of this evaluation, our management concluded that internal control over financial reporting was not effective as of December 31, 2022, due to the existence of a material weakness listed below. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements may not be prevented or detected on a timely basis.

Management has determined that a material weakness in internal control over financial reporting existed at December 31, 2022 due to the existence of the following identified deficiencies:

- A lack of sufficient accounting personnel with the requisite knowledge of US GAAP and financial reporting requirements of the SEC; and
- A lack of sufficient segregation of duties in the financial reporting process.

This material weakness resulted in material misstatements which have been corrected, and also in immaterial misstatements, some of which were corrected prior to the release of our consolidated financial statements as of and for the year ended December 31, 2022. This material weakness creates a reasonable possibility that a material misstatement to the consolidated financial statements will not be prevented or detected on a timely basis.

Plan for Remediation of Material Weakness

Management has been and is continuing to evaluate and strengthen our internal controls over financial reporting to ensure that management can routinely prepare our financial statements under US GAAP, meet the requirements of our independent auditors and remain in compliance with the SEC reporting requirements. These efforts are time consuming and require significant resource investment that we are committed to making.

We are still developing and documenting the full extent of the procedures to implement, and remediate the material weakness described above, however the current remediation plan includes:

- Identifying and hiring additional key positions necessary to support our initiatives related to internal controls over financial reporting, including but not limited to technical accounting, transactional accounting, and tax accounting.
- Formalizing segregation of duties structures in the accounting and IT functions.
- Continuing to use the services of specialized consultants to assist with on-going process improvements and control remediation efforts in targeted accounting, IT, and operations processes.

Changes in Internal Controls

During the year ended December 31, 2022, we have implemented the following remediation steps:

- Expanded and provided extensive training to the ERP and procurement teams.
- Hired thrid-party consultants to assist with process improvements and control remediation efforts in targeted accounting, IT and operations processes.
- We continued to test and improve the design and operating effectiveness of our internal controls, and determine whether remediation plans have been implemented in the deficiency areas.
- We invested in hiring additional IT resources including a Chief Infomation Officer with appropriate knowledge and expertise to effectively implement internal controls.

Except for the remediation efforts related to the material weakness described above, no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) occurred during the quarter ended December 31, 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Internal Controls

Management, including the Chief Executive Officer and Chief Financial Officer, does not expect that disclosure controls or internal controls will prevent all error and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. In addition, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud,

if any, within a company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake.

Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by management's override of the control. The design of any systems of controls is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions. Over time, control may become inadequate because of changes in conditions, or the degree of compliance with the policies or procedures may deteriorate. Because of these inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and not be detected. Individual persons may perform multiple tasks which normally would be allocated to separate persons and therefore extra diligence must be exercised during the period these tasks are combined.

Item 9B. Other Information.

On March 25, 2022, our Board of Directors (the "Board"), acting upon a recommendation from our Compensation Committee, approved payment of a cash bonus for George Palikaras, our Chief Executive Officer, of $385,000 based on 85% achievement of his target bonus for the year ended December 31, 2021.

Effective as of February 28, 2022, our Board of Directors voted to promote Kenneth L. Rice to the position of Chief Operating Officer where Mr. Rice retained his duties as Chief Financial Officer as well as assuming management responsibility for Business Development Operations, Manufacturing and Quality Control. In connection with the promotion, the Board approved, effective March 1, 2022, (i) an increase in Mr. Rice annual base salary from $216,000 to $300,000. (ii) an increase in Mr. Rice bonus from 66% to 70%. Mr. Rice was eligible to receive a quarterly bonus up to a target of 70% of his annual base salary where 75% of the bonus to be paid in cash and 25% to be paid in fully vested options.

During 2022, Mr. Rice received $64,350 for his 2021 cash bonus and $106,313 for his 2022 cash bonus. Mr. Rice was also granted 110,252 fully vested options at an exercise price of $1.21 and grant date fair value of $32,934 for his 2021 options bonus and 110,589 fully vested options at a weighted average exercise price of $1.26 and grant date fair value of $39,375 for his 2022 options bonus.

In addition, Mr. Rice was granted 217,711 options and 158,228 RSUs that vest in four equal annual installments as part of our Long-Term Incentive Plan. The grant date fair value of such options and RSUs were valued at a total of $500,000.

During 2022, Jonathan Waldern, our Chief Technology Officer, received $85,500 for his 2021 cash bonus and $150,000 for his 2022 cash bonus. Mr. Waldern was also granted 2,556,714 fully vested options at a weighted average exercise price of $1.87 and grant date fair value of $2,731,805 for his 2021 options bonus and 2,549,207 fully vested options at a weighted average exercise price of $1.22 and a grant date fair value of $731,796 for his 2022 options bonus.

Mr. Waldern's employment agreement, effective as of December 16, 2020, included an annual base salary of US$150,000 which increased to US$250,000 on March 1, 2021. Mr. Waldern was eligible to receive a quarterly bonus up to $50,000 based on his achievement of a balanced scorecard, in the sole discretion of the Company or the Meta Board. In the first two years, Mr. Waldern was also eligible to receive up to 0.25% per quarter of the then outstanding common stock of the Company as fully vested options of the Company.

In addition, Mr. Waldern was granted 174,169 options and 126,582 RSUs that vest in four equal annual installments as part of our Long-Term Incentive Plan. The grant date fair value of such options and RSUs were valued at $400,000.

On December 5, 2022, our Board approved the Company's New Outside Director Compensation Plan, which took effect January 1, 2023 for all continuing directors and newly elected or appointed directors after the Company's 2022 Annual Meeting of Stockholders. Under the New Outside Director Compensation Plan, directors who were not employees of the Company are entitled to receive an annual retainer fee of $50,000, plus Non-executive Chairman additional retainer of $35,000 per annum and Chair Retainers for Board committees of $15,000 to $20,000 per annum depending on the specific committee. Outside directors also receive annual equity awards of $100,000 in value payable in Restricted Stock Units along with an initial equity award for newly elected directors of $100,000 in value payable in Restricted Stock Units. Board members are required to achieve 5 times the annual cash retainer amount in owned shares of the Company within 5 years of their joining the board.

This above disclosure is provided in this Part II, Item 9B in lieu of disclosure under Item 5.02(e) of Form 8-K.

Form 8-K/Item 3.01 Notice of Delisting or Failure to Satisfy a Continued Listing Rule or Standard; Transfer of Listing.

On March 20, 2023, we received written notice ("The Bid Price Letter") from The Nasdaq Stock Market LLC ("Nasdaq") indicating that the Company is not in compliance with the $1.00 minimum bid price requirement for continued listing on The Nasdaq Capital Market, as set forth in Nasdaq Listing Rule 5550(a)(2) (the "Bid Price Rule"). In accordance with Nasdaq Listing Rule 5810(c)(3)(A), the Company has a period of 180 calendar days, or until September 18, 2023, to regain compliance with the Bid Price Rule. To regain compliance, the closing bid price of the Company's common stock must meet or exceed $1.00 per share for a minimum of ten consecutive business days during this 180-day period. The Bid Price Letter is a notice of deficiency, not delisting, and does not currently affect the listing or trading of shares of our common stock on The Nasdaq Capital Market, which will continue to trade under the symbol "MMAT."

We intend to actively monitor the closing bid price of shares of our common stock and may, if appropriate, consider implementing available options to regain compliance with the Bid Price Rule. If the Company does not regain compliance within the allotted compliance periods, including any extensions that may be granted by Nasdaq, Nasdaq will provide notice that the Company's common stock will be subject to delisting. The Company would then be entitled to appeal that determination to a Nasdaq hearings panel.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections.

None.

Part III

Item 10. Directors, Executive Officers, and Corporate Governance.

The information required by this Item will be provided in an amendment to this Annual Report on Form 10-K in accordance with General Instruction G (3) to Form 10-K.

Item 11. Executive Compensation.

The information required by this Item will be provided in an amendment to this Annual Report on Form 10-K in accordance with General Instruction G (3) to Form 10-K

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this Item will be provided in an amendment to this Annual Report on Form 10-K in accordance with General Instruction G (3) to Form 10-K

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this Item will be provided in an amendment to this Annual Report on Form 10-K in accordance with General Instruction G (3) to Form 10-K

Item 14. Principal Accounting Fees and Services.

The information required by this Item will be provided in an amendment to this Annual Report on Form 10-K in accordance with General Instruction G (3) to Form 10-K

PART IV

Item 15. Exhibits, Financial Statement Schedules.

Exhibit Index

Exhibit Number	Exhibit Description	Incorporated by Reference		Filed Herewith
		Form	Filing Date	
1.1.0	Amended and Restated Placement Agency Agreement, dated as of June 27, 2022, by and among Meta Materials Inc., Roth Capital Partners, LLC and A.G.P./Alliance Global Partners	8-K	27-Jun-22	
1.2.0	At Market Issuance Sales Agreement dated February 10, 2023, by and between the Company and the Agents	8-K	10-Feb-23	
1.1.2	Amended and Restated Placement Agency Agreement, dated as of June 27, 2022.	8-K	27-June-22	
2.1.0	Arrangement Agreement between Metamaterial Inc. and Torchlight Energy Resources, Inc., dated December 14, 2020	8-K	14-Dec-20	
2.1.1	Amendment to Arrangement Agreement dated February 3, 2021	8-K	3-Feb-21	
2.1.2	Amendment to Arrangement Agreement dated March 11, 2021	8-K	11-Mar-21	
2.1.3	Amendment to Arrangement Agreement dated March 31, 2021	8-K	1-Apr-21	
2.1.4	Amendment to Arrangement Agreement dated April 15, 2021	8-K	15-Apr-21	
2.1.5	Amendment to Arrangement Agreement dated May 2, 2021	8-K	3-May-21	
2.1.6	Amendment to Arrangement Agreement dated June 18, 2021	8-K	21-Jun-21	
2.2.0	Arrangement Agreement between Meta Materials Inc. and Nanotech Securities, dated August 4, 2021	10-K	2-Mar-22	
2.3.0	Distribution Agreement Between Meta Materials Inc. and Next Bridge Hydrocarbons Inc. dated September 2,2022			**X**
2.4.0	Meta Materials Inc. - Next Bridge Hydrocarbons Inc. - Tax Matters Agreement, dated September 2, 2022			**X**
2.5.0	Meta Materials Inc. - Next Bridge Loan Agreement, dated September 2, 2022			**X**
2.6.0	Meta Materials Inc. & Oilco Holdings Inc - 8% Promissory Note Secure - $15 mil loan dated October 1, 2021			**X**
2.7.0	Stock Pledge Agreement between Gregory McCabe & Meta Materials Inc. dated September 30, 2021			**X**
2.8.0	Stock Purchase Agreement for the Sale and Purchase of the Entire Issued Share Capital of Plasma App Ltd., dated as of March 31, 2022, by and between Dmitry Yarmolich and Dzianis Yarmolich, on the one hand, and Meta Materials, Inc, on the other hand	10-Q/A	1-June-22	
2.9.0	Asset Purchase Agreement, dated as of June 16, 2022, by and between Meta Materials Inc., Optodot Corporation, and SCP Management LLC, as Securityholders' Representative	8-K	17-June-22	
2.10.0	Stock Purchase Agreement, dated March 31, 2022, by and between Meta Materials Inc., on the one hand, and Dmitry Yarmolich and Dzianis Yarmolich, on the other hand	10-Q/A	31-Mar-22	
3.1.0	Articles of Incorporation	10-K	18-Mar-19	
3.1.1	Certificate of Amendment to Articles of Incorporation dated December 10, 2014	10-Q	15-May-15	
3.1.2	Certificate of Amendment to Articles of Incorporation dated September 15, 2015	10-Q	12-Nov-15	
3.1.3	Certificate of Amendment to Articles of Incorporation dated August 18, 2017.	10-Q	9-Nov-18	
3.1.4	Amendment to the Articles of Incorporation of Torchlight Energy Resources, Inc., dated June 14, 2021	8-K	16-Jun-21	
3.1.5	Certificate of Amendment related to the Reverse Stock Split and Name Change, filed June 25, 2021	8-K	29-Jun-21	

3.2.0	Certificate of Designation of Preferences, Rights and Limitations of Series B Special Voting Preferred Stock, dated June 14, 2021	8-K	16-Jun-21	
3.3.0	Certificate of Withdrawal of Certificate of Designation of Preference, Rights, and Limitations of Series A Non-Voting Preferred Stock	8-K	15-Dec-22	
3.4.0	Certificate of Designation of Preferences, Rights and Limitations of Series B Special Voting Preferred Stock, dated June 14, 2021	8-K	16-Jun-21	
3.5.0	Amended and Restated Bylaws	8-K	26-Oct-16	
4.1.0	Form of Investor Warrant	10-K	2-Mar-22	
4.2.0	Form of Broker Warrant	10-K	2-Mar-22	
4.3.0	Form of Common Stock	10-K	2-Mar-22	
4.4.0	Form of Common Stock Purchase Warrant (issued in June 2022)	8-K	27-June-22	
4.5.0	Certificate of Incorporation of 2798832 Ontario Inc., dated December 9, 2020			X
4.5.1	Articles of Amendment of 2798832 Ontario Inc, dated February 3, 2021			X
4.5.2	Articles of Amendment of Metamaterial Exchangeco Inc., dated June 25, 2021			X
4.6.0	Description of Secruities			X
9.1.0	Voting and Exchange Trust Agreement by and among the Company and Metamaterial Exchangeco Inc. and AST Trust Company (Canada)			X
10.1.0	Highfield Park, Dartmouth, NS - Lease 20200828 - Original Document	10-K	2-Mar-22	
10.2.0	Highfield Park, Dartmouth, NS - Lease 20210603 - Amendment June 1, 2021	10-K	2-Mar-22	
10.3.0	Highfield Park, Dartmouth, NS - Subscription Agreement	10-K	2-Mar-22	
10.4.0+	Employment Agreement with George Palikaras, dated July 1, 2021	10-K	2-Mar-22	
10.5.0	QMB Innovation Centre, London-Lease 20221022-Modification&Expension			X
10.6.0	Burnaby-Vancouver-BC-Lease-20220601-Modification			X
10.7.0+	Employment Agreement with Kenneth Rice, dated December 11, 2020	10-K	2-Mar-22	
10.8.0+	Employment Agreement with Jonathan Waldern dated December 16, 2020	10-K	2-Mar-22	
10.09.0	Form of Meta Materials Inc. Indemnification Agreement (Incorporated by reference form 8-k filed with the SEC on June 29, 2021)	10-K	2-Mar-22	
10.10.0	Form of Stock Option Agreement	10-Q/A	1-June-22	
10.11.0	Form of Restricted Stock Unit Agreement	10-Q/A	1-June-22	
10.12.0	Form of Amended and Restated Securities Purchase Agreement, dated June 27, 2022	8-K	27-June-22	
10.13.0+	Amended and Restated Stock Option Plan	S-8	26-Aug-21	
10.14.0+	2021 Equity Incentive Plan	S-8	22-Mar-22	
10.15.0	Outside Director Compensation Plan			X
21.1.0	List of Subsidiaries			X
23.1.0	Consent of Independent Registered Public Accounting Firm			X
24.1.0	Power of Attorney (included in signature page hereto)			
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002			X
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002			X
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002			X

32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	X
101.SCH	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.	X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document	X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document	X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document	X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document	X
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)	X

+ Indicates management contract or compensatory plan.

*The certifications attached as Exhibits 32.1 and 32.2 that accompany this Annual Report on Form 10-K are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Meta Materials Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K, irrespective of any general incorporation language contained in such filing.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Report to be signed on its behalf by the undersigned, thereunto duly authorized.

Meta Materials Inc.

Dated: March 23, 2023 By: /s/ George Palikaras

George Palikaras
President, Chief Executive Officer and director
(Principal Executive Officer)

Dated: March 23, 2023 By: /s/ Ken Rice

Ken Rice
Chief Financial Officer and Chief Operating Officer
(Principal Financial and Accounting Officer)

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints George Palikaras and Ken Rice and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming that all said attorneys-in-fact and agents, or any of them or their or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this Annual Report on Form 10-K has been signed by the following persons on behalf of the Registrant and in the capacities and on the dates indicated:

Signature	Title	Date
/s/ George Palikaras **George Palikaras**	President, Chief Executive Officer, and Director *(Principal Executive Officer)*	23-Mar-23
/s/ Kenneth Rice **Kenneth Rice**	Chief Financial Officer and Chief Operating Officer *(Principal Financial Officer and Accounting Officer)*	23-Mar-23
/s/ John Harding **John Harding**	Chair of the Board	23-Mar-23
/s/ Maurice Guitton **Maurice Guitton**	Director	23-Mar-23
/s/ Allison Christilaw **Allison Christilaw**	Director	23-Mar-23
/s/ Steen Karsbo **Steen Karsbo**	Director	23-Mar-23
/s/ Eric Leslie **Eric Leslie**	Director	23-Mar-23
/s/ Ken Hannah **Ken Hannah**	Director	23-Mar-23

DISTRIBUTION AGREEMENT BETWEEN META MATERIALS, INC. AND NEXT BRIDGE HYDROCARBONS, INC.

Dated September 2, 2022

DISTRIBUTION AGREEMENT

THIS DISTRIBUTION AGREEMENT, made and entered into effective as of September 2, 2022 (this "**Agreement**"), is by and between **META MATERIALS, INC.**, a Nevada corporation (formerly known as Torchlight Energy Resources, Inc., "**Parent**"), and **NEXT BRIDGE HYDROCARBONS, INC.**, a Nevada corporation, and, as of the date hereof, a wholly-owned subsidiary of Parent ("**NBH**"). Parent and NBH are each a "Party" and are sometimes referred to herein as the "Parties". Certain capitalized terms used in this Agreement are defined in Section 1.1.

WITNESSETH:

WHEREAS, Parent and NBH previously entered into an Assignment of Company Interests and Stock Power dated as of June 28, 2022 (the "**Assignment Agreement**"), pursuant to which Parent contributed to NBH the equity interests of certain entities that were previously wholly-owned subsidiaries of Parent;

WHEREAS, Parent intends to divest all of its ownership interest in NBH through a distribution of outstanding shares of NBH Common Stock to the persons holding shares of Parent Series A Preferred Stock (each, a "**Parent Shareholder**" and one or more, "**Parent Shareholders**") on the Record Date, without any consideration being paid by such Parent's stockholders, pursuant to the terms and subject to the conditions of this Agreement (the "**Distribution**"); and

WHEREAS, it is appropriate and desirable to set forth the principal corporate transactions required to effect the Distribution, as well as certain other agreements all on the terms and conditions set forth below.

NOW, THEREFORE, for and in consideration of the premises and the covenants and agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and intending to be legally bound hereby, the parties hereby agree as follows:

ARTICLE I
DEFINITIONS

1.1 Certain Definitions.

For purposes of this Agreement, the following terms shall have the meanings specified in this Section 1.1:

"**AAA Commercial Arbitration Rules**" shall have the meaning set forth in Section 5.2(a).

"**Action**" means any demand, action, claim, dispute, suit, countersuit, arbitration, inquiry, proceeding or investigation by or before any federal, state, local, foreign or international Governmental Entity or any arbitration or mediation tribunal.

"**Affiliate**" means, when used with respect to a specified Person, a Person that, directly or indirectly, through one or more intermediaries, controls, is controlled by or is under common control with such specified Person. For the purpose of this definition, "control" (including with correlative meanings, "controlled by" and "under common control with"), when used with respect to any specified Person, means the possession, directly or indirectly, of the power to direct or cause the direction of the

management and policies of such Person, whether through the ownership of voting securities or other interests, by contract, agreement, obligation, indenture, instrument, lease, promise, arrangement, release, warranty, commitment, undertaking or otherwise. It is expressly agreed that, from and after the Effective Time and for purposes of this Agreement and the Ancillary Agreements, NBH shall not be deemed to be an Affiliate of Parent, and Parent shall not be deemed to be an Affiliate of NBH.

"**Ancillary Agreements**" means the (i) Tax Matters Agreement, (ii) Assignment Agreement, (iii) 8% Secured Promissory Note, dated October 1, 2021, issued by Oilco Holdings, Inc., a Nevada corporation (now known as Next Bridge Hydrocarbons, Inc.), in an original principal amount of up to $15 million in favor of Parent and (iv) unsecured Loan Agreement, dated September 2, 2022 by and among NBH, Torchlight Energy, Inc., a Nevada corporation, Torchlight Hazel, LLC, a Texas limited liability company, Hudspeth Oil Corporation, a Texas corporation, Hudspeth Operating, LLC, a Texas limited liability company and Parent.

"**Assignment Agreement**" has the meaning set forth in the Recitals. "**Code**" means the Internal Revenue Code of 1986, as amended.

"**Consent**" means any consent, waiver or approval from, or notification requirement to, any third parties.

"**Dispute**" means any controversy or dispute with respect to the interpretation or enforcement of this Agreement.

"**Distribution**" has the meaning set forth in the Recitals.

"**Distribution Agent**" means the distribution agent to be appointed by Parent to distribute to the Parent Shareholders all of the outstanding shares of NBH pursuant to the Distribution.

"**Distribution Date**" means the date on which Parent, through the Distribution Agent, distributes all of the issued and outstanding shares of NBH to Parent Shareholders in the Distribution.

"**Effective Time**" means 5:00 p.m. Central Time, or such other time as Parent may determine, on the Distribution Date.

"**Force Majeure**" means, with respect to a Party, an event beyond the control of such Party (or any Person acting on its behalf), which by its nature could not have been reasonably foreseen by such Party (or such Person) or, if it could have been reasonably foreseen, was unavoidable, and includes acts of God, storms, floods, riots, labor unrest, pandemics, nuclear incidents, fires, sabotage, civil commotion or civil unrest, interference by civil or military authorities, acts of war (declared or undeclared) or armed hostilities, or other national or international calamity or one or more acts of terrorism or failure of energy sources or distribution or transportation facilities.

"**Governmental Approvals**" means any notice, report or other filing to be made with, or any consent, registration, approval, permit or authorization to be obtained from, any Governmental Entity; provided, however, that no consent required from any counterparty to any contract shall constitute a Governmental Approval for purposes of this Agreement.

"**Governmental Entity**" means any domestic or foreign (whether national, federal, state, provincial, local or otherwise) government or any court, administrative agency or commission or other governmental or regulatory authority or agency, domestic or foreign.

"**Group**" means either the NBH Group or the Parent Group, as the context requires. "**Indemnifying Party**" shall have the meaning set forth in Section 6.3(a).
"**Indemnitee**" shall have the meaning set forth in Section 6.3(a).

"**Indemnity Payment**" shall have the meaning set forth in Section 6.3(a).

"**Information**" means documents and information, whether or not patentable or copyrightable, in written, oral, electronic or other tangible or intangible form, stored in any medium, including studies, reports, records, books, contracts, instruments, surveys, discoveries, ideas, concepts, know-how, techniques, designs, specifications, drawings, blueprints, diagrams, models, prototypes, samples, flow charts, data, computer data, disks, diskettes, tapes, computer programs or other software, marketing plans, customer names, communications by or to attorneys (including attorney-client privileged communications), memoranda and other materials prepared by attorneys or under their direction (including attorney work product), and other technical, financial, employee or business information or data.

"**Insurance Proceeds**" means those monies:

(a) received by an insured from an insurance carrier; or

(b) paid by an insurance carrier on behalf of the insured;

in either such case net of any applicable premium adjustments (including reserves and retrospectively rated premium adjustments) and net of any costs or expenses incurred in the collection thereof; provided, however, that with respect to a captive insurance arrangement, Insurance Proceeds shall only include net amounts received by the captive insurer from a Third Party in respect of any captive reinsurance arrangement.

"**Law**" means any national, supranational, federal, state, provincial, local or similar law (including common law), statute, code, order, ordinance, rule, regulation, treaty (including any income tax treaty), license, permit, authorization, approval, consent, decree, injunction, binding judicial or administrative interpretation or other requirement, in each case, enacted, promulgated, issued or entered by a Governmental Entity.

"**Lien**" means any pledges, claims, liens, charges, options, rights of first refusal, encumbrances and security interests of any kind or nature whatsoever (including any limitation on voting, sale, transfer or other disposition or exercise of any other attribute of ownership).

"**Losses**" means actual losses (including any diminution in value), costs, damages, fines, penalties and expenses (including legal and accounting fees and expenses and costs of investigation and litigation), whether or not involving a Third-Party Claim.

"**NBH Common Stock**" means the common stock, $0.0001 par value, of NBH.

"**NBH Group**" means NBH, each Subsidiary of NBH immediately after the Effective Time and each Affiliate of NBH immediately after the Effective Time.

"**NBH Indemnities**" has the meaning set forth in Section 6.2.

"**NBH Liabilities**" means any and all liabilities associated with or relating to the oil and gas operations of Parent whether before or after the Distribution, including, without limitation, any environmental liabilities, any obligation or liability resulting from the extinguishment of debt on or about March 9, 2020 relating to Parent's Series C Unsecured Convertible Promissory Notes, and any liabilities that are expressly provided by this Agreement or any Ancillary Agreement as liabilities to be assumed by NBH.

"**Parent Group**" means Parent, each Subsidiary of Parent immediately after the Effective Time and each Affiliate of Parent immediately after the Effective Time (in each case other than any member of the NBH Group).

"**Parent Indemnitees**" has the meaning set forth in Section 6.2.

"**Parent Preferred Stock**" means the Series A Preferred Stock, $0.0001 par value, of Parent. "**Parent Shareholder**" and "**Parent Shareholders**" have the meaning set forth in the Recitals.

"**Person**" means any individual, general or limited partnership, corporation, business trust, joint venture, association, company, limited liability company, unincorporated organization, a limited liability entity, any other entity and any Governmental Entity.

"**Privilege**" has the meaning set forth in Section 4.4.

"**Prospectus**" means the Prospectus attached to the S-1, including any amendment or supplement thereto.

"**Record Date**" means 5:00 p.m. Central Time on the date to be determined by the Board of Directors of Parent as the Record Date for determining Parent Shareholders entitled to receive shares of NBH Common Stock in the Distribution.

"**Record Holders**" means the holders of record of Parent Preferred Stock as of the Record Date.

"**Representatives**" means, with respect to any Person, any of such Person's directors, officers, employees, agents, consultants, advisors, accountants, attorneys or other representatives.

"**S-1**" means the registration statement on Form S-1 filed by NBH with the SEC in connection with the Distribution, including any amendments or supplements thereto.

"**SEC**" means the U.S. Securities and Exchange Commission. "**Securities Act**" means the Securities Act of 1933, as amended.

"**Subsidiary**" or "**subsidiary**" means, with respect to any Person, any corporation, limited liability company, joint venture or partnership of which such Person (a) beneficially owns, either directly or indirectly, more than fifty percent (50%) of (i) the total combined voting power of all classes of voting securities of such Person, (ii) the total combined equity interests or (iii) the capital or profit interests, in the case of a partnership, or (b) otherwise has the power to vote, either directly or indirectly, sufficient securities to elect a majority of the board of directors or similar governing body.

"**Taxing Authority**" means a Governmental Entity having jurisdiction over the assessment, determination, collection, or other imposition of any Tax.

"**Tax Matters Agreement**" means the Tax Matters Agreement, dated as of the date hereof, between Parent and NBH, in substantially the form attached as Exhibit A hereto, as such agreement may be modified or amended from time to time in accordance with its terms.

"**Tax Return**" means any return, declaration, report, claim for refund, property rendition or information return or statement relating to Taxes, including any schedule or attachment thereto and including any amendment thereof.

"**Taxes**" means (a) all federal, state, local or foreign income, gross receipts, license, payroll, employment, excise, severance, stamp, occupation, premium, windfall profits, environmental (including taxes under Section 59A of the Code), customs, duties, capital stock, franchise, margins, profits, withholding, social security (or similar), unemployment, disability, real property, personal property, sales, use, transfer, escheat, registration, value added, wealth, net wealth, net worth, alternative or add-on minimum, estimated or any other taxes, unclaimed property liabilities, any payments in lieu of taxes or other similar payments, charges, fees, fines, levies, imposts, customs or duties of any kind, whatsoever, including any interest, penalty, fines, or addition thereto, whether disputed or not and including any obligations to indemnify or otherwise assume or succeed to the Tax liability of any other Person or
(b) any liability for the payment of any taxes, interest, penalty, addition to tax or like additional amount resulting from the application of Treasury Regulation Section 1.1502-6 or comparable federal, state or local Law.

"**Third Party**" shall have the meaning set forth in Section 6.4(a).

"**Third-Party Claim**" shall have the meaning set forth in Section 6.4(a).

ARTICLE II

CERTAIN ACTIONS AT OR PRIOR TO THE DISTRIBUTION

2.1 Time and Place of Distribution.

Subject to the terms and conditions of this Agreement, the Distribution shall be consummated on the Distribution Date.

2.2 Pre-Distribution Transactions.

(a) On or prior to the Distribution Date, the appropriate parties shall enter into the Ancillary Agreements.

(b) NBH shall file with the SEC any amendments or supplements to the S-1 as may be necessary or advisable in order to cause the S-1 to become and remain effective as required by the SEC or federal, state or other applicable securities Laws. Parent and NBH shall cooperate in preparing, filing with the SEC and causing to become effective registration statements or amendments thereof which are required to reflect the establishment of, or amendments to, any employee benefit and other plans necessary or advisable in connection with the transactions contemplated by this Agreement and the Ancillary Agreements. Parent and NBH shall take all such action as may be necessary or advisable under the securities or "blue sky" Laws of the United States (and any comparable Laws under any non-U.S. jurisdiction) in connection with the transactions contemplated by this Agreement and the Ancillary Agreements.

ARTICLE III THE DISTRIBUTION

3.1 The Distribution.

(a) On or prior to the Distribution Date, Parent shall deliver to the Distribution Agent, for the benefit of the Record Holders, book-entry transfer authorizations for such number of the outstanding shares of NBH Common Stock as is necessary to effect the Distribution.

(b) The Effective Time on the Distribution Date shall be 5:00 p.m. Central Time, or such other time as Parent may determine.

(c) Parent shall instruct the Distribution Agent to distribute, as soon as practicable following the Effective Time, to each Record Holder one share of NBH Common Stock for every one (1) share of Parent Preferred Stock held by such Record Holder as of the Record Date.

3.2 Actions in Connection with the Distribution.

(a) NBH shall make available to the Parent Shareholders, at such time on or prior to the Distribution Date, any information concerning NBH, its business, operations and management, the Distribution and such other matters as may be required by Law.

(b) Promptly after receiving a request from Parent, NBH shall take all such actions as may be necessary or appropriate under the state securities or Blue Sky Laws of the United States (and any comparable Laws under any foreign jurisdiction) in connection with the Distribution.

(c) NBH shall take all reasonable steps necessary and appropriate to cause the conditions set forth in Section 3.3 to be satisfied and to effect the Distribution, or any portion thereof, on the Distribution Date.

3.3 Conditions to Distribution.

The following are conditions to the consummation of any part of the Distribution. The conditions are for the sole benefit of Parent and shall not give rise to or create any duty on the part of Parent or Parent's board of directors to waive or not waive any such condition.

(a) The actions and filings with regard to state securities and Blue Sky Laws of the United States (and any comparable Laws under any foreign jurisdictions) described in Section 2.2(b) shall have been taken and, where applicable, have become effective or been accepted.

(b) Any material Consents necessary to consummate the Distribution or any portion thereof shall have been obtained and be in full force and effect.

(c) The S-1 registering the NBH Common Stock shall be effective under the Securities Act.

(d) No order, injunction or decree issued by any court or agency of competent jurisdiction or other legal restraint or prohibition preventing the consummation of all or any portion of the Distribution shall be in effect, and no other event outside the control of Parent shall have occurred or failed to occur that prevents the consummation of all or any portion of the Distribution.

(e) Each of the Ancillary Agreements shall have been duly executed and delivered by the parties thereto.

(f) Parent's Board of Directors shall have approved the Distribution and shall have not determined that any events or developments shall have occurred that make it inadvisable to effect the Distribution.

3.4 Closing. The closing and consummation of the transactions contemplated by this Agreement to occur prior to or on the Distribution Date shall take place at the principal office of Parent.

3.5 Withholding Taxes. Notwithstanding anything to the contrary in this Agreement, Parent, the Distribution Agent and each of their Affiliates and Representatives (each, a "**Withholding Agent**") shall be entitled to deduct and withhold, or cause to be deducted and withheld, from any amounts payable or otherwise deliverable pursuant to this Agreement such amounts as may be required to be deducted or withheld therefrom under any provision of U.S. federal, state, local or non-U.S. Tax Law. If a Withholding Agent intends to deduct or withhold any Taxes as required by Law from any amounts payable or otherwise deliverable to NBH pursuant to this Agreement, such Withholding Agent shall use commercially reasonable efforts to provide reasonable advance notice of its intent to deduct or withhold such amounts and shall use commercially reasonable efforts to cooperate with NBH to mitigate, reduce or eliminate such deduction or withholding. To the extent such amounts are so deducted or withheld, such amounts shall be treated for all purposes under this Agreement as having been paid to the Person to whom such amounts would otherwise have been paid.

3.6 General Representation and Warranties.

(a) Each Party has all requisite power and authority necessary to carry out the transactions contemplated by this Agreement.

(b) The execution, delivery and performance of this Agreement have been duly authorized by each Party, and this Agreement constitutes a valid and binding obligation of each Party, enforceable in accordance with its terms, except as enforceability may be limited or affected by applicable bankruptcy, insolvency, reorganization or other laws of general application relating to or affecting the rights of creditors and except as enforceability may be limited by rules of law governing specific performance, injunctive relief or other equitable remedies.

(c) Neither the execution and delivery of this Agreement to which such Party is a party, and none of the transactions contemplated hereby shall (i) violate any provision of the governing documents of such Party, (ii) violate any Law or other restriction to which such Party is subject, or (iii) result in the imposition of any Lien upon any of the assets, of such Party. Other than the S-1, neither Party is required to give notice to, make any filing with, or obtain any authorization, consent or approval of any Governmental Entity in order for the Parties to consummate the transactions contemplated by this Agreement.

3.7 Tax Representations and Warranties.

(a) Except to the extent as would not have a material adverse effect on NBH or its Subsidiaries:

(i) each of Parent and its Subsidiaries has (1) duly and timely filed or caused to be filed all Tax Returns required to be filed by them with the appropriate Taxing Authority, and each Tax Return of Parent and its Subsidiaries is true, complete and correct in all material

respects, and (2) paid all Taxes due or claimed due by a Taxing Authority (whether or not shown as due on a filed Tax Return) from or with respect to it; and

(ii) there are no currently proposed or pending adjustments by any Taxing Authority in connection with any Tax Returns relating to NBH or any of its Subsidiaries, and no waiver or extension of any statute of limitations as to any U.S. federal, state, local or non-U.S. Tax matter relating to each of NBH and its Subsidiaries has been given by or requested from Parent or its Subsidiaries with respect to any Tax year.

(b) Neither NBH nor any of its Subsidiaries has constituted either a "distributing corporation" or a "controlled corporation" in a distribution of stock qualifying for tax-free treatment under Section 355 of the Code (i) in the two years prior to the date of this Agreement, or (ii) in a distribution which could otherwise constitute part of a "plan" or "series of related transactions" (within the meaning of Section 355(e) of the Code) that includes the transactions contemplated by this Agreement.

3.8 Transition Services. Except as otherwise provided in any Ancillary Agreement, as of the Effective Time Parent shall not be obligated to provide any services that it had been previously providing to NBH.

3.9 Post-Distribution Liabilities. As of the Effective Time, NBH shall become responsible and liable for all NBH Liabilities.

ARTICLE IV
COVENANTS

4.1 Agreement for Exchange of Information; Access to Employees.

Except as otherwise provided in any Ancillary Agreement, each of Parent and NBH, on behalf of itself and the members of its respective Group, shall use commercially reasonable efforts to provide or make available, or cause to be provided or made available, to the other Party, at any time before or after the Effective Time, as soon as reasonably practicable after written request therefor, any Information (or a copy thereof) in the possession or under the control of either Party or any of its Subsidiaries to the extent that: (i) such Information relates to NBH if NBH is the requesting Party, or to Parent if Parent is the requesting Party; (ii) such Information is required by the requesting Party to comply with its obligations under this Agreement or any Ancillary Agreement; (iii) such Information is required by the requesting Party in connection with any litigation, legal proceeding or dispute involving the requesting Party; or (iv) such Information is required by the requesting Party to comply with any obligation imposed by any Governmental Entity; provided, however, that, in the event that the Party to whom the request has been made determines that any such provision of Information could be commercially detrimental, violate any Law or agreement or waive any attorney-client privilege, then the Parties shall use commercially reasonable efforts to permit compliance with such obligations to the extent and in a manner that avoids any such harm or consequence. The Party providing Information pursuant to this Section 4.1 shall only be obligated to provide such Information in the form, condition and format in which it then exists and in no event shall such Party be required to perform any improvement, modification, conversion, updating or reformatting of any such Information.

In addition, each of Parent and NBH, on behalf of itself and the members of its respective Group, shall use commercially reasonable efforts to provide or make available, or cause to be provided or made available, to the other Party, at any time before or after the Effective Time, as soon as reasonably

practicable after written request therefor, such Party's employees to support and in connection with any litigation, legal proceeding or dispute involving the requesting Party.

4.2 Ownership of Information. Any Information owned by one Group that is provided to a requesting Party pursuant to Section 4.1 shall remain the property of the providing Party. Unless specifically set forth herein, nothing contained in this Agreement shall be construed as granting or conferring rights of license or otherwise in any such Information.

4.3 Compensation for Providing Information. The Party requesting Information agrees to reimburse the other Party for the reasonable out-of-pocket costs, if any, of creating, gathering and copying such Information or otherwise complying with the request with respect to such Information.

4.4 Additional Indebtedness to Parent.

(a) No later than three months after the Distribution, the Parties hereby agree to negotiate in good faith the settlement and agreement regarding (i) advances made to NBH by Parent or paid by Parent on behalf of NBH, whether before or after the Distribution (including the Credit Amount, as defined below), and (ii) the costs related to the Spin-Off to be borne by NBH that were not otherwise advanced to NBH by Parent prior to the Distribution, i.e. pursuant to the 8% Secured Promissory Note, dated October 1, 2021, issued by Oilco Holdings, Inc., a Nevada corporation (now known as Next Bridge Hydrocarbons, Inc.), in an original principal amount of up to $15 million in favor of Parent and the Loan Agreement dated September 2, 2022 by and among NBH, Torchlight Energy, Inc., a Nevada corporation, Torchlight Hazel, LLC, a Texas limited liability company, Hudspeth Oil Corporation, a Texas corporation, Hudspeth Operating, LLC, a Texas limited liability company and Parent. NBH shall then enter into a promissory note in favor of Parent for that amount owed by NBH to Parent. Such aggregate amount owed by NBH to Parent is currently not expected to exceed $11 million.

(b) To the extent Parent has signed credit applications with trade creditors of NBH, for NBH's benefit, to allow NBH to pursue its drilling obligations under the leases for the Orogrande Basin in order to maintain such leases, the aggregate amount, including any cash down-payments, for which Parent is guaranteeing NBH's obligations to such trade creditors (the "**Credit Amount**") shall be due and payable from NBH if Parent actually pays any such amounts.

ARTICLE V

DISPUTE RESOLUTION

5.1 General Provisions.

(a) Any dispute, controversy or claim arising out of or relating to this Agreement or the Ancillary Agreements (except as otherwise set forth in any such Ancillary Agreements)(a "**Dispute**"), including (i) the validity, interpretation, breach or termination thereof or (ii) whether any liability not specifically characterized in this Agreement or the Ancillary Agreements, whose proper characterization is disputed, shall be resolved in accordance with the procedures set forth in this Article V, which shall be the sole and exclusive procedures for the resolution of any such Dispute unless otherwise specified in the applicable Ancillary Agreement or in this Article V.

(b) THE PARTIES EXPRESSLY WAIVE AND FOREGO ANY RIGHT TO TRIAL BY JURY.

(c) The specific procedures set forth in this Article V, including the time limits referenced herein, may be modified by agreement of both of the Parties in writing.

(d) All applicable statutes of limitations and defenses based upon the passage of time shall be tolled while the procedures specified in this Article V are pending. The Parties shall take any necessary or appropriate action required to effectuate such tolling.

(e) All communications between the Parties or their representatives in connection with the attempted resolution of any Dispute shall be deemed to have been delivered in furtherance of a Dispute settlement and shall be exempt from discovery and production, and shall not be admissible into evidence for any reason (whether as an admission or otherwise), in any arbitral or other proceeding for the resolution of any Dispute.

5.2 Arbitration.

(a) In the event any Dispute is not finally resolved between the Parties pursuant to good faith negotiations, and unless the Parties have mutually agreed to mediate or use some other form of alternative dispute resolution in an attempt to resolve the Dispute, then such Dispute may be submitted by either Party to be finally resolved by binding arbitration pursuant to the AAA Commercial Arbitration Rules as then in effect (the "**AAA Commercial Arbitration Rules**").

(b) Without waiving its rights to any remedy under this Agreement, either Party may seek any interim or provisional relief that is necessary to protect the rights or property of that Party either (i) before any federal or state court in Dallas County, Texas, (ii) before a special arbitrator, as provided for under the AAA Commercial Arbitration Rules, or (iii) before the arbitral tribunal established hereunder.

(c) Unless otherwise agreed by the Parties in writing, any Dispute to be decided in arbitration hereunder shall be decided (i) before a sole arbitrator if the amount in dispute, inclusive of all claims and counterclaims, totals less than $1,000,000; or (ii) by an arbitral tribunal of three (3) arbitrators if (A) the amount in dispute, inclusive of all claims and counterclaims, is equal to or greater than $1,000,000 or (B) either Party elects in writing to have such dispute decided by three (3) arbitrators when one of the Parties believes, in its sole judgment, the issue could have significant precedential value; however, the Party who makes such election under clause (B) shall solely bear the increased costs and expenses associated with a panel of three (3) arbitrators (i.e., the additional costs and expenses associated with the two (2) additional arbitrators).

(d) A panel of three (3) arbitrators shall be chosen as follows: (i) upon the written demand of either Party and within fifteen (15) days from the date of receipt of such demand, each Party shall name an arbitrator selected by such Party in its sole discretion; and (ii) the two (2) party-appointed arbitrators shall thereafter, within thirty (30) days from the date on which the second of the two (2) arbitrators was named, name a third, independent arbitrator who shall act as chairperson of the arbitral tribunal. In the event that either Party fails to name an arbitrator within fifteen (15) days from the date of receipt of a written demand to do so, then upon written application by either Party, that arbitrator shall be appointed pursuant to the AAA Commercial Arbitration Rules. In the event that the two (2) party-appointed arbitrators fail to appoint the third, independent arbitrator within thirty (30) days from the date on which the second of the two (2) arbitrators was named, then upon written application by either Party, the third, independent arbitrator shall be appointed pursuant to AAA Commercial Arbitration Rules. If the arbitration shall be before a sole independent arbitrator, then the sole independent arbitrator shall be appointed by agreement of the Parties within fifteen (15) days from the date of receipt of written demand of either Party. If the Parties cannot agree to a sole independent arbitrator, then upon written application

by either Party, the sole independent arbitrator shall be appointed pursuant to AAA Commercial Arbitration Rules.

(e) The place of arbitration shall be Dallas County, Texas. Along with the arbitrator(s) appointed, the Parties shall agree to a mutually convenient location, date and time to conduct the arbitration, but in no event shall the final hearing(s) be scheduled more than six (6) months from submission of the Dispute to arbitration unless the Parties agree otherwise in writing.

(f) Neither Party shall be bound by Rule 13 of the Federal Rules of Civil Procedure or any analogous Law or provision in the AAA Commercial Arbitration Rules governing deadlines for compulsory counterclaims; rather, each Party shall be free to bring a counterclaim at any time (subject to any applicable statutes of limitation).

(g) So long as either Party has a timely claim to assert, the agreement to arbitrate Disputes set forth in this Section 5.2 shall continue in full force and effect subsequent to, and notwithstanding the completion, expiration or termination of, this Agreement.

(h) The interim or final award in an arbitration pursuant to this Article V shall be conclusive and binding upon the Parties, and a Party obtaining a final award may enter judgment upon such award in any federal or state court in Dallas County, Texas.

(i) It is the intent of the Parties that the agreement to arbitrate Disputes set forth in this Section 5.2 shall be interpreted and applied broadly such that all reasonable doubts as to arbitrability of a Dispute shall be decided in favor of arbitration.

(j) The Parties agree that any Dispute submitted to arbitration shall be governed by, and construed and interpreted in accordance with Laws of the State of Nevada and, except as otherwise provided in this Article V or mutually agreed to in writing by the Parties, the Federal Arbitration Act, 9
U.S.C. §§ 1 et seq., shall govern any arbitration between the Parties pursuant to this Section 5.2.

(k) Subject to Section 5.2(c)(ii)(B), each Party shall bear its own fees, costs and expenses and shall bear an equal share of the costs and expenses of the arbitration, including the fees, costs and expenses of the three (3) arbitrators; provided that the arbitral tribunal may award the prevailing Party its reasonable fees and expenses (including attorneys' fees), if it finds that there was no good faith basis for the position taken by the other Party in the arbitration.

(l) Notwithstanding anything in this Article V to the contrary, any disputes relating to the interpretation of Article VI or requesting injunctive relief or specific performance shall be conducted according to the fast-track arbitration procedures of the AAA Commercial Arbitration Rules then in effect.

5.3. Allocation of Undetermined Liabilities and Third-Party Claims.

(a) If either Party or any of its Subsidiaries shall receive notice or otherwise learn of the assertion of a liability or Third-Party Claim which is not determined to be a NBH Liability or a retained liability of Parent, such Party shall give the other Party written notice thereof promptly (and in any event within 15 days) after such Person becomes aware of such liability or Third-Party Claim. Thereafter, the Party shall deliver to the other Party, promptly (and in any event within 10 calendar days) after the Party's receipt thereof, copies of all notices and documents (including court papers) received by the Party relating to the matter. If a dispute shall arise between the Parties as to the proper characterization of any liability,

the dispute shall be attempted to be resolved between the Parties pursuant to good faith negotiations, and if unable, then pursuant to binding arbitration in accordance with Section 5.2 hereof.

(b) Parent may commence defense of any unallocated Third-Party Claims but shall not be obligated to do so. If Parent commences any such defense and subsequently NBH is determined hereunder to have the exclusive obligation to such Third-Party Claim, then, upon the request of NBH, Parent shall promptly discontinue the defense of such matter and transfer the control thereof to NBH. In such event, NBH will reimburse Parent for all costs and expenses incurred prior to resolution of such dispute in the defense of such Third-Party Claim.

(c) NBH may commence defense of any unallocated Third-Party Claims but shall not be obligated to do so. If NBH commences any such defense and subsequently Parent is determined hereunder to have the exclusive obligation to such Third-Party Claim, then, upon the request of Parent, NBH shall promptly discontinue the defense of such matter and transfer the control thereof to Parent. In such event, Parent will reimburse NBH for all costs and expenses incurred prior to resolution of such dispute in the defense of such Third-Party Claim.

ARTICLE VI

MUTUAL RELEASES; INDEMNIFICATION; COOPERATION

6.1 Release of Pre-Distribution Claims.

(a) Except as provided in Section 6.1(b) and Section 6.1(d), effective as of the Effective Time, each Party does hereby, on behalf of itself and its successors and assigns, release and forever discharge the other Party, each Subsidiary of such other Party and their respective successors and assigns, and all Persons who at any time prior to the Distribution Date have been directors, officers or employees of such other Party (in each case, in their respective capacities as such), and their respective successors and assigns, from any and all demands, Actions and liabilities whatsoever, whether at law or in equity, whether arising under any contract or agreement, by operation of law or otherwise, existing or arising from any acts or events occurring or failing to occur or alleged to have occurred or to have failed to occur or any conditions existing or alleged to have existed on or before the Distribution Date, including in connection with the transactions and all other activities to implement the Distribution. Parent shall cause each of the other parties of the Parent Group to, effective as of the Effective Time, release and forever discharge each of the NBH Indemnitees as and to the same extent as the release and discharge provided by Parent pursuant to this Section 6.1(a). NBH shall cause each of the other parties of the NBH Group to, effective as of the Effective Time, release and forever discharge each of the Parent Indemnitees as and to the same extent as the release and discharge provided by NBH pursuant to this Section 6.1(a).

(b) Nothing contained in Section 6.1(a) shall impair any right of any Person identified in Section 6.1(a) to enforce this Agreement or any Ancillary Agreement. Nothing contained in Section 6.1(a) shall release or discharge any Person from any liability that any Party may have with respect to indemnification pursuant to this Agreement.

(c) No Party shall make, nor permit any of its Subsidiaries to make, any claim or demand, or commence any Action asserting any claim or demand against the other Party, or any other Person released pursuant to Section 6.1(a), with respect to any liability released pursuant to Section 6.1(a).

(d) For the avoidance of any doubt, Section 6.1 and Section 6.3, specifically, and this Agreement, generally, do not release current or former directors or officers of Parent (notwithstanding

whether or not such directors or officers would otherwise fall within the definition of "NBH Group" or "NBH Indemnitees") save and except for any employees or contractors of subsidiaries of Parent that are becoming directors and officers of Parent as of the Distribution Date for any liability to Parent or the Parent Group in respect of pre-Distribution Date misconduct or breaches of fiduciary duty, including but not limited to the claims asserted in the consolidated securities class action pending in the United States District Court for the Eastern District of New York captioned *In re Meta Materials Inc. Securities Litigation*, No. 1:21-cv-07203 or the shareholder derivative action pending in the United States District Court for the Eastern District of New York captioned *Hines v. Palikaras, et al*., No. 1:22-cv-00248.

6.2 **Indemnification by NBH**. Subject to Section 6.5, NBH shall, and shall cause the other members of the NBH Group to, indemnify, defend and hold harmless Parent, each member of the Parent Group and each of their respective directors, officers and employees, and each of the successors and assigns of any of the foregoing (collectively, the "**Parent Indemnitees**"), from and against any and all liabilities of the Parent Indemnitees relating to, arising out of or resulting from any of the following items (without duplication):

(a) any breach by NBH or any member of the NBH Group of any representation, warranty or covenant contained in this Agreement or any of the Ancillary Agreements;

(b) the Hudspeth Oil Corporation and Wolfbone Investments, LLC v. Datalog LWT, Inc. d/b/a Cordax Evaluation Technologies suit, filed on April 30, 2020 in the 189th Judicial District Court of Harris County, Texas and the foreclosure action, Datalog LWT Inc. d/b/a Cordax Evaluation Technologies v. Torchlight Energy Resources, Inc., filed on March 18, 2021 in the 205th Judicial District Court of Hudspeth County, Texas; and

(c) any untrue statement or alleged untrue statement of a material fact or omission or alleged omission to state a material fact required to be stated therein or necessary to make the statements therein not misleading, with respect to all information contained in any of the S-1 (including in any amendments or supplements thereto) or the Prospectus (as amended or supplemented if NBH shall have furnished any amendments or supplements thereto), other than any such statement or omission in the S-1, Prospectus or marketing materials based on information furnished by Parent and solely concerning the Parent Group.

6.3 **Indemnification by Parent**. Subject to Section 6.5, Parent shall, and shall cause the other members of the Parent Group to, indemnify, defend and hold harmless NBH and each member of the NBH Group, and each of the successors and assigns of any of the foregoing (collectively, the "**NBH Indemnitees**"), from and against any and all liabilities of the NBH Indemnitees relating to, arising out of or resulting from any of the following items (without duplication):

(d) any breach by Parent or any member of the Parent Group of any representation, warranty or covenant contained in this Agreement or any Ancillary Agreements;

(e) any untrue statement or alleged untrue statement of a material fact or omission or alleged omission to state a material fact required to be stated therein or necessary to make the statements therein not misleading, with respect to all information contained in any of the S-1 (including in any amendments or supplements thereto), or the Prospectus (as amended or supplemented if NBH shall have furnished any amendments or supplements thereto) filed in connection with this Distribution Agreement, in each case based on information furnished by Parent and solely concerning the Parent Group; and

(c) subject to Section 6.2(b), any liability of the Parent or its Subsidiaries in connection with litigation, whether or not outstanding on the Distribution Date, arising in respect of pre-Distribution Date acts or omissions of the Parent or its Subsidiaries or arising in respect of Parent's consummation of the transactions contemplated herein (including the legal proceedings set forth in Part II, Item 1 of the Parent's Form 10-Q for the quarterly period ended March 31, 2022).

For the avoidance of doubt, nothing in this Section 6.3, specifically, or this Agreement, generally, shall create, extend, modify, limit, change, supplant, replace or amend in any way any obligation of the Parent or the Parent Group to indemnify current or former directors or officers of Parent (notwithstanding whether or not such directors or officers would otherwise fall within the definition of "NBH Group" or "NBH Indemnitees") with respect to pre-Distribution Date misconduct or breaches of fiduciary duty, including but not limited to any misconduct or breaches of fiduciary duty prior to consummation of the Arrangement Agreement between Parent and Metamaterial Inc. on June 28, 2021, including but not limited to any indemnification rights related to the claims asserted in the consolidated securities class action pending in the United States District Court for the Eastern District of New York captioned *In re Meta Materials Inc. Securities Litigation*, No. 1:21-cv-07203 or the shareholder derivative action pending in the United States District Court for the Eastern District of New York captioned *Hines v. Palikaras, et al*., No. 1:22-cv-00248. The current and former directors and officers of Parent and/or Torchlight Energy Resources, Inc. shall retain whatever rights they have to indemnification by Parent or the Parent Group, including but not limited to by contract, Parent's Articles of Incorporation and Bylaws, and/or Nevada law, as of the Distribution Date.

6.4 Indemnification Obligations Net of Insurance Proceeds.

(a) The Parties intend that any liability subject to indemnification or reimbursement pursuant to this Article VI shall be net of Insurance Proceeds that actually reduce the amount of the liability. Accordingly, the amount that any party (an "**Indemnifying Party**") is required to pay to any Person entitled to indemnification hereunder (an "**Indemnitee**") shall be reduced by any Insurance Proceeds theretofore actually recovered by or on behalf of the Indemnitee in respect of the related liability. If an Indemnitee receives a payment (an "**Indemnity Payment**") required by this Agreement from an Indemnifying Party in respect of any liability and subsequently receives Insurance Proceeds, then the Indemnitee shall pay to the Indemnifying Party an amount equal to the excess of the Indemnity Payment received over the amount of the Indemnity Payment that would have been due if the Insurance Proceeds had been received, realized or recovered before the Indemnity Payment was made.

(b) An insurer who would otherwise be obligated to pay any claim shall not be relieved of the responsibility with respect thereto or, solely by virtue of the indemnification provisions hereof, have any subrogation rights with respect thereto, it being expressly understood and agreed that no insurer or any other Third Party shall be entitled to a "windfall" (i.e., a benefit they would not be entitled to receive in the absence of the indemnification provisions hereof) by virtue of the indemnification provisions hereof.

(c) For all claims as to which indemnification is provided under Section 6.2 or 6.3, the reasonable fees and expenses of counsel to the Indemnitee for the enforcement of the indemnity obligations shall be borne by the Indemnifying Party.

6.5 Procedures for Indemnification of Third-Party Claims.

(a) If an Indemnitee shall receive written notice from a Person (including any Governmental Entity) who is not a member of the Parent Group or the NBH Group (a "**Third Party**") of

any claim or of the commencement by any such Person of any action (collectively, a "**Third-Party Claim**") with respect to which an Indemnifying Party may be obligated to provide indemnification to such Indemnitee pursuant to Section 6.2 or 6.3, or any other Section of this Agreement or, subject to Section 6.9, any Ancillary Agreement, such Indemnitee shall give such Indemnifying Party written notice thereof within fourteen (14) days of receipt of such written notice. Any such notice shall describe the Third-Party Claim in reasonable detail and include copies of all notices and documents (including court papers) received by the Indemnitee relating to the Third-Party Claim. Notwithstanding the foregoing, the failure of an Indemnitee to provide notice in accordance with this Section 6.5(a) shall not relieve an Indemnifying Party of its indemnification obligations under this Agreement, except to the extent to which the Indemnifying Party shall demonstrate that it was materially prejudiced by the Indemnitee's failure to provide notice in accordance with this Section 6.5(a).

(b) An Indemnifying Party may elect to defend (and to seek to settle or compromise), at such Indemnifying Party's own expense and by such Indemnifying Party's own counsel, any Third Party Claim. Within thirty (30) days after the receipt of notice from an Indemnitee in accordance with Section 6.5(a) (or sooner, if the nature of such Third-Party Claim so requires), the Indemnifying Party shall notify the Indemnitee of its election whether the Indemnifying Party shall assume responsibility for defending such Third-Party Claim. After notice from an Indemnifying Party to an Indemnitee of its election to assume the defense of a Third-Party Claim, such Indemnitee shall have the right to employ separate counsel and to participate in (but not control) the defense, compromise, or settlement thereof, but the fees and expenses of such counsel shall be the expense of such Indemnitee except as otherwise expressly set forth herein.

(c) If an Indemnifying Party has elected to assume the defense of a Third-Party Claim, then such Indemnifying Party shall be solely liable for all fees and expenses incurred by it in connection with the defense of such Third-Party Claim and shall not be entitled to seek any indemnification or reimbursement from the Indemnitee for any such fees or expenses incurred during the course of its defense of such Third Party Claim, regardless of any subsequent decision by the Indemnifying Party to reject or otherwise abandon its assumption of such defense. If an Indemnifying Party elects not to assume responsibility for defending any Third-Party Claim or fails to notify an Indemnitee of its election within thirty (30) days after receipt of a notice from an Indemnitee, such Indemnitee shall have the right to control the defense of such Third-Party Claim, in which case the Indemnifying Party shall be liable for all reasonable fees and expenses incurred by the Indemnitee in connection with the defense of such Third-Party Claim.

(d) Notwithstanding an election by an Indemnifying Party to defend a Third-Party Claim pursuant to Section 6.5(b), a Indemnitee may, upon notice to the Indemnifying Party, elect to take over the defense of such Third-Party Claim if (i) in its exercise of reasonable business judgment, the Indemnitee determines that the Indemnifying Party is not defending such Third-Party Claim competently or in good faith, (ii) the Indemnitee determines in its exercise of reasonable business judgment that there exists a compelling business reason for such Indemnitee to defend such Third-Party Claim (other than as contemplated by the foregoing clause (i)), (iii) the Indemnifying Party makes a general assignment for the benefit of creditors, has filed against it or files a petition in bankruptcy or insolvency or is declared bankrupt or insolvent or declares that it is bankrupt or insolvent, or (iv) there occurs a change of control of the Indemnifying Party.

(e) An Indemnitee that does not conduct and control the defense of any Third-Party Claim, or an Indemnifying Party that has failed to elect to defend any Third-Party Claim as contemplated hereby, nevertheless shall have the right to employ separate counsel (including local counsel as necessary) of its own choosing to monitor and participate in (but not control) the defense of any Third- Party Claim for which it is a potential Indemnitee or Indemnifying Party, but the fees and expenses of

such counsel shall be at the expense of such Indemnitee or Indemnifying Party, as the case may be, and the provisions of Section 6.5(c) shall not apply to such fees and expenses. Notwithstanding the foregoing, such Party shall cooperate with the Party entitled to conduct and control the defense of such Third-Party Claim in such defense and make available to the controlling Party, at the non-controlling Party's expense, all witnesses, information and materials in such Party's possession or under such Party's control relating thereto as are reasonably required by the controlling Party. In addition to the foregoing, if any Indemnitee shall in good faith determine that such Indemnitee and the Indemnifying Party have actual or potential differing defenses or conflicts of interest between them that make joint representation inappropriate, then the Indemnitee shall have the right to employ separate counsel (including local counsel as necessary) and to participate in (but not control) the defense, compromise or settlement thereof, and the Indemnifying Party shall bear the reasonable fees and expenses of such counsel for all Indemnitees.

(f) Neither Party may settle or compromise any Third-Party Claim for which either Party is seeking to be indemnified hereunder without the prior written consent of the other Party, which consent may not be unreasonably withheld, unless such settlement or compromise is solely for monetary damages, does not involve any finding or determination of wrongdoing or violation of Law by the other Party and provides for a full, unconditional and irrevocable release of the other Party from all liability in connection with the Third-Party Claim. The Parties hereby agree that if a Party presents the other Party with a written notice containing a proposal to settle or compromise a Third-Party Claim for which either Party is seeking to be indemnified hereunder and the Party receiving such proposal does not respond in any manner to the Party presenting such proposal within thirty (30) days (or within any such shorter time period that may be required by applicable Law or court order) of receipt of such proposal, then the Party receiving such proposal shall be deemed to have consented to the terms of such proposal.

(g) The Indemnifying Party shall establish a procedure reasonably acceptable to the Indemnitee to keep the Indemnitee reasonably informed of the progress of the Third-Party Claim and to notify the Indemnitee when any such Third-Party Claim is closed, regardless of whether such Third-Party Claim was resolved by settlement, verdict, dismissal or otherwise.

6.6 Additional Matters.

(a) Indemnification payments in respect of any liabilities for which an Indemnitee is entitled to indemnification under this Article VI shall be paid by the Indemnifying Party to the Indemnitee as such liabilities are incurred upon demand by the Indemnitee, including reasonably satisfactory documentation setting forth the basis for the amount of such indemnification payment, including documentation with respect to calculations made and consideration of any Insurance Proceeds that actually reduce the amount of such liabilities. THE INDEMNITY AGREEMENTS CONTAINED IN THIS ARTICLE VI SHALL REMAIN OPERATIVE AND IN FULL FORCE AND EFFECT, REGARDLESS OF (I) ANY INVESTIGATION MADE BY OR ON BEHALF OF ANY INDEMNITEE,
(II) THE KNOWLEDGE BY THE INDEMNITEE OF LIABILITIES FOR WHICH IT MIGHT BE ENTITLED TO INDEMNIFICATION HEREUNDER AND (III) ANY TERMINATION OF THIS AGREEMENT.

(b) Any claim on account of a liability that does not result from a Third-Party Claim shall be asserted by written notice given by the Indemnitee to the related Indemnifying Party. Such Indemnifying Party shall have a period of thirty (30) days after the receipt of such notice within which to respond thereto. If such Indemnifying Party does not respond within such thirty (30)-day period, such Indemnifying Party shall be deemed to have refused to accept responsibility to make payment. If such Indemnifying Party does not respond within such thirty (30)-day period or rejects such claim in whole or in part, such Indemnitee shall be free to pursue such remedies as may be available to such party as contemplated by this Agreement and the Ancillary Agreements.

(c) In the event of payment by or on behalf of any Indemnifying Party to any Indemnitee in connection with any Third-Party Claim, such Indemnifying Party shall be subrogated to and shall stand in the place of such Indemnitee as to any events or circumstances in respect of which such Indemnitee may have any right, defense or claim relating to such Third-Party Claim against any claimant or plaintiff asserting such Third-Party Claim or against any other Person. Such Indemnitee shall cooperate with such Indemnifying Party in a reasonable manner, and at the cost and expense of such Indemnifying Party, in prosecuting any subrogated right, defense or claim.

(d) In the event of an action for which indemnification is sought pursuant to Section 6.2 or 6.3 and in which the Indemnifying Party is not a named defendant, if either the Indemnitee or Indemnifying Party shall so request, the Parties shall use commercially reasonable efforts to substitute the Indemnifying Party for the named defendant.

(e) An Indemnitee shall take all reasonable steps to mitigate damages in respect of any claim for which it seeks indemnification hereunder, and shall use reasonable efforts to avoid any costs or expenses associated with such claim and, if such costs and expenses cannot be avoided, to minimize the amount thereof; provided, however, that an Indemnitee shall have no obligation to make a claim for recovery against any of its insurers with respect to any Losses for which it is seeking indemnification.

6.7 Remedies Cumulative. The remedies provided in this Article VI shall be cumulative and shall not preclude assertion by any Indemnitee of any other rights or the seeking of any and all other remedies against any Indemnifying Party; provided, however, if a Party has recovered any Losses from the other Party pursuant to any provision of this Agreement or any Ancillary Agreement or otherwise, it shall not be entitled to recover the same Losses pursuant to any other provision of this Agreement or any Ancillary Agreement or otherwise.

6.8 Survival of Indemnities. The rights and obligations of each of Parent and NBH and their respective Indemnitees under this Article VI shall survive (a) the sale or other transfer by any Party of any Assets or businesses or the assignment by it of any liabilities, and (b) any merger, consolidation business combination, sale of all or substantially all of the Assets, restructuring, recapitalization, reorganization or similar transaction involving either Party or any of its respective Subsidiaries.

6.9 Ancillary Agreements. Notwithstanding anything in this Agreement to the contrary, to the extent any Ancillary Agreement contains any indemnification provisions, the indemnification obligations set forth in such Ancillary Agreement shall govern.

6.10 Cooperation in Defense and Settlement.

(a) With respect to any Third-Party Claim that implicates both Parties in a material fashion due to the allocation of liabilities, responsibilities for management of defense and related indemnities pursuant to this Agreement or any of the Ancillary Agreements, the Parties agree to use commercially reasonable efforts to cooperate fully and maintain a joint defense (in a manner that will preserve for the Parties the attorney-client privilege, joint defense or other privilege with respect thereto).

(b) To the extent there are documents, other materials, access to employees or witnesses related to or from a Party that is not responsible for the defense or liability of a particular action, such Party shall provide to the other Party reasonable access to documents, other materials, employees, and shall permit employees, officers and directors to cooperate as witnesses in the defense of such action.

(c) Each of Parent and NBH agrees that at all times from and after the Effective Time, if an action currently exists or is commenced by a third party with respect to which a Party (or one of its Subsidiaries) is a named defendant, but the defense of such action and any recovery in such action is otherwise not a liability allocated under this Agreement or any Ancillary Agreement to that Party, then the other Party shall use commercially reasonable efforts to cause the named but not liable defendant to be removed from such action and such defendants shall not be required to make any payments or contributions therewith.

6.11 Tax Matters. The provisions of this Article VI (other than this Section 6.11) shall not apply to Taxes (Taxes being governed by the Tax Matters Agreement).

ARTICLE VII OTHER AGREEMENTS

7.1 Further Assurances.

(a) In addition to the actions specifically provided for elsewhere in this Agreement, each of the Parties hereto shall use its commercially reasonable efforts, prior to, on and after the Effective Time, to take, or cause to be taken, all actions, and to do, or cause to be done, all things reasonably necessary, proper or advisable on its part under applicable Laws, regulations and agreements, to consummate and make effective the transactions contemplated by this Agreement and the Ancillary Agreements.

(b) Without limiting the foregoing, prior to, on and after the Effective Time, each Party hereto shall cooperate with each other Party hereto, and without any further consideration, but at the expense of the requesting Party, to execute and deliver, or use its commercially reasonable efforts to cause to be executed and delivered, all instruments, including instruments of conveyance, assignment and transfer, and to make all filings with, and to obtain or make any approvals or notifications of, any Governmental Entity or any other Person under any permit, license, agreement, indenture or other instrument (including any Third-Party consents or Governmental Approvals), and to take all such other actions as such Party may reasonably be requested to take by any other Party hereto from time to time, consistent with the terms of this Agreement and the Ancillary Agreements, in order to effectuate the provisions and purposes of this Agreement and the Ancillary Agreements and the other transactions contemplated hereby and thereby. Without limiting the foregoing, each Party shall, at the reasonable request, cost and expense of any other Party, take such other actions as may be reasonably necessary to vest in such other Party all of the transferring Party's right, title and interest to the Assets allocated to such Party by this Agreement or any Ancillary Agreement, in each case, if and to the extent it is practicable to do so.

(c) Parent shall cause to be performed, and hereby guarantees the performance of, all actions, agreements and obligations set forth in this Agreement or in any Ancillary Agreement to be performed by any member of the Parent Group. NBH shall cause to be performed, and hereby guarantees the performance of, all actions, agreements and obligations set forth in this Agreement or in any Ancillary Agreement to be performed by any member of the NBH Group. Each Party (including its permitted successors and assigns) further agrees that it shall (i) give timely notice of the terms, conditions and continuing obligations contained in this Section 7.1 to all of the other members of its Group, and (ii) cause all of the other members of its Group not to take, or omit to take, any action which action or omission would violate or cause such Party to violate this Agreement or any Ancillary Agreement.

7.2 Confidentiality.

(f) From and after the Effective Time, and except as contemplated by or otherwise provided in this Agreement or any Ancillary Agreement, Parent, on behalf of itself and each of the Parent Subsidiaries, and NBH, on behalf of itself and each of the NBH Subsidiaries, agrees to hold, and to cause its respective Representatives to hold, in strict confidence, with at least the same degree of care that applies to Parent's confidential and proprietary information pursuant to policies in effect as of the Effective Time, all confidential and proprietary Information concerning the other Party (or its business) and the other Party's Subsidiaries (or their respective businesses) that is either in its possession (including confidential and proprietary Information in its possession prior to the Effective Time) or furnished by the other Party or the other Party's Subsidiaries or their respective Representatives at any time pursuant to this Agreement or any Ancillary Agreement, and shall not use any such confidential and proprietary Information other than for such purposes as may be expressly permitted hereunder or thereunder, except, in each case, to the extent that such confidential and proprietary Information has been: (i) in the public domain or generally available to the public, other than as a result of a disclosure by such Party or any of its Subsidiaries or any of their respective Representatives in violation of this Agreement, (ii) later lawfully acquired from other sources by such Party or any of its Subsidiaries, which sources are not themselves bound by a confidentiality obligation or other contractual, legal or fiduciary obligation of confidentiality with respect to such confidential and proprietary Information or (iii) independently developed or generated without reference to or use of the respective proprietary or confidential Information of the other Party or any of its Subsidiaries. If any confidential and proprietary Information of one Party or any of its Subsidiaries is disclosed to another Party or any of its Subsidiaries in connection with providing services to such first Party or any of its Subsidiaries under this Agreement or any Ancillary Agreement, then such disclosed confidential and proprietary Information shall be used only as required to perform such services.

(g) Each Party agrees not to release or disclose, or permit to be released or disclosed, any confidential or proprietary Information of the other Party addressed in Section 7.2(a) to any other Person, except its Representatives who need to know such Information in their capacities as such. Without limiting the foregoing, when any Information furnished by the other Party after the Effective Time pursuant to this Agreement or any Ancillary Agreement is no longer needed for the purposes contemplated by this Agreement or any Ancillary Agreement, each Party shall, at its option, promptly after receiving a written notice from the disclosing Party, either return to the disclosing Party all such Information in a tangible form (including all copies thereof and all notes, extracts or summaries based thereon) or certify to the disclosing Party that it has destroyed such Information (and such copies thereof and such notes, extracts or summaries based thereon); provided, however, that a Party shall not be required to destroy or return any such Information to the extent that (i) the Party is required to retain the Information in order to comply with any applicable Law, (ii) the Information has been backed up electronically pursuant to the Party's standard document retention policies and will be managed and ultimately destroyed consistent with such policies or (iii) it is kept in the Party's legal files for purposes of resolving any dispute that may arise under this Agreement or any Ancillary Agreement.

(h) Each Party acknowledges that it and its respective Subsidiaries may presently have and, following the Effective Time, may gain access to or possession of confidential or proprietary Information of, or personal Information relating to, Third Parties: (i) that was received under confidentiality or non-disclosure agreements entered into between such Third Parties, on the one hand, and the other Party or the other Party's Subsidiaries, on the other hand, prior to the Effective Time or

(ii) that, as between the two parties, was originally collected by the other Party or the other Party's Subsidiaries and that may be subject to and protected by privacy, data protection or other applicable Laws. As may be provided in more detail in an applicable Ancillary Agreement, each Party agrees that it shall hold, protect and use, and shall cause its Subsidiaries and its and their respective Representatives to hold, protect and use, in strict confidence the confidential and proprietary Information of, or personal Information relating to, Third Parties in accordance with privacy, data protection or other applicable Laws

and the terms of any agreements that were either entered into before the Effective Time or affirmative commitments or representations that were made before the Effective Time by, between or among the other Party or the other Party's Subsidiaries, on the one hand, and such Third Parties, on the other hand.

7.3 Order of Precedence. Notwithstanding anything to the contrary in this Agreement or any Ancillary Agreement, in the case of any conflict between the provisions of this Agreement and the provisions of any Ancillary Agreement, the provisions of this Agreement shall prevail; provided, however, that in relation to any matters concerning Taxes, the Tax Matters Agreement shall prevail over this Agreement and any other Ancillary Agreement.

ARTICLE VIII
MISCELLANEOUS

8.1 Governing Law.

This Agreement and, unless expressly provided therein, each other Ancillary Agreement, shall be governed by, and construed and interpreted in accordance with, the laws of the State of Nevada, without giving effect to any conflicts of law rule or principle that might require the application of the laws of another jurisdiction.

8.2 Notices.

All notices, requests, claims, demands and other communications under this Agreement and, to the extent applicable and unless otherwise provided therein, under each of the Transaction Documents shall be in writing and shall be given or made (and shall be deemed to have been duly given or made upon receipt) by delivery in person, by overnight courier service, by facsimile with receipt confirmed (followed by delivery of an original via overnight courier service) or by registered or certified mail (postage prepaid, return receipt requested) to the respective parties at the following addresses (or at such other address for a Party as shall be specified in a notice given in accordance with this Section 8.2):

If to Parent, to:

Meta Materials Inc. Attention:
CEO
1 Research Drive
Dartmouth, Nova Scotia B2Y 4M9
Email: george.palikaras@metamaterial.com

With a copy to:

Wilson Sonsini Goodrich & Rosati Attention:
Tom Hornish
12235 El Camino Real
San Diego, California 92130
Email: thornish@wsgr.com

If to NBH, to:

Next Bridge Hydrocarbons, Inc. 6300
Ridglea Place, Suite 950

Fort Worth, Texas 76116
Email: cdubose@nextbridgehydrocarbons.com

With a copy to:

O'Melveny & Myers LLP Attention:
Jason A. Schumacher 2501 N. Harwood
Street, Floor 17
Dallas, Texas 75201
Email: jschumacher@omm.com

8.3 **Severability**. If any provision of this Agreement or any Ancillary Agreement or the application thereof to any Person or circumstance is determined by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions hereof or thereof, or the application of such provision to Persons or circumstances or in jurisdictions other than those as to which it has been held invalid or unenforceable, shall remain in full force and effect and shall in no way be affected, impaired or invalidated thereby. Upon such determination, the Parties shall negotiate in good faith in an effort to agree upon such a suitable and equitable provision to effect the original intent of the Parties.

8.4 **Entire Agreement**. This Agreement and the Ancillary Agreements, and the exhibits, annexes and schedules thereto, contain the entire agreement between the Parties with respect to the subject matter hereof, supersede all previous agreements, negotiations, discussions, writings, understandings, commitments and conversations with respect to such subject matter and there are no agreements or understandings between the Parties with respect to such subject matter other than those set forth or referred to herein or therein.

8.5 **Assignment; No Third-Party Beneficiaries**. This Agreement shall not be assigned by any Party hereto without the prior written consent of the other Party hereto. Except for the indemnification rights under this Agreement or any Ancillary Agreement of any Parent Indemnitee or NBH Indemnitee in their respective capacities as such, this Agreement is for the sole benefit of the Parties to this Agreement and their permitted successors and assigns and nothing in this Agreement, express or implied, is intended to or shall confer upon any other Person or entity any legal or equitable right, benefit or remedy of any nature whatsoever under or by reason of this Agreement.

8.6 **Amendment**. No provision of this Agreement may be amended or modified except by a written instrument signed by both Parties. No waiver by any Party of any provision hereof shall be effective unless explicitly set forth in writing and executed by the Party so waiving. The waiver by either Party of a breach of any provision of this Agreement shall not operate or be construed as a waiver of any other subsequent breach.

8.7 **Counterparts**. This Agreement may be executed in one or more counterparts, and by each Party in separate counterparts, each of which when executed shall be deemed to be an original but all of which taken together shall constitute one and the same agreement. Delivery of an executed counterpart of a signature page to this Agreement by facsimile or electronic mail shall be as effective as delivery of a manually executed counterpart of any such Agreement.

8.8 **Termination**. This Agreement may be terminated at any time prior to the Effective Time by and in the sole discretion of Parent without the approval of NBH in which case neither Party will have any liability of any kind to the other Party.

8.9 **Force Majeure**. Neither Party shall be deemed in default of this Agreement or any Ancillary Agreement for failure to fulfill any obligation, other than a delay or failure to make a payment, so long as and to the extent to which any delay or failure in the fulfillment of such obligations is prevented, frustrated, hindered or delayed as a consequence of circumstances of Force Majeure. In the event of any such excused delay, the time for performance shall be extended for a period equal to the time lost by reason of the delay. A Party claiming the benefit of this provision shall, as soon as reasonably practicable after the occurrence of any such event, (a) provide written notice to the other Party of the nature and extent of any such Force Majeure condition; and (b) use commercially reasonable efforts to remove any such causes and resume performance under this Agreement or any Ancillary Agreement, as applicable, as soon as reasonably practicable.

8.10 **Publicity**. From and after the Effective Time for a period of 180 days, NBH and Parent shall consult with each other before issuing, and give each other the opportunity to review and comment upon, any press release or other public statements with respect to the transactions contemplated by this Agreement and the Ancillary Agreements, and shall not issue any such press release or make any public statement prior to such consultation, except as may be required by applicable Law, court process or by obligations pursuant to any listing agreement with any national securities exchange or national securities quotation system.

[Signature Page Follows]

IN WITNESS WHEREOF, the parties have caused this Distribution Agreement to be executed to be effective on the date first written above by their respective duly authorized officers.

PARENT

META MATERIALS, INC.,
A Nevada corporation

By: _ Name: Kenneth Rice
Title: Chief Financial Officer and
Chief Operating Officer

NBH

NEXT BRIDGE HYDROCARBONS, INC.,
A Nevada corporation

By: _ Name: George Palikaras
Title: President

TAX MATTERS AGREEMENT

This Tax Matters Agreement, dated as of September 2, 2022 (this "**Agreement**"), is between Meta Materials, Inc., a Nevada corporation, on behalf of itself and the Affiliated Group (as defined below) (other than NBH and the NBH Group), on the one hand, and Next Bridge Hydrocarbons, Inc., a Nevada corporation ("**NBH**"), on behalf of itself and the NBH Group (as defined below), on the other hand. Parent and NBH are referred to in this Agreement collectively as the "**Parties**" and individually as a "**Party**." Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to such terms in that certain Distribution Agreement entered into by the Parties as of September 2, 2022 ("**Distribution Agreement**").

WHEREAS, as of the date of this Agreement, the Parent, NBH and the members of the NBH Group are members of the consolidated U.S. federal income tax group (as defined in Section 1504(a) of the Code) of which Parent is the common parent corporation, which will join annually in the filing of a consolidated U.S. federal income Tax Return under Section 1501 of the Code, so that the Tax liability of the Affiliated Group is determined under Section 1502 of the Code and the Treasury Regulations thereunder by consolidating the income, expenses, gains, losses and credits of all of the members of the Affiliated Group;

WHEREAS, Parent intends to distribute all of its shares of NBH stock to holders of Parent's Series A Preferred Stock in redemption of the Series A Preferred Stock (the "**Distribution**");

WHEREAS, the Parties wish to provide for the allocation among them of their consolidated federal income tax liability, state and local income tax liability, and certain related matters; and

WHEREAS, after the Effective Date of the Distribution Agreement (the "**Distribution Date**"), NBH and the NBH Group will no longer be included in the Affiliated Group.

NOW, THEREFORE, in consideration of the foregoing premises and of the mutual covenants and agreements contained herein, the parties agree as follows:

Article I. DEFINITIONS

Section 1.1 Definitions. For purposes of this Agreement, the terms set forth below shall be defined as follows:

"**Adjustment**" means an adjustment determined on an issue-by-issue or transaction by-transaction basis, as appropriate, made by a Taxing Authority with respect to any amount reflected or required to be reflected on any Tax Return.

"**Affiliated Group**" means Parent, NBH, and all other corporations (including any members of the NBH Group) which may now or from time to time hereafter be eligible or required to be included in a Consolidated Return with Parent as the common parent corporation.

"**Code**" means the U.S. Internal Revenue Code of 1986, as amended.

"**Consolidated Return**" means any consolidated, combined or unitary Tax Return filed by Parent for the Affiliated Group with respect to U.S. federal, state or local Taxes, including Taxes imposed or based on net income, net worth or gross receipts.

"**Consolidated Return Year**" means any taxable period during which the Affiliated Group actually files or is required to file a Consolidated Return, including the taxable year that includes the Effective Date.

"**Consolidated Tax Liability**" means the Tax liability of the Affiliated Group with respect to a Consolidated Return for a Consolidated Return Year.

"**NBH Group**" means NBH and each Subsidiary of NBH immediately before the Effective Time, whether or not eligible or required to be included in a Consolidated Return with Parent as the common parent corporation.

"**Parent**" means (i) Meta Materials, Inc., a Nevada corporation, (ii) any successor common parent corporation described in Treasury Regulations Section 1.1502-75(d)(2)(i) or (ii) (or any comparable provision of state or local law), or (iii) any corporation as to which Parent (or successor corporation described in clause (ii) hereof) is the "predecessor" within the meaning of Treasury Regulations Section 1.1502-1(f)(4), if such corporation acquires Parent (or a successor corporation described in clause (ii) hereof) in a "reverse acquisition" within the meaning of Treasury Regulations Section 1.1502-75(d)(3) (or any comparable provision of state or local law).

"**Tax**" or "**Taxes**" means all federal, state, local and foreign income, alternative or add-on minimum tax, gross income, sales, use, ad valorem, gross receipts, value added, franchise, profits, license, transfer, recording, withholding, payroll, employment, excise, severance, stamp occupation, premium, property, windfall profit, custom duty, or other tax, governmental fee or other like assessment or charge of any kind whatsoever, together with any related interest, penalties, or other additions to tax, or additional amounts imposed by any such Taxing Authority.

"**Tax Attribute**" means one or more of the following attributes of Parent or a member of the NBH Group: (i) with respect to the Consolidated Return, a net operating loss, a net capital loss, an unused investment credit, an unused foreign Tax credit, an excess charitable contribution, a U.S. federal minimum Tax credit or U.S. federal general business credit (but not Tax basis or earnings and profits) and (ii) any comparable Tax item reflected on any Tax Return (other than for federal income Taxes) filed on a consolidated, combined (including nexus combination, worldwide combination, domestic combination, line of business combination or any other form of combination) or unitary basis.

"**Taxing Authority**" means any governmental authority or any subdivision, agency, commission or authority thereof, or any quasi-governmental or private body having jurisdiction over the assessment, determination, collection or other imposition of Taxes.

"**Tax Returns**" means all returns, reports and information statements (including all exhibits and schedules thereto and including amendments) required to be filed with a Taxing Authority with respect to any Taxes.

"**Transfer Tax**" means all sales, use and transfer Taxes, bulk transfer Taxes, deed Taxes, real property or leasehold interest transfer or gains Taxes, conveyance fees, documentary and recording charges and similar taxes imposed as a result of the transactions contemplated by this Agreement, together with any interest, penalties or additions to such transfer Taxes or attributable to any failure to comply with any requirement regarding Tax Returns.

Article II.

PREPARATION AND FILING OF TAX RETURNS

Section 2.1 Tax Returns.

A. Parent shall prepare and file, or cause to be prepared and filed, the Consolidated Returns for all Consolidated Return Years. NBH shall, and shall cause the NBH Group to, execute and file such consents, elections and other documents that may be required or appropriate for the proper filing of such returns and maintain such books and records and provide such information as Parent may reasonably request in connection with the matters contemplated by this Agreement.

B. The Affiliated Group will jointly file state and local Tax Returns, including returns for Tax periods beginning before and ending after the Distribution, on a combined, consolidated, unitary, or other basis that Parent determines appropriate and beneficial for the Affiliated Group. In the event any such state or local Consolidated Returns are filed, the provisions of this Agreement (including those relating to allocation, preparation, filing, payment, indemnification, information, and Tax audits) shall be applied as is appropriate in the context of the applicable state and local Tax laws as determined in the discretion of Parent. The provisions of this Agreement also apply to any other Taxes of the Affiliated Group.

C. Parent shall prepare and file, or cause to be prepared and filed, all Tax Returns of the NBH Group not described in Section 2.1A or Section 2.1B that are required to be filed before the Distribution Date.

D. NBH shall, on a timely basis and at its own expense, prepare and file, or cause to be prepared and filed, all Tax Returns not described in Section 2.1A or Section 2.1B required to be filed by NBH or a member of the NBH Group after the Distribution Date and shall pay in full any Taxes shown due thereon. NBH shall not amend or refile, or permit to be amended or refiled, any Tax Return described in Section 2.1A or Section 2.1B.

Section 2.2 Preparation of Consolidated Returns. With respect to all Consolidated Returns, Parent shall have the right to (i) subject to the review and comment of NBH, which comments Parent shall be required only to consider in good faith, make any elections which are employed in the filing of such Consolidated Returns, including any elections denominated as such in the Code such as choice of methods of accounting and depreciation; (ii) subject to the review

and comment of NBH, which comments Parent shall be required only to consider in good faith, determine the manner in which Consolidated Returns shall be prepared and filed, including without limitation, the manner in which any item of income, gain, loss, deduction or credit shall be reported; (iii) contest, compromise or settle any adjustment or deficiency proposed, asserted or assessed as a result of any audit of any such returns; (iv) file, prosecute, compromise or settle any claim for refund; (v) determine whether any refunds to which the Affiliated Group may be entitled shall be paid by way of refund or credit against the Tax liability of the Affiliated Group and (vi) subject to the review and comment of NBH, which comments Parent shall be required only to consider in good faith, allocate Tax assets and attributes including losses, credits and earnings and profits.

Section 2.3 Amended Tax Returns.

A. Subject to Section 2.1D, except to reflect the resolution of any dispute between the Parties resolved pursuant to Section 4.1, subject to the review and reasonable comment of Parent, which comments NBH shall be required only to consider in good faith, NBH shall be permitted, and shall be permitted to allow any member of the NBH Group, to amend any Tax Return of the NBH Group for any Tax period ending on or before the Distribution Date.

B. Except to reflect the resolution of any dispute between the Parties resolved pursuant to Section 4.1, subject to the review and reasonable comment of NBH, which comments Parent shall be required only to consider in good faith, Parent shall be permitted, and shall be permitted to allow any member of the Affiliated Group, to amend any Consolidated Return for any Tax Period ending on or before the Distribution Date.

Section 2.4 Right to Review. The Party responsible for preparing (or causing to be prepared) any Tax Return under this Article II shall make such Tax Return and related work papers available for review by the other Party, if requested, to the extent (i) such Tax Return relates to Taxes for which the requesting Party would be liable under Article III or (ii) such Tax Return relates to Taxes for which the requesting Party would reasonably be expected to have a claim for a Tax refund under this Agreement. The Party responsible for preparing (or causing to be prepared) the relevant Tax Return shall (x) use its reasonable efforts to make such portion of such Tax Return available for review as required under this paragraph sufficiently in advance of the due date for the filing of such Tax Return to provide the requesting Party with a meaningful opportunity to analyze and comment on such Tax Return and (y) consider in good faith any comments provided by the requesting Party.

Section 2.5 Tax Audits.

A. The Parties acknowledge and agree that the Parent is, and shall continue to be, authorized to undertake any and all actions that are within the scope of Parent's authority under the Code or the applicable Treasury Regulations, as the common parent corporation of the Consolidated Group in connection with the filing of any Consolidated Returns and any U.S. federal income tax audit, examination or other tax proceeding involving Taxes filed on a group basis. Parent shall have the authority to control, settle and resolve any dispute relating to any Consolidated Returns with the Internal Revenue Service (the "**IRS**") or any other Taxing Authority; provided, however, that Parent shall keep NBH duly informed of the progress thereof

to the extent that such Tax Proceeding (as defined below in Section 2.5B) or Tax Claim (as defined below in Section 2.5B) could directly or indirectly affect (adversely or otherwise) any member of the NBH Group and that NBH shall have the right to review and comment on any and all submissions made to the IRS, a court, or other Taxing Authority with respect to such Tax Claim or Tax Proceeding and that Parent will consider such comments in good faith. If Parent provides written notice to NBH of its intent to settle or resolve any such Tax Proceeding or Tax Claim (the "**Proposed Resolution**"), NBH shall have thirty (30) days (or such shorter time as is necessary to avoid material prejudice to Parent or any member of the Affiliated Group, which shorter period Parent shall provide notice of to NBH) within which to provide any objection thereto in writing. If the Parties are unable to reach an agreement within thirty (30) days (or such shorter time as is necessary to avoid material prejudice to Parent or any member of the Affiliated Group, which shorter period Parent shall provide notice of to NBH) after Parent's receipt of NBH's written objection to any potential settlement or resolution by Parent of any such Tax Claim or Tax Proceeding, the objection shall be resolved by an independent, nationally recognized accounting firm mutually selected by the Parties (the "**Accounting Firm**"). The Accounting Firm shall determine whether it is "more likely than not" that an alternative settlement or resolution of such Tax Proceeding or Tax Claim could reasonably be obtained that imposes less liability on the NBH Group (either under this Agreement or applicable law) than the Proposed Resolution and no greater liability on Parent or its affiliates (either under this Agreement or applicable law) than the Proposed Resolution (such settlement or resolution, the "**Alternative Resolution**"). If the Accounting Firm determines that an Alternative Resolution is reasonably available, Parent shall not enter into the Proposed Resolution. The determination by the Accounting Firm shall be final and binding upon the Parties. Each of Parent and NBH shall bear all fees and costs incurred by it in connection with the resolution of any such Tax Proceeding or Tax Claim, except that (i) the Parties shall each pay one-half (50%) of the fees and expenses of the Accounting Firm, and (ii) without prejudice to Parent's rights under Section 3.3B, if the Alternative Resolution requires pursuing the settlement or resolution of such Tax Claim or Tax Proceeding in a different forum than the forum in which the Proposed Resolution arose, NBH shall bear all fees and costs incurred in connection with the Tax Proceeding or Tax Claim following the Accounting Firm's determination.

B. If any claim, demand, assessment (including a notice of proposed assessment) or other assertion is made with respect to federal income Taxes against Parent or any member of the NBH Group the calculation of which involves a matter covered in this Agreement ("**Tax Claim**") or if Parent or NBH receives any notice from any jurisdiction with respect to any current or future audit, examination, investigation or other proceeding ("**Tax Proceeding**") involving Parent or any member of the NBH Group or that otherwise could involve a matter covered in this Agreement and could directly or indirectly affect Parent or any member of the NBH Group (adversely or otherwise), then Parent or NBH, as applicable, shall promptly notify Parent or NBH, as applicable, of such Tax Claim or Tax Proceeding. Each of the Parent and NBH shall retain all Tax Returns, schedules, work papers and other Tax records relating to matters or periods covered by this Agreement until the expiration of the statute of limitations applicable to such underlying Taxes. Notwithstanding the foregoing, the delay or failure of any party to give notice to the other party as provided in this Section 2.5B shall not relieve the other Party of its obligations, if any, under this Agreement, except to the extent that such other Party is actually and substantially prejudiced by such delay or failure to give notice.

Section 2.6 Special Rules Relating to the Preparation of Tax Returns.

A. General. Except as provided in this Section 2.6, NBH shall prepare (or cause to be prepared) any Tax Return for which it is responsible under this Article II in accordance with past practices, accounting methods, elections or conventions ("**Past Practices**") used by the Parent prior to the Distribution Date with respect to such Tax Return to the extent permitted by applicable law, and to the extent any items, methods or positions are not covered by Past Practices, as directed by Parent to the extent permitted by applicable law.

B. Election to File Joint Tax Returns. Parent shall be entitled to file any Consolidated Return if the filing of such Tax Return is elective under applicable Tax law. Each member of the Affiliated Group shall execute and file such consents, elections and other documents as may be required, appropriate or otherwise requested by Parent in connection with the filing of such Consolidated Returns.

C. Preparation of Transfer Tax Returns. The Party required under applicable Tax law to file any Tax Returns in respect of Transfer Taxes shall prepare and file (or cause to be prepared and filed) such Tax Returns. If required by applicable Tax law, Parent and NBH shall, and shall cause their respective affiliates to, cooperate in preparing and filing, and join the execution of, any such Tax Returns.

Section 2.7 Accumulated Earnings and Profits, Initial Determination and Subsequent Adjustments. Within one hundred and eighty (180) days following the Distribution Date, Parent shall notify NBH of the balance of accumulated earnings and profits on Parent's Tax records as of the Distribution Date which are allocable to the business of any member of the NBH Group, as calculated in accordance with the appropriate provisions of the Code and the Treasury Regulations thereunder (including Section 312(h) of the Code and Treasury Regulations Section 1.312-10 or any successor regulation thereto) by Parent. The notice provided by Parent to NBH hereunder shall include supporting documentation which details the calculation of earnings and profits allocated to the business of any member of the NBH Group as of the Distribution Date. Within sixty (60) days after filing the Consolidated Return for the taxable year that includes the Distribution Date, Parent shall notify NBH of any adjustments in Parent's earnings and profits as of the Distribution Date and shall provide to NBH supporting documentation which details the recalculation of Parent earnings and profits allocable to the business of any member of the NBH Group as of the Distribution Date.

Article III.
RESPONSIBILITY FOR TAX

Section 3.1 Payment of Tax Liabilities. With respect to any payment of Tax (including any estimated payment of Tax) made or required to be made by Parent or its Subsidiaries with respect to a Consolidated Return filed or to be filed on behalf of the Affiliated Group following the Distribution Date, NBH shall pay to Parent, not later than twenty (20) days before the due date of such payment of Tax, an amount equal to, without duplication, the NBH Affiliated Group Tax Liability (as defined below in Section 3.4A) and Distribution Tax Liability (as defined below in Section 3.4C) with respect to such payment.

Section 3.2 Adjustments to Tax Liabilities. If, with respect to any taxable year the Consolidated Tax Liability or any member's separate Tax liability is subject to an Adjustment, or the Affiliated Group pays additional Taxes with respect to a Consolidated Return, including by reason of any of the events specified in Section 6213(b) or (d) of the Code, then NBH shall pay to Parent, not later than twenty (20) days after Parent notifies NBH of such Adjustment or payment, the amount of such Adjustment or payment that is an NBH Affiliated Group Tax Liability, if any.

Section 3.3 Indemnification.

A. NBH shall indemnify and hold harmless Parent and members of the Affiliated Group (other than NBH and members of the NBH Group) against the amount of any and all liability, loss, expense or damage Parent and members of the Affiliated Group (other than NBH and members of the NBH Group) may suffer or incur after the Distribution Date as a result of any or all claims, demands, costs or expenses (including, without limitation, attorneys' and accountants' fees), interest, penalties or judgments made against it arising from or incurred in relation to (i) any failure of NBH to pay any amount to Parent with respect to NBH's obligations under Section 3.1 and Section 3.2 of this Agreement, (ii) any and all Taxes (other than Taxes in respect of Consolidated Returns) of members of the NBH Group for any taxable year or period, and (iii) any NBH Affiliated Group Tax Liability, Distribution Tax Liability or other Tax liabilities allocated to the NBH Group under this Agreement. NBH shall be able to offset any liabilities that are owed by Parent to NBH under Section 3.3.B for any payments that are owed under this Section 3.3.A.

B. Parent shall indemnify and hold harmless NBH and the members of the NBH Group against the amount of any and all liability, loss, expense or damage NBH and members of the NBH Group may suffer or incur after the Distribution Date as a result of any or all claims, demands, costs or expenses (including, without limitation, attorneys' and accountants' fees), interest, penalties or judgments made against it arising from or incurred in relation to any and all Taxes, other than any NBH Affiliated Group Tax Liability, Distribution Tax Liability or other liability for Taxes for which NBH is required to indemnify Parent pursuant to Section 3.3A, (i) in respect of all Consolidated Returns, including but not limited to Taxes for which the NBH Group is liable under Treasury Regulation Section 1.1502-6 or any comparable provision of state or local tax law, and (ii) imposed on Parent or any member of the Affiliated Group (other than NBH or a member of the NBH Group or any predecessor thereof) and (a) for which the NBH Group is liable pursuant to any contract entered into before the Distribution Date (excluding, for the avoidance of doubt, this Agreement and the Distribution Agreement) or (b) which may be collected from NBH or a member of the NBH Group pursuant to applicable law. Parent shall be able to offset any liabilities that are owed by NBH to Parent under Section 3.1, Section 3.2 or Section 3.3A for any payments that are owed under this Section 3.3B.

Section 3.4 Allocation of Tax Liabilities.

A. Allocation of Consolidated Tax Liabilities

(i) For each taxable period in which NBH and/or any other member of the NBH Group is included in the Affiliated Group, the "**NBH Affiliated Group Tax Liability**" with respect to any Consolidated Return filed or required to be filed with respect to the Affiliated

Group shall equal the hypothetical separate return Tax liability of NBH and the NBH Group, calculated as though NBH and the NBH Group had filed such a Consolidated Return for such taxable period that included only NBH and the NBH Group, and determined, in the case of any
U.S. federal income tax liability, in accordance with the provisions of Treasury Regulations Section 1.1552-1(a)(2)(ii) (treating references to a "member" therein as references to NBH and the NBH Group, and including the adjustments under clauses (a)(i) thereof), with such hypothetical Consolidated Return prepared:

(a) assuming that the members of the NBH Group were not included in the Affiliated Group and by including only Tax items of the members of the NBH Group that are included in the Consolidated Return;

(b) except as provided in Section 3.4A(i)(d) hereof, using all elections, accounting methods and conventions used on the Consolidated Return for such period;

(c) applying the highest statutory marginal corporate income Tax rate in effect for such taxable period; and

(d) assuming that the NBH Group elects not to carry back any net operating losses and may elect either to deduct or take a credit for foreign Taxes paid or deemed paid (and to carryback or carryforward any excess foreign Taxes).

(ii) NBH and the NBH Group's federal income Tax liability for the taxable year during which NBH and the NBH Group cease to be members of the Affiliated Group shall be determined in accordance with the provisions of Treasury Regulations Section 1.1502- 76(b)(2) by closing the books of NBH and the other members of the NBH Group as of the end of the last day of the Consolidated Return Year and taking into account only items accruing during the portion of the taxable year ending on such date in computing such liability. Items shall not be pro-rated in accordance with clauses (ii) or (iii) of Treasury Regulations Section 1.1502-76(b)(2), except to the extent Parent in its discretion determines that it is impracticable to allocate particular items in accordance with the preceding sentence.

(iii) The parties acknowledge that the allocation of federal Tax liability provided for by this Section 3.4A is for purposes of determining the Parties' actual payment obligations to each other with respect to Taxes of the Affiliated Group for the Consolidated Return Year and not for purposes of computing earnings and profits pursuant to Section 1552 of the Code. Each of Parent and NBH recognizes that such allocation may differ from the allocation provided by Section 1552 of the Code for earnings and profits purposes.

B. Preparation and Delivery of Pro Forma Tax Returns. Not later than ninety (90) days following the date on which the related Consolidated Return is filed with the appropriate Taxing Authority, Parent shall prepare and deliver to NBH pro forma Tax Returns calculating the NBH Affiliated Group Tax Liability which is attributable to the period covered by such filed Tax Return.

C. Allocation of Tax Liabilities Arising from the Distribution. For purposes of this Agreement, notwithstanding the provisions of Section 3.4A, all Tax liabilities arising or resulting

from the Distribution ("**Distribution Tax Liability**") shall be borne by the NBH Group.

Section 3.5 Tax Attributes. Not later than ninety (90) days following the filing of the Consolidated Return for each taxable year, Parent shall determine the aggregate amount of the Tax Attributes of the Affiliated Group that are allocable to the NBH Group as of the end of such year and shall inform NBH of such determination.

Section 3.6 Allocation of Additional Tax Liabilities. Each Party shall be entitled to retain or be paid all refunds of Tax received, whether in the form of payment, credit or otherwise, from any Taxing Authority with respect to any Tax for which such Party is responsible under this Article III.

Article IV. GENERAL PROVISIONS

Section 4.1 Resolution of Disputes. In the event of any dispute relating to the application of the Tax laws of the United States (or any jurisdiction within the United States) as relates this Agreement, the Parties shall work together in good faith to resolve such dispute within thirty (30) days. In the event that such dispute is not resolved, upon written notice by a Party after such thirty (30)-day period, the matter shall be referred to U.S. Tax counsel or other U.S. Tax advisor of recognized national standing (the "**Tax Arbiter**") that will be jointly chosen by Parent and NBH; provided, however, that, if Parent and NBH do not agree on the selection of the Tax Arbiter after five (5) days of good faith negotiation, the Tax Arbiter shall consist of a panel of, as applicable, U.S. Tax counsel or other U.S. Tax advisors of recognized national standing with one member chosen by Parent, one member chosen by NBH, and a third member chosen by mutual agreement of the other members within the following ten (10)-day period. Each decision of a panel Tax Arbiter shall be made by majority vote of the members. The Tax Arbiter may, in its discretion, obtain the services of any third party necessary to assist it in resolving the dispute. The Tax Arbiter shall furnish written notice to the Parties to the dispute of its resolution of the dispute as soon as practicable, but in any event no later than ninety (90) days after acceptance of the matter for resolution. Any such resolution by the Tax Arbiter shall be binding on the Parties, and the Parties shall take, or cause to be taken, any action necessary to implement such resolution. All fees and expenses of the Tax Arbiter shall be shared equally by the Parties to the dispute. In the case of any dispute involving the Tax laws of a jurisdiction other than the United States (or any jurisdiction within the United States), the provisions of this Section 4.1 shall apply to such dispute *mutatis mutandis*.

Section 4.2 Tax Sharing Agreements. All Tax sharing, indemnification and similar agreements, written or unwritten, as between Parent, on the one hand, and NBH, on the other (other than this Agreement, the Distribution Agreement and any other transaction document), shall be or shall have been terminated no later than the Effective Time and, after the Effective Time, neither Parent nor NBH shall have any further rights or obligations under any such Tax sharing, indemnification or similar agreement.

Section 4.3 General Cooperation. The Parties shall each reasonably cooperate with all reasonable requests in writing from the other Party, or from an agent, representative or advisor to such Party,

in connection with the preparation and filing of Tax Returns, claims for Tax refunds, Tax Proceedings and calculations of amounts required to be paid pursuant to this Agreement, in

each case, related or attributable to or arising in connection with Taxes of any of the Parties covered by this Agreement and the establishment of any reserve required in connection with any financial reporting matter (a "**Tax Matter**"). Such cooperation shall include the provision of any information reasonably necessary or helpful in connection with a Tax Matter and shall include the execution of any document (including any power of attorney) that are reasonably necessary to permit a Party to exercise its rights hereunder in connection with any Tax Proceedings of any of the Parties. Each Party shall make its employees, advisors and facilities available, without charge, on a reasonable and mutually convenient basis in connection with the foregoing matters.

Section 4.4 Notices. All notices, requests, claims, demands and other communications hereunder shall be in writing and shall be given (and shall be deemed to have been duly given upon receipt) by delivery in person, by email or by registered or certified mail (postage prepaid, return receipt requested) to the respective Parties at the following addresses (or at such other address for a Party as shall be specified in a notice given in accordance with this Section 4.2):

if to the Parent:

Meta Materials, Inc. 85
Swanson Road
Boxborough, MA 01719
Attention: Kenneth Rice
Email: ken.rice@metamaterial.com
with a copy (which shall not constitute notice) to: Wilson Sonsini
Goodrich & Rosati
12235 El Camino Real San
Diego, CA 92130 Attention:
Tom Hornish
Email: thornish@wsgr.com if to
NBH:
Next Bridge Hydrocarbons, Inc. 6300
Ridglea Place, Suite 950 Fort Worth,
Texas 76116 Attention: Clifton Dubose
Email: cdubose@nextbridgehydrocarbons.com
with a copy (which shall not constitute notice) to: O'Melveny & Myers
LLP
Attention: Jason A. Schumacher 2501 N.
Harwood Street, Floor 17
Dallas, Texas 75201

Email: jschumacher@omm.com

Section 4.5 Severability. If any term or other provision of this Agreement is invalid, illegal or incapable of being enforced by any rule of law, or public policy, all other conditions and provisions of this Agreement shall nevertheless remain in full force and effect so long as the economic or legal substance of the Transactions is not affected in any manner materially adverse to any party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the Parties hereto shall negotiate in good faith to modify this Agreement so as to effect the original intent of the Parties as closely as possible in a mutually acceptable manner.

Section 4.6 Parties in Interest. This Agreement shall be binding upon and inure solely to the benefit of each Party hereto, and nothing in this Agreement, express or implied, is intended to or shall confer upon any other person any right, benefit or remedy of any nature whatsoever under or by reason of this Agreement.

Section 4.7 Governing Law. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Nevada applicable to contracts executed in and to be performed in that State. All legal actions and proceedings arising out of or relating to this Agreement shall be heard and determined exclusively in any Nevada District Court; provided, however, that if jurisdiction is not then available in a Nevada District Court, then any such legal action may be brought in any federal court located in the State of Nevada or any other Nevada state court. The Parties hereto hereby (a) irrevocably submit to the exclusive jurisdiction of the aforesaid courts for themselves and with respect to their respective properties for the purpose of any action arising out of or relating to this Agreement brought by any Party hereto, and (b) agree not to commence any action relating thereto except in the courts described above in Nevada, other than actions in any court of competent jurisdiction to enforce any judgment, decree or award rendered by any such court in Nevada as described herein. Each of the Parties further agrees that notice as provided herein shall constitute sufficient service of process and the Parties further waive any argument that such service is insufficient. Each of the Parties hereby irrevocably and unconditionally waives, and agrees not to assert, by way of motion or as a defense, counterclaim or otherwise, in any action arising out of or relating to this Agreement, (a) any claim that it is not personally subject to the jurisdiction of the courts in Nevada as described herein for any reason,
(b) that it or its property is exempt or immune from jurisdiction of any such court or from any legal process commenced in such courts (whether through service of notice, attachment prior to judgment, attachment in aid of execution of judgment, execution of judgment or otherwise) and
(c) that (i) the action in any such court is brought in an inconvenient forum, (ii) the venue of such action is improper or (iii) this Agreement, or the subject matter hereof, may not be enforced in or by such courts.

Section 4.8 Waiver of Jury Trial. EACH OF THE PARTIES HERETO HEREBY WAIVES TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY WITH RESPECT TO ANY LITIGATION DIRECTLY OR INDIRECTLY ARISING OUT OF, UNDER OR IN CONNECTION WITH THIS AGREEMENT OR THE TRANSACTIONS. EACH OF THE PARTIES HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THAT

FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE TRANSACTIONS, AS APPLICABLE, BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION 4.6.

Section 4.9 Headings. The descriptive headings contained in this Agreement are included for convenience of reference only and shall not affect in any way the meaning or interpretation of this Agreement.

Section 4.10 Counterparts. This Agreement may be executed and delivered (including by facsimile or portable document format (pdf) transmission) in one or more counterparts, and by the different Parties hereto in separate counterparts, each of which when executed shall be deemed to be an original but all of which taken together shall constitute one and the same agreement.

Section 4.11 Specific Performance. The Parties agree that irreparable damage would occur if any provision of this Agreement were not performed in accordance with the terms hereof, and, accordingly, that the Parties shall be entitled to an injunction or injunctions to prevent breaches of this Agreement or to enforce specifically the performance of the terms and provisions hereof in a Nevada District Court or, if that court does not have jurisdiction, any court of the United States located in the State of Nevada without proof of actual damages or otherwise, in addition to any other remedy to which they are entitled at law or in equity as expressly permitted in this Agreement. Each of the Parties hereby further waives (a) any defense in any action for specific performance that a remedy at law would be adequate and (b) any requirement under any law to post security or a bond as a prerequisite to obtaining equitable relief.

Section 4.12 Expenses. Except as set forth elsewhere in this Agreement, all expenses incurred in connection with this Agreement shall be paid by the Party incurring such expenses.

Section 4.13 Amendment. This Agreement may be amended in writing by the Parties hereto at any time prior to the Effective Time. This Agreement may not be amended except by an instrument in writing signed by each of the Parties hereto.

Section 4.14 Waiver. Any Party to this Agreement may, at any time prior to the Effective Time, (a) extend the time for the performance of any obligation or other act of the other Parties hereto, (b) waive any inaccuracy in the representations and warranties of another Party hereto contained herein or in any document delivered by another Party pursuant hereto and (c) waive compliance with any agreement of another Party hereto or any condition to its own obligations contained herein. Any such extension or waiver shall be valid if set forth in an instrument in writing signed by the Party or Parties to be bound thereby.

Section 4.15 Entire Agreement. This Agreement and the Distribution Agreement contain the entire understanding of the Parties hereto with respect to the subject matter contained herein and supersedes all prior written, oral or implied understandings, representations and agreements among the parties with respect thereto.

Section 4.16 Term. This Agreement shall be effective as of September 2, 2022 and shall apply to and govern all subsequent taxable periods, unless the Parties hereto each agree in writing to terminate this Agreement. Notwithstanding any such termination, this Agreement shall continue in effect with respect to any payment due from one Party to the other with respect to any taxable period occurring prior to the effective date of the termination of this Agreement.

[Signature Page Follows]

IN WITNESS WHEREOF, the Parent and NBH have caused this Tax Matters Agreement to be executed as of the date first written above by their respective officers thereunto duly authorized.

META MATERIALS, INC.

By:_____ Name: Kenneth Rice
Title: Chief Financial Officer and \ Chief Operating Officer

NEXT BRIDGE HYDROCARBONS, INC.

By:_____ Name: George Palikaras
Title: President

Exhibit 2.5.0

LOAN AGREEMENT

dated as of September 2,
2022 among
NEXT BRIDGE HYDROCARBONS, INC.
TORCHLIGHT ENERGY, INC. TORCHLIGHT
HAZEL, LLC HUDSPETH OIL CORPORATION
HUDSPETH OPERATING, LLC
as Borrowers

and

META MATERIALS, INC.
as Lender

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LOAN AGREEMENT dated as of September 2, 2022 (this "*Agreement*"), by and among NEXT BRIDGE HYDROCARBONS, INC., a Nevada corporation (the "*Parent Borrower*"), TORCHLIGHT ENERGY, INC., a Nevada corporation ("*Torchlight Energy*"), TORCHLIGHT HAZEL, LLC, a Texas limited liability company ("*Hazel*"), HUDSPETH OIL CORPORATION, a Texas corporation ("*Hudspeth Oil*"), HUDSPETH OPERATING, LLC, a Texas limited liability company ("*Hudspeth Operating*", and together with Parent Borrower, Torchlight Energy, Hazel and Hudspeth Oil, the "*Borrowers*"), and META MATERIALS, INC., a Nevada corporation (a "*Lender*").

The parties hereto agree as follows:

ARTICLE 1
DEFINITIONS

Section 1.01. *Defined Terms*. As used in this Agreement, the following terms have the meanings specified below:

"*Affiliate*" means, with respect to a specified Person, another Person that directly, or indirectly through one or more intermediaries, Controls or is Controlled by or is under common Control with the Person specified.

"*Agreement*" has the meaning specified in introductory paragraph hereof. "*Ancillary Document*" has the meaning assigned to it in Section 9.06(b).

"*Anti-Corruption Laws*" means all laws, rules, and regulations of any jurisdiction applicable to the Borrowers or any of their Subsidiaries from time to time concerning or relating to bribery or corruption.

"*Applicable Law*" means any statute or law or any judgment, order, decree, rule, or regulation of any court or Governmental Authority to which a specified Person or property is subject.

"*Assignment and Assumption*" means an assignment and assumption entered into by a Lender and an assignee (with the consent of any party whose consent is required by Section 9.04), in a form approved by the Lender.

"*Availability Period*" means the period from and including the Effective Date to but excluding the earlier of December 30, 2022 and the date of termination of the Commitment.

"*Bankruptcy Code*" means Title 11 of the United States Code entitled "Bankruptcy", as now and hereafter in effect, or any successor statute.

"*Borrowers*" has the meaning set forth in the introductory paragraph hereto. "*Borrowing*" means a borrowing of a Loan hereunder.

"*Borrowing Request*" means a request by a Borrower for a Borrowing in accordance with Section 2.03, which shall be in a form approved by the Lender.

"*Business Day*" means, any day (other than a Saturday or a Sunday) on which banks are open for business in New York City, Boston, Massachusetts and Canada.

"*Capital Lease Obligations*" of any Person means the obligations of such Person to pay rent or other amounts under any lease of (or other arrangement conveying the right to use) real or personal property, or a combination thereof, which obligations are required to be classified and accounted for as capital leases or financing leases on a balance sheet of such Person under GAAP, and the amount of such obligations shall be the capitalized amount thereof determined in accordance with GAAP.

"*Change in Control*" means: (a) before the Spin Out, the acquisition of ownership, directly or indirectly, beneficially or of record, by any Person or group (within the meaning of the Securities Exchange Act of 1934 and the rules of the SEC thereunder as in effect on the date hereof), of Equity Interests representing more than 50% of the aggregate ordinary voting power represented by the issued and outstanding Equity Interests of any Borrower; or (b) from and after the Spin Out: (1) the acquisition of ownership, directly or indirectly, beneficially or of record, by any Person or group (within the meaning of the Securities Exchange Act of 1934 and the rules of the SEC thereunder as in effect on the date hereof), of Equity Interests representing more than 25% of the aggregate ordinary voting power represented by the issued and outstanding Equity Interests of the Parent Borrower; (2) occupation of a majority of the seats (other than vacant seats) on the board of directors of any Borrower by Persons who were not (A) directors of such Borrower on the date the Spin Out is consummated or nominated or appointed by the board of directors of such Borrower or
(B) appointed by directors so nominated or appointed; (3) the acquisition of direct or indirect Control of the Parent Borrower by any Person or group; (4) the Parent Borrower ceases to own, directly or indirectly, 100% of all Equity Interests of any one or more of Torchlight Energy, Hazel, Hudspeth Oil or Hudspeth Operating; (5) the Parent Borrower ceases to Control each other Borrower; or (6) the sale of all or any material portion of the assets, in the aggregate, of the Parent Borrower and its Subsidiaries; provided, the Spin Out shall not constitute a Change in Control.

"*Code*" means the Internal Revenue Code of 1986, as amended.

"*Commitment*" means, with respect to the Lender, the amount set forth on Schedule 2.01A opposite the Lender's name, or in the Assignment and Assumption, and giving effect to (a) any reduction in such amount from time to time pursuant to Section 2.04(b) and (b) any reduction or increase in such amount from time to time pursuant to assignments by or to the Lender pursuant to Section 8.04.

"*Consolidated EBITDA*" means, at any date of determination, an amount equal to Consolidated Net Income of the Parent Borrower and its Subsidiaries on a consolidated basis for the most recently completed fiscal year of the Parent Borrower plus (a) the following to the extent deducted in calculating such Consolidated Net Income: (i) Consolidated Interest Charges, (ii) the provision for federal, state, local and foreign income taxes payable, (iii) depreciation and amortization expense and (iv) other expenses reducing such Consolidated Net Income which do not represent a cash item in such period or any future period (in each case of or by the Parent Borrower and its Subsidiaries for such fiscal year) and minus (b) the following to the extent included in calculating such Consolidated Net Income: (i) federal, state, local and foreign income tax credits and (ii) all non-cash items increasing Consolidated Net Income (in each case of or by the Parent Borrower and its Subsidiaries for such fiscal year).

"*Consolidated Interest Charges*" means, for any fiscal year of the Parent Borrower, the sum of (a) all interest, premium payments, debt discount, fees, charges and related expenses in

connection with borrowed money (including capitalized interest) or in connection with the deferred purchase price of assets, in each case to the extent treated as interest in accordance with GAAP, (b) all interest paid or payable with respect to discontinued operations and (c) the portion of rent expense under Capitalized Lease Obligations that is treated as interest in accordance with GAAP, in each case, of or the Parent Borrower and its Subsidiaries on a consolidated basis for the most recently completed fiscal year.

"*Consolidated Net Income*" means, at any date of determination, the net income (or loss) of the Parent Borrower and its Subsidiaries on a consolidated basis for the most recently completed fiscal year; provided that Consolidated Net Income shall exclude (a) extraordinary gains and extraordinary losses for such fiscal year, (b) the net income of any Subsidiary during such fiscal year to the extent that the declaration or payment of dividends or similar distributions by such Subsidiary of such income is not permitted by operation of the terms of its constitutive documents or any agreement, instrument or law applicable to such Subsidiary during such fiscal year, except that the Parent Borrower's equity in any net loss of any such Subsidiary for such fiscal year shall be included in determining Consolidated Net Income, and (c) any income (or loss) for such fiscal year of any Person if such Person is not a Subsidiary, except that Parent Borrower's equity in the net income of any such Person for such fiscal year shall be included in Consolidated Net Income up to the aggregate amount of cash actually distributed by such Person during such fiscal year to the Parent Borrower or a Subsidiary as a dividend or other distribution (and in the case of a dividend or other distribution to a Subsidiary, such Subsidiary is not precluded from further distributing such amount to the Parent Borrower as described in clause (b) of this proviso).

"*Control*" means the possession, directly or indirectly, of the power to direct or cause the direction of the management or policies of a Person, whether through the ability to exercise voting power, by contract or otherwise. "Controlling" and "Controlled" have meanings correlative thereto.

"*Debtor Relief Laws*" means the Bankruptcy Code, and all other liquidation, conservatorship, bankruptcy, assignment for the benefit of creditors, moratorium, rearrangement, receivership, insolvency, reorganization, or similar debtor relief laws of the United States or other applicable jurisdictions from time to time in effect and affecting the rights of creditors generally.

"*Default*" means any event or condition which constitutes an Event of Default or which upon notice, lapse of time or both would, unless cured or waived, become an Event of Default.

"*Disclosed Matters*" means the actions, suits and proceedings and the environmental matters (if any) disclosed in Schedule 3.06.

"*Disposition*" or "*Dispose*" means the sale, transfer, license, lease or other disposition (in one transaction or in a series of transactions and whether effected pursuant to a division or otherwise) of any property by any Person (including any sale and leaseback transaction and any issuance of Equity Interests by a Subsidiary of such Person), including any sale, assignment, transfer or other disposal, with or without recourse, of any notes or accounts receivable or any rights and claims associated therewith.

"*Dollars*", "*dollars*" or "*$*" refers to lawful money of the United States of America. "*Effective Date*" means the date on which the conditions specified in Section 4.01 are satisfied (or waived in accordance with Section 8.02).

"*Electronic Signature*" means an electronic sound, symbol, or process attached to, or associated with, a contract or other record and adopted by a Person with the intent to sign, authenticate or accept such contract or record.

"*Environmental Laws*" means all laws, rules, regulations, codes, ordinances, orders, decrees, judgments, injunctions, notices or binding agreements issued, promulgated or entered into by any Governmental Authority, relating in any way to (i) the environment, (ii) preservation or reclamation of natural resources, (iii) the management, release or threatened release of any Hazardous Material or (iv) health and safety matters.

"*Environmental Liability*" means any liability, contingent or otherwise (including any liability for damages, costs of environmental remediation, fines, penalties or indemnities), of the Borrower or any Subsidiary directly or indirectly resulting from or based upon (a) violation of any Environmental Law, (b) the generation, use, handling, transportation, storage, treatment or disposal of any Hazardous Materials, (c) exposure to any Hazardous Materials, (d) the release or threatened release of any Hazardous Materials into the environment or (e) any contract, agreement or other consensual arrangement pursuant to which liability is assumed or imposed with respect to any of the foregoing.

"*Equity Interests*" means shares of capital stock, partnership interests, membership interests in a limited liability company, beneficial interests in a trust or other equity ownership interests in a Person, and any warrants, options or other rights entitling the holder thereof to purchase or acquire any such equity interest, but excluding any debt securities convertible into any of the foregoing.

"*ERISA*" means the Employee Retirement Income Security Act of 1974, as amended from time to time, and the rules and regulations promulgated thereunder.

"*ERISA Affiliate*" means any trade or business (whether or not incorporated) that, together with the Borrowers, is treated as a single employer under Section 414(b) or (c) of the Code or Section 4001(14) of ERISA or, solely for purposes of Section 302 of ERISA and Section 412 of the Code, is treated as a single employer under Section 414 of the Code.

"*ERISA Event*" means (a) any "reportable event", as defined in Section 4043 of ERISA or the regulations issued thereunder with respect to a Plan (other than an event for which the 30 day notice period is waived); (b) the failure to satisfy the "minimum funding standard" (as defined in Section 412 of the Code or Section 302 of ERISA), whether or not waived; (c) the filing pursuant to Section 412(c) of the Code or Section 302(c) of ERISA of an application for a waiver of the minimum funding standard with respect to any Plan; (d) the incurrence by any Borrowers or any of their ERISA Affiliates of any liability under Title IV of ERISA with respect to the termination of any Plan; (e) the receipt by any Borrowers or any ERISA Affiliate from the PBGC or a plan administrator of any notice relating to an intention to terminate any Plan or Plans or to appoint a trustee to administer any Plan; (f) the incurrence by any Borrowers or any of their ERISA Affiliates of any liability with respect to the withdrawal or partial withdrawal of any Borrowers or any of their ERISA Affiliates from any Plan or Multiemployer Plan; or (g) the receipt by any Borrowers or any ERISA Affiliate of any notice, or the receipt by any Multiemployer Plan from any Borrowers or any ERISA Affiliate of any notice, concerning the imposition upon any Borrowers or any of their ERISA Affiliates of Withdrawal Liability or a determination that a Multiemployer Plan is, or is expected to be, insolvent or in reorganization, within the meaning of Title IV of ERISA.

"*Event of Default*" has the meaning assigned to such term in Section 7.01.

"*Excess Cash Flow*" means, for any fiscal year of the Parent Borrower and its Subsidiaries, the excess (if any) of (a) Consolidated EBITDA for such fiscal year over (b) the sum (for such fiscal year) of (i) Consolidated Interest Charges actually paid in cash by the Parent Borrower and its Subsidiaries, (ii) scheduled principal repayments, to the extent actually made, of Existing Loans and the Existing Secured Note on the Maturity Date, (iii) all income taxes actually paid in cash by the Parent Borrower and its Subsidiaries and (iv) capital expenditures actually made by the Parent Borrower and its Subsidiaries in such fiscal year.

"*Excluded Issuance*" by the Parent Borrower means an issuance and sale of an Equity Interest in the Parent Borrower to its employees, officers, directors or consultants, or an issuance of shares of capital stock of (or other ownership or profit interests in) the Parent Borrower upon the exercise of warrants, options or other rights for the purchase of such capital stock (or other ownership or profit interest), in each case, pursuant to employee stock option plans of the Parent Borrower.

"*Excluded Taxes*" means any of the following Taxes imposed on or with respect to a Recipient or required to be withheld or deducted from a payment to a Recipient, (a) Taxes imposed on or measured by net income (however denominated), franchise Taxes, and branch profits Taxes, in each case, (i) imposed as a result of such Recipient being organized under the laws of, or having its principal office or, in the case of any Lender, its applicable lending office located in, the jurisdiction imposing such Tax (or any political subdivision thereof) or (ii) that are Other Connection Taxes, (b) in the case of a Lender, U.S. federal withholding Taxes imposed on amounts payable to or for the account of such Lender with respect to an applicable interest in a Loan or Commitment pursuant to a law in effect on the date on which such Lender acquires such interest in the Loan or Commitment, except to the extent that, pursuant to Section 2.08, amounts with respect to such Taxes were payable either to such Lender's assignor immediately before such Lender acquired the applicable interest in a Loan or Commitment or to such Lender immediately before it changed its lending office, and (c) any withholding Taxes imposed under FATCA.

"*Existing Loans*" means the term loans made by the Lender to the Borrower in the aggregate principal amount of $5,000,000, as further described in Schedule A hereto.

"*Existing Secured Note*" means the 8% Secured Promissory Note, dated October 1, 2021, issued by Oilco Holdings, Inc., a Nevada corporation (now known as Next Bridge Hydrocarbons, Inc.), in favor of Lender.

"*Existing Security Documents*" means, collectively, (a) the Stock Pledge Agreement dated as of September 30, 2021, executed and delivered by Gregory McCabe in favor of the Lender, and
(b) the Deed of Trust, Mortgage, Security Agreement, Fixture Filing, Financing Statement and Assignment of Production, dated as of September 30, 2021, executed and delivered by Wolfbone Investments, LLC, a Texas limited liability company, to Travis Vargo, as trustee, for the benefit of the Lender.

"*Extraordinary Receipt*" means any cash received by or paid to or for the account of any Person not in the ordinary course of business, including tax refunds, pension plan reversions, proceeds of insurance (other than proceeds of business interruption insurance to the extent such proceeds constitute compensation for lost earnings), condemnation awards (and payments in lieu thereof), indemnity payments and any purchase price adjustments; *provided*, that an Extraordinary Receipt shall not include cash receipts from proceeds of insurance, condemnation awards (or payments in lieu thereof) or indemnity payments to the extent that such proceeds, awards or payments in respect of loss or damage to equipment, fixed assets or real property are applied (or in

respect of which expenditures were previously incurred) to replace or repair the equipment, fixed assets or real property in respect of which such proceeds were received in accordance with the terms of Section 2.06(b)(v).

"*FATCA*" means Sections 1471 through 1474 of the Code, as of the date of this Agreement (or any amended or successor version that is substantively comparable and not materially more onerous to comply with), any current or future regulations or official interpretations thereof, any agreement entered into pursuant to Section 1471(b)(1) of the Code and any fiscal or regulatory legislation, rules or practices adopted pursuant to any intergovernmental agreement, treaty or convention among Governmental Authorities and implementing such Sections of the Code.

"*Federal Reserve Board*" means the Board of Governors of the Federal Reserve System of the United States of America.

"*Financial Officer*" means the chief financial officer, principal accounting officer, treasurer or controller of a Borrower.

"*GAAP*" means generally accepted accounting principles in the United States of America. "*Governmental Authority*" means the government of the United States of America, any other nation or any political subdivision thereof, whether state or local, and any agency, authority, instrumentality, regulatory body, court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative powers or functions of or pertaining to government.

"*Guarantee*" of or by any Person (the "*guarantor*") means any obligation, contingent or otherwise, of the guarantor guaranteeing or having the economic effect of guaranteeing any Indebtedness or other obligation of any other Person (the "*primary obligor*") in any manner, whether directly or indirectly, and including any obligation of the guarantor, direct or indirect, (a) to purchase or pay (or advance or supply funds for the purchase or payment of) such Indebtedness or other obligation or to purchase (or to advance or supply funds for the purchase of) any security for the payment thereof, (b) to purchase or lease property, securities or services for the purpose of assuring the owner of such Indebtedness or other obligation of the payment thereof, (c) to maintain working capital, equity capital or any other financial statement condition or liquidity of the primary obligor so as to enable the primary obligor to pay such Indebtedness or other obligation or (d) as an account party in respect of any letter of credit or letter of guaranty issued to support such Indebtedness or obligation; *provided*, that the term Guarantee shall not include endorsements for collection or deposit in the ordinary course of business.

"*Guaranty"* has the meaning assigned to it in Section 2.10.

"*Hazardous Materials*" means all explosive or radioactive substances or wastes and all hazardous or toxic substances, wastes or other pollutants, including petroleum or petroleum distillates, asbestos or asbestos containing materials, polychlorinated biphenyls, radon gas, infectious or medical wastes and all other substances or wastes of any nature regulated pursuant to any Environmental Law.

"*Hazel*" has the meaning set forth in the introductory paragraph hereto. "*Hudspeth Oil*" has the meaning set forth in the introductory paragraph hereto.

"*Hudspeth Operating*" has the meaning set forth in the introductory paragraph hereto.

"*Immaterial Subsidiary*" means any Subsidiary of the Parent Borrower that (a) individually constitutes or holds less than two and one half percent (2.5%) of the Parent Borrower's consolidated total assets and generates less than two and one half percent (2.5%) of the Parent Borrower's consolidated total revenue and (b) when taken together with all then existing Immaterial Subsidiaries, such Subsidiary and such Immaterial Subsidiaries, in the aggregate, would constitute or hold less than five percent (5%) of the Parent Borrower's consolidated total assets and generate less than five percent (5%) of the Parent Borrower's consolidated total revenue, in each case of the foregoing clauses as of the last day of, or for, the most recently ended fiscal period for which financial statements were required to have been delivered pursuant to 5.01(a) or (b).

"*Indebtedness*" of any Person means, without duplication, (a) all obligations of such Person for borrowed money or with respect to deposits or advances of any kind, (b) all obligations of such Person evidenced by bonds, debentures, notes or similar instruments, (c) all obligations of such Person upon which interest charges are customarily paid, (d) all obligations of such Person under conditional sale or other title retention agreements relating to property acquired by such Person,
(e) all obligations of such Person in respect of the deferred purchase price of property or services (excluding current accounts payable incurred in the ordinary course of business), (f) all Indebtedness of others secured by (or for which the holder of such Indebtedness has an existing right, contingent or otherwise, to be secured by) any Lien on property owned or acquired by such Person, whether or not the Indebtedness secured thereby has been assumed, (g) all Guarantees by such Person of Indebtedness of others, (h) all Capital Lease Obligations of such Person, (i) all obligations, contingent or otherwise, of such Person as an account party in respect of letters of credit, demand guarantees and similar independent undertakings and (j) all obligations, contingent or otherwise, of such Person in respect of bankers' acceptances. The Indebtedness of any Person shall include the Indebtedness of any other entity (including any partnership in which such Person is a general partner) to the extent such Person is liable therefor as a result of such Person's ownership interest in or other relationship with such entity, except to the extent the terms of such Indebtedness provide that such Person is not liable therefor.

"*Indemnified Taxes*" means (a) Taxes, other than Excluded Taxes, imposed on or with respect to any payment made by or on account of any obligation of any Loan Party under any Loan Document and (b) to the extent not otherwise described in (a) hereof, Other Taxes.

"*Indemnitee*" has the meaning assigned to it in Section 8.03(c). "*IRS*"
means the United States Internal Revenue Service.
"*Leases*" shall mean the leases held by any Borrower or its Subsidiaries pertaining to such Borrower's or such Subsidiary's interests in any of the following oil and gas projects: the Orogrande Project in Hudspeth County, Texas, the Hazel Project in Sterling, Tom Green, and Irion Counties, Texas, and two wells in Central Oklahoma.

"*Lender-Related Person*" has the meaning assigned to it in Section 8.03(b).

"*Lenders*" means the Persons listed on Schedule 2.01A and any other Person that shall have become a party hereto pursuant to an Assignment and Assumption or otherwise, other than any such Person that ceases to be a party hereto pursuant to an Assignment and Assumption or otherwise.

"*Liabilities*" means any losses, claims (including intraparty claims), demands, damages or liabilities of any kind.

"*Lien*" means, with respect to any asset, (a) any mortgage, deed of trust, lien, pledge, hypothecation, encumbrance, charge or security interest in, on or of such asset, (b) the interest of a vendor or a lessor under any conditional sale agreement, capital lease or title retention agreement (or any financing lease having substantially the same economic effect as any of the foregoing) relating to such asset and (c) in the case of securities, any purchase option, call or similar right of a third party with respect to such securities.

"*Loan Documents*" means this Agreement, including schedules and exhibits hereto, and any agreements entered into in connection herewith by any Loan Party with or in favor of the Lender, including the Note, any amendments, modifications or supplements thereto or waivers thereof, and any other documents prepared in connection with the other Loan Documents, if any.

"*Loan Parties*" means the Borrowers.

"*Loans*" means the loans made by the Lender to the Borrowers pursuant to this Agreement. "*Margin Stock*" means margin stock within the meaning of Regulations T, U and X, as applicable.

"*Material Adverse Effect*" means (a) a material adverse change in, or a material adverse effect upon, the operations, business, properties, liabilities (actual or contingent), or condition (financial or otherwise) of the Parent Borrower and its Subsidiaries taken as a whole; (b) a material impairment of the rights and remedies of the Lender under any Loan Document, or of the ability of any Loan Party to perform its obligations under any Loan Document to which it is a party; or (c) a material adverse effect upon the legality, validity, binding effect or enforceability against any Loan Party of any Loan Document to which it is a party.

"*Material Indebtedness*" means Indebtedness (other than the Loans), or obligations in respect of one or more Swap Agreements, of any one or more of any Borrower and its Subsidiaries in an aggregate principal amount exceeding $250,000. For purposes of determining Material Indebtedness, the "principal amount" of the obligations of any Borrower or any Subsidiary in respect of any Swap Agreement at any time shall be the maximum aggregate amount (giving effect to any netting agreements) that such Borrower or such Subsidiary would be required to pay if such Swap Agreement were terminated at such time.

"*Maturity Date*" means March 31, 2023; *provided*, if the Parent Borrower consummates a Qualified Financing on or before March 31, 2023 and if no Default exists, then the Maturity Date shall be October 3, 2023.

"*Maximum Lawful Rate*" has the meaning assigned to it in Section 8.14.

"*Monthly Payment Date*" means the last Business Day of each of April 2023, May 2023, June 2023, July 2023 and August 2023, and the Maturity Date.

"*Moody's*" means Moody's Investors Service, Inc.

"*Multiemployer Plan*" means a multiemployer plan as defined in Section 4001(a)(3) of ERISA.

"*Note*" means a promissory note made by the Borrowers in favor of the Lender evidencing the Loans made by the Lender, in form and substance satisfactory to the Lender.

"*Obligations*" means all advances to, and debts, liabilities, obligations, covenants and duties of, the Borrowers arising under any Loan Document or otherwise with respect to any Loan, whether direct or indirect (including those acquired by assumption), absolute or contingent, due or to become due, now existing or hereafter arising and including interest and fees that accrue after the commencement by or against the Borrowers or any Affiliate thereof of any proceeding under any Debtor Relief Laws naming such Person as the debtor in such proceeding, regardless of whether such interest and fees are allowed or allowable claims in such proceeding. Without limiting the foregoing, the Obligations include (a) the obligation to pay principal, interest, charges, expenses, fees, indemnities and all other amounts payable by the Borrowers under any Loan Document and (b) the obligation of the Borrowers to reimburse any amount in respect of any of the foregoing that the Lender, in each case in its sole discretion, may elect to pay or advance on behalf of the Borrowers.

"*Other Connection Taxes*" means, with respect to any Recipient, Taxes imposed as a result of a present or former connection between such Recipient and the jurisdiction imposing such Tax (other than connections arising from such Recipient having executed, delivered, become a party to, performed its obligations under, received payments under, received or perfected a security interest under, engaged in any other transaction pursuant to or enforced any Loan Document, or sold or assigned an interest in any Loan or Loan Document).

"*Other Taxes*" means all present or future stamp, court or documentary, intangible, recording, filing or similar Taxes that arise from any payment made under, from the execution, delivery, performance, enforcement or registration of, from the receipt or perfection of a security interest under, or otherwise with respect to, any Loan Document, except any such Taxes that are Other Connection Taxes imposed with respect to an assignment.

"*Parent Borrower*" has the meaning set forth in the introductory paragraph hereto. "*Participant*" has the meaning assigned to such term in Section 8.04(c). "*Participant Register*" has the meaning assigned to such term in Section 8.04(c). "*Patriot Act*" has the meaning assigned to it in Section 8.16.

"*PBGC*" means the Pension Benefit Guaranty Corporation referred to and defined in ERISA and any successor entity performing similar functions.

"*Permitted Encumbrances*" means:

(a) Liens imposed by law for Taxes that are not yet due or are being contested in compliance with Section 5.04;

(b) carriers', warehousemen's, mechanics', materialmen's, repairmen's and other like Liens imposed by law, arising in the ordinary course of business and securing obligations that are not overdue by more than 30 days or are being contested in compliance with Section 5.04;

(c) pledges and deposits made in the ordinary course of business in compliance with workers' compensation, unemployment insurance and other social security laws or regulations;

(d) deposits to secure the performance of bids, trade contracts, leases, statutory obligations, surety and appeal bonds, performance bonds and other obligations of a like nature, in each case in the ordinary course of business;

(e) judgment liens in respect of judgments that do not constitute an Event of Default under Section 7.01(k);

(f) easements, zoning restrictions, rights-of-way and similar encumbrances on real property imposed by law or arising in the ordinary course of business that do not secure any monetary obligations and do not materially detract from the value of the affected property or interfere with the ordinary conduct of business of any Borrower or any Subsidiary of a Borrower;

(g) To the extent constituting Liens, the Leases; *provided* that the Leases do not secure any Indebtedness (other than Indebtedness owing to the Lender) for borrowed money;

(h) Liens in favor of a banking or other financial institution arising as a matter of law or in the ordinary course of business under customary general terms and conditions encumbering deposits or other funds maintained with a financial institution (including the right of set-off) and that are within the general parameters customary in the banking industry or arising pursuant to such banking institution's general terms and conditions;

(i) Liens on specific items of inventory or other goods (other than fixed or capital assets) and proceeds thereof of any Person securing such Person's obligations in respect of bankers' acceptances or letters of credit issued or created for the account of such Person to facilitate the purchase, shipment or storage of such inventory or other goods in the ordinary course of business; and

(j) Liens in favor of customs and revenue authorities arising as a matter of law to secure payment of customs duties in connection with the importation of goods in the ordinary course of business so long as such Liens only cover the related goods;

provided that the term "Permitted Encumbrances" shall not include any Lien securing Indebtedness. "*Permitted Investments*" means:

(a) direct obligations of, or obligations the principal of and interest on which are unconditionally guaranteed by, the United States of America (or by any agency thereof to the extent such obligations are backed by the full faith and credit of the United States of America), in each case maturing within one year from the date of acquisition thereof;

(b) investments in commercial paper maturing within 270 days from the date of acquisition thereof and having, at such date of acquisition, the highest credit rating obtainable from S&P or from Moody's;

(c) investments in certificates of deposit, banker's acceptances and time deposits maturing within 180 days from the date of acquisition thereof issued or guaranteed by or placed with, and money market deposit accounts issued or offered by, any domestic office of any commercial bank organized under the laws of the United States of America

or any State thereof which has a combined capital and surplus and undivided profits of not less than $500,000,000;

(d) fully collateralized repurchase agreements with a term of not more than 30 days for securities described in clause (a) above and entered into with a financial institution satisfying the criteria described in clause (c) above; and

(e) money market funds that (i) comply with the criteria set forth in SEC Rule 2a-7 under the Investment Company Act of 1940, (ii) are rated AAA by S&P and Aaa by Moody's and (iii) have portfolio assets of at least $5,000,000,000.

"*Person*" means any natural person, corporation, limited liability company, trust, joint venture, association, company, partnership, Governmental Authority or other entity.

"*Plan*" means any employee pension benefit plan (other than a Multiemployer Plan) subject to the provisions of Title IV of ERISA or Section 412 of the Code or Section 302 of ERISA, and in respect of which the Borrower or any ERISA Affiliate is (or, if such plan were terminated, would under Section 4069 of ERISA be deemed to be) an "employer" as defined in Section 3(5) of ERISA.

"*Plan Asset Regulations*" means 29 CFR § 2510.3-101 et seq., as modified by Section 3(42) of ERISA, as amended from time to time.

"*Proceeding*" means any claim, litigation, investigation, action, suit, arbitration or administrative, judicial or regulatory action or proceeding in any jurisdiction.

"*Qualified Financing*" means a transaction or series of transactions pursuant to which the Parent Borrower and/or any of its Subsidiaries issues and sells its Equity Interests (excluding, for avoidance of doubt, the Spin Out), and/or incurs Indebtedness (other than Indebtedness owing to the Lender), for aggregate gross proceeds of at least $30,000,000 (excluding all proceeds from the incurrence of any Indebtedness that is converted into such Equity Interests, or otherwise cancelled in consideration for the issuance of such Equity Interests) with the principal purpose of raising capital.

"*Recipient*" means the Lender.

"*Register*" has the meaning assigned to such term in Section 8.04(b).

"*Regulation D*" means Regulation D of the Federal Reserve Board, as in effect from time to time and all official rulings and interpretations thereunder or thereof.

"*Regulation T*" means Regulation T of the Federal Reserve Board, as in effect from time to time and all official rulings and interpretations thereunder or thereof.

"*Regulation U*" means Regulation U of the Federal Reserve Board, as in effect from time to time and all official rulings and interpretations thereunder or thereof.

"*Regulation X*" means Regulation X of the Federal Reserve Board, as in effect from time to time and all official rulings and interpretations thereunder or thereof.

"*Related Parties*" means, with respect to any specified Person, such Person's Affiliates and the respective directors, officers, employees, agents and advisors of such Person and such Person's Affiliates.

"*Responsible Officer*" means the president, Financial Officer or other executive officer of a Borrower.

"*Restricted Payment*" means any dividend or other distribution (whether in cash, securities or other property) with respect to any Equity Interests in any Borrower or any Subsidiary of a Borrower, or any payment (whether in cash, securities or other property), including any sinking fund or similar deposit, on account of the purchase, redemption, retirement, acquisition, cancellation or termination of any such Equity Interests or any option, warrant or other right to acquire any such Equity Interests.

"*S&P*" means Standard & Poor's Rating Services, a Standard & Poor's Financial Services LLC business.

"*Sanctioned Country*" means, at any time, a country, region or territory which is itself the subject or target of any Sanctions (at the time of this Agreement, the so - called Donetsk People's Republic, the so- called Luhansk People's Republic, the Crimea Region of Ukraine, Cuba, Iran, North Korea and Syria).

"*Sanctioned Person*" means, at any time, (a) any Person listed in any Sanctions-related list of designated Persons maintained by the Office of Foreign Assets Control of the U.S. Department of the Treasury, the U.S. Department of State, (b) any Person operating, organized or resident in a Sanctioned Country, (c) any Person owned or controlled by any such Person or Persons described in the foregoing clauses (a) or (b), or (d) any Person otherwise the subject of any Sanctions.

"*Sanctions*" means all economic or financial sanctions or trade embargoes imposed, administered or enforced from time to time by the U.S. government, including those administered by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the U.S. Department of State.

"*SEC*" means the Securities and Exchange Commission of the United States of America. "*Solvent*" means, as to any Person as of any date of determination, that on such date (a) the fair value of the property of such Person is greater than the total amount of liabilities, including contingent liabilities, of such Person, (b) the present fair saleable value of such Person is not less than the amount that will be required to pay the probable liability of such Person on its debts, including contingent debts, as they become absolute and matured and (c) such Person does not intend to, and does not believe that it will, incur debts or liabilities, including contingent debts and liabilities, beyond such Person's ability to pay such debts and liabilities as they mature. The amount of any contingent liability at any time shall be computed as the amount that, in light of all of the facts and circumstances existing at such time, represents the amount that can reasonably be expected to become an actual or matured liability.

"*Spin Out*" means the transaction (or series of transactions) whereby the Lender distributes all of the shares of common stock of the Parent Borrower to the holders of the Series A Non-Voting Preferred Stock of the Lender, immediately after which all shares of the Series A Non-Voting Preferred Stock of the Lender are cancelled.

"*Stated Rate*" has the meaning assigned to such term in Section 8.12.

"*subsidiary*" means, with respect to any Person (the "*parent*") at any date, any corporation, limited liability company, partnership, association or other entity the accounts of which would be consolidated with those of the parent in the parent's consolidated financial statements if such financial statements were prepared in accordance with GAAP as of such date, as well as any other corporation, limited liability company, partnership, association or other entity (a) of which securities or other ownership interests representing more than 50% of the equity or more than 50% of the ordinary voting power or, in the case of a partnership, more than 50% of the general partnership interests are, as of such date, owned, controlled or held, or (b) that is, as of such date, otherwise Controlled by the parent and/or one or more subsidiaries of the parent.

"*Subsidiary*" means any subsidiary of the Parent Borrower.

"*Swap Agreement*" means any agreement with respect to any swap, forward, future or derivative transaction or option or similar agreement involving, or settled by reference to, one or more rates, currencies, commodities, equity or debt instruments or securities, or economic, financial or pricing indices or measures of economic, financial or pricing risk or value or any similar transaction or any combination of these transactions; *provided* that no phantom stock or similar plan providing for payments only on account of services provided by current or former directors, officers, employees or consultants of the Parent Borrower or the Subsidiaries shall be a Swap Agreement.

"*Taxes*" means all present or future taxes, levies, imposts, duties, deductions, withholdings (including backup withholding), value added taxes, or any other goods and services, use or sales taxes, assessments, fees or other charges imposed by any Governmental Authority, including any interest, additions to tax or penalties applicable thereto.

"*Torchlight Energy*" has the meaning set forth in the introductory paragraph hereto. "*Transactions*" means, with respect to any Loan Party, the execution, delivery and performance by such Loan Party of each Loan Document to which it is party, the borrowing of Loans, and the use of the proceeds thereof.

"*Withdrawal Liability*" means liability to a Multiemployer Plan as a result of a complete or partial withdrawal from such Multiemployer Plan, as such terms are defined in Part I of Subtitle E of Title IV of ERISA.

Section 1.02. *Terms Generally*. The definitions of terms herein shall apply equally to the singular and plural forms of the terms defined. Whenever the context may require, any pronoun shall include the corresponding masculine, feminine and neuter forms. The words "include", "includes" and "including" shall be deemed to be followed by the phrase "without limitation". The word "will" shall be construed to have the same meaning and effect as the word "shall". Unless the context requires otherwise (a) any definition of or reference to any agreement, instrument or other document herein shall be construed as referring to such agreement, instrument or other document as from time to time amended, supplemented or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein), (b) any reference herein to any Person shall be construed to include such Person's successors and assigns, (c) the words "herein", "hereof" and "hereunder", and words of similar import, shall be construed to refer to this Agreement in its entirety and not to any particular provision hereof, (d) all references herein to Articles, Sections, Exhibits and Schedules shall be construed to refer to Articles and Sections of,

and Exhibits and Schedules to, this Agreement, (e) any reference to any law, rule or regulation herein shall, unless otherwise specified, refer to such law, rule or regulation as amended, modified or supplemented from time to time and (f) the words "asset" and "property" shall be construed to have the same meaning and effect and to refer to any and all tangible and intangible assets and properties, including cash, securities, accounts and contract rights.

Section 1.03. *Accounting Terms; GAAP*. (a) Except as otherwise expressly provided herein, all terms of an accounting or financial nature shall be construed in accordance with GAAP, as in effect from time to time. Notwithstanding any other provision contained herein, all terms of an accounting or financial nature used herein shall be construed, and all computations of amounts and ratios referred to herein shall be made, without giving effect to (i) any election under Financial Accounting Standards Board Accounting Standards Codification 825 (or any other Financial Accounting Standard having a similar result or effect) to value any Indebtedness or other liabilities of the Borrower or any Subsidiary at "fair value", as defined therein and (ii) any treatment of Indebtedness under Accounting Standards Codification 470-20 or 2015-03 (or any other Accounting Standards Codification or Financial Accounting Standard having a similar result or effect) to value any such Indebtedness in a reduced or bifurcated manner as described therein, and such Indebtedness shall at all times be valued at the full stated principal amount thereof.

(b) Notwithstanding anything to the contrary contained in Section 1.04(a) or in the definition of "Capital Lease Obligations," any change in accounting for leases pursuant to GAAP resulting from the adoption of Financial Accounting Standards Board Accounting Standards Update No. 2016-02, Leases (Topic 842) ("*FAS 842*"), to the extent such adoption would require treating any lease (or similar arrangement conveying the right to use) as a capital lease where such lease (or similar arrangement) would not have been required to be so treated under GAAP as in effect on December 31, 2015, such lease shall not be considered a capital lease, and all calculations and deliverables under any Loan Document shall be made or delivered, as applicable, in accordance therewith.

ARTICLE 2
THE LOANS

Section 2.01. *Commitment*. Subject to the terms and conditions set forth herein, the Lender agrees to make Loans to the Borrowers from time to time during the Availability Period in an aggregate principal amount not to exceed the Lender's Commitment. Amounts borrowed under this Section 2.01(a) and repaid or prepaid may not be reborrowed.

Section 2.02. *Loans and Borrowings*. (a) Each Loan shall be in a principal amount of $500,000 or a whole multiple of $100,000 in excess thereof (or, if less, the remaining unused portion of the Commitment).

(b) Notwithstanding any other provision of this Agreement, effective as of the date hereof, each Borrower hereby expressly acknowledges and agrees that the Existing Loans shall constitute Loans hereunder for all purposes of the Loan Documents, and that $5,000,000 of the Commitment shall be deemed to have been utilized hereunder as of the Effective Date.

Section 2.03. *Requests for Loans*. To request a Loan, the Parent Borrower shall notify the Lender of such request by submitting a Borrowing Request not later than 11:00 a.m., New York City time, at least ten Business Days before the date of the proposed Borrowing. Each such Borrowing Request shall be irrevocable and shall be signed by a Responsible Officer of the Parent

Borrower. Each such Borrowing Request shall specify the following information:

(i) the principal amount of the requested Loan;

(ii) the date of such Loan, which shall be a Business Day;

(iii) detailed evidence of how the proceeds of the preceding Loans have been applied by the applicable Borrower(s);

(iv) a detailed description of the use of proceeds of such Loan by the applicable Borrower(s); and

(v) the location and number of the applicable Borrower's account in the United States to which funds are to be disbursed.

Section 2.04. *Termination and Reduction of Commitments*. (a) Unless previously terminated, the Commitment shall terminate on the Maturity Date.

(b) The Borrowers may at any time terminate, or from time to time reduce, the Commitment, by irrevocable written notice to the Lender. Any termination or reduction of the Commitment shall be permanent.

Section 2.05. *Repayment of Loans; Evidence of Debt*. (a) The Borrowers hereby unconditionally promise to pay, jointly and severally, to the Lender the then unpaid principal amount of each Loan on the Maturity Date. If a Qualified Financing is consummated on or before March 31, 2023, then the Borrowers shall repay, jointly and severally, to the Lender the aggregate principal amount of all Loans outstanding in equal monthly installments, one such installment due and payable on each Monthly Payment Date (which amounts shall be reduced as a result of the application of prepayments made pursuant to Section 2.06); *provided*, that the final principal repayment installment of the Loans shall be repaid on the Maturity Date and in any event shall be in an amount equal to the aggregate principal amount of all Loans outstanding on such date.

(b) The Lender shall maintain in accordance with its usual practice an account or accounts evidencing the indebtedness of the Borrowers to the Lender resulting from each Loan made by the Lender, including the amounts of principal and interest payable and paid to the Lender from time to time hereunder.

(c) The entries made in the accounts maintained pursuant to paragraph (b) of this Section shall be conclusive (absent manifest error) evidence of the existence and amounts of the obligations recorded therein; *provided* that the failure of the Lender to maintain such accounts or any error therein shall not in any manner affect the obligation of any Borrower to repay the Loans in accordance with the terms of this Agreement.

(d) The Loans made by the Lender shall be evidenced by one or more Notes executed by the Borrowers in an original principal amount equal to the Lender's Commitment.

Section 2.06. *Prepayment of Loans*. (a) Optional. The Borrowers shall have the right at any time and from time to time to prepay any Loan in whole or in part, without penalty or premium, subject to prior notice in accordance with Section 2.06(c). Each prepayment of Loans pursuant to this Section 2.06(a) shall be applied ratably to the Loans.

(b) Mandatory Prepayments. From and after the Spin Out:

(i) Within five Business Days after financial statements are required to be delivered pursuant to Section 5.01(a), the Borrowers shall prepay an aggregate principal amount of Loans equal to the excess (if any) of (A) 100% of Excess Cash Flow for the fiscal year covered by such financial statements over (B) $10,000,000 (such prepayments to be applied as set forth in clause (vi) below).

(ii) If any Loan Party or any of its Subsidiaries Disposes of any property (other than any Disposition of any property permitted by Section 6.04) which results in the realization by such Person of net cash proceeds, the Borrowers shall prepay an aggregate principal amount of Loans equal to 100% of such net cash proceeds immediately upon receipt thereof by such Person (such prepayments to be applied as set forth in clause (vi) below);

(iii) Upon the sale or issuance by any Loan Party or any of its Subsidiaries of any of its Equity Interests (other than a Qualified Financing, any Excluded Issuances and any non-cash sales or issuances of Equity Interests from one Loan Party to another Loan Party), the Borrowers shall prepay an aggregate principal amount of Loans equal to 100% of all net cash proceeds received therefrom immediately upon receipt thereof by such Loan Party or such Subsidiary (such prepayments to be applied as set forth in clause (vi) below).

(iv) Upon the incurrence or issuance by any Loan Party or any of its Subsidiaries of any Indebtedness (other than Indebtedness expressly permitted to be incurred or issued pursuant to Section 6.01), the Borrowers shall prepay an aggregate principal amount of Loans equal to 100% of all net cash proceeds received therefrom immediately upon receipt thereof by such Loan Party or such Subsidiary (such prepayments to be applied as set forth in clause (vi) below).

(v) Upon any Extraordinary Receipt received by or paid to or for the account of any Loan Party or any of its Subsidiaries, and not otherwise included in clause (ii), (iii) or (iv) of this Section 2.06(b), the Borrowers shall prepay an aggregate principal amount of Loans equal to 100% of all net cash proceeds received therefrom immediately upon receipt thereof by such Loan Party or such Subsidiary (such prepayments to be applied as set forth in clause (vi) below); *provided*, that with respect to any proceeds of insurance or condemnation awards (or payments in lieu thereof), at the election of the Borrowers (as notified by the Parent Borrower to the Lender on or prior to the date of receipt of such insurance proceeds or condemnation awards), and so long as no Default shall have occurred and be continuing, the Borrowers or such Subsidiary may apply within 30 days after the receipt of such cash proceeds to replace or repair the equipment, fixed assets or real property in respect of which such cash proceeds were received; and *provided*, *further*, that any cash proceeds not so applied shall be immediately applied to the prepayment of the Loans as set forth in this Section 2.06(b)(v).

(vi) Each prepayment of Loans pursuant to the foregoing provisions of this Section 2.06(b) shall be applied ratably to the Loans.

(c) The Borrowers shall notify the Lender by telephone (confirmed by telecopy or electronic mail) of any prepayment hereunder on or before the date of prepayment. Each such notice shall be irrevocable and shall specify the prepayment date and the principal amount of each Loan or portion thereof to be prepaid. Prepayments shall be accompanied by accrued interest to the extent required by Section 2.07.

Section 2.07. *Interest*. (a) The Loans shall bear interest at a rate equal to eight percent (8%) per annum.

(b) Notwithstanding the foregoing, if any principal of or interest on any Loan or any fee or other amount payable by any Borrower or any other Loan Party hereunder is not paid when due, whether at stated maturity, upon acceleration or otherwise, such overdue amount shall bear interest, after as well as before judgment, at a rate per annum equal to twelve percent (12%) per annum. While any Event of Default exists, the Borrowers shall pay interest on the principal amount of all outstanding Obligations hereunder at a fixed interest rate per annum at all times equal to twelve percent (12%) per annum to the fullest extent permitted by applicable laws.

(c) Accrued interest on each Loan shall be payable in arrears on the Maturity Date for such Loan, on the date of repayment of principal of such Loan on each Monthly Payment Date pursuant to Section 2.05(a), on the date of any prepayment (in whole or in part) of such Loan, and upon termination of the Commitment; *provided* that (i) interest accrued pursuant to paragraph (b) of this Section shall be payable on demand, and (ii) in the event of any repayment or prepayment of any Loan, accrued interest on the principal amount repaid or prepaid shall be payable on the date of such repayment or prepayment.

(d) Interest shall be computed on the basis of a year of 360 days, and interest shall be payable for the actual number of days elapsed (including the first day but excluding the last day). All interest hereunder on any Loan shall be computed on a daily basis based upon the outstanding principal amount of such Loan as of the applicable date of determination.

Section 2.08. *Withholding of Taxes; Gross-Up*.

(a) *Payments Free of Taxes*. Any and all payments by or on account of any obligation of any Loan Party under any Loan Document shall be made without deduction or withholding for any Taxes, except as required by applicable law. If any applicable law (as determined in the good faith discretion of an applicable withholding agent) requires the deduction or withholding of any Tax from any such payment by a withholding agent, then the applicable withholding agent shall be entitled to make such deduction or withholding and shall timely pay the full amount deducted or withheld to the relevant Governmental Authority in accordance with applicable law and, if such Tax is an Indemnified Tax, then the sum payable by the applicable Loan Party shall be increased as necessary so that after such deduction or withholding has been made (including such deductions and withholdings applicable to additional sums payable under this Section) the applicable Recipient receives an amount equal to the sum it would have received had no such deduction or withholding been made.

(b) *Payment of Other Taxes by the Borrowers*. The Loan Parties shall timely pay to the relevant Governmental Authority in accordance with applicable law, or at the option of the Lender timely reimburse it for, Other Taxes.

(c) *Evidence of Payments*. As soon as practicable after any payment of Taxes by any Loan Party to a Governmental Authority pursuant to this Section, at Lender's request, such Loan Party shall deliver to the Lender the original or a certified copy of a receipt issued by such Governmental Authority evidencing such payment, a copy of the return reporting such payment or other evidence of such payment reasonably satisfactory to the Lender.

(d) *Indemnification by the Borrowers*. The Borrowers shall jointly and severally indemnify each Recipient, within 10 days after demand therefor, for the full amount of any

Indemnified Taxes (including Indemnified Taxes imposed or asserted on or attributable to amounts payable under this Section) payable or paid by such Recipient or required to be withheld or deducted from a payment to such Recipient and any reasonable expenses arising therefrom or with respect thereto, whether or not such Indemnified Taxes were correctly or legally imposed or asserted by the relevant Governmental Authority. A certificate as to the amount of such payment or liability delivered to the Parent Borrower by the Lender shall be conclusive absent manifest error.

(e) *Survival*. Each party's obligations under this Section shall survive the resignation or replacement of the Lender or any assignment of rights by, or the replacement of, the Lender, the termination of the Commitment and the repayment, satisfaction or discharge of all obligations under any Loan Document.

Section 2.09. *Payments Generally; Pro Rata Treatment; Sharing of Setoffs*. (a) The Borrowers shall make each payment or prepayment required to be made by any Borrower hereunder (whether of principal, interest, fees or otherwise) in Dollars prior to 12:00 noon, New York City time, on the date when due or the date fixed for any prepayment hereunder, in immediately available funds, without setoff, recoupment or counterclaim. Any amounts received after such time on any date may, in the discretion of the Lender, be deemed to have been received on the next succeeding Business Day for purposes of calculating interest thereon. All such payments shall be made to the Lender at its offices set forth in Schedule 8.01, except that payments pursuant to Section 8.03 shall be made directly to the Persons entitled thereto. If any payment hereunder shall be due on a day that is not a Business Day, the date for payment shall be extended to the next succeeding Business Day, and, in the case of any payment accruing interest, interest thereon shall be payable for the period of such extension. All payments hereunder shall be made in Dollars.

(b) If at any time insufficient funds are received by and available to the Lender to pay fully all amounts of principal, interest and fees then due hereunder, such funds shall be applied
(i) first, towards payment of interest and fees then due hereunder, ratably among the parties entitled thereto in accordance with the amounts of interest and fees then due to such parties, and (ii) second, towards payment of principal then due hereunder.

Section 2.10. *Continuing Guaranty*.

(a) Guaranty. Each Borrower hereby absolutely and unconditionally guarantees (the "*Guaranty*"), as a guaranty of payment and performance and not merely as a guaranty of collection, prompt payment when due, whether at stated maturity, by required prepayment, upon acceleration, demand or otherwise, and at all times thereafter, of any and all of the Obligations, whether for principal, interest, premiums, fees, indemnities, damages, costs, expenses or otherwise, of each other Borrower to the Lender, and whether arising hereunder or under any other Loan Document (including all renewals, extensions, amendments, refinancings and other modifications thereof and all costs, attorneys' fees and expenses incurred by the Lender in connection with the collection or enforcement thereof). The Lender's books and records showing the amount of the Obligations shall be admissible in evidence in any action or proceeding, and shall be binding upon each Borrower, and conclusive for the purpose of establishing the amount of the Obligations. This Guaranty shall not be affected by the genuineness, validity, regularity or enforceability of the Obligations or any instrument or agreement evidencing any Obligations, or by the existence, validity, enforceability, perfection, non-perfection or extent of any collateral therefor, or by any fact or circumstance relating to the Obligations which might otherwise constitute a defense to the obligations of any Borrower under this Guaranty, and each Borrower hereby irrevocably waives any defenses it may now have or hereafter acquire in any way relating to any or all of the foregoing.

(b) Rights of Lender. Related to Borrower's obligations under the Guaranty, each Borrower consents and agrees that the Lender may, at any time and from time to time, without notice or demand, and without affecting the enforceability or continuing effectiveness hereof: (a) amend, extend, renew, compromise, discharge, accelerate or otherwise change the time for payment or the terms of the Obligations or any part thereof; (b) take, hold, exchange, enforce, waive, release, fail to perfect, sell, or otherwise dispose of any security for the payment of this Guaranty or any Obligations; (c) apply such security and direct the order or manner of sale thereof as the Lender in its sole discretion may determine; and (d) release or substitute one or more of any endorsers or other guarantors of any of the Obligations. Without limiting the generality of the foregoing, each Borrower consents to the taking of, or failure to take, any action which might in any manner or to any extent vary the risks of such Borrower under this Guaranty or which, but for this provision, might operate as a discharge of such Borrower.

(c) Certain Waivers. Each Borrower waives (a) any defense arising by reason of any disability or other defense of the other Borrowers or any other guarantor, or the cessation from any cause whatsoever (including any act or omission of Lender) of the liability of any other Borrower;
(b) any defense based on any claim that such Borrower's obligations exceed or are more burdensome than those of the other Borrowers; (c) the benefit of any statute of limitations affecting such Borrower's liability hereunder; (d) any right to proceed against any other Borrower, proceed against or exhaust any guarantee or security for the Obligations, or pursue any other remedy in the power of Lender whatsoever; (e) any benefit of and any right to participate in any security now or hereafter held by Lender; and (f) to the fullest extent permitted by law, any and all other defenses or benefits that may be derived from or afforded by applicable law limiting the liability of or exonerating guarantors or sureties. Each Borrower expressly waives all setoffs and counterclaims and all presentments, demands for payment or performance, notices of nonpayment or nonperformance, protests, notices of protest, notices of dishonor and all other notices or demands of any kind or nature whatsoever with respect to the Obligations, and all notices of acceptance of this Guaranty or of the existence, creation or incurrence of new or additional Obligations, including but not limited to the benefits of Chapter 34 of the Texas Business and Commerce Code, §17.01 of the Texas Civil Practice and Remedies Code, and Rule 31 of the Texas Rules of Civil Procedure, or any similar statute.

(d) Obligations Independent. The obligations of each Borrower hereunder are those of primary obligor, and not merely as surety, and are independent of the Obligations and the obligations of any other guarantor, and a separate action may be brought against such Borrower to enforce this Guaranty whether or not any other Borrower or any other Person is joined as a party.

(e) Subrogation. No Borrower shall exercise any right of subrogation, contribution, indemnity, reimbursement or similar rights with respect to any payments it makes under this Guaranty until all of the Obligations and any amounts payable under this Guaranty have been indefeasibly paid and performed in full in cash and the Commitment is terminated. If any amounts are paid to any Borrower in violation of the foregoing limitation, then such amounts shall be held in trust for the benefit of Lender and shall forthwith be paid to Lender to reduce the amount of the Obligations, whether matured or unmatured.

(f) Termination; Reinstatement. This Guaranty is a continuing and irrevocable guaranty of all Obligations now or hereafter existing and shall remain in full force and effect until all Obligations and any other amounts payable under this Guaranty are indefeasibly paid in full in cash and the Commitment with respect to the Obligations is terminated. Notwithstanding the foregoing, this Guaranty shall continue in full force and effect or be revived, as the case may be, if any payment by or on behalf of any Borrower is made, or Lender exercises its right of setoff, in

respect of the Obligations and such payment or the proceeds of such setoff or any part thereof is subsequently invalidated, declared to be fraudulent or preferential, set aside or required (including pursuant to any settlement entered into by Lender in its discretion) to be repaid to a trustee, receiver or any other party, in connection with any proceeding under any Debtor Relief Laws or otherwise, all as if such payment had not been made or such setoff had not occurred and whether or not Lender is in possession of or have released this Guaranty and regardless of any prior revocation, rescission, termination or reduction. The obligations of each Borrower under this paragraph shall survive termination of this Guaranty.

(g) Subordination. Each Borrower hereby subordinates the payment of all obligations and indebtedness of the other Borrowers owing to such Borrower, whether now existing or hereafter arising, including but not limited to any obligation of any other Borrower to such Borrower as subrogee of the Lender or resulting from such Borrower's performance under this Guaranty, to the indefeasible payment in full in cash of all Obligations. If the Lender so requests, any such obligation or indebtedness of any other Borrower to such Borrower shall be enforced and performance received by such Borrower as trustee for the Lender and the proceeds thereof shall be paid over to the Lender on account of the Obligations, but without reducing or affecting in any manner the liability of such Borrower under this Guaranty.

(h) Stay of Acceleration. If acceleration of the time for payment of any of the Obligations is stayed, in connection with any case commenced by or against any Borrower under any Debtor Relief Laws, or otherwise, all such amounts shall nonetheless be payable by each Borrower immediately upon demand by the Lender.

(i) Condition of Borrowers. Each Borrower acknowledges and agrees that it has the sole responsibility for, and has adequate means of, obtaining from the other Borrowers and any other guarantor such information concerning the financial condition, business and operations of the other Borrowers and any such other guarantor as such Borrower requires, and that Lender does not have any duty, and such Borrower is not relying on the Lender at any time, to disclose to such Borrower any information relating to the business, operations or financial condition of the other Borrowers or any other guarantor (Parent Borrower waiving any duty on the part of the Lender to disclose such information and any defense relating to the failure to provide the same).

ARTICLE 3 REPRESENTATIONS AND WARRANTIES

Each Borrower represents and warrants to the Lender that:

Section 3.01. *Organization; Powers*. Each of such Borrower and its Subsidiaries is duly organized or formed, validly existing and in good standing under the laws of the jurisdiction of its organization, has all requisite power and authority to carry on its business as now conducted and, except where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect, is qualified to do business in, and is in good standing in, every jurisdiction where such qualification is required.

Section 3.02. *Authorization; Enforceability*. The Transactions are within such Borrower's corporate or other organizational powers and have been duly authorized by all necessary corporate or other organizational and, if required, stockholder action. This Agreement has been duly executed and delivered by such Borrower and constitutes a legal, valid and binding obligation of such Borrower, enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights

generally and subject to general principles of equity, regardless of whether considered in a proceeding in equity or at law.

Section 3.03. *Governmental Approvals; No Conflicts*. The Transactions (a) do not require any consent or approval of, registration or filing with, or any other action by, any Governmental Authority, except such as have been obtained or made and are in full force and effect,
(b) will not violate any applicable law or regulation or the charter, by-laws or other organizational documents of such Borrower or any of its Subsidiaries or any order of any Governmental Authority,
(c) will not violate or result in a default under any indenture, agreement or other instrument binding upon such Borrower or any of its Subsidiaries or its assets, or give rise to a right thereunder to require any payment to be made by such Borrower or any of its Subsidiaries, and (d) will not result in the creation or imposition of, or the requirement to create, any Lien on any asset of such Borrower or any of its Subsidiaries.

Section 3.04. *Financial Condition; No Material Adverse Change*. (a) The Parent Borrower has heretofore furnished to the Lender the consolidated and consolidating balance sheet and statements of income, stockholders equity and cash flows for the Parent Borrower and its Subsidiaries (i) as of and for the fiscal year ended December 31, 2021, reported on by BF Borgers CPA, independent public accountants, and (ii) as of and for the fiscal quarter ended June 30, 2022, certified by its chief financial officer. Such financial statements present fairly, in all material respects, the financial position and results of operations and cash flows of the Parent Borrower and its Subsidiaries as of such dates and for such periods in accordance with GAAP, subject to year- end audit adjustments and the absence of footnotes in the case of the statements referred to in clause
(ii) above.

(b) Since June 30, 2022, there has been no a material adverse change in, or a material adverse effect upon, the operations, business, properties, liabilities (actual or contingent), or condition (financial or otherwise) of the Parent Borrower and its Subsidiaries taken as a whole.

Section 3.05. *Properties*. (a) Each Borrower and its Subsidiaries has good title to, or valid leasehold interests in, all its real and personal property material to its business, except for minor defects in title that do not interfere with its ability to conduct its business as currently conducted or to utilize such properties for their intended purposes.

(b) Each Borrower and its Subsidiaries owns, or is licensed to use, all trademarks, trade names, copyrights, patents and other intellectual property material to its business, and the use thereof by such Borrower and its Subsidiaries does not infringe upon the rights of any other Person, except for any such infringements that, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect.

Section 3.06. *Litigation and Environmental Matters*. (a) There are no actions, suits or proceedings by or before any arbitrator or Governmental Authority pending against or, to the knowledge of such Borrower, threatened against or affecting any Borrower or any of its Subsidiaries (i) as to which there is a reasonable possibility of an adverse determination and that, if adversely determined, could reasonably be expected, individually or in the aggregate, to result in a Material Adverse Effect (other than the Disclosed Matters) or (ii) that involve the Loan Documents or the Transactions.

(b) Except for the Disclosed Matters and except with respect to any other matters that, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect, no Borrower nor any of its Subsidiaries (i) has failed to comply with any Environmental

Law or to obtain, maintain or comply with any permit, license or other approval required under any Environmental Law, (ii) has become subject to any Environmental Liability, (iii) has received notice of any claim with respect to any Environmental Liability or (iv) knows of any basis for any Environmental Liability.

(c) Since the date of this Agreement, there has been no change in the status of the Disclosed Matters that, individually or in the aggregate, has resulted in, or materially increased the likelihood of, a Material Adverse Effect.

Section 3.07. *Compliance with Laws and Agreements*. Each Borrower and its Subsidiaries is in compliance with all laws, regulations and orders of any Governmental Authority applicable to it or its property and all indentures, agreements and other instruments binding upon it or its property, except where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect. No Default has occurred and is continuing.

Section 3.08. *Investment Company Status*. Neither Borrower nor any of its Subsidiaries is an "investment company" as defined in, or subject to regulation under, the Investment Company Act of 1940.

Section 3.09. *Taxes*. Each Borrower and its Subsidiaries has timely filed or caused to be filed all Tax returns and reports required to have been filed and has paid or caused to be paid all Taxes required to have been paid by it, except (a) Taxes that are being contested in good faith by appropriate proceedings and for which such Borrower or such Subsidiary, as applicable, has set aside on its books adequate reserves and (b) to the extent that the failure to do so could not reasonably be expected to result in a Material Adverse Effect.

Section 3.10. *ERISA*. No ERISA Event has occurred or is reasonably expected to occur that, when taken together with all other such ERISA Events for which liability is reasonably expected to occur, could reasonably be expected to result in a Material Adverse Effect. The present value of all accumulated benefit obligations under each Plan (based on the assumptions used for purposes of Statement of Financial Accounting Standards No. 87) did not, as of the date of the most recent financial statements reflecting such amounts, exceed by more than $5000 the fair market value of the assets of such Plan, and the present value of all accumulated benefit obligations of all underfunded Plans (based on the assumptions used for purposes of Statement of Financial Accounting Standards No. 87) did not, as of the date of the most recent financial statements reflecting such amounts, exceed by more than $5000 the fair market value of the assets of all such underfunded Plans.

Section 3.11. *Disclosure*. Each Borrower has disclosed to the Lender all agreements, instruments and corporate or other restrictions to which it or any of its Subsidiaries is subject, and all other matters known to it, that, individually or in the aggregate, could reasonably be expected to result in a Material Adverse Effect. None of the reports, financial statements, certificates or other information furnished by or on behalf of such Borrower or any Subsidiary to the Lender in connection with the negotiation of this Agreement or delivered hereunder (as modified or supplemented by other information so furnished) contains any material misstatement of fact or omits to state any material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided* that, with respect to projected financial information, such Borrower represents only that such information was prepared in good faith based upon assumptions believed to be reasonable at the time.

Section 3.12. *Anti-Corruption Laws and Sanctions*. Such Borrower has implemented and maintains in effect policies and procedures designed to ensure compliance by such Borrower, its Subsidiaries and their respective directors, officers, employees and agents with Anti-Corruption Laws and applicable Sanctions, and such Borrower, its Subsidiaries and their respective officers and directors and to the knowledge of such Borrower its employees and agents, are in compliance with Anti-Corruption Laws and applicable Sanctions in all material respects. None of (a) such Borrower, any Subsidiary, any of their respective directors or officers or employees, or (b) to the knowledge of such Borrower, any agent of such Borrower or any Subsidiary that will act in any capacity in connection with or benefit from the credit facility established hereby, is a Sanctioned Person. No Loan, use of proceeds or other Transaction will violate any Anti-Corruption Law or applicable Sanctions.

Section 3.13. *Plan Assets; Prohibited Transactions*. None of such Borrower or any of its Subsidiaries is an entity deemed to hold "plan assets" (within the meaning of the Plan Asset Regulations), and neither the execution, delivery nor performance of the transactions contemplated under this Agreement, including the making of any Loan hereunder, will give rise to a non-exempt prohibited transaction under Section 406 of ERISA or Section 4975 of the Code.

Section 3.14. *Margin Regulations*. Such Borrower is not engaged and will not engage, principally or as one of its important activities, in the business of purchasing or carrying Margin Stock, or extending credit for the purpose of purchasing or carrying Margin Stock, and no part of the proceeds of any Loan hereunder will be used to buy or carry any Margin Stock. Following the application there has been no a material adverse change in, or a material adverse effect upon, the operations, business, properties, liabilities (actual or contingent), or condition (financial or otherwise) of the Parent Borrower and its Subsidiaries taken as a whole of the proceeds of each Loan, not more than 25% of the value of the assets (either of the Parent Borrower only or of the Parent Borrower and its Subsidiaries on a consolidated basis) will be Margin Stock.

Section 3.15. *Solvency*. Such Borrower and its Subsidiaries taken as a whole are Solvent.

ARTICLE 4
CONDITIONS

Section 4.01. *Effective Date*. The obligations of the Lender to make Loans hereunder shall not become effective until the date on which each of the following conditions is satisfied in the Lender's sole discretion (or waived in writing in the Lender's sole discretion):

(a) The Lender (or its counsel) shall have received a counterpart of this Agreement and each other Loan Document, duly executed and delivered by each party hereto and thereto.

(b) The Lender shall have received such documents and certificates as the Lender or its counsel may reasonably request relating to the organization, existence and good standing of each Loan Party, the authorization of the Transactions and any other legal matters relating to the Loan Parties, the Loan Documents or the Transactions, all in form and substance satisfactory to the Lender and its counsel.

(c) The Lender shall have received a certificate, dated the Effective Date and signed by the President, a Vice President or a Financial Officer of each Loan Party, confirming compliance with the conditions set forth in paragraphs (a) and (b) of Section 4.02.

(d) The Lender shall have received all fees and other amounts due and payable on or prior to the Effective Date, including, to the extent invoiced, reimbursement or payment of all out of pocket expenses required to be reimbursed or paid by the Borrowers hereunder.

(e) The Lender shall have received evidence satisfactory to the Lender that the Borrowers have used all of the proceeds of the Existing Loans to pay for general and administrative expenses, payments for third party advisors, attorneys, engineers, and accountants, and operating and drilling expenses in the ordinary course of the Borrowers' business.

(f) The Lender shall have received an amendment to the Existing Secured Note and a ratification of the related Existing Security Documents, each duly executed by the parties thereto, and each in form and substance satisfactory to the Lender, pursuant to which the maturity date of the Existing Secured Note is extended to March 31, 2023 (which maturity date may be further extended to September 30, 2023 if a Qualified Financing is consummated on or before March 31, 2023, subject to six-month amortization of principal of the Existing Secured Note on each Monthly Payment Date).

(g) The Lender shall have received such other documents as the Lender may reasonably request.

The Lender shall notify the Parent Borrower of the Effective Date, and such notice shall be conclusive and binding.

Section 4.02. *Each Credit Event*. The obligation of the Lender to make a Loan on the occasion of any Borrowing of a Loan, is subject to the satisfaction of the following conditions:

(a) The representations and warranties of each Loan Party set forth in each Loan Document shall be true and correct in all material respects on and as of the date of such Loan.

(b) At the time of and immediately after giving effect to such Loan, no Default shall have occurred and be continuing.

(c) The Lender shall have received evidence satisfactory to the Lender that all of the proceeds of any and all preceding Loans have been used in full and only in strict compliance with Section 5.08, and that the proceeds of the requested Loan shall be used only in strict compliance with Section 5.08.

(d) In the Lender's sole judgment, there shall not have been a material adverse change in, or a material adverse effect upon, the operations, business, properties, liabilities (actual or contingent), or condition (financial or otherwise) of the Parent Borrower and its Subsidiaries taken as a whole.

(e) The Lender shall have received a satisfactory Borrowing Request in accordance with Section 2.03.

Each Borrowing of a Loan shall be deemed to constitute a representation and warranty by each Borrower on the date thereof as to the matters specified in paragraphs (a), (b) and (c) of this Section.

ARTICLE 5
AFFIRMATIVE COVENANTS

Until the Commitment has expired or been terminated and all principal of, and interest on, each Loan and all fees payable hereunder and all other outstanding Obligations shall have been paid in full in cash, each Borrower covenants and agrees with the Lender that, from and after the Effective Date:

Section 5.01. *Financial Statements; Ratings Change and Other Information*. The Borrowers will furnish to the Lender:

(a) within 90 days after the end of each fiscal year of the Parent Borrower (commencing with the fiscal year ended December 31, 2022), its audited consolidated balance sheet and related statements of operations, stockholders' equity and cash flows of the Parent Borrower and its consolidated Subsidiaries as of the end of and for such year, setting forth in each case in comparative form the figures for the previous fiscal year, all reported on by BF Borgers CPA or other independent public accountants of recognized national standing (without a "going concern" or like qualification commentary or exception and without any qualification or exception as to the scope of such audit) to the effect that such consolidated financial statements present fairly in all material respects the financial condition and results of operations of the Parent Borrower and its consolidated Subsidiaries on a consolidated basis in accordance with GAAP consistently applied;

(b) within 45 days after the end of each of the first three fiscal quarters of each fiscal year of the Parent Borrower (commencing with the fiscal quarter ended September 30, 2022), its consolidated and consolidating balance sheets and related statements of operations, stockholders' equity and cash flows of the Parent Borrower and its Subsidiaries as of the end of and for such fiscal quarter and the then elapsed portion of the fiscal year, setting forth in each case in comparative form the figures as of the end of and for the corresponding period or periods of the previous fiscal year, all certified by one of its Financial Officers as presenting fairly in all material respects the financial condition and results of operations of the Parent Borrower and its Subsidiaries on a consolidated and consolidating basis in accordance with GAAP consistently applied, subject to normal year-end audit adjustments and the absence of footnotes;

(c) concurrently with any delivery of financial statements under clause (a) or (b) above, a certificate of a Financial Officer of the Parent Borrower (i) certifying as to whether a Default has occurred and, if a Default has occurred, specifying the details thereof and any action taken or proposed to be taken with respect thereto, (ii) setting forth a reasonably detailed operations report and summary, including without limitation with respect to any drilling operations and results and any cash flows from the Hazel project in Texas, and (iii) stating whether any change in GAAP or in the application thereof has occurred since the date of the audited financial statements referred to in Section 3.04 and, if any such change has occurred, specifying the effect of such change on the financial statements accompanying such certificate;

(d) concurrently with any delivery of financial statements under clause (a) above, a certificate of the accounting firm that reported on such financial statements stating whether they obtained knowledge during the course of their examination of such financial statements of any Default (which certificate may be limited to the extent required by accounting rules or guidelines);

(e) promptly after the same become publicly available, copies of all periodic and other reports, proxy statements and other materials filed by the Parent Borrower or any Subsidiary with

the SEC or any Governmental Authority succeeding to any or all of the functions of said

Commission, or with any national securities exchange, or distributed by any Borrower to its shareholders generally, as the case may be;

(f) promptly after receipt thereof by any Borrower or any Subsidiary, copies of each notice or other correspondence received from the SEC (or comparable agency in any applicable non-U.S. jurisdiction) concerning any investigation or possible investigation or other inquiry by the SEC or such other agency regarding financial or other operational results of any Borrower or any Subsidiary thereof;

(g) promptly following any request therefor, copies of any detailed audit reports, management letters or recommendations submitted to the board of directors (or the audit committee of the board of directors) of any Borrower by independent accountants in connection with the accounts or books of any Borrower or any Subsidiary, or any audit of any of them as the Lender may request; and

(h) promptly following any request therefor, (x) such other information regarding the operations, business affairs and financial condition of any Loan Party or any Subsidiary, or compliance with the terms of the Loan Documents, as the Lender may reasonably request and (y) information and documentation reasonably requested by the Lender for purposes of compliance with applicable "know your customer" and anti-money laundering rules and regulations.

Documents required to be delivered pursuant to Section 5.01(a), (b) or (e) (to the extent any such documents are included in materials otherwise filed with the SEC) may be delivered electronically and, if so delivered, shall be deemed to have been delivered on the date (i) on which such materials are publicly available as posted on the Electronic Data Gathering, Analysis and Retrieval system (EDGAR); or (ii) on which such documents are posted on the Parent Borrower's behalf on an Internet or intranet website, if any, to which the Lender has access (whether a commercial, third-party website or otherwise); *provided* that: (A) upon written request by the Lender to the Parent Borrower, the Parent Borrower shall deliver paper copies of such documents to the Lender until a written request to cease delivering paper copies is given by the Lender and
(B) the Parent Borrower shall notify the Lender (by telecopier or electronic mail) of the posting of any such documents and provide to the Lender by electronic mail electronic versions (i.e., soft copies) of such documents. The Lender shall have no obligation to request the delivery of or to maintain paper copies of the documents referred to above, and in any event shall have no responsibility to monitor compliance by the Borrowers with any such request by the Lender for delivery.

Section 5.02. *Notices of Material Events*. The Borrowers will furnish to the Lender prompt written notice of the following:

(a) the occurrence of any Default;

(b) the filing or commencement of any Proceeding by or before any arbitrator or Governmental Authority against or affecting any Borrower or any Affiliate thereof, including pursuant to any applicable Environmental Laws, that, if adversely determined, could reasonably be expected to result in a Material Adverse Effect;

(c) the occurrence of any ERISA Event that, alone or together with any other ERISA Events that have occurred, could reasonably be expected to result in liability of any Borrower and its Subsidiaries in an aggregate amount exceeding $25,000;

(d) notice of any action arising under any Environmental Law or of any noncompliance by any Borrower or any Subsidiary with any Environmental Law or any permit, approval, license or other authorization required thereunder that, if adversely determined, could reasonably be expected to result in a Material Adverse Effect;

(e) any material change in accounting or financial reporting practices by any Borrower or any Subsidiary;

(f) any change in the credit ratings from a credit rating agency, or the placement by a credit rating agency of any Borrower (or, after the Spin Out, any parent entity of the Parent Borrower) on a "CreditWatch" or "WatchList" or any similar list, in each case with negative implications, or the cessation by a credit rating agency of, or its intent to cease, rating any Borrower's debt;

(g) notice of (i) any default, event of default, termination, suspension, rescission, force majeure event or material breach, in each case, of or under any Lease, and (ii) any event or condition which could reasonably be expected to result in a default, event of default, termination, suspension, rescission or material breach of or under any Lease; and

(h) any other development that results in, or could reasonably be expected to result in, a Material Adverse Effect.

Each notice delivered under this Section (i) shall be in writing, and (ii) shall be accompanied by a statement of a Financial Officer or other executive officer of the Parent Borrower setting forth the details of the event or development requiring such notice and any action taken or proposed to be taken with respect thereto.

Section 5.03. *Existence; Conduct of Business*. Such Borrower will, and will cause each of its Subsidiaries to, do or cause to be done all things necessary to preserve, renew and keep in full force and effect its legal existence and the rights, licenses, permits, privileges and franchises material to the conduct of its business; *provided* that the foregoing shall not prohibit any merger, consolidation, liquidation or dissolution permitted under Section 6.03.

Section 5.04. *Payment of Obligations*. Such Borrower will, and will cause each of its Subsidiaries to, pay its obligations, including Tax liabilities, that, if not paid, could result in a Material Adverse Effect before the same shall become delinquent or in default, except where (a) the validity or amount thereof is being contested in good faith by appropriate proceedings, (b) such Borrower or such Subsidiary has set aside on its books adequate reserves with respect thereto in accordance with GAAP and (c) the failure to make payment pending such contest could not reasonably be expected to result in a Material Adverse Effect.

Section 5.05. *Maintenance of Properties; Insurance*. Such Borrower will, and will cause each of its Subsidiaries to, (a) keep and maintain all property material to the conduct of its business in good working order and condition, ordinary wear and tear excepted, and (b) maintain, with financially sound and reputable insurance companies, insurance in such amounts and against such risks as are customarily maintained by companies engaged in the same or similar businesses operating in the same or similar locations.

Section 5.06. *Books and Records; Inspection Rights*. Such Borrower will, and will cause each of its Subsidiaries to, keep proper books of record and account in which full, true and correct entries are made of all dealings and transactions in relation to its business and activities. Such

Borrower will, and will cause each of its Subsidiaries to, permit any representatives designated by the Lender, upon at least 3 Business Days' notice, to visit and inspect its properties, to examine and make extracts from its books and records, to discuss its affairs, finances and condition with its officers and independent accountants (and hereby authorizes the Lender to contact its independent accountants directly) and to provide contact information for each bank where such Borrower and its Subsidiaries have a depository and/or securities account and each such Loan Party hereby authorizes the Lender to contact the bank(s) in order to request bank statements and/or balances, all at such reasonable times during normal business hours and as often as reasonably requested.

Section 5.07. *Compliance with Laws*. Such Borrower will, and will cause each of its Subsidiaries to, comply with all laws, rules, regulations and orders of any Governmental Authority applicable to it or its property, except where the failure to do so, individually or in the aggregate, could not reasonably be expected to result in a Material Adverse Effect. Such Borrower will maintain in effect and enforce policies and procedures designed to ensure compliance by such Borrower, its Subsidiaries and their respective directors, officers, employees and agents with Anti- Corruption Laws and applicable Sanctions.

Section 5.08. *Use of Proceeds*. The proceeds of the Loans (including the Existing Loans) will be used only for general and administrative expenses, working capital, payments for third party advisors, attorneys, engineers, and accountants, and operating and drilling expenses in the ordinary course of the Borrowers' business. The proceeds of any Qualified Financing will be used solely (i) to pay for general and administrative expenses, payments for third party advisors, attorneys, engineers, and accountants, and operating and drilling expenses in the ordinary course of the Borrowers' business, and transaction expenses related to such Qualified Financing, and (ii) to repay and/or prepay the Obligations. No part of the proceeds of any Loan will be used, whether directly or indirectly, for any purpose that entails a violation of any of the regulations of the Federal Reserve Board, including Regulations T, U and X. Such Borrower will not request any Loan, and such Borrower shall not use, and shall procure that its Subsidiaries and its or their respective directors, officers, employees and agents shall not use, the proceeds of any Loan (a) in furtherance of an offer, payment, promise to pay, or authorization of the payment or giving of money, or anything else of value, to any Person in violation of any Anti-Corruption Laws, (b) for the purpose of funding, financing or facilitating any activities, business or transaction of or with any Sanctioned Person, or in any Sanctioned Country, except to the extent permitted for a Person required to comply with Sanctions, or (c) in any manner that would result in the violation of any Sanctions applicable to any party hereto.

Section 5.09. *Accuracy of Information*. Such Borrower will ensure that any information, including financial statements or other documents, furnished to the Lender in connection with this Agreement or any amendment or modification hereof or waiver hereunder contains no material misstatement of fact or omits to state any material fact necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading, and the furnishing of such information shall be deemed to be a representation and warranty by such Borrower on the date thereof as to the matters specified in this Section.

ARTICLE 6 NEGATIVE COVENANTS

Until the Commitment has expired or been terminated and all principal of, and interest on, each Loan and all fees payable hereunder and all other outstanding Obligations shall have been

paid in full in cash, each Borrower covenants and agrees with the Lender that, without the prior written consent of the Lender, from and after the Effective Date:

Section 6.01. *Indebtedness*. The Borrowers will not, and will not permit any Subsidiary to, create, incur, assume or permit to exist any Indebtedness, except:

(a) Indebtedness created hereunder;

(b) Indebtedness existing on the date hereof and set forth in Schedule 6.01, but not any extensions, renewals or replacements of any such Indebtedness;

(c) Indebtedness of any Loan Party to another Loan Party, so long as such Indebtedness (1) is unsecured and has a maturity date that is after December 31, 2023 and (2) are expressly subordinated to the Obligations and all other Indebtedness of the Loan Parties payable to the Lender pursuant to a subordination agreement in form and substance satisfactory to the Lender;

(d) Guarantees by any Loan Party of Indebtedness of any other Loan Party, so long as such Guarantees (1) are unsecured and (2) are expressly subordinated to the Obligations and all other Indebtedness of the Loan Parties payable to the Lender pursuant to a subordination agreement in form and substance satisfactory to the Lender;

(e) Indebtedness of any Loan Party incurred to finance commitments related to drilling (including drilling preparation and completion expenses), the acquisition, construction or improvement of any fixed or capital assets, including Capital Lease Obligations and any Indebtedness assumed in connection with the acquisition of any such assets or secured by a Lien on any such assets prior to the acquisition thereof, and extensions, renewals and replacements of any such Indebtedness that do not increase the outstanding principal amount thereof; *provided* that the aggregate principal amount of Indebtedness permitted by this clause (e) shall not exceed $500,000 at any time outstanding; and

(f) Indebtedness constituting a Qualified Financing, so long as the proceeds of such Qualified Financing are used solely (i) to pay for general and administrative expenses, payments for third party advisors, attorneys, engineers, and accountants, and operating, drilling and completion expenses in the ordinary course of the Borrowers' business operating and drilling expenses in the ordinary course of the Borrowers' business, and transaction expenses related to such Qualified Financing, and (ii) to repay and/or prepay the Obligations pursuant to this Agreement.

Section 6.02. *Liens*. The Borrowers will not, and will not permit any Subsidiary to, create, incur, assume or permit to exist any Lien on any property or asset now owned or hereafter acquired by it, or assign or sell any income or revenues (including accounts receivable) or rights in respect of any thereof, except:

(a) Permitted Encumbrances;

(b) any Lien on any property or asset of a Loan Party existing on the date hereof and set forth in Schedule 6.02; *provided* that (i) such Lien shall not apply to any other property or asset of any Loan Party or any Subsidiary and (ii) such Lien shall secure only those obligations which it secures on the date hereof; and

(c) Liens on fixed or capital assets acquired, constructed or improved by any Loan Party; *provided* that (i) such security interests secure Indebtedness permitted by clause (e) of Section 6.01, (ii) such security interests and the Indebtedness secured thereby are incurred prior to or within 90 days after such acquisition or the completion of such construction or improvement, (iii) the Indebtedness secured thereby does not exceed 100% of the cost of acquiring, constructing or improving such fixed or capital assets and (iv) such security interests shall not apply to any other property or assets of any Loan Party or any Subsidiary; and

(d) Liens securing Indebtedness permitted under Section 6.01(f).

Section 6.03. *Fundamental Changes*. (a) The Borrowers will not, and will not permit any Subsidiary to, merge into or consolidate with any other Person, or permit any other Person to merge into or consolidate with it, or otherwise Dispose of all or any substantial part of its assets, or all or substantially all of the Equity Interests of any of their respective Subsidiaries (in each case, whether now owned or hereafter acquired), or liquidate or dissolve, except that, (i) if at the time thereof and immediately after giving effect thereto no Default shall have occurred and be continuing, any Subsidiary may merge into the Parent Borrower in a transaction in which the Parent Borrower is the surviving corporation; *provided* that any such merger involving a Person that is not a wholly owned Subsidiary immediately prior to such merger shall not be permitted unless also permitted by Section 6.05, (ii) Borrowers may consummate the Spin Out and (iii) a Borrower may Dispose of an Immaterial Subsidiary.

(b) The Borrowers will not, and will not permit any of its Subsidiaries to, engage in any business other than businesses of the type conducted by the Parent Borrower and its Subsidiaries on the date of execution of this Agreement and businesses reasonably related thereto.

(c) The Borrowers will not permit their fiscal years to end on a day other than December 31 or change the Borrowers' method of determining its fiscal quarters.

Section 6.04. *Dispositions*. The Borrowers will not, and will not permit any Subsidiary to, make any Disposition, except:

(a) Dispositions of obsolete or worn out property in the ordinary course of business;

(b) Dispositions of inventory and Permitted Investments in the ordinary course of business;

(c) Dispositions of equipment or real property to the extent that (i) such property is exchanged for credit against the purchase price of similar replacement property or (ii) the proceeds of such Disposition are reasonably promptly applied to the purchase price of such replacement property;

(d) Dispositions of property by any Subsidiary of the Parent Borrower to a Borrower;

(e) Dispositions permitted by Section 6.03;

(f) Dispositions of intellectual property rights that are no longer used or useful in the business of the Parent Borrower and its Subsidiaries; and

(g) Restricted Payments permitted by Section 6.07 and investments permitted by Section 6.05;

provided, for avoidance of doubt, the Borrowers will not, and will not permit any Subsidiary to, Dispose of any Lease without the prior written consent of Lender.

Section 6.05. *Investments, Loans, Advances, Guarantees and Acquisitions*. The Borrowers will not, and will not permit any of their Subsidiaries to, purchase, hold or acquire (including pursuant to any merger with any Person that was not a wholly owned Subsidiary prior to such merger) any capital stock, evidences of indebtedness or other securities (including any option, warrant or other right to acquire any of the foregoing) of, make or permit to exist any loans or advances to, Guarantee any obligations of, or make or permit to exist any investment or any other interest in, any other Person, or purchase or otherwise acquire (in one transaction or a series of transactions) any assets of any other Person constituting a business unit, except:

(a) Permitted Investments;

(b) investments by a Borrower existing on the date hereof in the capital stock of its Subsidiaries;

(c) intercompany loans or advances made by a Loan Party to another Loan Party, so long as such intercompany loans or advances (1) are unsecured and have a maturity date that is after December 31, 2023 and (2) are expressly subordinated to the Obligations and all other Indebtedness of the Loan Parties payable to the Lender pursuant to a subordination agreement in form and substance satisfactory to the Lender;

(d) Guarantees constituting Indebtedness permitted by Section 6.01(d); and

(e) For avoidance of any doubt, the Spin Out.

Section 6.06. *Swap Agreements*. The Borrowers will not, and will not permit any of their Subsidiaries to, enter into any Swap Agreement; provided, with the prior written consent of the Lender (such consent not to be unreasonably withheld), Borrowers may enter into a Swap Agreement in connection with a Qualified Financing.

Section 6.07. *Restricted Payments*. The Borrowers will not, and will not permit any of their Subsidiaries to, declare or make, or agree to pay or make, directly or indirectly, any Restricted Payment, except (a) the Parent Borrower may declare and pay dividends with respect to its Equity Interests payable solely in additional shares of its common stock, (b) each Subsidiary may make Restricted Payments to the Parent Borrower and to any Subsidiaries of the Parent Borrower that are Borrowers, (c) before the Spin Out, the Borrowers may make Restricted Payments to the Lender,
(d) the Parent Borrower may make Restricted Payments pursuant to and in accordance with stock option plans or other benefit plans for management or employees of the Parent Borrower and its Subsidiaries, (e) the Parent Borrower may pay cash in lieu of fractional shares and (f) the Borrowers may consummate the Spin Out.

Section 6.08. *Transactions with Affiliates*. The Borrowers will not, and will not permit any of their Subsidiaries to, sell, lease or otherwise transfer any property or assets to, or purchase, lease or otherwise acquire any property or assets from, or otherwise engage in any other transactions with, any of its Affiliates, except (a) in the ordinary course of business at prices and on terms and conditions not less favorable to a Borrower or such Subsidiary than could be obtained on an arm's- length basis from unrelated third parties, (b) transactions between or among the Borrowers and their wholly owned Subsidiaries not involving any other Affiliate, (c) any Restricted Payment permitted by Section 6.07 and (d) the Spin Out.

Section 6.09. ***Restrictive Agreements***. The Borrowers will not, and will not permit any of their Subsidiaries to, directly or indirectly, enter into, incur or permit to exist any agreement or other arrangement that prohibits, restricts or imposes any condition upon (a) the ability of any Borrower or any Subsidiary to create, incur or permit to exist any Lien upon any of its property or assets, or (b) the ability of any Subsidiary to pay dividends or other distributions with respect to any shares of its capital stock or to make or repay loans or advances to the Borrowers or any other Subsidiary or to Guarantee Indebtedness of the Borrowers or any other Subsidiary; *provided* that
(i) the foregoing shall not apply to restrictions and conditions imposed by law or by the Loan Documents, (ii) the foregoing shall not apply to restrictions and conditions existing on the date hereof identified on Schedule 6.09 (but shall apply to any extension or renewal of, or any amendment or modification expanding the scope of, any such restriction or condition), (iii) the foregoing shall not apply to customary restrictions and conditions contained in agreements relating to the sale of a Subsidiary pending such sale; *provided* that such restrictions and conditions apply only to the Subsidiary that is to be sold and such sale is permitted hereunder, (iv) clause (a) of the foregoing shall not apply to restrictions or conditions imposed by any agreement relating to secured Indebtedness permitted by this Agreement if such restrictions or conditions apply only to the property or assets securing such Indebtedness, (v) clause (a) of the foregoing shall not apply to customary provisions in leases and other contracts restricting the assignment thereof, (vi) the foregoing shall not apply to customary restrictions and conditions contained in agreements relating to the Spin Out, and (vii) solely with and to the extent (if any) of the prior written consent of the Lender in the Lender's reasonable discretion (it being understood and agreed that it would be reasonable for the Lender to withhold consent if the Lender's board of directors does not approve, or if any Indebtedness that any Borrower or any Affiliate thereof owes to the Lender may be subordinated or structurally subordinated, or if a Default exists or could reasonably be expected to occur), clause (b) of the foregoing shall not apply to a Qualified Financing.

ARTICLE 7 EVENTS OF DEFAULT

Section 7.01. *Events of Default*. If any of the following events ("*Events of Default*") shall occur:

(a) any Borrower shall fail to pay any principal of, or interest on, any Loan when and as the same shall become due and payable, whether at the due date thereof or at a date fixed for prepayment thereof or otherwise;

(b) any Borrower shall fail to pay any fee or any other amount (other than an amount referred to in clause (a) of this Article) payable under any Loan Document, when and as the same shall become due and payable, and such failure shall continue unremedied for a period of three Business Days;

(c) any representation or warranty made or deemed made by or on behalf of any Loan Party or any Subsidiary in or in connection with any Loan Document, or any amendment or modification hereof or thereof or waiver hereunder or thereunder, or in any report, certificate, financial statement or other document furnished pursuant to or in connection with any Loan Document, or any amendment or modification hereof or thereof or waiver hereunder or thereunder, shall prove to have been incorrect when made or deemed made;

(d) any Borrower shall fail to observe or perform any covenant, condition or agreement contained in Section 5.02, 5.03 (with respect to a Borrower's existence), 5.04, or 5.08 or in Article

6;

(e) any Loan Party shall fail to observe or perform any covenant, condition or agreement contained in this Agreement (other than those specified in clause (a), (b) or (d) of this Article) or any other Loan Document, and such failure shall continue unremedied for a period of thirty (30) days;

(f) any Loan Party or any Subsidiary shall fail to make any payment (whether of principal or interest and regardless of amount) in respect of any Material Indebtedness, when and as the same shall become due and payable;

(g) any event or condition occurs that results in any Material Indebtedness becoming due prior to its scheduled maturity or that enables or permits (with or without the giving of notice, the lapse of time or both) the holder or holders of any Material Indebtedness or any trustee or agent on its or their behalf to cause any Material Indebtedness to become due, or to require the prepayment, repurchase, redemption or defeasance thereof, prior to its scheduled maturity; *provided* that this clause (g) shall not apply to secured Indebtedness that becomes due as a result of the voluntary sale or transfer of the property or assets securing such Indebtedness;

(h) an involuntary proceeding shall be commenced or an involuntary petition shall be filed seeking (i) liquidation, reorganization or other relief in respect of any Loan Party or any Subsidiary or its debts, or of a substantial part of its assets, under any federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect or (ii) the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for any Loan Party or any Subsidiary or for a substantial part of its assets, and, in any such case, such proceeding or petition shall continue undismissed for 45 days or an order or decree approving or ordering any of the foregoing shall be entered;

(i) Any Loan Party or any Subsidiary shall (i) voluntarily commence any proceeding or file any petition seeking liquidation, reorganization or other relief under any federal, state or foreign bankruptcy, insolvency, receivership or similar law now or hereafter in effect, (ii) consent to the institution of, or fail to contest in a timely and appropriate manner, any proceeding or petition described in clause (h) of this Article, (iii) apply for or consent to the appointment of a receiver, trustee, custodian, sequestrator, conservator or similar official for the Borrower or any Subsidiary or for a substantial part of its assets, (iv) file an answer admitting the material allegations of a petition filed against it in any such proceeding, (v) make a general assignment for the benefit of creditors or (vi) take any action for the purpose of effecting any of the foregoing;

(j) Any Loan Party or any Subsidiary shall become unable, admit in writing its inability or fail generally to pay its debts as they become due;

(k) one or more judgments for the payment of money in an aggregate amount in excess of $50,000 shall be rendered against any Loan Party, any Subsidiary or any combination thereof and the same shall remain undischarged for a period of 30 consecutive days during which execution shall not be effectively stayed, or any action shall be legally taken by a judgment creditor to attach or levy upon any assets of any Loan Party or any Subsidiary to enforce any such judgment;

(l) an ERISA Event shall have occurred that, in the opinion of the Lender, when taken together with all other ERISA Events that have occurred, could reasonably be expected to result in a Material Adverse Effect;

(m) a Change in Control shall occur;

(n) a Material Adverse Effect shall occur; or

(o) any material provision of any Loan Document, at any time after its execution and delivery and for any reason other than as expressly permitted hereunder or thereunder or satisfaction in full of all Obligations, ceases to be in full force and effect; or any Loan Party or any other Person contests in writing the validity or enforceability of any provision of any Loan Document; or any Loan Party denies in writing that it has any or further liability or obligation under any Loan Document, or purports in writing to revoke, terminate or rescind any Loan Document;

(p) any Lease shall terminate, and such termination could reasonably be expected to have a Material Adverse Effect.

Section 7.02. *Remedies Upon an Event of Default*. If an Event of Default occurs (other than an event with respect to any Loan Party described in Sections 7.01(h) or 7.01(i)), and at any time thereafter during the continuance of such Event of Default, the Lender may, by notice to the Borrower, take any or all of the following actions, at the same or different times:

(a) terminate the Commitment, and thereupon the Commitment shall terminate immediately;

(b) declare the Loans then outstanding to be due and payable in whole (or in part, in which case any principal not so declared to be due and payable may thereafter be declared to be due and payable), and thereupon the principal of the Loans so declared to be due and payable, together with accrued interest thereon and all fees and other obligations of the Borrower accrued hereunder and under any other Loan Document, shall become due and payable immediately, without presentment, demand, protest or other notice of any kind, all of which are hereby waived by the Borrower; and

(c) exercise all rights and remedies available to it under the Loan Documents and Applicable Law.

If an Event of Default described in Sections 7.01(h) or 7.01(i) occurs with respect to any Loan Party, the Commitment shall automatically terminate and the principal of the Loans then outstanding, together with accrued interest thereon and all fees and other obligations of the Borrowers accrued hereunder and under any other Loan Document, and all other Obligations, shall automatically become due and payable, in each case, without presentment, demand, protest or other notice of any kind, all of which are hereby waived by the Borrowers.

Section 7.03. *Application of Payments*. Notwithstanding anything herein to the contrary, following the occurrence and during the continuance of an Event of Default:

(a) all payments received on account of the Obligations shall, be applied by the Lender as follows:

(i) *first*, to payment of that portion of the Obligations constituting fees, indemnities, expenses and other amounts payable to the Lender (including fees and disbursements and other charges of counsel to the Lender payable under Section 8.03);

(ii) *second*, to payment of that portion of the Obligations constituting fees, expenses, indemnities and other amounts (other than principal and interest) payable to the

Lender (including fees and disbursements and other charges of counsel to the Lender payable under Section 8.03) arising under the Loan Documents;

(iii) *third*, to payment of that portion of the Obligations constituting accrued and unpaid interest on the Loans;

(iv) *fourth*, to payment of that portion of the Obligations constituting unpaid principal of the Loans;

(v) *fifth*, to the payment in full of all other Obligations; and

(vi) *finally*, the balance, if any, after all Obligations have been paid in full in cash, to the Borrowers or as otherwise required by law.

ARTICLE 8
MISCELLANEOUS

Section 8.01. *Notices*. (a) Except in the case of notices and other communications expressly permitted to be given by telephone (and subject to paragraph (b) below), all notices and other communications provided for herein shall be in writing and shall be delivered by hand or overnight courier service, mailed by certified or registered mail or sent by telecopy, (i) if to a Borrower, to it at its address set forth in Schedule 8.01, and (ii) if to the Lender, to it at its address set forth in Schedule 8.01. Notices sent by hand or overnight courier service, or mailed by certified or registered mail, shall be deemed to have been given when received; notices sent by facsimile shall be deemed to have been given when sent (except that, if not given during normal business hours for the recipient, shall be deemed to have been given at the opening of business on the next business day for the recipient).

(b) Unless the Lender otherwise prescribes, (i) notices and other communications sent to an e-mail address shall be deemed received upon the sender's receipt of an acknowledgement from the intended recipient (such as by the "return receipt requested" function, as available, return e-mail or other written acknowledgement), and (ii) notices or communications posted to an Internet or intranet website shall be deemed received upon the deemed receipt by the intended recipient, at its e-mail address as described in the foregoing clause (i), of notification that such notice or communication is available and identifying the website address therefor; *provided* that, for both clauses (i) and (ii) above, if such notice, email or other communication is not sent during the normal business hours of the recipient, such notice or communication shall be deemed to have been sent at the opening of business on the next business day for the recipient.

(c) Any party hereto may change its address or telecopy number for notices and other communications hereunder by notice to the other parties hereto.

Section 8.02. *Waivers; Amendments*. (a) No failure or delay by the Lender in exercising any right or power under the Loan Documents shall operate as a waiver thereof, nor shall any single or partial exercise of any such right or power, or any abandonment or discontinuance of steps to enforce such a right or power, preclude any other or further exercise thereof or the exercise of any other right or power. The rights and remedies of the Lender under the Loan Documents are cumulative and are not exclusive of any rights or remedies that they would otherwise have. No waiver of any provision of any Loan Document or consent to any departure by any Loan Party therefrom shall in any event be effective unless the same shall be permitted by paragraph (b) of this

Section, and then such waiver or consent shall be effective only in the specific instance and for the

purpose for which given. Without limiting the generality of the foregoing, the making of a Loan shall not be construed as a waiver of any Default, regardless of whether the Lender may have had notice or knowledge of such Default at the time.

(b) Neither this Agreement nor any other Loan Document nor any provision of any Loan Document may be waived, amended or modified except pursuant to an agreement or agreements in writing entered into by the Borrowers and the Lender.

Section 8.03. *Expenses; Limitation of Liability; Indemnity, Etc*.

(a) *Expenses*. Following the Spin Out, the Borrowers shall jointly and severally pay
(i) all out of pocket expenses incurred by the Lender and its Affiliates, including the fees, charges and disbursements of counsel for the Lender, in connection with the negotiation, preparation and administration of the Loan Documents or any amendments, modifications or waivers of the provisions hereof or thereof (whether or not the transactions contemplated hereby or thereby shall be consummated), and (ii) all out-of-pocket expenses incurred by the Lender, including the fees, charges and disbursements of any counsel for the Lender, in connection with the enforcement or protection of its rights in connection with the Loan Documents, including its rights under this Section, or in connection with the Loans made hereunder, including all such out-of-pocket expenses incurred during any workout, restructuring or negotiations in respect of the Loans.

(b) *Limitation of Liability*. To the fullest extent permitted by applicable law (i) the Borrowers and any Loan Party shall not assert, and each Loan Party hereby waives, any claim against the Lender, and any Related Party of the Lender (each such Person being called a "*Lender- Related Person*") for any Liabilities arising from the use by others of information or other materials (including, without limitation, any personal data) obtained through telecommunications, electronic or other information transmission systems (including the Internet), and (ii) no party hereto shall assert, and each such party hereby waives, any Liabilities against any other party hereto, on any theory of liability, for special, indirect, consequential or punitive damages (as opposed to direct or actual damages) arising out of, in connection with, or as a result of, any Loan Document, or any agreement or instrument contemplated hereby or thereby, the Transactions, any Loan or the use of the proceeds thereof; *provided* that, nothing in this paragraph shall relieve each Loan Party of any obligation it may have to indemnify an Indemnitee, as provided in Section 8.03(c), against any special, indirect, consequential or punitive damages asserted against such Indemnitee by a third party.

(c) *Indemnity*. The Borrowers hereby jointly and severally indemnify the Lender, and each Related Party of the Lender (each such Person being called an "*Indemnitee*") against, and hold each Indemnitee harmless from, any and all Liabilities and related expenses, including the fees, charges and disbursements of any counsel for any Indemnitee, incurred by or asserted against any Indemnitee arising out of, in connection with, or as a result of (i) the execution or delivery of this Agreement, any other Loan Document, or any agreement or instrument contemplated hereby or thereby, (ii) the performance by the parties hereto of their respective obligations hereunder or thereunder or the consummation of the Transactions or any other transactions contemplated thereby,
(iii) any Loan or the use of the proceeds therefrom, (iv) any actual or alleged presence or release of Hazardous Materials on or from any property owned or operated by the Borrowers or any of their Subsidiaries, or any Environmental Liability related in any way to the Borrowers or any of their Subsidiaries, or (v) any actual or prospective Proceeding relating to any of the foregoing, whether or not such Proceeding is brought by any Loan Party or its equity holders, Affiliates, creditors or any other third Person and whether based on contract, tort or any other theory and regardless of whether any Indemnitee is a party thereto; *provided* that such indemnity shall not, as to any

Indemnitee, be available to the extent that such Liabilities or related expenses are determined by a court of competent jurisdiction by final and nonappealable judgment to have resulted primarily from the gross negligence or willful misconduct of such Indemnitee. This Section 8.03(c) shall not apply with respect to Taxes other than any Taxes that represent losses, claims or damages arising from any non-Tax claim.

(d) *Payments*. All amounts due under this Section 8.03 shall be payable not later than three Business Days after written demand therefor.

Section 8.04. *Successors and Assigns*. (a) The provisions of this Agreement and the other Loan Documents shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns permitted hereby, except that (i) no Loan Party may assign or otherwise transfer any of its rights or obligations under any Loan Document without the prior written consent of the Lender (and any attempted assignment or transfer by a Loan Party without such consent shall be null and void) and (ii) the Lender may not assign or otherwise transfer its rights or obligations hereunder except in accordance with this Section. Nothing in any Loan Document, expressed or implied, shall be construed to confer upon any Person (other than the parties hereto, their respective successors and assigns permitted hereby, Participants (to the extent provided in paragraph (c) of this Section) and, to the extent expressly contemplated hereby, the Related Parties of the Lender) any legal or equitable right, remedy or claim under or by reason of any Loan Document.

(b) (i) The Lender may assign to one or more Persons all or a portion of its rights and obligations under the Loan Documents (including all or a portion of its Commitment and the Loans at the time owing to it) at any time. Each partial assignment shall be made as an assignment of a proportionate part of all the assigning Lender's rights and obligations under this Agreement and the other Loan Documents.

(ii) Subject to acceptance and recording thereof pursuant to paragraph (b)(iii) of this Section, from and after the effective date specified in each Assignment and Assumption the assignee thereunder shall be a party hereto and, to the extent of the interest assigned by such Assignment and Assumption, have the rights and obligations of a Lender under the Loan Documents, and the assigning Lender thereunder shall, to the extent of the interest assigned by such Assignment and Assumption, be released from its obligations under the Loan Documents (and, in the case of an Assignment and Assumption covering all of the assigning Lender's rights and obligations under the Loan Documents, such Lender shall cease to be a party hereto but shall continue to be entitled to the benefits of Sections 2.08 and 8.03). Any assignment or transfer by a Lender of rights or obligations under the Loan Documents that does not comply with this Section shall be treated for purposes of the Loan Documents as a sale by such Lender of a participation in such rights and obligations in accordance with paragraph (c) of this Section.

(iii) The Lender, acting for this purpose as a non-fiduciary agent of the Borrowers, shall maintain at one of its offices a copy of each Assignment and Assumption delivered to it and a register for the recordation of the names and addresses of the Lenders, and the Commitment of, and principal amount (and stated interest) of the Loans owing to, each Lender pursuant to the terms hereof from time to time (the "*Register*"). The entries in the Register shall be conclusive, and the Borrowers, and the Lender(s) shall treat each Person whose name is recorded in the Register pursuant to the terms hereof as a Lender hereunder for all purposes of the Loan Documents, notwithstanding notice to the contrary.

The Register shall be available for inspection by the Borrowers and any Lender, at any reasonable time and from time to time upon reasonable prior notice.

(c) The Lender may, without the consent of, or notice to, the Borrowers, sell participations to one or more banks or other entities (a "*Participant*"), in all or a portion of the Lender's rights and/or obligations under the Loan Documents (including all or a portion of its Commitment and/or the Loans owing to it); *provided* that (i) the Lender's obligations under the Loan Documents shall remain unchanged; (ii) the Lender shall remain solely responsible to the other parties hereto for the performance of such obligations; and (iii) the Borrowers, shall continue to deal solely and directly with the Lender in connection with the Lender's rights and obligations under the Loan Documents. The Borrowers agree that each Participant shall be entitled to the benefits of Section 2.08 (subject to the requirements and limitations therein) to the same extent as if it were a Lender and had acquired its interest by assignment pursuant to paragraph (b) of this Section. To the extent permitted by law, each Participant also shall be entitled to the benefits of Section 8.08 as though it were a Lender. Each Lender that sells a participation shall, acting solely for this purpose as a non-fiduciary agent of the Borrowers, maintain a register on which it enters the name and address of each Participant and the principal amounts (and stated interest) of each Participant's interest in the Loans or other obligations under the Loan Documents (the "*Participant Register*"); *provided* that no Lender shall have any obligation to disclose all or any portion of the Participant Register (including the identity of any Participant or any information relating to a Participant's interest in any Commitment, Loans, or its other obligations under any Loan Document) to any Person. The entries in the Participant Register shall be conclusive absent manifest error, and such Lender shall treat each Person whose name is recorded in the Participant Register as the owner of such participation for all purposes of this Agreement notwithstanding any notice to the contrary. For the avoidance of doubt, the Lender (in its capacity as Lender) shall have no responsibility for maintaining a Participant Register.

Section 8.05. *Survival*. All covenants, agreements, representations and warranties made by the Borrowers in the Loan Documents and in the certificates or other instruments delivered in connection with or pursuant to any Loan Documents shall be considered to have been relied upon by the other parties hereto and shall survive the execution and delivery of this Agreement and the making of any Loans, regardless of any investigation made by any such other party or on its behalf and notwithstanding that the Lender may have had notice or knowledge of any Default or incorrect representation or warranty at the time any credit is extended hereunder, and shall continue in full force and effect as long as the principal of or any accrued interest on any Loan or any fee or any other Obligations payable under this Loan Documents is outstanding and so long as the Commitment has not expired or terminated. The provisions of Sections 2.08 and 8.03 and Article
8 shall survive and remain in full force and effect regardless of the consummation of the transactions contemplated hereby, the repayment of the Obligations in full in cash, the expiration or termination of the Commitments or the termination of the Loan Documents or any provision thereof.

Section 8.06. *Counterparts; Integration; Effectiveness; Electronic Execution*. (a) This Agreement may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. This Agreement and the other Loan Documents constitute the entire contract among the parties relating to the subject matter hereof and supersede any and all previous agreements and understandings, oral or written, relating to the subject matter hereof. Except as provided in Section 4.01, this Agreement shall become effective when it shall have been executed by the Lender and when the Lender shall have received counterparts hereof which, when taken

together, bear the signatures of each of the other parties hereto, and thereafter shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

(b) Delivery of an executed counterpart of a signature page of (x) this Agreement, (y) any other Loan Document and/or (z) any document, amendment, approval, consent, information, notice (including, for the avoidance of doubt, any notice delivered pursuant to Section 8.01), certificate, request, statement, disclosure or authorization related to this Agreement, any other Loan Document and/or the transactions contemplated hereby and/or thereby (each an "*Ancillary Document*") that is an Electronic Signature transmitted by telecopy, emailed pdf. or any other electronic means that reproduces an image of an actual executed signature page shall be effective as delivery of a manually executed counterpart of this Agreement, such other Loan Document or such Ancillary Document, as applicable. The words "execution," "signed," "signature," "delivery," and words of like import in or relating to this Agreement, any other Loan Document and/or any Ancillary Document shall be deemed to include Electronic Signatures, deliveries or the keeping of records in any electronic form (including deliveries by telecopy, emailed pdf. or any other electronic means that reproduces an image of an actual executed signature page), each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be; *provided* that nothing herein shall require the Lender to accept Electronic Signatures in any form or format without its prior written consent and pursuant to procedures approved by it; *provided*, *further*, without limiting the foregoing, (i) to the extent the Lender has agreed to accept any Electronic Signature, the Lender shall be entitled to rely on such Electronic Signature purportedly given by or on behalf of any Loan Party without further verification thereof and without any obligation to review the appearance or form of any such Electronic signature and (ii) upon the request of the Lender, any Electronic Signature shall be promptly followed by a manually executed counterpart. Without limiting the generality of the foregoing, each Loan Party hereby (A) agrees that, for all purposes, including without limitation, in connection with any workout, restructuring, enforcement of remedies, bankruptcy proceedings or litigation among the Lender and the Loan Parties, Electronic Signatures transmitted by telecopy, emailed pdf. or any other electronic means that reproduces an image of an actual executed signature page and/or any electronic images of this Agreement, any other Loan Document and/or any Ancillary Document shall have the same legal effect, validity and enforceability as any paper original, (B) the Lender may, at its option, create one or more copies of this Agreement, any other Loan Document and/or any Ancillary Document in the form of an imaged electronic record in any format, which shall be deemed created in the ordinary course of such Person's business, and destroy the original paper document (and all such electronic records shall be considered an original for all purposes and shall have the same legal effect, validity and enforceability as a paper record), (C) waives any argument, defense or right to contest the legal effect, validity or enforceability of this Agreement, any other Loan Document and/or any Ancillary Document based solely on the lack of paper original copies of this Agreement, such other Loan Document and/or such Ancillary Document, respectively, including with respect to any signature pages thereto and (D) waives any claim against any Lender-Related Person for any Liabilities arising solely from the Lender's and/or any Lender's reliance on or use of Electronic Signatures and/or transmissions by telecopy, emailed pdf. or any other electronic means that reproduces an image of an actual executed signature page, including any Liabilities arising as a result of the failure of any Loan Party to use any available security measures in connection with the execution, delivery or transmission of any Electronic Signature.

Section 8.07. *Severability*. Any provision of this Agreement held to be invalid, illegal or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity, illegality or unenforceability without affecting the validity, legality and enforceability

of the remaining provisions hereof; and the invalidity of a particular provision in a particular jurisdiction shall not invalidate such provision in any other jurisdiction.

Section 8.08. *Right of Setoff*. From and after the Spin Out, if an Event of Default shall have occurred and be continuing, the Lender and its Affiliates (other than any Borrower or any Borrower's Affiliates) is hereby authorized at any time and from time to time, to the fullest extent permitted by law, to setoff and apply any and all deposits (general or special, time or demand, provisional or final) at any time held, and other obligations at any time owing, by the Lender or any such Affiliate of the Lender, to or for the credit or the account of any Borrower against any and all of the obligations of any Borrower now or hereafter existing under any Loan Document to the Lender, irrespective of whether or not the Lender shall have made any demand under any Loan Document and although such obligations of the Borrowers may be contingent or unmatured or are owed to an Affiliate of the Lender different from the Affiliate holding such deposit or obligated on such indebtedness. The rights of the Lender and such Affiliates of the Lender under this Section are in addition to other rights and remedies (including other rights of setoff) that the Lender and such Affiliates of the Lender may have. The Lender agrees to notify the Parent Borrower promptly after any such setoff and application; *provided* that the failure to give such notice shall not affect the validity of such setoff and application.

Section 8.09. *Governing Law; Jurisdiction; Consent to Service of Process*. (a) This Agreement and the other Loan Documents shall be construed in accordance with and governed by the law of the State of New York.

(b) Each Loan Party hereby irrevocably and unconditionally submits, for itself and its property, to the exclusive jurisdiction of the United States District Court for the Southern District of New York sitting in the Borough of Manhattan (or if such court lacks subject matter jurisdiction, the Supreme Court of the State of New York sitting in the Borough of Manhattan), and any appellate court from any thereof, in any action or proceeding arising out of or relating to any and all Loan Documents or the transactions relating thereto, or for recognition or enforcement of any judgment, and each of the parties hereto hereby irrevocably and unconditionally agrees that all claims in respect of any such action or proceeding may (and any such claims, cross-claims or third party claims brought against the Lender or any of its Related Parties may only) be heard and determined in such federal (to the extent permitted by law) or New York State court. Each of the parties hereto agrees that a final judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law. Nothing in any Loan Document shall affect any right that the Lender may otherwise have to bring any action or proceeding relating to this Agreement against any Loan Party or its properties in the courts of any jurisdiction.

(c) Each Loan Party hereby irrevocably and unconditionally waives, to the fullest extent it may legally and effectively do so, any objection which it may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or relating to this Agreement or any other Loan Document in any court referred to in paragraph (b) of this Section. Each Loan Party hereby irrevocably waives, to the fullest extent permitted by law, the defense of an inconvenient forum to the maintenance of such action or proceeding in any such court.

(d) Each Loan Party irrevocably consents to service of process in the manner provided for notices in Section 8.01. Nothing in this Agreement will affect the right of any party to this Agreement to serve process in any other manner permitted by law.

Section 8.10. *WAIVER OF JURY TRIAL*. **EACH PARTY HERETO HEREBY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THE LOAN DOCUMENTS OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PARTY HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PARTY WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION**.

Section 8.11. *Headings*. Article and Section headings and the Table of Contents used herein are for convenience of reference only, are not part of this Agreement and shall not affect the construction of, or be taken into consideration in interpreting, this Agreement.

Section 8.12. *Interest Rate Limitation*. In no event shall the interest charged with respect to the Loans or any other Obligations of any Loan Party under any Loan Document exceed the maximum amount permitted under the laws of the State of New York or of any other applicable jurisdiction. Notwithstanding anything to the contrary herein or elsewhere, if at any time the rate of interest payable hereunder or under any Note or other Loan Document (the "*Stated Rate*") would exceed the highest rate of interest permitted under any applicable law to be charged (the "*Maximum Lawful Rate*"), then for so long as the Maximum Lawful Rate would be so exceeded, the rate of interest payable shall be equal to the Maximum Lawful Rate; provided, that if at any time thereafter the Stated Rate is less than the Maximum Lawful Rate, each Loan Party shall, to the extent permitted by law, continue to pay interest at the Maximum Lawful Rate until such time as the total interest received is equal to the total interest which would have been received had the Stated Rate been (but for the operation of this provision) the interest rate payable. Thereafter, the interest rate payable shall be the Stated Rate unless and until the Stated Rate again would exceed the Maximum Lawful Rate, in which event this provision shall again apply. In no event shall the total interest received by the Lender exceed the amount which it could lawfully have received had the interest been calculated for the full term hereof at the Maximum Lawful Rate. If, notwithstanding the prior sentence, the Lender has received interest hereunder in excess of the Maximum Lawful Rate, such excess amount shall be applied to the reduction of the principal balance of the Loans or to other amounts (other than interest) payable hereunder, and if no such principal or other amounts are then outstanding, such excess or part thereof remaining shall be paid to Borrower. In computing interest payable with reference to the Maximum Lawful Rate applicable to the Lender, such interest shall be calculated at a daily rate equal to the Maximum Lawful Rate divided by the number of days in the year in which such calculation is made.

Section 8.13. *No Fiduciary Duty, etc.* Each Borrower acknowledges and agrees, and acknowledges its Subsidiaries' understanding, that Lender will not have any obligations except those obligations expressly set forth in the Loan Documents and Lender is acting solely in the capacity of an arm's length contractual counterparty to each Borrower with respect to the Loan Documents and the transactions contemplated herein and therein and not as a financial advisor or a fiduciary to, or an agent of, any Borrower or any other person. Each Borrower agrees that it will not assert any claim against Lender based on an alleged breach of fiduciary duty by Lender in connection with this Agreement and the transactions contemplated hereby. Additionally, each

Borrower acknowledges and agrees that Lender is not advising any Borrower as to any legal, tax, investment, accounting, regulatory or any other matters in any jurisdiction. Each Borrower shall consult with its own advisors concerning such matters and shall be responsible for making its own independent investigation and appraisal of the transactions contemplated in the Loan Documents, and Lender shall have no responsibility or liability to the Borrowers with respect thereto.

Section 8.14. *USA PATRIOT Act*. From and after the Spin Out, to the extent the Lender is subject to the requirements of the USA PATRIOT Act of 2001 (the "*Patriot Act*"), the Lender hereby notifies the Borrowers that pursuant to the requirements of the Patriot Act, it is required to obtain, verify and record information that identifies the Borrowers, which information includes the names and addresses of the Borrowers and other information that will allow the Lender to identify the Borrowers in accordance with the Patriot Act.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and delivered by their respective authorized officers as of the day and year first above written.

BORROWERS:

NEXT BRIDGE HYDROCARBONS, INC.

By: ____ Name: George Palikaras
Title: President

TORCHLIGHT ENERGY, INC.
By: ____ Name: George Palikaras
Title: President

TORCHLIGHT HAZEL, LLC
By: ____ Name: George Palikaras
Title: President HUDSPETH OIL CORPORATION
By: ____ Name: George Palikaras
Title: President HUDSPETH OPERATING, LLC
By: ____
Name: George Palikaras Title: President

[Signature Page to Loan Agreement]

LENDER:

META MATERIALS, INC.

By: ____ Name: Kenneth Rice
Title: Chief Financial Officer and \
Chief Operating Officer

SCHEDULE A
EXISTING LOANS

Date of Loan	**Principal Amount (in $)**	**Borrower**
April 14, 2022	90,000	Parent Borrower
May 4, 2022	69,000	Parent Borrower
May 12, 2022	89,000	Parent Borrower
May 26, 2022	82,000	Parent Borrower
June 1, 2022	30,000	Parent Borrower
June 13, 2022	81,000	Parent Borrower
June 28, 2022	1,900,000	Parent Borrower
August 11, 2022	1,200,000	Parent Borrower
August 29, 2022	1,459,000	Parent Borrower
Total	**5,000,000**	

SCHEDULE 2.01A

Commitment

Name of Lender	Commitment
Meta Materials, Inc.	$5,000,000

SCHEDULE 3.06

Disclosed Matters

None.

SCHEDULE 6.01

Existing Indebtedness

1. Indebtedness evidenced by and under the Existing Secured Note

SCHEDULE 6.02

Existing Liens

1. Liens securing the Existing Secured Notes under and pursuant to the Existing Security Documents

SCHEDULE 6.09

Existing Restrictions

None.

SCHEDULE 8.01

Addresses

If to a Borrower:

Next Bridge Hydrocarbons, Inc. 6300
Ridglea Place, Suite 950 Fort Worth,
TX 76116
United States of America

Tel: (817) 438-1937
Email: cdubose@nextbridgehydrocarbons.com

With a copy to (which shall not constitute notice):

O'Melveny & Myers LLP
2501 N. Harwood Street, Floor 17
Dallas, Texas 75201
Attn: Jason A. Schumacher Email:
jschumacher@omm.com

If to the Lender:

Meta Materials, Inc.
85 Swanson Road, Suite 222
Boxborough, Massachusetts 01719 United States
of America
Attn: Chief Financial Officer Tel: 1-
413-625-5484
Fax:
Email: ken.rice@metamaterial.com

With a copy to (which shall not constitute notice):

Wilson Sonsini Goodrich & Rosati, P.C. 28 State
Street
Boston, MA 02109 Attn:
Charlotte Kim Email:
ckim@wsgr.com

Exhibit 2.6.0

8% SECURED PROMISSORY NOTE OF OILCO HOLDINGS, INC.

Up to $15,000,000 Original Issue Date: October 01 2021 FOR VALUE RECEIVED, OILCO HOLDINGS, INC., a Nevada corporation with its office located at 3600 W. Plano Pkwy Ste. 3600, Plano, Texas, 75093 (the "**Company**" or "**Debtor**"), unconditionally promises to pay to Meta Materials Inc., a Nevada corporation, whose address is 1 Research Drive, Dartmouth, NS B2Y 4M9, CANADA, or its registered assignee (the "**Registered Holder**" or "**Holder**"), upon presentation of this 8% Secured Promissory Note (the "**Note**") by the Registered Holder hereof at the offices of the Registered Holder, the principal balance of the Drawdowns (as defined below), together with the accrued and unpaid interest thereon and other sums as hereinafter provided, subject to the terms and conditions as set forth below. The effective date of execution and issuance of this Note is October 01, 2021 ("**Original Issue Date**").

1. **Purpose of Note**. This Note evidences, and is given in consideration of, a loan in the principal amount of up to $15,000,000 in United States Dollars. This is a revolving credit facility and unless extended or renewed shall be payable in full on the Maturity Date (defined below). Holder hereby agrees to loan up to $15,000,000 in principal amount to the Company, under the terms and conditions of this Note.

2. **Drawdown Requests**. The principal of this Note may be drawn down from time to time prior to the Maturity Date (as defined below), upon written request from the Company to the Holder (each, a "**Drawdown Request**"), which Drawdown Request must state the amount to be drawn down, and must not be an amount less than $1,000,000 (each, a "**Drawdown**" and collectively "**Drawdowns**"). The Holder shall fund each Drawdown Request within three (3) Business Days (as defined below) after receipt of a Drawdown Request; provided, however, that the maximum amount of Drawdowns, collectively, under this Note shall not exceed a total of $15,000,000.

3. **Schedule for Payment of Principal and Interest.** The principal balance of the Drawdowns outstanding hereunder and all accrued and unpaid interest thereon and all other amounts accrued under this Note shall be due and payable in full in one lump sum payment, in United States Dollars on or before the earlier of: (i) September 30, 2022; and (ii) such date that the Company receives at least a total of $25,000,000 in funding from a capital raise (excluding funds received under this Note) (in either case, the "**Maturity Date**"). All interest on the principal balance of the Drawdowns outstanding hereunder shall be payable at the rate of 8% per annum and shall be due and payable to the Holder on the Maturity Date. Interest shall be computed on the basis of a 360-day year.

4. **Payment**. Payment of any sums due to the Holder under the terms of this Note shall be made in United States Dollars by wire transfer. Payment shall be made at the address last

appearing on the Note Register of the Holder as designated in writing by the Holder hereof from time to time. If any payment hereunder would otherwise become due and payable on a day on which

commercial banks in Dartmouth, Nova Scotia, Canada, are permitted or required to be closed, such payment shall become due and payable on the next succeeding day on which commercial banks in Dartmouth, Nova Scotia, Canada, are not permitted or required to be closed ("**Business Day**"). The forwarding of such funds shall constitute a payment of outstanding principal and interest hereunder and shall satisfy and discharge the liability for principal and interest on this Note to the extent of the sum represented by such payment.

5. **Security for Payment**. The Note is secured by (i) a security interest in 1,515,000 shares of common stock of Meta Materials Inc. that are owned directly and beneficially by Gregory McCabe ("McCabe"), as evidenced by a Stock Pledge Agreement of even date herewith between McCabe and the Registered Holder (the **"Stock Pledge Agreement"**); and (ii) a security interest, as evidenced by a Security Agreement of even date herewith, between an affiliate of McCabe and the Registered Holder (the "**Security Agreement**") in and to a 25% working interest beneficially owned by McCabe in the Orogrande Prospect (as defined in the Security Agreement).

6. **Representations and Warranties of the Company**. The Company represents and warrants to the Holder that:

(a) Organization. The Company is validly existing and in good standing under the laws of the state of Nevada and has the requisite power to own, lease and operate its properties and to carry on its business as now being conducted. The Company is duly qualified to do business and is in good standing in each jurisdiction in which the character or location of the properties owned or leased by the Company or the nature of the business conducted by the Company makes such qualification necessary or advisable, except where the failure to do so would not have a material adverse effect on the Company.

(b) Power and Authority. The Company has the requisite power to execute, deliver and perform this Note, and to consummate the transactions contemplated hereby. The execution and delivery of this Note by the Company and the consummation of the transactions contemplated hereby have been duly authorized by all necessary corporate action on the part of the Company. This Note has been duly executed and delivered by the Company and constitutes a legal, valid and binding obligation of the Company and is enforceable against the Company in accordance with its terms except (i) that such enforcement may be subject to bankruptcy, insolvency, moratorium or similar laws affecting creditors' rights and (ii) that the remedy of specific performance and injunctive and other forms of equitable relief are subject to certain equitable defenses and to the discretion of the court before which any proceedings therefor may be brought.

7. **Events of Defaults and Remedies**. The following are deemed to be an event of default ("**Event of Default"**) hereunder: (i) the failure by the Company to pay all or any part of the principal and accrued and unpaid interest on this Note when and as the same become due and payable as set forth above, at maturity, by acceleration or otherwise; (ii) the failure by the Company to observe or perform any covenant or agreement contained in this Note and the continuance of such failure for a period of 30 days after the written notice is given to the Company; (iii) an event of default under the Stock Pledge Agreement or the Security Agreement; (iv) (A) the assignment by the Company for the benefit of creditors, or an application by the Company to any tribunal for the

appointment of a trustee or receiver of a substantial part of the assets of the Company, or (B) the commencement of any proceedings relating to the Company under any bankruptcy, reorganization, arrangement, insolvency, readjustment of debts, dissolution or other liquidation law of any jurisdiction; or (C) the filing of such application, or the commencement of any such proceedings against the Company and an indication of consent by the Company to such proceedings, or (D) the appointment of such trustee or receiver, or (E) an adjudication of the Company bankrupt or insolvent, or approval of the petition in any such proceedings, and such order remains in effect for 60 days; (v) the declaration of an event of default or default, occurring after the Original Issue Date, under any other contract, agreement, debt or obligation of the Company with a monetary amount in excess of $500,000 United States Dollars (or the equivalent in Canadian Dollars); or
(vi) the entry of a judgment against the Company, which is not otherwise appealable, or for which all appeals have been exhausted and for which the Company has not posted a bond to satisfy the amount of the judgment in excess of $500,000 United States Dollars (or the equivalent in Canadian Dollars).

8. **The Holder's Rights and Remedies upon the Occurrence of an Event of Default**. If an Event of Default occurs and is continuing (other than an Event of Default specified in clause (v) above with respect to the Company), then in every such case, unless the principal balance of the Drawdowns of the Note shall have already become due and payable, the Holder of the Note then outstanding, by notice in writing to the Company (an **"Acceleration Notice"**), may declare all principal and accrued and unpaid interest thereon to be due and payable immediately and said principal sum shall bear interest from the date of the Event of Default at the rate per annum 4% in excess of the applicable rate of interest provided in Section 3. If an Event of Default specified in clause (v) above occurs with respect to the Company, all principal and accrued and unpaid interest thereon will be immediately due and payable on the Note without any declaration or other act on the part of the Holder. The Holder may rescind such acceleration if the existing Event of Default has been cured or waived. Failure to exercise this option shall not constitute a waiver of the right to exercise the same in the event of a subsequent Event of Default. If the Note for which the then outstanding principal balance of the Drawdowns, together with interest owing in respect thereof, shall have been paid in accordance herewith, the Note shall promptly be surrendered to or as directed by the Company.

9. **Limitation on Merger, Sale or Consolidation**. The Company may not, directly or indirectly, consolidate with or merge into another person or sell, lease, convey or transfer all or substantially all of its assets (computed on a consolidated basis), whether in a single transaction or a series of related transactions, to another person or group of affiliated persons, unless either (i) in the case of a merger or consolidation, the Company is the surviving entity or(ii) the resulting, surviving or transferee entity expressly assumes by supplemental agreement all of the obligations of the Company in connection with the Note. Upon any consolidation or merger or any transfer of all or substantially all of the assets of the Company in accordance with the foregoing, the successor entity formed by such consolidation or into which the Company is merged or to which such transfer is made, shall succeed to, and be substituted for, and may exercise every right and power of the Company under the Note with the same effect as if such successor entity had been named therein as the Company, and the Company will be released from its obligations under the Note, except as to any obligations that arise from or as a result of such transaction.

10. **Listing of Registered Holder of Note**. This Note will be registered as to the

principal balance of the Drawdowns in the Holder's name on the books of the Company (the "**Note Register**"), after which no transfer hereof shall be valid unless made on the Company's books at the office of the Company, by the Holder hereof, in person, or by attorney duly authorized in writing, and similarly noted hereon.

11. **Waiver of Demand, Presentment, Etc.** The Company hereby expressly waives demand and presentment for payment, notice of nonpayment, protest, notice of protest, notice of dishonor, notice of acceleration or intent to accelerate, bringing of suit and diligence in taking any action to collect amounts called for hereunder and shall be directly and primarily liable for the payment of all sums owing and to be owing hereunder, regardless of and without any notice, diligence, act or omission as or with respect to the collection of any amount called for hereunder.

12. **Attorney's Fees.** The Company agrees to pay all costs and expenses, including without limitation reasonable attorney's fees, which may be incurred by the Holder in collecting any amount due under this Note or in enforcing any of Holder's rights as described herein.

13. **Enforceability.** In case any provision of this Note is held by a court of competent jurisdiction to be excessive in scope or otherwise invalid or unenforceable, such provision shall be adjusted rather than voided, if possible, so that it is enforceable to the maximum extent possible, and the validity and enforceability of the remaining provisions of this Note will not in any way be affected or impaired thereby.

14. **Intent to Comply with Usury Laws.** In no event will the interest to be paid on this Note exceed the maximum rate provided by law. It is the intent of the parties to comply fully with the usury laws of the State of Nevada; accordingly, it is agreed that notwithstanding any provisions to the contrary in this Note, in no event shall such Note require the payment or permit the collection of interest (which term, for purposes hereof, shall include any amount which, under Nevada law, is deemed to be interest, whether or not such amount is characterized by the parties as interest) in excess of the maximum amount permitted by the laws of the State of Nevada. If any excess of interest is unintentionally contracted for, charged or received under this Note, or in the event the maturity of the indebtedness evidenced by the Note is accelerated in whole or in part, or in the event that all of part of the principal amount or interest of this Note shall be prepaid, so that the amount of interest contracted for, charged or received under this Note, on the amount of the principal amount actually outstanding from time to time under this Note shall exceed the maximum amount of interest permitted by the applicable usury laws, then in any such event (i) the provisions of this paragraph shall govern and control, (ii) neither the Company nor any other person or entity now or hereafter liable for the payment thereof, shall be obligated to pay the amount of such interest to the extent that it is in excess of the maximum amount of interest permitted by such applicable usury laws, (iii) any such excess which may have been collected shall be either applied as a credit against the then unpaid principal amount thereof or refunded to the Company at the Holder's option, and (iv) the effective rate of interest shall be automatically reduced to the maximum lawful rate of interest allowed under the applicable usury laws as now or hereafter construed by the courts having jurisdiction thereof. It is further agreed that without limitation of the foregoing, all calculations of the rate of interest contracted for, charged or received under the Note which are made for the purpose of determining whether such rate exceeds the maximum lawful rate of interest, shall be made, to the extent permitted by applicable laws, by amortizing,

prorating, allocating and spreading in equal parts during the period of the full stated term of the Note evidenced thereby, all interest at any time contracted for, charged or received from the Company or otherwise by the Holder in connection with this Note.

15. **Governing Law; Consent to Jurisdiction.** This Note shall be governed by and construed in accordance with the laws of the state of Nevada without regard to the conflict of laws provisions thereof. In any action between or among any of the parties, whether rising out of this Note or otherwise, each of the parties irrevocably consents to the exclusive jurisdiction andvenue of the of the federal and/or state courts located in Clark County, Nevada.

16. **Amendment and Waiver**. Any waiver or amendment hereto shall be in writing signed by the Holder. No failure on the part of the Holder to exercise, and no delay in exercising, any right hereunder shall operate as a waiver thereof, nor shall any single or partial exercise by the Holder of any right hereunder preclude any other or further exercise thereof or the exercise of any other rights. The remedies herein provided are cumulative and not exclusive of any other remedies provided by law.

17. **Transfer or Assignment.** This Note and any and all rights thereunder may be sold, transferred, assigned or pledged by the registered Holder hereof, in whole or in part. Any transfer of this Note otherwise permissible hereunder shall be made at the office of the Company upon surrender of this Note for cancellation, and upon any such transfer a new Note will be issued to the transferee in exchange therefor.

18. **Entire Agreement; Headings**. This Note constitutes the entire agreement between the Holder and the Company pertaining to the subject matter hereof and supersedes all prior and contemporaneous agreements, representations and understandings, written or oral, of such parties. The headings are for reference purposes only and shall not be used in construing or interpreting this Note.

19. **Notices**. Any notices or other communications required or permitted hereunder shall be sufficiently given if in writing and delivered in person, or sent by registered or certified mail (return receipt requested) or recognized overnight delivery service, postage pre-paid, or sent by email addressed as follows, or to such other address as such party may notify to the other parties in writing:

(a) If to the Company, to it at the following address:

600 W. Plano Pkwy, Ste. 3600
Plano, Texas 75093
Email: roger@torchlightenergy.com

(b) If to Registered Holder, then to the address listed on the front of this Note, unless changed, by notice in writing as provided for herein.

A notice or communication will be effective (i) if delivered in person or by overnight

courier, on the Business Day it is delivered, (ii) if sent by registered or certified mail, the earlier

of the date of actual receipt by the party to whom such notice is required to be given or three (3) days after deposit in the United States mail and (iii) if sent by email, on the date sent. If any notice or other communication is sent by email, the party providing such notice shall, no later than the next business day after such emailed notice is sent, send a written notice by registered or certified mail (return receipt requested) or recognized overnight delivery service, postage pre-paid.

20. **Survival**. The representations, warranties, obligations and covenants of the Company shall survive execution of this Note.

[Signature Page Follows]

IN WITNESS WHEREOF, each of the parties below has caused this Note to be duly executed in its corporate name by the manual signature of an officer of such party.

OILCO HOLDINGS, INC.

By:_____ Ken Rice, Chief Financial Officer

META MATERIALS INC.

By:_____ George Palikaras, President

Exhibit 2.7.0

STOCK PLEDGE AGREEMENT

This Stock Pledge Agreement (this **"Agreement"**) is made effective as of September 30, 2021 (**"Effective Date"**), by and between **Gregory McCabe**, an individual whose address is 500 West Texas Ave., Suite 890, Midland, Texas 79701 (the **"Pledgor"**), and **Meta Materials Inc.**, a Nevada corporation (the **"Secured Party"**).

RECITALS:

WHEREAS, on September 30, the Secured Party agreed to loan Oilco Holdings, Inc. up to $15,000,000 in principal amount, under the terms and conditions of an 8% Secured Promissory Note (the "**Note**").

WHEREAS, the Note provides that the Pledgor shall pledge and grant a security interest in the Collateral (as hereinafter defined) as security for the Obligations (as hereinafter defined) under the Note; and

WHEREAS, pursuant to the Note, this Agreement must be executed and delivered by the Pledgor; and

WHEREAS, the Pledgor has determined that Pledgor's execution, delivery and performance of this Agreement may reasonably be expected to provide substantial benefit to Pledgor, directly or indirectly, and to be in the best interests of Pledgor.

NOW, THEREFORE, FOR VALUE RECEIVED, the sufficiency of which is acknowledged by the parties, the parties hereto agree as follows:

ARTICLE I
Security Interest and Pledge

Section 1.01. **Defined Terms and Related Matters**.

(a) Capitalized terms used and not otherwise defined herein that are defined in the Note shall have the meanings specified therein. Terms defined in the singular include the plural and terms defined in the plural include the singular.

(b) The words "hereof," "herein" and "hereunder" and words of similar import when used in this Agreement shall refer to this Agreement as a whole and not to any particular provision of this Agreement.

(c) **"Pledged Securities"** means 1,515,000 shares of common stock of Meta Materials Inc. held directly and/or beneficially by Gregory McCabe, as set forth in Schedule A.

Section 1.02 **Security Interest and Pledge.** Subject to the terms of this Agreement, Pledgor hereby pledges and deliver to the Secured Party, and hereby grants to the Secured Party, a lien on and security interest in and to (i) all of Pledgor's rights, titles, interests and privileges in

and with respect to the Pledged Securities, whether now owned or hereafter acquired, including, without

limitation: (a) the Pledged Securities; (b) all certificates or instruments representing Pledged Securities and all proceeds, income and profits thereon, and all interest, dividends and other payments, property, revenues, and distributions with respect thereto; (c) all proceeds received or receivable by Pledgor in cash, stock or otherwise, from any recapitalization, reclassification, merger, dissolution, liquidation or other termination of the existence of the Secured Party relating to the Pledged Securities (all such property, collectively, the **"Collateral"**).

Section 1.03. **Obligations Secured.** This Agreement secures: (a) all obligations under the Note, including the full and prompt payment of the principal of, interest on, and all other amounts due with respect to the Note from time to time outstanding, as and when such amounts shall become due and payable, whether by lapse of time, upon redemption, prepayment or purchase, by extension or by acceleration or declaration or otherwise; (b) the full and prompt payment, performance and observance by Pledgor of all obligations, covenants, conditions and agreements contained in this Agreement; and (c) the full and prompt payment, upon demand by the Secured Party, of all costs and expenses (including, without limitation, reasonable attorneys' fees), if any, as shall have been expended or incurred by the Secured Party in the protection or enforcement of any right or privilege under the Note or this Agreement, or in the protection or enforcement of any rights, privileges or liabilities thereunder (all such obligations, covenants, conditions and agreements described in the foregoing clauses (a), (b) and (c) being hereinafter collectively referred to as the **"Obligations"**.

Section 1.04. **Formalities.**

(a) All certificates and instruments representing the Pledged Securities have been, or, in the case of all Pledged Securities hereafter acquired in accordance with Section 1.02, immediately upon acquisition shall be, delivered to and shall be held by the Secured Party pursuant hereto in suitable form for transfer to Secured Party in the Event of Default by delivery, or accompanied by undated stock powers or other instruments of transfer or assignment, duly executed in blank, all in form and substance satisfactory to the Secured Party.

(b) Notwithstanding anything to the contrary contained in clause (a) above, if any Pledged Securities (whether now owned or hereafter acquired) are uncertificated securities, Pledgor hereby agrees to and shall promptly notify the Secured Party, and shall promptly notify the Transfer Agent for Meta Materials Inc. of this Agreement and the pledge and restrictions contained herein with respect to the Pledged Securities and shall further, without the need for any request from the Secured Party, take all actions required to perfect the security interest of the Secured Party under applicable law (including, in any event, under the provisions of Article 8 or 9 of the Uniform Commercial Code, if applicable). Pledgor further agrees to take such actions as the Secured Party deems necessary or desirable to effect the foregoing and to permit the Secured Party to exercise any rights and remedies hereunder.

(c) Pledgor hereby authorizes the Secured Party to file one or more financing or continuation statements, and amendments thereto, relating to all or any part of the Collateral without the signature of Pledgor where permitted by law. A photocopy or other reproduction of this Agreement or any financing statement covering the Collateral or any part thereof shall be sufficient as a financing statement where permitted by law.

ARTICLE II
Representations and Warranties

Section 2.01 **Representations and Warranties**. Pledgor represents, warrants, and covenants to Secured Party as follows:

(a) The principal place of business and the executive office of Pledgor and the sole location where the records of Pledgor with respect to the Collateral are kept are located at the address set forth on Schedule B attached hereto.

(b) Pledgor has not sold, granted any option with respect to, assigned, transferred or otherwise disposed of any of its rights or interests in or to the Pledged Securities.

(c) This Agreement has been duly authorized, executed and delivered by the Pledgor and constitutes a legal, valid and binding obligation of the Pledgor, enforceable against Pledgor in accordance with its terms, except to the extent that the enforceability hereof may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting creditors' rights generally and by equitable principles (regardless of whether enforcement is sought in equity or at law).

ARTICLE III
Affirmative and Negative Covenants

Pledgor covenants and agrees with Secured Party that until the Obligations are satisfied and performed in full:

Section 3.01 **Encumbrances.** Pledgor shall not create, permit, or suffer to exist, and shall defend the Collateral against, any lien, security interest, or other encumbrance on the Collateral except the pledge and security interest of Secured Party hereunder and shall defend Pledgor's rights in the Collateral and Secured Party's security interest in the Collateral against the claims of all persons or entities whatsoever.

Section 3.02. **Sale of Collateral.** Pledgor shall not sell, assign, or otherwise dispose of the Collateral or any part thereof, or attempt to sell, assign, or otherwise dispose of the Collateral or any part thereof, without the prior written consent of the Secured Party.

Section 3.03. **Further Assurances.** At any time and from time to time, upon the request of the Secured Party, and at the sole expense of Pledgor, Pledgor shall promptly execute and deliver all such further instruments and documents and take such further action as the Secured Party may deem necessary or desirable to preserve and perfect their security interest in the Collateral and carry out the provisions and purposes of this Agreement, including, without limitation, the execution and/or filing of such financing statements as the Secured Party may require (and any such filing is hereby authorized by Pledgor).

Section 3.04. **Notification.** Pledgor shall promptly notify the Secured Party of any lien, security interest, encumbrance or claim made or threatened against the Collateral.

ARTICLE IV
Rights of Secured Party and Pledgor

Section 4.01. **Voting Rights.** So long as no Event of Default (as hereinafter defined) shall have occurred and be continuing and not cured and this Agreement is in force and effect, Pledgor shall be entitled to exercise any voting and other consensual rights relating or pertaining to the Pledged Securities or any part thereof provided, however, that no vote shall be cast or consent, waiver or ratification given or action taken that would be inconsistent with or violate any provision of this Agreement unless the Note is paid in full. Upon the occurrence of an Event of Default, which shall be continuing and not cured, at the sole option of the Secured Party, all voting rights shall thereupon become vested in the Secured Party or their assignee, who shall thereupon have the sole right to exercise or to assign the right to exercise such voting and other consensual rights.

Section 4.02. **Dividends; Distributions.** Until an Event of Default occurs and is continuing and not cured, Pledgor shall be entitled to receive, retain and use any and all dividends, distributions and other payments paid in respect of the Pledged Securities to the extent not otherwise prohibited hereby; provided, however, that any and all

(a) dividends, distributions and other amounts paid or payable other than in cash in respect of, and instruments and other property received, receivable or otherwise distributed in respect of, or in exchange for, any of the Collateral;

(b) dividends or distributions hereafter paid or payable in cash in respect of any of the Collateral in connection with a partial or total liquidation or dissolution; and

(c) cash paid, payable or otherwise distributed in redemption of, or in exchange for, any of Pledgor's portion of the Collateral;

shall be, and shall be forthwith delivered to the Secured Party to hold as Collateral and shall, if received by Pledgor, be received in trust for the benefit of the Secured Party, be segregated from the other property or funds of Pledgor and be forthwith delivered to the Secured Party as Collateral in the same form as so received (with any necessary endorsement).

Section 4.03. **Exercise of Rights.** Upon the occurrence and during the continuance of an Event of Default, which is not cured:

(i) All rights of the Pledgor to receive the dividends, distributions and other payments which it would otherwise be authorized to receive and retain pursuant to Section 4.02 hereof shall cease, and all such rights shall thereupon become vested in the Secured Party which shall thereupon have the sole right to exercise such voting and other consensual rights and to receive and hold as Collateral such dividends, distributions and other payments; and

(ii) All dividends, distributions or other payments which are received by Pledgor contrary to the provisions of this Article shall be received in trust for the benefit of the Secured Party, shall be segregated from other funds of Pledgor, and shall be forthwith paid over to the Secured Party as Collateral in the same form as so received (with any necessary endorsement).

Section 4.04 **Performance by Secured Party of Pledgor's Obligations.** If Pledgor fails to perform or comply with any of the agreements contained herein and Secured Party shall cause performance of or compliance with such agreement, the expenses of Secured Party, together with interest thereon shall be payable by Pledgor to Secured Party on demand and shall constitute Obligations secured by this Agreement.

Section 4.05. **Possession; Reasonable Care**. The powers conferred on the Secured Party hereunder are solely to protect its interest in the Collateral and shall not impose any duty upon Secured Party to exercise any such powers. Except for the safe custody of any Collateral in its possession and the accounting for monies actually received by it hereunder, the Secured Party shall have no duty as to any Collateral or as to the taking of any necessary steps to preserve rights against prior parties or any other rights pertaining to any Collateral. The Secured Party shall hold in its possession all Collateral pledged, assigned or transferred hereunder, except as from time to time any documents or instruments may be required for recordation or for the purpose of enforcing or realizing upon any right or value thereby represented.

Section 4.06. **Release of Collateral.** The Secured Party shall release the Collateral upon the full payment of the Note.

ARTICLE V
Default

Section 5.01. **Events of Default.** Each of the following shall be deemed an **"Event of Default"**:

(a) an Event of Default occurs under terms of the Note, which is not cured;

(b) Any representation or warranty made or deemed made by Pledgor in this Agreement or in any certificate, report, notice, or statement furnished at any time in connection with this Agreement or the Note is false or misleading in any material respect on the date when made or deemed to have been made.

(c) Pledgor fails to perform, observe, or comply with any covenant, agreement or term, other than a monetary default, contained in this Agreement and such failure continues, without cure, for thirty (30) days after written notice to Pledgor.

(d) Pledgor commences a voluntary proceeding seeking liquidation, reorganization, or other relief with respect to itself or its debts under any bankruptcy, insolvency or other similar law now or hereafter in effect or seeking the appointment of a trustee, receiver, liquidator, custodian, or other similar official of it or a substantial part of its property or consents to any such relief or to the appointment of or taking possession by any such official in an involuntary case or other proceeding commenced against it or makes a general assignment for the benefit of creditors or takes any corporate action to authorize any of the foregoing.

(e) An involuntary proceeding is commenced against Pledgor seeking liquidation, reorganization, or other relief with respect to it or its debts under any bankruptcy, insolvency or other similar law now or hereafter in effect or seeking the appointment of a

trustee, receiver, liquidator, custodian or other similar official of it or a substantial part of its property, and such

involuntary proceeding shall remain undismissed and unstayed for a period of sixty (60) days after commencement.

Section 5.02. **Rights and Remedies.** Upon the occurrence of an Event of Default, and subject to the notice and opportunity to cure (if any) required by the Note or this Agreement, the Secured Party shall have all of the rights and remedies set forth in this Agreement and the Note, and additionally shall have the following rights and remedies:

(i) The Secured Party may declare the Obligations or any part thereof immediately due and payable, without demand, presentment, notice of dishonor, notice of acceleration, notice of intent to accelerate, notice of intent to demand, protest, or any other notice whatsoever, all of which are hereby expressly waived by Pledgor; provided, however, that upon the occurrence of an Event of Default under Section 5.01(d) or Section 5.01(e) of this Agreement, the Obligations shall become immediately due and payable without demand, presentment, notice of dishonor, notice of acceleration, notice of intent to accelerate, notice of intent to demand, protest, or any other notice whatsoever, all of which are hereby expressly waived by Pledgor;

(ii) In addition to all other rights and remedies granted to the Secured Party in this Agreement and in any other instrument or agreement securing, evidencing, or relating to the Obligations, the Secured Party shall have all of the rights and remedies of a secured party under the Uniform Commercial Code in force in the State of Texas as of the date of this Agreement. Without limiting the generality of the foregoing, the Secured Party may (A) without demand or notice to Pledgor, collect, receive, or take possession of the Collateral or any part thereof, (B) sell or otherwise dispose of the Collateral, or any part thereof, in one or more parcels at public or private sale or sales, at the Secured Party's offices or elsewhere, for cash or on credit, and/or (C) bid and become a purchaser at any sale free of any right or equity of redemption in Pledgor, which right or equity is hereby expressly waived and released by Pledgor. Pledgor agrees that the Secured Party shall not be obligated to give more than ten (10) business days written notice of the time and place of any public sale or of the time after which any private sale may take place and that such notice shall constitute reasonable notice of such matters. The Secured Party shall not be obligated to make any sale of the Collateral regardless of notice of sale having been given. The Secured Party may adjourn any public or private sale from time to time by announcement at the time and place fixed therefor, and such sale may, without further notice, be made at the time and place to which it was so adjourned. Any cash held by the Secured Party as Collateral and all cash proceeds received by the Secured Party in respect of any sale of, collection from, or other realization upon all or any part of the Collateral may, in the discretion of the Secured Party, be held by the Secured Party as collateral for, and/or be applied then or at any time thereafter to the Obligations in the order and manner as Secured Party may elect. Any surplus of such cash or cash proceeds held by the Secured Party and remaining after payment in full of all the Obligations shall be paid over to Pledgor or to whomever may be lawfully entitled to receive such surplus. Pledgor shall be liable for all expenses of retaking, holding, preparing for sale, or the like, and all attorneys' fees and other expenses incurred by Secured Party in connection with the collection of the Obligations and the enforcement of Secured Party's rights under this Agreement, all of which expenses and fees shall constitute additional Obligations secured by this Agreement. Pledgor shall remain liable for any deficiency if

the proceeds of any sale or disposition of the Collateral are insufficient to pay the Obligations;

(iii) The Secured Party may cause any or all of the Collateral held by it to be transferred into the name of the Secured Party or the name or names of the Secured Party's nominee or nominees;

(iv) The Secured Party shall be entitled to receive all cash and non-cash dividends payable in respect of the Collateral;

(v) The Secured Party shall have the right, but shall not be obligated to, exercise or cause to be exercised all voting rights and corporate powers in respect of the Collateral and Pledgor shall deliver to the Secured Party, if requested by the Secured Party, irrevocable proxies with respect to the Collateral in form satisfactory to the Secured Party;

(vi) On any sale of the Collateral, the Secured Party is hereby authorized to comply with any limitation or restriction compliance with which is necessary, in the view of the Secured Party's counsel, in order to avoid any violation of applicable law or in order to obtain any required approval of the purchaser or purchasers by any applicable governmental authority.

Section 5.03. **Waiver and Consent.** Upon the occurrence and during the continuance of an Event of Default, and subject to the notice and opportunity to cure (if any) required by the Note, the Secured Party may enforce this Agreement independently from any other document and independently of any other remedy, security or guaranty the Secured Party at any time may have or hold in connection with the Obligations, and it shall not be necessary for the Secured Party to marshal assets in favor of Pledgor or any other person or to proceed upon or against and/or exhaust my other security or remedy before proceeding to enforce this Agreement. Pledgor expressly agrees that the Secured Party may proceed against any or all of the Collateral or guaranties in such order and in such manner as Secured Party shall determine in Secured Party's sole and absolute discretion.

ARTICLE VI
Miscellaneous

Section 6.01. **No Waiver; Cumulative Remedies.** No failure on the part of the Secured Party to exercise and no delay in exercising, and no course of dealing with respect to, any right, power, or privilege under this Agreement shall operate as a waiver thereof, nor shall any single or partial exercise of any right, power, or privilege under this Agreement preclude any other or further exercise thereof or the exercise of any other right, power, or privilege. The rights and remedies provided for in this Agreement are cumulative and not exclusive of any rights and remedies provided by law.

Section 6.02. **Successors and Assigns.** This Agreement shall be binding upon and inure to the benefit of Pledgor and Secured Party and their respective heirs, successors, and assigns, except that neither the Pledgor nor the Secured Party may assign any of their rights or obligations under this Agreement without the prior written consent of the other party, which written consent shall not be unreasonably withheld.

Section 6.03. **Amendment; Entire Agreement.** This Agreement embodies the entire

agreement among the parties hereto and supersedes all prior agreements and understandings, if any,

relating to the subject matter hereof. The provisions of this Agreement may be amended or waived only by an instrument in writing signed by the parties hereto.

Section 6.04. **Notices.** Any notices or other communications required or permitted hereunder shall be sufficiently given if in writing and delivered in person or sent by registered or certified mail (return receipt requested) or nationally recognized overnight delivery service, postage pre-paid, addressed as follows, or to such other address has such party may notify to the other parties in writing:

To Secured Party: Meta Materials Inc.
Attn: George Palikaras, President 1 Research Drive
Dartmouth, Nova Scotia, Canada B2Y 4M9

with a copy to: ____

To Pledgor: Gregory McCabe
500 West Texas Ave., Suite 890
Midland, Texas 79701

with a copy to: Kelly Hart & Hallman LLP 201 Main Street, Suite 2500 Fort Worth, Texas 76102 Attn: Evan Malloy

A notice or communication will be effective (i) if delivered in person or by overnight courier, on the business day it is delivered and (ii) if sent by registered or certified mail, three (3) business days after dispatch.

Section 6.05. **Expenses.** Each party agrees to pay its own expenses in connection with the preparation, negotiation, and execution of any and all amendments, modifications, and supplements to this Agreement.

Section 6.06 **Choice of Law**. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Texas, without regard to principles of conflict of laws. In any action between or among any of the parties, whether arising out of this Agreement or otherwise, each of the parties irrevocably consents to the exclusive jurisdiction and venue of the federal and state courts located in Midland County, Texas.

Section 6.07. **Headings.** The headings, captions, and arrangements used in this Agreement are for convenience only and shall not affect the interpretation of this Agreement.

Section 6.08. **Execution**. This Agreement may be executed in two or more counterparts, all of which when taken together shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party, it

being understood that both parties need not sign the same counterpart. In the event that any signature is delivered by facsimile transmission or by e-mail delivery of a ".pdf" format data file, such signature shall create a valid and binding obligation of the party executing (or on whose behalf such signature is executed) with the same force and effect as if such facsimile or ".pdf" signature page were an original thereof.

Section 6.09. **Severability.** Any provision of this Agreement which is prohibited or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such prohibition or unenforceability without invalidating the remaining provisions of this Agreement, and any such prohibition or unenforceability in any jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

Section 6.10 **Non-Recourse.** For the avoidance of doubt, the Pledgor shall not have any obligation based upon, arising out of or related to this Agreement other than with respect to the Collateral, and then only as expressly provided herein. Without limiting the foregoing, no claim will be brought or maintained by the Secured Party or any of its affiliates, successors or permitted assigns against Pledgor or any of his affiliates other than with respect to the Collateral (and then only pursuant to the express terms hereof), and no recourse will be brought or granted against any of them, by virtue of or based upon any alleged misrepresentation or inaccuracy in or breach or nonperformance of any of the representations, warranties, covenants or agreements of any party hereto set forth or contained in this Agreement.

Executed as of the Effective Date above written.

PLEDGOR:

GREGORY MCCABE

SECURED PARTY: **META MATERIALS INC.**

By:_____ Kenneth Rice, CFO

Schedule A

Pledged Securities

Schedule A

Number of Shares of Common Stock

Schedule A

Schedule A

1,515,000

Schedule A

Schedule B

Principal Place of Business; Chief Executive Office; Location of Records; Jurisdiction of Organization

Gregory McCabe
Principal Place of Business and Location of Records: 500 West Texas Ave.,
Suite 890
Midland, Texas 79701

Request ID: 025392170
Demande n°:
Transaction ID: 077479877
Transaction n°:
Category ID: CT
Catégorie:

Province of Ontario
Province de l'Ontario
Ministry of Government Services
Ministère des Services gouvernementaux

Date Report Produced: 2020/12/09
Document produit le:
Time Report Produced: 10:53:36
Imprimé à:

Certificate of Incorporation
Certificat de constitution

This is to certify that

Ceci certifie que

2798832 ONTARIO INC.

Ontario Corporation No.

Numéro matricule de la personne morale en Ontario

002798832

is a corporation incorporated, under the laws of the Province of Ontario.

est une société constituée aux termes des lois de la province de l'Ontario.

These articles of incorporation are effective on

Les présents statuts constitutifs entrent en vigueur le

DECEMBER 09 DÉCEMBRE, 2020

Barbara Hackett

Director/Directeur
Business Corporations Act/Loi sur les sociétés par actions

Request ID / *Demande n°*: 25392170

Ontario Corporation Number / *Numéro de la compagnie en Ontario*: 2798832

FORM 1 / *FORMULE NUMÉRO 1*

BUSINESS CORPORATIONS ACT / *LOI SUR LES SOCIÉTÉS PAR ACTIONS*

ARTICLES OF INCORPORATION
STATUTS CONSTITUTIFS

1. The name of the corporation is: / *Dénomination sociale de la compagnie:*
   2798832 ONTARIO INC.

2. The address of the registered office is: / *Adresse du siège social:*

   199 BAY STREET Suite 5300
   COMMERCE COURT WEST
   (Street & Number, or R.R. Number & if Multi-Office Building give Room No.)
   (Rue et numéro, ou numéro de la R.R. et, s'il s'agit édifice à bureau, numéro du bureau)

   TORONTO ONTARIO
   CANADA M5L 1B9
   (Name of Municipality or Post Office) (Postal Code/*Code postal*)
   (Nom de la municipalité ou du bureau de poste)

3. Number (or minimum and maximum number) of directors is: / *Nombre (ou nombres minimal et maximal) d'administrateurs:*
   Minimum 1 Maximum 10

4. The first director(s) is/are: / *Premier(s) administrateur(s):*

First name, initials and surname / *Prénom, initiales et nom de famille*	Address for service, giving Street & No. or R.R. No., Municipality and Postal Code / *Domicile élu, y compris la rue et le numéro, le numéro de la R.R., ou le nom de la municipalité et le code postal*	Resident Canadian State Yes or No / *Résident Canadien Oui/Non*
* JOHN BRDA	1425 FRONTENAY COURT WARSON WOODS MISSOURI UNITED STATES OF AMERICA 63122	NO

Request ID / *Demande n°*	Ontario Corporation Number *Numéro de la compagnie en Ontario*
25392170	2798832

*	ERIC M. LESLIE 1414 8TH ST. SW Suite 610 CALGARY ALBERTA CANADA T2R 1J6	YES
*	ROGER WURTELE 5913 GLEN HEATHER DR. PLANO TEXAS UNITED STATES OF AMERICA 75093	NO

Request ID / *Demande n°*	Ontario Corporation Number *Numéro de la compagnie en Ontario*
25392170	2798832

5. Restrictions, if any, on business the corporation may carry on or on powers the corporation may exercise.
Limites, s'il y a lieu, imposées aux activités commerciales ou aux pouvoirs de la compagnie.

None.

6. The classes and any maximum number of shares that the corporation is authorized to issue:
Catégories et nombre maximal, s'il y a lieu, d'actions que la compagnie est autorisée à émettre:

An unlimited number of common shares.

Request ID / *Demande n°*	Ontario Corporation Number *Numéro de la compagnie en Ontario*
25392170	2798832

7. Rights, privileges, restrictions and conditions (if any) attaching to each class of shares and directors authority with respect to any class of shares which may be issued in series:
Droits, privilèges, restrictions et conditions, s'il y a lieu, rattachés à chaque catégorie d'actions et pouvoirs des administrateurs relatifs à chaque catégorie d'actions que peut être émise en série:

N/A

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8. The issue, transfer or ownership of shares is/is not restricted and the restrictions (if any) are as follows:
L'émission, le transfert ou la propriété d'actions est/n'est pas restreinte. Les restrictions, s'il y a lieu, sont les suivantes:

Shares of the Corporation may not be transferred unless:

(a) in any case where there is a unanimous shareholders' agreement that is in effect and that contains restrictions on the transfer of shares of the Corporation, such restrictions on transfer are complied with; or

(b) if Section 8(a) is not applicable, the restrictions on the transfer of securities of the Corporation contained in section 9 of these Articles (entitled "Other provisions, if any") are complied with.

Request ID / *Demande n°*	Ontario Corporation Number *Numéro de la compagnie en Ontario*
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9. Other provisions, (if any, are):
Autres dispositions, s'il y a lieu:

Securities of the Corporation, other than non-convertible debt securities, may not be transferred unless:

(a) (i) the consent of the directors of the Corporation is obtained; or (ii) the consent of shareholders holding more than 50% of the shares entitled to vote at such time is obtained;

(b) in the case of securities, other than shares, which are subject to restrictions on transfer contained in a security holders' agreement, such restrictions on transfer are complied with.

The consent of the directors or the shareholders for the purposes of this section is evidenced by a resolution of the directors or shareholders, as the case may be, or by an instrument or instruments in writing signed by all of the directors, or shareholders holding more than 50% of the shares entitled to vote at such time, as the case may be.

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10. The names and addresses of the incorporators are
Nom et adresse des fondateurs

First name, initials and last name or corporate name — *Prénom, initiale et nom de famille ou dénomination sociale*

Full address for service or address of registered office or of principal place of business giving street & No. or R.R. No., municipality and postal code
Domicile élu, adresse du siège social au adresse de l'établissement principal, y compris la rue et le numéro, le numéro de la R.R., le nom de la municipalité et le code postal

* JOHN BRDA

1425 FRONTENAY COURT

WARSON WOODS MISSOURI
UNITED STATES OF AMERICA 63122

* ROGER WURTELE

5913 GLEN HEATHER DR.

PLANO TEXAS
UNITED STATES OF AMERICA 75093

* ERIC M. LESLIE

1414 8TH ST. SW Suite 610

CALGARY ALBERTA
CANADA T2R 1J6

SHARE SUBSCRIPTION

TO: 2798832 **Ontario Inc. (the "Corporation")**

AND TO: **The directors of the Corporation**

Torchlight Energy Resources, Inc. (the "**Subscriber**") subscribes for 1 common share of the Corporation (the "**Share**") at $1.00 per share and tenders $1.00 in full payment of the subscription price for the Share.

The Subscriber requests that the Share be allotted and issued to it as fully paid and non-assessable and that (i) if the Share are certificated securities, a certificate or certificates representing the Share be issued in the Subscriber and delivered to it and (ii) if the Share are uncertificated securities, the Corporation register the Subscriber as the registered owner of the Share on the books of the Corporation.

[Remainder of page left intentionally blank]

DATED December 9th, **2020.**

TORCHLIGHT ENERGY RESOURCES, INC.

By: 

Name: John A. Brda

Title: CEO

For Ministry Use Only
À l'usage exclusif du ministère

Ontario Corporation Number
Numéro de la société en Ontario

2798832

Ministry of Government and Consumer Services
Ontario
CERTIFICATE
This is to certify that these articles are effective on

Ministère des Services gouvernementaux et des Services aux consommateurs
CERTIFICAT
Ceci certifie que les présents statuts entrent en vigueur le

FEBRUARY 03 FEVRIER 2021

Barbara Puckett (17)
Director / Directrice
Business Corporations Act / Loi sur les sociétés par actions

ARTICLES OF AMENDMENT
STATUTS DE MODIFICATION

Form 3
Business Corporations Act

Formule 3
Loi sur les sociétés par actions

1. The name of the corporation is: (Set out in BLOCK CAPITAL LETTERS)
Dénomination sociale actuelle de la société (écrire en LETTRES MAJUSCULES SEULEMENT) :

2798832 ONTARIO INC.

2. The name of the corporation is changed to (if applicable): (Set out in BLOCK CAPITAL LETTERS)
Nouvelle dénomination sociale de la société (s'il y a lieu) (écrire en LETTRES MAJUSCULES SEULEMENT) :

METAMATERIAL EXCHANGECO INC.

3. Date of incorporation/amalgamation:
Date de la constitution ou de la fusion :

2020-12-09
(Year, Month, Day)
(année, mois, jour)

4. **Complete only if there is a change in the number of directors or the minimum / maximum number of directors.**
Il faut remplir cette partie seulement si le nombre d'administrateurs ou si le nombre minimal ou maximal d'administrateurs a changé.

Number of directors is/are: Nombre d'administrateurs :		minimum and maximum number of directors is/are: nombres minimum et maximum d'administrateurs :	
Number Nombre		minimum and maximum minimum et maximum	
	or **ou**		

5. The articles of the corporation are amended as follows:
Les statuts de la société sont modifiés de la façon suivante :

to change the name to Metamaterial Exchangeco Inc.

6. The amendment has been duly authorized as required by sections 168 and 170 (as applicable) of the *Business Corporations Act*.
La modification a été dûment autorisée conformément aux articles 168 et 170 (selon le cas) de la *Loi sur les sociétés par actions*.

7. The resolution authorizing the amendment was approved by the shareholders/directors (as applicable) of the corporation on
Les actionnaires ou les administrateurs (selon le cas) de la société ont approuvé la résolution autorisant la modification le

2021/02/01

(Year, Month, Day)
(année, mois, jour)

These articles are signed in duplicate.
Les présents statuts sont signés en double exemplaire.

2798832 ONTARIO INC.

(Print name of corporation from Article 1 on page 1)
(Veuillez écrir le nom de la société de l'article un à la page une).

By/
Par :

(Signature)
(Signature)

John Brda

Chief Executive Officer

(Description of Office)
(Fonction)

Exhibit 4.5.2

For Ministry Use Only
A l'usage exclusif du _t t-_ee·reMinistry of Government

and Consumer Services

Ontario

CERTI FICATE

This is t9 certify that these articles are effective on. -

Ministere des Services gouvernetnentaux et des Services aux consommateurs

CERTIFICAT

Cec1certifie que les presents statuts entrent en vigueur **le**

Ontario Corporation Number

Numero de la societe en Ontario

- · **Director / Directrice**
Business Corporations Act / Loi sur las societes par actions

Form 3 *Business Corporations Act*

Formule 3 *Loi sur /es societes par actions*

ARTICLES OF AMENDMENT STATUTS DE MODIFICATION

1. The name of the corporation is: (Set out in BLOCK CAPITAL LETTERS)

M	E	T	A	M	A	T	E	R	I	A	L		E	X	C	H	A	N	G	E	C	0		I	N	C	

Denomination sociale actuelle de la societe (ecrire en LETTRES MAJUSCULES SEULEMENT):

2. The name of the corporation is changed to (if applicable): (Set out in BLOCK CAPITAL LETTERS)
Nouvelle denomination sociale de la societe (s'il ya lieu) (ecrire en LETTRES MAJUSCULES SEULEMENT):

3. Date of incorporation/amalgamation: Date de la constitution ou de la fusion :

2020-12-09

(Year, Month, Day) (annee, mols, jour)

4. **Complete only if there is a change in the number of directors or the minimum/ maximum number of directors.** Il **faut remplir cette partie seulement si le nombre d'administrateurs ou si le nombre minimal ou maximal d'administrateurs a change.**

Number of directors is/are: Nombre d'administrateurs :

Number Nombre

or
OU

mioimum and maximum. number of directors is/are: nombres m.iDimum et maximum d'administrateurs :

minimum and maximum. minim...u.u.m, .e.., _t_maximum_

5. The articles of the corporation are amended as follows:
Les statuts de la societe son! modifies de la fagon suivante :

See attached pages I a to l x.

The articles of the Corporation are amended to:

(a) Increase the authorized capital of the Corporation by the creation of an unlimited number of Exchangeable shares.

(b) To provide that the rights, privileges, restrictions and conditions attaching to the Exchangeable shares and the common shares shall be as set out below.

A. EXCHANGEABLE SHARES

1. Interpretation

(1) For the purposes of these share provisions:

"affiliate" has the meaning ascribed thereto in the Securities Act (Ontario), as amended.

"Agent" means any chartered bank or trust company in Canada selected by Canco for the purposes of holding some or all of the Liquidation Amount or Redemption Price in accordance with Section 5 or Section 7, respectively.

"Ancillary Rights" means U1e interest of a holder of Exchangeable Shares as a beneficiary of the trust created under the Voting and Exchange Trust Agreement.

"Arrangement" means an arrangement under Section 182 of the OBCA on the terms and subject to the conditions set out in the Plan of Arrangement, subject to any amendments or variations hereto made in accordance with the Plan of Arrangement and the Arrangement Agreement or made at the direction of the Court, to which plan these share provisions are attached as Appendix I.

"Arrangement Agreement" means the arrangement agreement made as of December 11, 2020 between RTO Acquiror, Canco, Calleo and Meta, as amended, supplemented and/or restated in accordance with its terms.

"Automatic Exchange Right" has the meaning ascribed thereto in the Voting and Exchange Trust Agreement.

"Board of Directors" means the board of directors of Canco.

"Business Day" means a day other than a Saturday, a Sunday or any other day on which commercial banking institutions in Toronto, Ontario are authorized or required by applicable Law to be closed.

"Calleo" means 2798331 Ontario Inc., a direct or indirect wholly-owned subsidiary of RTO Acquiror incorporated under the laws of the Province of Ontario or any other direct or indirect wholly-owned subsidiary of RTO Acquiror designated by RTO Acquiror from time to time after the Effective Date in replacement thereof.

"Call Notice" has the meaning ascribed thereto in Section 6(3) of these share provisions.

"Canadian Dollar Equivalent" means in respect of an amount expressed in a currency other than Canadian dollars (the "Foreign Currency Amount") at any date the product obtained by multiplying:

(a) the Foreign Currency Amount; by

(b) the exchange rate on the Business Day immediately preceding such date for such foreign currency expressed in Canadian dollars as reported by the Bank of Canada or, in the event such exchange rate is not available, such exchange rate on the Business Day immediately preceding such date for sud1 foreign currency expressed in Canadian dollars as may be mutually agreed upon by RTO Acquiror and Meta, to be appropriate for such purpose, which determination shall be conclusive and binding.

"Canco" means Metamaterial Exchangeco Inc. (formerly 2798832 Ontario Inc.), being the corporation, which is a wholly-owned subsidiary of RTO Acquiror, incorporated under the laws of the Province of Ontario that issues the Exchangeable Shares pursuant to the Arrangement.

"Common Shares" means the common shares in the capital of Canco. "Court" means the Ontario Superior Court of Justice (Commercial List). "CRA" means the Canada Revenue Agency.

"Current Market Price" means, in respect of an RTO Acquiror Share on any date, the quotient obtained by dividing (a) the aggregate of the Daily Value of Trades for each day during the period of 20 consecutive trading days ending three trading days before such date; by (b) the aggregate volume of RTO Acquiror Shares used to calculate such Daily Value of Trades.

"Daily Value of Trades" means, in respect of the RTO Acquiror Shares on any trading day, the product of (a) the Canadian Dollar Equivalent of the volume weighted average price of FffO Acquiror Shares on the NASDAQ (or, if the RTO Acquiror Shares are not listed on the NASDAQ, the volume weighted average price of RTO Acquiror Shares on such other stock exchange or automated quotation system on which the RTO Acquiror Shares are listed or quoted, as the case may be, as determined by RTO Acquiror for such purpose) on such date; and (b) the aggregate volume of RTO Acquiror Shares traded on such day on the NASDAQ or such other stock exchange or automated quotation system and used to calculate such volume weighted average price; provided that any such selections by RTO Acquiror shall be conclusive and binding.

"Depositary" means the person acting as depositary under the Arrangement. "Director" means the Director appointed pursuant to Section 278 of the OBCA.

"Dividend Amount" means an amount equal to all declared and unpaid dividends on an Exchangeable Share held by a holder on any dividend record date which occurred prior to the date of purchase, redemption or other acquisition of such share by Calico, Canco or RTO Acquiror from such holder pursuant to Section 5(1), Section 6(1) or Section 7(1).

"Effective Date" means the date on which the Arrangement becomes effective in accordance with the OBCA and the Final Order.

"Exchange" means the Canadian Securities Exchange, the Toronto Stock Exchange or such other recognized securities exchange upon which the Exchangeable Shares may be listed for trading from time to time.

"Exchangeable Shares" means the non-voting, exchangeable shares in the capital of Canco, having the rights, privileges, restrictions and conditions set forth herein.

"Exchangeable Share Voting Event" means any matter in respect of which holders of Exchangeable Shares are entitled to vote as shareholders of Canco and in respect of which the Board of Directors determines in good faith that after giving effect to such matter the economic equivalence of the Exchangeable Shares and the RTO Acquiror Shares is maintained for the holders of Exchangeable Shares (other than RTO Acquiror and its affiliates).

"Exempt Exchangeable Share Voting Event" means an Exchangeable Share Voting Event in order to approve or disapprove, as applicable, any change to, or in the rights of the holders of, the Exchangeable Shares, where the approval or disapproval, as applicable, of such change would be required to maintain the economic equivalence of the Exchangeable Shares and the RTO Acquiror Shares.

"Final Order" means an order of the Court granted pursuant to Section 185 of the OBCA, in a form acceptable to each of FHO Acquiror and Meta, each acting reasonably, approving the Arrangement a1ter a hearing upon the procedural and substantive fairness of the terms and conditions of the Arrangement, as such order may be affirmed, amended, modified, supplemented or varied by the Court (with the consent of RTO Acquiror and Meta, each acting reasonably) at any time prior to the Effective Date or, if appealed, as affirmed or amended (provided, however, that any such amendment is acceptable to RTO Acquiror and Meta, each acting reasonably) on appeal, unless such appeal is withdrawn, abandoned or denied.

"Governmental Entity" means any domestic or foreign court, tribunal, federal, state, provincial or local government or governmental agency, department or authority or other regulatory authority (including the Exchange and NASDAQ) or administrative agency or commission (including the Securities Authorities and the SEC) or any elected or appointed public official.

"holder" means, when used with reference to the Exchangeable Shares, a holder of Exchangeable Shares shown from time to time in the register maintained by or on behalf of Canco in respect of the Exchangeable Shares.

"including" means "including without limitation" and "includes" means "includes without limitation".

"ITA" means the Income Tax Act (Canada), as amended.

"Liquidation Amount" has the meaning ascribed thereto in Section 5(1) of these share provisions. "Liquidation Call Right" has the meaning ascribed thereto in the Plan of Arrangement. "Liquidation Date" has the meaning ascribed thereto in Section 5(1) of these share provisions. "Meta" means Metamaterial Inc., a corporation governed under the OBCA:

"NASDAQ" means the NASDAQ Capital Market.

"OBCA" means the Business Corporations Act (Ontario), as amended.

"person" includes any individual, firm, partnership, limited partnership, joint venture, venture capital fund, limited liability company, unlimited liability company, association, trust, trustee, executor, administrator, legal personal representative, estate, group, body corporate, corporation, unincorporated association or organization, Governmental Entity, syndicate or other entity, whether or not having legal status.

"Plan of Arrangement" means the plan of arrangement substantially in the form and content of Schedule B annexed to the Arrangement Agreement, and any amendments or variations thereto made in accordance with Article 6 of the Arrangement Agreement or Article 6 of the Plan of Arrangement or made at the direction of the Court.

"Purchase Price" has the meaning ascribed thereto in Section 6(3) of these share provisions. "Redemption Call Purchase Price" has the meaning ascribed thereto in the Plan of Arrangement. "Redemption Call Right" has the meaning ascribed thereto in the Plan of Arrangement.

"Redemption Date" means the date, if any, established by the Board of Directors for the redemption by Canco of all but not less than all of the outstanding Exchangeable Shares pursuant to Section 7 of these share provisions, which date shall be no earlier than the seventh anniversary of the date on which Exchangeable Shares first are issued, unless:

(a) there are fewer than that number of Exchangeable Shares equal to 25% of the number of Exchangeable Shares issued on the Effective Date outstanding (other than Exchangeable Shares held by RTO Acquiror and its affiliates, and as such number of shares may be adjusted as deemed appropriate by the Board of Directors to give effect to any subdivision or consolidation of or stock dividend on the Exchangeable Shares, any issue or distribution of rights to acquire Exchangeable Shares or securities exchangeable for or convertible into Exchangeable Shares, any issue or distribution of other securities or rights or evidences of indebtedness or assets, or any other capital reorganization or other transaction affecting the Exchangeable Shares), in which case the Board of Directors may accelerate such redemption date to such date prior to the seventh anniversary of the date on which Exchangeable Shares first are issued as the Board of Directors may determine, upon at least 30 days' prior written notice to the holders of the Exchangeable Shares and the Trustee;

(b) an RTO Acquiror Control Transaction occurs, in which case, provided that the Board of Directors determines, in its sole discretion, that it is not reasonably practicable to substantially replicate the terms and conditions of the Exchangeable Shares in connection with such RTO Acquiror Control Transaction and that the redemption of all but not less than all of the outstanding Exchangeable Shares is necessary to enable the completion of such RTO Acquiror Control Transaction in accordance with its terms, the Board of Directors may accelerate such redemption date to such date prior to the seventh anniversary of the date on which Exchangeable Shares first are issued as the Board of Directors may determine, upon such number of days' prior written notice to the holders of the Exchangeable Shares and the Trustee as the Board of Directors may determine to be reasonably practicable in such circumstances;

(c) an Exchangeable Share Voting Event that is not an Exempt Exchangeable Share Voting Event is proposed and (i) the t1olders of the Exchangeable Shares fail to take the necessary action, at a meeting or other vote of holders of Exchangeable Shares, to approve or disapprove, as applicable, the Exchangeable Share Voting Event or

the holders of the Exchangeable Shares do take the necessary action but, in connection therewith, rights of dissent are required to be granted to the holders of Exchangeable Shares pursuant to the OBCA and the holders of more than 2% of the outstanding Exchangeable Shares (other than those held by RTO Acquiror and its affiliates) exercise rights of dissent under the OBCA, and (ii) the Board of Directors determines that it is not reasonably practicable to accomplish the business purpose (which business purpose must be bona fide and not for the primary purpose of causing the occurrence of the Redemption Date) intended by the Exchangeable Share Voting Event in a commercially reasonable manner that does not result in an Exchangeable Share Voting Event, in which case the Redemption Date shall be the Business Day following the day on which the later of the events described in (i) and (ii) above occur; or

(d) an Exempt Exchangeable Share Voting Event is proposed and holders of the Exchangeable Shares fail to take the necessary action at a meeting or other vote of holders of Exchangeable Shares to approve or disapprove, as applicable, the Exempt Exchangeable Share Voting Event in which case the Redemption Date shall be the Business Day following the day on which the holders of the Exchangeable Shares failed to take such action

provided, however, that the accidental failure or omission to give any notice of redemption under clauses (a), (b), (c) or (d) above to any of the holders of Exchangeable Shares shall not affect the validity of any such redemption.

"Redemption Price" has the meaning ascribed thereto in Section 7(1) of these share provisions. "Retracted Shares" has the meaning ascribed thereto in Section 6(1)(a) of these share provisions.

"Retraction Call Right" has the meaning ascribed thereto in Section 6(1)(c) of these share provisions.

"Retraction Date" has the meaning ascribed thereto in Section 6(1)(b) of these share provisions. "Retraction Price" has the meaning ascribed thereto in Section 6(1) of these share provisions. "Retraction Request" has the meaning ascribed thereto in Section 6('1) of these share provisions.

"RTO Acquiror" means Torchlight Energy Resources, Inc., a corporation existing under the laws of the State of Nevada.

"RTO Acquiror Control Transaction" means: (i) any merger, amalgamation, arrangement, takeover bid or tender offer, material sale of shares or rights or interests therein or thereto or similar transactions involving RTO Acquiror that results in the holders of outstanding voting securities of RTO Acquiror immediately prior to such transaction directly or indirectly owning, or exercising control or direction over, voting securities representing less than 50% of the total voting power of all of the voting securities of the surviving entity outstanding immediately after such transaction; or (ii) any sale or disposition of all or substantially of RTO Acquiror's Assets; provided however that RTO Acquiror Control Transaction shall not refer to
(i) any Asset Sale Transaction (as such term is defined in the terms of the preferred stock of the RTO Acquiror), or (ii) the reincorporation of the RTO Acquiror under the laws of the State of Delaware.

"RTO Acquiror Dividend Declaration Date" means the date on which the board of directors of RTO Acquiror declares any dividend or other distribution on the RTO Acquiror Shares,

provided however that RTO Acquiror Dividend Declaration Date shall not refer to any date on which a Asset Sale Dividend is declared (as such term is defined in the terms of the preferred stock of the RTO Acquiror).

"RTO Acquiror Shares" means the common stock, par value U.S.$0.01 per share, in the capital of RTO Acquiror.

"SEC" means the U.S. Securities and Exchange Commission.

"Securities Authorities" means all securities regulatory authorities, including the applicable securities commission or similar regulatory authorities in each of the provinces and territories of Canada, the SEC, the Exchange, and the NASDAQ, that are applicable to Meta or RTO Acquiror, as the case may be.

"Support Agreement" means the agreement made between RTO Acquiror, Calleo and Canco substantially in the form and content of Schedule I to the Arrangement Agreement.

"Transfer Agent" means a person as may from time to time be appointed by Canco as the registrar and transfer agent for the Exchangeable Shares.

"Trustee" means the trustee chosen by RTO Acquiror to act as trustee under the Voting and Exchange Trust Agreement, and any successor trustee appointed under the Voting and Exchange Trust Agreement.

"Voting and Exchange Trust Agreement" means an agreement to be made among RTO Acquiror, Canco and the Trustee in connection with the Plan of Arrangement substantially in the form of Schedule J to the Arrangement Agreement.

2. Ranking of Exchangeable Shares

The Exchangeable Shares shall be entitled to a preference over the Common Shares and any other shares ranking junior to the Exchangeable Shares with respect to the payment of dividends and the distribution of assets in the event of the liquidation, dissolution or winding- up of Canco, whether voluntary or involuntary, or any other distribution of the assets of Canco among its shareholders for the purpose of winding up its affairs.

3. Dividends and Distributions

(1) A holder of an Exchangeable Share shall be entitled to receive and the Board of Directors shall, subject to applicable law, on each RTO Acquiror Dividend Declaration Date, declare a dividend or other distribution on each Exchangeable Share:

(a) in the case of a cash dividend or other distribution declared on the RTO Acquiror Shares, in an amount in cash for each Exchangeable Share equal to the cash dividend or other distribution declared on each RTO Acquiror Share on the RTO Acquiror Dividend Declaration Date;

(b) in the case of a stock dividend or other distribution declared on the RTO Acquiror Shares to be paid in RTO Acquiror Shares, by the issue or transfer by Canco of such number of Exchangeable Shares for each Exchangeable Share as is equal to the number of RTO Acquiror Shares to be paid on each RTO Acquiror Share unless **in** lieu of such stock dividend or other distribution

Canco elects to effect a corresponding and contemporaneous and economically equivalent (as determined by the Board of Directors in accordance with Section 3(5) hereof) subdivision, redivision or change of the outstanding Exchangeable Shares; or

(c) in the case of a dividend or other distribution declared on the RTO Acquiror Shares in property other than cash or RTO Acquiror Shares, in such type and amount of property for each Exchangeable Share as is the same as or economically equivalent (to be determined by the Board of Directors as contemplated by Section 3(5) hereof) to the type and amount of property declared as a dividend or other distribution on each RTO Acquiror Share.

Such dividends or other distributions shall be paid out of money, assets or property of Canco properly applicable to the payment of dividends, or out of authorized but unissued shares of Canco, as applicable. The holders of Exchangeable Shares shall not be entitled to any dividends or other distributions other than or in excess of the dividends referred to in this Section 3(1).

(2) Cheques of Canco payable at par at any branch of the bankers of Canco shall be issued in respect of any cash dividends contemplated by Section 3(1)(a) hereof and the sending of such cheque to each holder of an Exchangeable Share shall satisfy the cash dividend or other distributions represented thereby unless the cheque is not paid on presentation. Written evidence of the book entry issuance or transfer to the registered holder of Exchangeable Shares shall be delivered in respect of any stock dividends or other distributions contemplated by Section 3(1)(b) hereof and the sending of such written evidence to each holder of an Exchangeable Share shall satisfy the stock dividend or other distribution represented thereby. Such other type and amount of property in respect of any dividends or other distributions contemplated by Section 3(1)(c) hereof shall be issued, distributed or transferred by Canco in such manner as it shall determine and the issuance, distribution or transfer thereof by Canco to each holder of an Exchangeable Share shall satisfy the dividend or other distribution represented thereby. No holder of an Exchangeable Share shall be entitled to recover by action or other legal process against Canco any dividend or other distribution that is represented by a cheque that has not been duly presented to Canco's bankers for payment or that otherwise remains unclaimed for a period of six years from the date on which such dividend or other distribution was payable.

(3) The record date for the determination of the holders of Exchangeable Shares entitled to receive payment of, and the payment date for, any dividend declared on the Exchangeable Shares under Section 3(1) hereof shall be the same dates as the record date and payment date, respectively, for the corresponding dividend or other distribution declared on the RTO Acquiror Shares. The record date for the determination of the holders of Exchangeable Shares entitled to receive Exchangeable Shares in connection with any subdivision, redivision or change of the Exchangeable Shares under Section 3(1)(b) hereof and the effective date of such subdivision shall be the same dates as the record and payment date, respectively, for the corresponding stock dividend or other distribution declared on the RTO Acquiror Shares.

(4) If on any payment date for any dividends or other distributions declared on the Exchangeable Shares under Section 3(1) hereof the dividends or other distributions are not paid in full on all of the Exchangeable Shares then outstanding, any such dividends or other distributions that remain unpaid shall be paid on a subsequent

date or dates determined by the Board of Directors on which Canco shall have sufficient moneys, assets or property properly applicable to the payment of such dividends or other distributions.

(5) The Board of Directors shall determine, **in** its sole discretion, "economic equivalence" for the purposes of these share provisions, including Section 3(1) hereof, and each such determination shall be conclusive and binding on Canco and its shareholders. In making each such determination, the following factors may, without excluding other factors determined by the Board of Directors to be relevant, be considered by the Board of Directors:

(a) **in** the case of any stock dividend or other distribution payable in RTO Acquiror Shares, the number of such shares issued in proportion to the number of RTO Acquiror Shares previously outstanding;

(b) in the case of the issuance or distribution of any rights, options or warrants to subscribe for or purchase RTO Acquiror Shares (or securities exchangeable for or convertible into or carrying rights to acquire RTO Acquiror Shares), the relationship between the exercise price of each such right, option or warrant and the Current Market Price;

(c) in the case of the issuance or distribution of any other form of property (including any shares or securities of RTO Acquiror of any class other than RTO Acquiror Shares, any rights, options or warrants other than those referred to in Section 3(5)(b) hereof, any evidences of indebtedness of RTO Acquiror or any assets of RTO Acquiror), the relationship between the fair marl<et value (as determined by the Board of Directors **in** the manner above contemplated) of such property to be issued or distributed with respect to each outstanding RTO Acquiror Share and the Current Market Price of an RTO Acquiror Share; and

(d) in all such cases, the general taxation consequences of the relevant event to holders of Exchangeable Shares to the extent that such consequences may differ from the taxation consequences to holders of RTO Acquiror Shares as a result of differences between taxation laws of Canada and the United States (except for any differing consequences arising as a result of differing withholding taxes and marginal taxation rates and without regard to the individual circumstances of holders of Exchangeable Shares).

4. Certain Restrictions

So long as any of the Exchangeable Shares are outstanding, Canco shall not at any time without, but may at any time with, the approval of the holders of the Exchangeable Shares given as specified in Section 11(2) of these share provisions:

(a) pay any dividends on the Common Shares or any other shares ranking junior to the Exchangeable Shares, other than stock dividends payable in Common Shares or any such other shares ranking junior to the Exchangeable Shares, as the case may be;

(b) redeem or purchase or make any capital distribution in respect of Common Shares or any other shares ranking junior to the Exchangeable Shares;

(c) redeem or purchase any other shares of Canco ranking equally with the Exchangeable Shares with respect to the payment of dividends or the distribution of assets in the event of the liquidation, dissolution or winding-up of Canco, whether voluntary or involuntary, or any other distribution of the assets of Canco among its shareholders for the purpose of winding up its affairs; or

(d) issue any Exchangeable Shares or any other shares of Canco ranking equally with the Exchangeable Shares other than by way of stock dividends to the holders of such Exchangeable Shares; and

(e) issue any shares of Canco ranking superior to the Exchangeable Shares.

5. Di_stribution on Liquidation

(1) In the event of the liquidation, dissolution or winding-up of Canco or any other distribution of the assets of Canco among its shareholders for the purpose of winding up its affairs, subject to the exercise by RTO Acquiror or Calleo of the Liquidation Call Right, a holder of Exchangeable Shares shall be entitled, subject to applicable law, to receive from the assets of Canco in respect of each Exchangeable Share held by such holder on the effective date (the "Liquidation Date") of such liquidation, dissolution, winding-up or other distribution, before any distribution of any part of the assets of Canco among the holders of the Common Shares or any other shares ranking junior to the Exchangeable Shares, an amount per share (the "Liquidation Amount") equal to the Current Market Price of an RTO Acquiror Share on the last Business Day prior to the Liquidation Date plus the Dividend Amount, which shall be satisfied in full by Canco delivering or causing to be delivered to such holder one RTO Acquiror Share, plus an amount equal to the Dividend Amount.

(2) On or promptly after the Liquidation Date, and provided the Liquidation Call Right has not been exercised by RTO Acquiror or Calleo, Canco shall pay or cause to be paid to the holders of the Exchangeable Shares the Liquidation Amount for each such Exchangeable Share upon presentation and surrender of the certificates representing such Exchangeable Shares, if any, together with such other documents and instruments as may be required to effect a transfer of Exchangeable Shares under the OBCA and the Articles of Canco and such additional documents, instruments and payments as the Transfer Agent and Canco may reasonably require, at the registered office of Canco or at any office of the Transfer Agent as may be specified by Canco by notice to the holders of the Exchangeable Shares. Payment of the Liquidation Amount for such Exchangeable Shares shall be made by transferring or causing to be transferred to each holder the RTO Acquiror Shares to which such holder is entitled and by delivering to such holder, on behalf of Canco, RTO Acquiror Shares (which shares shall be fully paid and non-assessable) and a cheque of Canco payable at par at any branch of the bankers of Canco in respect of the Dividend Amount. On and after the Liquidation Date, the holders of the Exchangeable Shares shall cease to be holders of such Exchangeable Shares and shall not be entitled to exercise any of the rights of holders in respect thereof (including any rights under the Voting and Exchange Trust Agreement), other than the right to receive the Liquidation Amount without interest upon presentation and surrender of share certificates in accordance with the foregoing provisions, unless, upon having made such presentation and surrender of certificates, payment of the total Liquidation Amount for such Exchangeable Shares shall not be made, in which case the rights of the holders shall remain unaffected until the Liquidation Amount

has been paid in the manner hereinbefore provided. Canco shall have the right at any time after the Liquidation Date to transfer or cause to be issued or transferred to, and deposited with, the Agent the Liquidation Amount in respect of the Exchangeable Shares represented by certificates that have not at the Liquidation Date been surrendered by the holders thereof, such Liquidation Amount to be held by the Agent as trustee for and on behalf of, and for the use and benefit of, such holders. Upon such deposit being made, the rights of a holder of Exchangeable Shares after such deposit shall be limited to receiving its proportionate part of the Liquidation Amount for such Exchangeable Shares so deposited, without interest, and when received by the Agent, all dividends and other distributions with respect to the RTO Acquiror Shares to which such holder is entitled with a record date after the date of such deposit and before the date of transfer of such RTO Acquiror Shares to such holder against presentation and surrender of the certificates for the Exchangeable Shares held by them in accordance with the foregoing provisions.

(3) After Canco has satisfied its obligations to pay the holders of the Exchangeable Shares the Liquidation Amount per Exchangeable Share pursuant to Section 5(1) of these share provisions, such holders shall not be entitled to share in any further distribution of the assets of Canco.

6. Retraction of Exchangeable Shares by Holder

(1) A holder of Exchangeable Shares shall be entitled at any time, subject to the exercise by RTO Acquiror or Calleo of the l etraction Call Right and otherwise upon compliance with, and subject to, the provisions of this Section 6, to require Canco to redeem any or all of the Exchangeable Shares registered in the name of such holder for an amount per share equal to the Current Market Price of an RTO Acquiror Share on the last Business Day prior to the Retraction Date plus the Dividend Amount (the "Retraction Price"), which shall be satisfied in full by Canco delivering or causing to be delivered to such holder one RTO Acquiror Share for each Exchangeable Share presented and surrendered by the holder together with, on the designated payment date therefor, the Dividend Amount. To effect such redemption, the holder shall present and surrender at the registered office of Canco or at any office of the Transfer Agent as may be specified by Canco by notice to the holders of Exchangeable Shares the certificate or certificates representing the Exchangeable Shares, if any, which the holder desires to have Canco redeem, together with such other documents and instruments as may be required to effect a transfer of Exchangeable Shares under the OBCA and the Articles of Canco and such additional documents, instruments and payments as the Transfer Agent and Canco may reasonably require, and together with a duly executed statement (the "Retraction Request") in the form of Schedule A hereto or in such other form as may be acceptable to Canco:

(a) specifying that the holder desires to have all or any number specified therein of the Exchangeable Shares represented by such certificate or certificates, if any, (the "Retracted Shares") redeemed by Canco;

(b) stating the Business Day on which the holder desires to have Canco redeem the Retracted Shares (the "Retraction Date"), provided that the Retraction Date shall be not less than 10 Business Days after the date on which the Retraction Request is received by Canco and further provided that, in the event that no such Business Day is specified by the holder in the Retraction Request, the Retraction Date shall be deemed to be the 15th Business Day

after the date on which the Retraction Request is received by Canco and subject also to Section 6(8); and

(c) acknowledging the overriding right (the "Retraction Call Right") of RTO Acquiror and Calleo to purchase all but not less than all the Retracted Shares directly from the holder and that the Retraction Request shall be deemed to be a revocable offer by the holder to sell the Retracted Shares to RTO Acquiror or Calleo in accordance with the Retraction Call Right on the terms and conditions set out in Section 6(3) hereof.

(2) Provided that neither RTO Acquiror nor Calleo has exercised the Retraction Call Right, upon receipt by Canco or the Transfer Agent in the manner specified in Section 6(1) of a certificate or certificates representing the number of Retracted Shares, if any, together with a Retraction Request, and provided that the Retraction Request is not revoked by the holder in the manner specified in Section 6(7), Canco shall redeem the Retracted Shares effective at the close of business on the Retraction Date and shall transfer or cause to be issued or transferred to such holder the RTO Acquiror Shares and shalLpay the Dividend Amount to which such holder is entitled and shall comply with Section 6(4) hereof. If only a part of the Exchangeable Shares represented by any certificate is redeemed (or purchased by RTO Acquiror or Calleo pursuant to the l etraction Call Right), a new certificate for the balance of such Exchangeable Shares shall be issued to the holder at the expense of Canco.

(3) Subject to the provisions of this Section 6, upon receipt by Canco of a Retraction Request, Canco shall immediately notify RTO Acquiror and Calleo thereof and shall provide to RTO Acquiror and Calleo a copy of the Retraction Request. In order to exercise the Retraction Call Right, RTO Acquiror or Calleo must notify Canco of its determination to do so (the "Call Notice") within five Business Days of notification to RTO Acquiror or Calleo by Canco of the receipt by Canco of the Retraction Request. If RTO Acquiror or Calleo do not so notify Canco within such five Business Day period, Canco will notify the holder as soon as possible thereafter that RTO Acquiror and Calleo will not exercise the Retraction Call Right. If RTO Acquiror or Calleo delivers the Call Notice within such five Business Day period, and provided that the Retraction Request is not revoked by the holder in the manner specified in Section 6(7), the Retraction Request shall thereupon be considered only to be an offer by the holder to sell the Retracted Shares to RTO Acquiror or Calleo, as applicable, in accordance with the Retraction Call Right. In such event, Canco shall not redeem the Retracted Shares and RTO Acquiror or Calleo, as applicable, shall purchase from such holder and such holder st1all sell to RTO Acquiror or Calleo, as applicable on the Retraction Date the Retracted Shares for a purchase price (the "Purchase Price") per share equal to the Retraction Price per share. To the extent that RTO Acquiror or Calleo, as applicable, pays the Dividend Amount in respect of the Retracted Shares, Canco shall no longer be obligated to pay any declared and unpaid dividends on such Retracted Shares. For the purpose of completing a purchase pursuant to the F etraction Call Right, on the Retraction Date, RTO Acquiror or Calleo shall transfer or cause to be issued or transferred to the holder of the Retracted Shares the RTO Acquiror Shares to which such holder is entitled. Provided that RTO Acquiror or Calleo, as applicable, has complied with the immediately preceding sentence and Section 6(4) hereof, the closing of the purchase and sale of the Retracted Shares pursuant to the Retraction Call Right shall be deemed to have occurred as at the close of business on the Retraction Date and, for greater certainty, no redemption by Canco of such Retracted Shares shall take place on the Retraction Date. In the event that RTO Acquiror and Calleo do not deliver a

Call Notice within such five Business Day period, and provided that the Retraction Request is not revoked by the holder in the manner specified in Section 6(7), Canco shall redeem the Retracted Shares on the Retraction Date and in the manner otherwise contemplated in this Section 6. For greater certainty, only one Call Notice may be given by either RTO Acquiror or Calleo in respect of each Retraction Request and, in the event that each of RTO Acquiror and Calleo each give a Call Notice to Canco, only the Call Notice first received by Canco shall be valid.

(4) Canco, RTO Acquiror or Calleo, as the case may be, shall deliver or cause the Transfer Agent to deliver to the relevant holder written evidence of the book entry issuance in uncertificated form of [TO Acquiror Shares (which shares shall be fully paid and non-assessable), and, if applicable and on or before the payment date therefor, a cheque payable at par at any branch of the bankers of Canco, RTO Acquiror or Calleo, as applicable, representing the aggregate Dividend Amount, in payment of the Retraction Price or the Purchase Price, as the case may be, and such delivery of such FHO Acquiror Shares and cheques by Canco, RTO Acquiror or Calleo, as the case may be, or by the Transfer Agent shall be deemed to be payment of and shall satisfy and discharge all liability for the Retraction Price or Purchase Price, as the case may be, to the extent that the same is represented by such share certificates and cheques.

(5) On and after the close of business on the Retraction Date, the holder of the Retracted Shares shall cease to be a holder of such Retracted Shares and shall not be entitled to exercise any of the rights of a holder in respect thereof (including any rights under the Voting and Exchange Trust Agreement), other than the right to receive the Retraction Price or Purchase Price, as the case may be, without interest, upon presentation and surrender of certificates, if any, in accordance with the foregoing provisions, unless upon having made such presentation and surrender of certificates, payment of the Retraction Price or the Purchase Price, as the case may be, shall not be made as provided in Section 6(4) hereof, in which case the rights of such holder shall remain unaffected until the Retraction Price or the Purchase Price, as the case may be, has been paid in the manner hereinbefore provided. On and after the close of business on the r etraction Date, provided that presentation and surrender of certificates and payment of the Retraction Price or the Purchase Price, as the case may be, has been made in accordance with the foregoing provisions, the holder of the Retracted Shares so redeemed by Canco or purchased by RTO Acquiror or Calleo shall thereafter be a holder of the RTO Acquiror Shares delivered to it.

(6) Notwithstanding any other provision of this Section 6, Canco shall not be obligated to redeem Retracted Shares specified by a holder in a Retraction Request to the extent that such redemption of Retracted Shares would be contrary to solvency requirements or other provisions of applicable law. If Canco believes that on any Retraction Date it would not be permitted by any of such provisions to redeem the Retracted Shares tendered for redemption on such date, if any, and provided that RTO Acquiror or Calleo shall not have exercised the Retraction Call Right with respect to the Retracted Shares, Canco shall only be obligated to redeem Retracted Shares specified by a holder in a Retraction Request to the extent of the maximum number that may be so redeemed (rounded down to a whole number of shares) as would not be contrary to such provisions and shall notify the holder and the Trustee at least two Business Days prior to the Retraction Date as to the number of Retracted Shares which will not be redeemed by Canco. In any case in which the redemption by Canco of Retracted Shares would be contrary to solvency

requirements or other provisions of applicable law, and provided that the Retraction Call Right has not been exercised by Fno Acquiror or Calleo, Canco shall redeem Retracted Shares in accordance with Section 6(2) of these share provisions on a pro rata basis and shall issue to each holder of Retracted Shares a new certificate representing the Retracted Shares not redeemed by Canco pursuant to Section 6(2) hereof. If Canco would otherwise be obligated to redeem the Retracted Shares pursuant to Section 6(2) of these share provisions but is not obligated to do so as a result of solvency requirements or other provisions of applicable law, the holder of any such Retracted Shares not redeemed by Canco pursuant to this Section 6(6) as a result of solvency requirements or other provisions of applicable law shall be deemed by giving the Retraction Request to have instructed the Transfer Agent to require RTO Acquiror to purchase such Retracted Shares from such holder on the Retraction Date or as soon as practicable thereafter on payment by RTO Acquiror to such holder of the Purchase Price for each such Retracted Share, all as more specifically provided for in the Voting and Exchange Trust Agreement.

(7) A holder of Retracted Shares may, by notice in writing given by the holder to Canco before the close of business on the Business Day immediately preceding the Retraction Date, withdraw its Retraction Request, in which event such Retraction Request shall be null and void and, for greater certainty, the revocable offer constituted by the Retraction Request to sell the Retracted Shares to FffO Acquiror or Calleo shall be deemed to have been revoked.

(8) Notwithstanding any other provision of this Section 6, if:

(a) exercise of the rights of the holders of the Exchangeable Shares, or any of them, to require Canco to redeem any Exchangeable Shares pursuant to this Section 6 on any Retraction Date would equire listing particulars or any similar document to be issued in order to obtain the approval of the NASDAQ to the listing and trading (subject to official notice of issuance) of, the RTO Acquiror Shares that would be required to be delivered to such holders of Exchangeable Shares in connection with the exercise of such rights; and

(b) as a result of (a) above, it would not be practicable (notwithstanding the reasonable endeavours of RTO Acquiror) to obtain such approvals in time to enable all or any of such RTO Acquiror Shares to be admitted to listing and trading by the NASDAQ (subject to official notice of issuance) when so delivered, that Retraction Date shall, notwithstanding any other date specified or otherwise deemed to be specified in any relevant Retraction Request, be deemed for all purposes to be the earlier of (i) the second Business Day immediately following the date the approvals referred to in Section 6(8)(a) are obtained, and (ii) the date which is 30 Business Days after the date on which the relevant Retraction f equest is received by Canco, and references in these share provisions to such Retraction Date shall be construed accordingly.

7. Redemption of Exchangeable Shares by Canco

(1) Subject to applicable law, and provided neither RTO Acquiror nor Calleo has exercised the Redemption Call Right, Canco shall on the Redemption Date redeem all but not less than all of the then outstanding Exchangeable Shares for an amount per share (the "Redemption Price") equal to the Current Market Price of an RTO Acquiror Share on the last Business Day prior to the Redemption Date plus the

Dividend Amount, which shall be satisfied in full by Canco causing to be delivered to each holder of Exchangeable Shares one RTO Acquiror Share for each Exchangeable Share held by such holder, together with an amount equal to the Dividend Amount.

(2) In any case of a redemption of Exchangeable Shares under this Section 7, Canco shall, at least 30 days before the Redemption Date (other than a Redemption Date established in connection with an RTO Acquiror Control Transaction, an Exchangeable Share Voting Event or an Exempt Exchangeable Share Voting Event), send or cause to be sent to each holder of Exchangeable Shares a notice in writing of the redemption by Canco or the purchase by Calleo under the Redemption Call Right, as the case may be, of the Exchangeable Shares held by such holder. In the case of a Redemption Date established in connection with an RTO Acquiror Control Transaction, an Exchangeable Share Voting Event or an Exempt Exchangeable St1are Voting Event, the written notice of the redemption by Canco or the purchase by RTO Acquiror or Calico, as applicable, under the Redemption Call Right will be sent on or before the Redemption Date, on as many days prior written notice as may be determined by the Board of Directors to be reasonably practicable in the circumstances. In any such case, such notice shall set out the formula for determining the Redemption Price or the Redemption Call Purchase Price, as the case may be, the Redemption Date and, if applicable, particulars of the Redemption Call Right.

(3) On or after the r edemption Date and provided that the Redemption Call Right has not been exercised by RTO Acquirco or Calico, as applicable, Canco shall pay or cause to be paid to the holders of the Exchangeable Shares to be redeemed the Redemption Price for each such Exchangeable Share, upon presentation and surrender at the registered office of Canco or at any office of the Transfer Agent as may be specified by Canco in such notice of the certificates, if any, representing such Exchangeable Shares, together with such other documents and instruments as may be required to effect a transfer of Exchangeable Shares under the OBCA and the Articles of Canco and such additional documents, instruments and payments as the Transfer Agent and Canco may reasonably require. Payment of the Redemption Price for such Exchangeable Shares shall be made by transferring or causing to be issued or transferred to each holder the RTO Acquiror Shares to which such holder is entitled and by delivering to such holder, on behalf of Canco, written evidence of the book entry issuance in uncertificated form of RTO Acquiror Shares (which shares shall be fully paid), and, if applicable, a cheque of Canco payable at par at any branch of the bankers of Canco in payment of the Dividend Amount. On and after the Redemption Date, the holders of the Exchangeable Shares called for redemption shall cease to be holders of such Exchangeable Shares and shall not be entitled to exercise any of the rights of holders in respect thereof (including any rights under the Voting and Exchange Trust Agreement), other than the right to receive the Redemption Price without interest upon presentation and surrender of certificates, if any, in accordance with the foregoing provisions, unless, upon having made such presentation and surrender of certificates, payment of the Redemption Price for such Exchangeable Shares shall not be made, in which case the rights of the holders shall remain unaffected until the Redemption Price has been paid in the manner hereinbefore provided. Canco shall have the right at any time after the sending of notice of its intention to redeem the Exchangeable Shares as aforesaid to transfer or cause to be issued or transferred to, and deposited with, the Agent named in such notice the Redemption Price for the Exchangeable Shares so called for redemption, or of such of the said Exchangeable Shares represented by certificates that have not

at the date of such deposit been surrendered by the holders thereof in connection with such redemption, such aggregate Redemption Price to be held by the Agent as trustee for and on behalf of, and for the use and benefit of, such holders. Upon the later of such deposit being made and the Redemption Date, the Exchangeable Shares in respect whereof such deposit shall have been made shall be redeemed and the rights of the holders thereof after such deposit or Redemption Date, as the case may be, shall be limited to receiving their propo1iionate part of the aggregate Redemption Price for such Exchangeable Shares, without interest, and when received by the Agent, all dividends and other distributions with respect to the RTO Acquiror Shares to which such holder is entitled with a record date after the later of the date of such deposit and the Redemption Date and before the date of transfer of such RTO Acquiror Shares to such holder, against presentation and surrender of the certificates, if any, for the Exchangeable Shares held by them in accordance with the foregoing provisions.

8. Purchase for Cancellation

Subject to applicable law, Canco may at any time and from time to time purchase for cancellation all or any part of the Exchangeable Shares by private agreement with the holder thereof.

9. Voting Rights

Except as required by applicable law and by Section 12 hereof, the 1olders of the Exchangeable Shares shall not be entitled as such to receive notice of or to attend any meeting of the shareholders of Canco or to vote at any such meeting. Without limiting the generality of the foregoing, the holders of the Exchangeable Shares shall not have class votes except as required by applicable law.

10. Specified Amount

The amount specified in respect of each Exchangeable Share for the purposes of subsection 191(4) of the ITA shall be an amount equal to $13.00.

11. Amendment and Approval

(1) The rights, privileges, restrictions and conditions attaching to the Exchangeable Shares may be added to, changed or removed only with the approval of the holders of the Exchangeable Shares given as hereinafter specified.

(2) Any approval given by the holders of the Exchangeable Shares to add to, change or remove any right, privilege, restriction or condition attaching to the Exchangeable Shares or any other matter requiring the approval or consent of the holders of the Exchangeable Shares in accordance with applicable law shall be deemed to have been sufficiently given if it shall have been given in accordance with applicable law, subject to a minimum requirement that such approval be evidenced by resolution passed by not less than two-thirds of the votes cast on such resolution at a meeting of holders of Exchangeable Shares duly called and held at which the holders of at least 10% of the outstanding Exchangeable Shares at that time are present or represented by proxy; provided that if at any such meeting the holders of at least 10% of the outstanding Exchangeable Shares at that time are not present or represented by proxy within one-half hour after the time appointed for such meeting, then the meeting shall be adjourned to such date not less than five days thereafter and to such time and place as may be designated by the Chairman of such meeting. At such adjourned meeting the holders of Exchangeable Shares present or

represented by proxy thereat may transact the business for which the meeting was originally called and a resolution passed thereat by the affirmative vote of not less than two-thirds of the votes cast on such resolution at such meeting shall constitute the approval or consent of the holders of the Exchangeable Shares.

12. Reciprocal Changes, etc. in Respect of RTO Acquiror Shares

(1) Each holder of an Exchangeable Share acknowledges that the Support Agreement provides, in part, that so long as any Exchangeable Shares not owned by RTO Acquiror or its affiliates are outstanding, RTO Acquiror will not without the prior approval of Canco and the prior approval of the holders of the Exchangeable Shares given in accordance with Section 11(2) of these share provisions:

(a) issue or distribute RTO Acquiror Shares (or securities exchangeable for or convertible into or carrying rights to acquire RTO Acquiror Shares) to the holders of all or substantially all of the then outstanding RTO Acquiror Shares by way of stock dividend or other distribution, other than an issue of RTO Acquiror Shares (or securities exchangeable for or convertible into or carrying rights to acquire RTO Acquiror Shares) to holders of RTO Acquiror Shares (i) who exercise an option to receive dividends in RTO Acquiror Shares (or securities exchangeable for or convertible into or carrying rights to acquire RTO Acquiror Shares) in lieu of receiving cash dividends, or (ii) pursuant to any dividend reinvestment plan or similar arrangement;

(b) issue or distribute rights, options or warrants to the holders of all or substantially all of the then outstanding RTO Acquiror Shares entitling them to subscribe for or to purchase RTO Acquiror Shares (or securities exchangeable for or convertible into or carrying rights to acquire RTO Acquiror Shares); or

(c) issue or distribute to the holders of all or substantially all of the then outstanding RTO Acquiror Shares:

(i) shares or securities of RTO Acquiror of any class (other than RTO Acquiror Shares or securities convertible into or exchangeable for or carrying rights to acquire RTO Acquiror Shares);

(ii) rights, options or warrants other than those referred to in Section 12(1)(b) above;

(iii) evidence of indebtedness of RTO Acquiror; or

(iv) assets of RTO Acquiror,

unless the economic equivalent on a per share basis of such rights, options, warrants, securities, shares, evidences of indebtedness or other assets is issued or distributed simultaneously to holders of the Exchangeable Shares and at least 7 days prior written notice thereof is given to the holders of Exchangeable Shares; provided that, for greater certainty, the above restrictions shall not apply to any securities issued or distributed by RTO Acquiror in order to give effect to and to consummate, in furtherance of or otherwise in connection with the transactions contemplated by, and in accordance with, the Arrangement Agreement and the Plan of Arrangement.

(2) Each holder of an Exchangeable Share acknowledges that the Support Agreement further provides, in part, that so long as any Exchangeable Shares not owned by RTO Acquiror or its affiliates are outstanding, RTO Acquiror will not without the prior approval of Canco and the prior approval of the holders of the Exchangeable Shares given in accordance with Section 11(2) of these share provisions:

(a) subdivide, redivide or change the then outstanding RTO Acquiror Shares into a greater number of RTO Acquiror Shares;

(b) reduce, combine, consolidate or change the then outstanding RTO Acquiror Shares into a lesser number of RTO Acquiror Shares; or

(c) reclassify or 0H1erwise change the RTO Acquiror Shares or effect an amalgamation, merger, reorganization or other transaction affecting the RTO Acquiror Shares,

unless the same or an economically equivalent change shall simultaneously be made to, or in the rights of the holders of, the Exchangeable Shares and at least 10 days prior written notice is given to the holders of Exchangeable Shares, provided that, for greater certainty, the above restrictions shall not apply to any securities issued or distributed by RTO Acquiror in order to give effect to and to consummate, in furtherance of or otherwise in connection with the transactions contemplated by, and in accordance with, the Arrangement Agreement and the Plan of Arrangement. The Support Agreement further provides, in part, that the aforesaid provisions of the Support Agreement shall not be changed without the approval of the holders of the Exchangeable Shares given in accordance with Section 11(2) of these share provisions.

(3) Notwithstanding the foregoing provisions of this Section 12, in the event of an RTO Acquiror Control Transaction:

(a) in which RTO Acquiror merges or amalgamates with, or in which all or substantially all of the then outstanding RTO Acquiror Shares are acquired by one or more other corporations to which RTO Acquiror is, immediately before such merger, amalgamation or acquisition, related within the meaning of the ITA (otherwise than virtue of a right referred to in paragraph 251(5)(b) thereof);

(b) which does not result in an acceleration of the Redemption Date in accordance with paragraph (b) of the definition of such term in Section 1(1) of the share provisions; and

(c) in which all or substantially all of the then outstanding RTO Acquiror Shares are converted into or exchanged for shares or rights to receive such shares (the "Other Shares") of another corporation (the "Other Corporation") that, immediately after such RTO Acquiror Control Transaction, owns or controls, directly or indirectly, RTO Acquiror; then all references herein to "RTO Acquiror" shall thereafter be and be deemed to be references to "Other Corporation" and all references herein to "RTO Acquiror Shares" shall thereafter be and be deemed to be references to "Other Shares" (with appropriate adjustments, if any, as are required to result in a holder of Exchangeable Shares on the exchange, redemption or retraction of shares pursuant to these share provisions or Article 5 of the Plan of Arrangement or

exchange of shares pursuant to the Voting and Exchange Trust Agreement immediately subsequent to the RTO Acquiror Control Transaction being entitled to receive that number of Other Shares equal to the number of Other Shares such holder of Exchangeable Shares would have received if the exchange, option or retraction of such shares pursuant to these share provisions or Article 5 of the Plan of Arrangement, or exchange of such shares pursuant to the Voting and Exchange Trust Agreement had occurred immediately prior to the RTO Acquiror Control Transaction and the RTO Acquiror Control Transaction was completed) without any need to amend the terms and conditions of the Exchangeable Shares and without any further action required.

13. Actions by Canco under Support Agreement

(1) Canco will take all such actions and do all such things as shall be necessary to perform and comply with and to ensure performance and compliance by RTO Acquiror, Calleo and Canco with all provisions of the Support Agreement applicable to RTO Acquiror, Calleo and Canco, respectively, in accordance with the terms thereof including taking all such actions and doing all such things as shall be necessary to enforce for the direct benefit of Canco all rights and benefits in favour of Canco under or pursuant to such agreement.

(2) Canco shall not propose, agree to or otherwise give effect to any amendment to, or waiver or forgiveness of its rights or obligations under, the Support Agreement without the approval of the holders of the Exchangeable Shares given in accordance with Section 11(2) of these share provisions other than such amendments, waivers and/or forgiveness as may be necessary or advisable for the purposes of:

(a) adding to the covenants of the other parties to such agreement for the protection of Canco or the holders of the Exchangeable Shares thereunder;

(b) making such amendments or modifications not inconsistent with such agreement as may be necessary or desirable with respect to matters or questions arising thereunder which, in the opinion of Canco, it may be expedient to make, provided that the Board of Directors shall be of the good faith opinion, that such amendments and modifications will not be materially prejudicial to the interests of the holders of the Exchangeable Shares; or

(c) making such changes in or corrections to such agreement for the purpose of curing or correcting any ambiguity or defect or inconsistent provision or clerical omission or mistake or manifest error contained therein, provided that the Board of Directors shall be of the good faith opinion that such changes or corrections will not be materially prejudicial to the rights or interests of the holders of the Exchangeable Shares.

14. Legend; Call Rights; Withholding Rights

(1) The certificates evidencing the Exchangeable Shares, if any, shall contain or have affixed thereto a legend with respect to the Support Agreement, the provisions of the Plan of Arrangement relating to the Liquidation Call Right, the Redemption Call Right and the Change of Law Call Right (as defined in the Plan of Arrangement), the Voting and Exchange Trust Agreement (including the provisions with respect to the voting rights and automatic exchange thereunder) and the Retraction Call Right.

(2) Each holder of an Exchangeable Share, whether of record or beneficial, by virtue of becoming and being such a holder shall be deemed to acknowledge each of the Liquidation Call Right, the Retraction Call Right, the Redemption Call Right and the Change of Law Call Right and the overriding nature thereof in connection with the liquidation, dissolution or winding-up of Canco or any other distribution of the assets of Canco among its shareholders for the purpose of winding up its affairs, or the retraction or redemption of Exchangeable Shares, as the case may be, and to be bound thereby in favour of RT0 Acquiror or Calleo as therein provided.

(3) Notwithstanding any other provisions of these share provisions, Canco, Calleo, RT0 Acquiror and the Transfer Agent shall be entitled to deduct and withhold from any dividend, distribution, consideration, purchase price or amounts otherwise payable to any holder of Exchangeable Shares such amounts as Canco, Calleo, RT0 Acquiror or the Transfer Agent is required to deduct and withhold with respect to such payment under the ITA or United States tax laws or any provision of provincial, territorial, state, local or foreign tax law, in each case, as amended. To the extent that amounts are so withheld, such withheld amounts shall be treated for all purposes hereof as having been paid to the holder of the Exchangeable Shares in respect of which such deduction and withholding was made, provided that such withheld amounts are actually remitted to the appropriate taxing Governmental Entity. To the extent that the amount so required to be deducted or withheld from any payment to a holder exceeds the cash portion of the consideration otherwise payable to the holder, Canco, Calico, RT0 Acquiror and the Transfer Agent are hereby authorized to sell or otherwise dispose of such portion of the consideration as is necessary to provide sufficient funds to Canco, Calico, RT0 Acquiror or the Transfer Agent, as the case may be, to enable it to comply with such deduction or withholding requirement and Canco, Calico, RT0 Acquiror or the Transfer Agent shall notify the holder thereof and remit any unapplied balance of the net proceeds of such sale.

15. Notices

(1) Any notice, request or other communication to be given to Canco by a holder of Exchangeable Shares shall be in writing and shall be valid and effective if given by first class mail (postage prepaid) or by delivery to the registered office of Canco and addressed to the attention of the Chief Executive Officer of Canco. Any such notice, request or other communication, if given by mail, telecopy or delivery, shall only be deemed to have been given and received upon actual receipt thereof by Canco.

(2) Any presentation and surrender by a holder of Exchangeable Shares to Canco or the Transfer Agent of certificates representing Exchangeable Shares in connection with the liquidation, dissolution or winding-up of Canco or the retraction or redemption of Exchangeable Shares shall be made by first class mail (postage prepaid) or by delivery to the registered office of Canco or to such office of the Transfer Agent as may be specified by Canco, in each case, addressed to the attention of the Chief Executive Officer of Canco. Any such presentation and surrender of certificates shall only be deemed to have been made and to be effective upon actual receipt thereof by Canco or the Transfer Agent, as the case may be. Any such presentation and surrender of certificates made by first class mail (postage prepaid) shall be at the sole risk of the holder mailing the same.

(3) Any notice, request or other communication to be given to a holder of Exchangeable Shares by or on behalf of Canco shall be in writing and shall be valid and effective if given by first class mail (postage prepaid) or by delivery to the address of the holder

recorded in the register of shareholders of Canco or, in the event of the address of any such holder not being so recorded, then at the last known address of such holder. Any such notice, request or other communication, if given by mail, shall be deemed to have been given and received on the third Business Day following the date of mailing and, if given by delivery, shall be deemed to have been given and received on the date of delivery. Accidental failure or omission to give any notice, request or other communication to one or more holders of Exchangeable Shares shall not invalidate or otherwise alter or affect any action or proceeding to be taken by Canco pursuant thereto.

(4) In the event of any interruption of mail service immediately prior to a scheduled mailing or in the period following a mailing during which delivery normally would be expected to occur, Canco shall make reasonable efforts to disseminate any notice by other means, such as press release.

Notwithstanding any other provisions of these share provIsIons, notices, other communications and deliveries need not be mailed if Canco determines that delivery thereof by mail may be delayed.

Persons entitled to any deliveries (including certificates and cheques) which are not mailed for the foregoing reason may take delivery thereof at the office of the Transfer Agent to which the deliveries were made, upon application to the Transfer Agent, until such time as Canco has determined that delivery by mail will not longer be delayed. Canco will provide notice of any such determination not to mail made hereunder as soon as reasonably practicable after the making of such determination and in accordance with this Section 15(4). Such deliveries in such circumstances will constitute delivery to the persons entitled thereto.

16. Disclosure of Interests in Exchangeable Shares

Canco shall be entitled to require any holder of an Exchangeable Share or any person who Canco knows or has reasonable cause to believe holds any interest whatsoever in an Exchangeable Share to confirm that fact or to give such details as to whom has an interest in such Exchangeable Share as would be required (if the Exchangeable Shares were a class of "equity shares" of Canco) under National Instrument 62-104 Takeover Bids and Issuer Bids or as would be required under the Articles of RTO Acquiror or any laws or regulations, or pursuant to the rules or regulations of any regulatory Governmental Entity, if the Exchangeable Shares were RTO Acquiror Shares.

B. <u>COMMON SHARES</u>

1. Voting.

The holders of the common shares shall be entitled to receive notice of and to attend and vote at all meetings of the shareholders of the Corporation (except where the holders of a particular class of Common Shares or another class of shares are entitled to vote separately as a class as provided in the OBCA and each common share shall confer the right to (one) **1** vote in person or by proxy at all meetings of shareholders of the Corporation).

2. Dividends.

Subject to the rights of the holders of the Exchangeable Shares, the holders of the common shares shall be entitled to receive and the Corporation shall pay thereon, as and when declared by the board of directors of the Corporation, such dividends as the board of directors of the Corporation may from time to time declare, in their absolute discretion.

3. Liquidation, Dissolution and Winding-up.

Subject to the prior rights of the holders of the Exchangeable Shares, in the event of the liquidation, dissolution or winding-up of the Corporation, whether voluntary or involuntary, the holders of the common shares shall be entitled to receive the remaining property of the Corporation.

SCHEDULE A
TO APPENDIX I RETRACTION REQUEST

[TO BE PRINTED ON EXCHANGEABLE SHARE CERTIFICATES, IF ANY]

To: Metamaterial Exchangeco Inc. ("Canco") and 2798331 Ontario Inc. ("Calleo") and Torchlight Energy Resources, Inc. ("RTO Acquiror")

This notice is given pursuant to Section 6 of the provisions (the "Share Provisions") attaching to the Exchangeable Shares of Canco represented by this certificate and all capitalized words and expressions used in this notice that are defined in the Share Provisions have the meanings ascribed to such words and expressions in such Share Provisions.

The undersigned hereby notifies Canco that, subject to the Retraction Call Right referred to below, the undersigned desires to have Canco redeem in accordance with Section 6 of the Share Provisions:

(a) ☐ all share(s) represented by this certificate; or

(b) ☐ share(s) only represented by this certificate.

The undersigned hereby notifies Canco that the Retraction Date shall be ___ NOTE: The Retraction Date must be a Business Day and must not be less than 10 Business Days nor more than 15 Business Days after the date upon which this notice is received by Canco. If no such Business Day is specified above, the Retraction Date shall be deemed to be the 15th Business Day after the date on which this notice is received by Canco.

The undersigned acknowledges the overriding Retraction Call Right of RTO Acquiror and Calleo to purchase all but not less than all the Retracted Shares from the undersigned and that this notice is and shall be deemed to be a revocable offer by the undersigned to sell the Retracted Shares to RTO Acquiror or Calleo in accordance with the Retraction Call Right on the Retraction Date for the Purchase Price and on the other terms and conditions set out in Section 6(3) of the Share Provisions. This Retraction Request, and this offer to sell the r etracted Shares to RTO Acquiror or Calleo, may be revoked and withdrawn by the undersigned only by notice in writing given to Canco at any time before the close of business on the Business Day immediately preceding the Retraction Date.

The undersigned acknowledges that if, as a result of solvency provisions of applicable law, Canco is unable to redeem all Retracted Shares, and provided that neither RTO Acquiror nor Calleo has exercised the Retraction Call Right with respect to the Retracted Shares, the Retracted Shares will be automatically exchanged pursuant to the Voting and Exchange Trust Agreement so as to require RTO Acquiror to purchase the unredeemed Retracted Shares.

The undersigned hereby represents and warrants to Calleo, RTO Acquiror and Canco that the undersigned:

[is]☐

[is not] ☐

(select one)

a non-resident of Canada for purposes of the Income Tax Act (Canada). The undersigned acknowledges that in the absence of an indication that the undersigned is not a non-resident of Canada, withholding on account of Canadian tax may be made from amounts payable to the undersigned on the redemption or purchase of the Retracted Shares.

The undersigned hereby represents and warrants to Calleo, RTO Acquiror and Canco that the undersigned is not a person within the United States of America, its territories or possessions or any state thereof, or the District of Columbia (collectively, the "United States") or a U.S. person (within the meaning of Regulation S under the United States Securities Act of 1933, as amended) and is not making this Retraction Request for the account or benefit of a person within the United States or such a U.S. person.

The undersigned hereby represents and warrants to Calleo, RTO Acquiror and Canco that the undersigned has good title to, and is the beneficial owner of, the share(s) represented by this certificate to be acquired by Calleo, RTO Acquiror or Canco, as the case may be, free and clear of all liens, claims and encumbrances.

(Date)

(Signature of Shareholder)

(Guarantee of Signature) E-60

Please check box if the certificates for RTO Acquiror Shares and any cheque(s) resulting from the retraction or purchase of the Retracted Shares are to be held for pick-up by the shareholder from the Transfer Agent, failing which such certificates and cheque(s) will be mailed to the last address of the shareholder as it appears on the register.

NOTE: This panel must be completed and this certificate, together with such additional documents and payments (including, without limitation, any applicable Stamp Taxes) as the Transfer Agent may require, must be deposited with the Transfer Agent. The securities and any cheque(s) resulting from the retraction or purchase of the Retracted Shares will be issued and registered in, and made payable to, respectively, the name of the shareholder as it appears on the register of Canco and the certificates for RTO Acquiror Shares and any cheque(s) resulting from such retraction or purchase will be delivered to such shareholder as indicated above, unless the form appearing immediately below is duly completed.

Date:	
Name of Person in Whose Name Securities or Cheque(s) Are to be Registered, Issued or Delivered (please print):	
Street Address or P.O. Box:	
Signature of Shareholder:	
_City, Province and Postal Code:	
Signature Guaranteed by:	

NOTE: If this Retraction Request is for less than all of the shares represented by this certificate, a certificate representing the remaining share(s) of Canco represented by this certificate will be issued and registered in the name of the shareholder as it appears on the register

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of Canco, unless the Share Transfer Power on the share certificate is duly completed in respect of such share(s).

6. The amendment has been duly authorized as required by sections 168 and 170 (as applicable) of the *Business Corporations Act.*
La modification a ete d0ment autorisee conformement aux articles 168 et 170 (selon le cas) de la *Loi sur /es societes par actions.*

7. The resolution authorizing the amendment was approved by the shareholders/directors (as applicable) of the corporation on
Les actionnaires ou les administrateurs (selon le cas) de la societe ont approuve la resolution autorisant la modification le

2021, 06,24

(Year, Month, Day) (annee, mois, jour)

These articles are signed in duplicate.
Les presents statuts sont signes en double exemplaire.

METAMATERIAL EXCHANGECO INC.

(Print name of corporation from Article 1 on page 1)
(Veuillez ecrlr le nom de la societe de l'article un a la page une).

Chief Executive Officer and Director, by electronic signature
(Description of Office)
(Fonction)

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DESCRIPTION OF SECURITIES

The following description of capital stock of Meta Materials Inc. (the "Company," "we," "us" and "our") summarizes certain provisions of our articles of incorporation, as amended (the "Articles of Incorporation"), and our amended and restated bylaws (the "Bylaws"). The description is intended as a summary, and is qualified in its entirety by reference to our Articles of Incorporation and our Bylaws, copies of which have been filed as exhibits to the Annual Report on Form 10-K of which this Exhibit 4.6 is a part.

General

Our authorized capital stock consists of 1,000,000,000 shares of common stock, par value $0.001 per share (the "Common Stock"), and 200,000,000 shares of preferred stock, par value $0.001 per share (the "Preferred Stock"). As of December 31, 2021, there were approximately 284,573,316 shares of Common Stock outstanding (including 1,872,750 shares of unvested restricted stock), and 164,923,363 shares of Preferred Stock which consist of 164,923,363 designated shares of Series A Non-Voting Preferred Stock and 0 designated shares of Series B Special Voting Preferred Stock, each as described below. Additionally, we currently have warrants and stock options outstanding that are exercisable into a total of approximately 18,509,876 shares of Common Stock.

Common Stock

Voting Rights

The rights of all holders of the Common Stock are identical in all respects. Each stockholder is entitled to one vote for each share of Common Stock held on all matters submitted to a vote of the stockholders.

Right to Receive Liquidation Distributions

Upon liquidation, dissolution or winding up of the Company, the holders of the Common Stock are entitled to share ratably in all aspects of the Company that are legally available for distribution, after payment of or provision for all debts and liabilities and after payment to the holders of Preferred Stock, if any.

No Preemptive or Similar Rights

The holders of the Common Stock do not have preemptive subscription, redemption or conversion rights under our Articles of Incorporation.

No Cumulative Voting

Cumulative voting in the election of Directors is not permitted. There are no sinking fund provisions applicable to the Common Stock.

Fully Paid

The outstanding shares of Common Stock are validly issued, fully paid and nonassessable.

Preferred Stock

Our Board of Directors can, without approval of our stockholders, issue one or more series of Preferred Stock and determine the number of shares of each series and the rights, preferences, and limitations of each series. The following description of the terms of the Preferred Stock sets forth certain general terms and provisions of our authorized Preferred Stock. If we offer Preferred Stock, a more specific description will be filed with the SEC, and the designations and rights of such Preferred Stock will be described in a prospectus supplement, including the following terms:

- the series, the number of shares offered, and the liquidation value of the Preferred Stock;
- the price at which the Preferred Stock will be issued;
- the dividend rate, the dates on which the dividends will be payable, and other terms relating to the payment of dividends on the Preferred Stock;
- the liquidation preference of the Preferred Stock;
- the voting rights of the Preferred Stock;
- whether the Preferred Stock is redeemable, or subject to a sinking fund, and the terms of any such redemption or sinking fund;
- whether the Preferred Stock is convertible, or exchangeable for any other securities, and the terms of any such conversion or exchange; and
- any additional rights, preferences, qualifications, limitations, and restrictions of the Preferred Stock.

The description of the terms of the Preferred Stock that will be set forth in an applicable prospectus supplement will not be complete and will be subject to and qualified in its entirety by reference to the certificate of designation relating to the applicable series of Preferred Stock. The registration statement, of which this prospectus forms a part, will incorporate by reference the certificate of designation as an exhibit.

Undesignated Preferred Stock may enable our Board of Directors to render more difficult or to discourage an attempt to obtain control of us by means of a tender offer, proxy contest, merger, or otherwise and to thereby protect the continuity of our management. The issuance of shares of Preferred Stock may adversely affect the rights of the holders of our Common Stock. For example, any Preferred Stock issued may:

- rank prior to our Common Stock as to dividend rights, liquidation preference, or both;
- have full or limited voting rights; and
- be convertible into shares of Common Stock.

As a result, the issuance of shares of Preferred Stock may:

- discourage bids for our Common Stock; or
- otherwise adversely affect the market price of our Common Stock or any then existing Preferred Stock.

Any Preferred Stock will, when issued, be fully paid and non-assessable.

Series B Preferred Stock

On June 14, 2021, we also filed the Certificate of Designation of Preferences, Rights and Limitations, or the Series B Certificate of Designation, of Series B Preferred Special Voting Preferred Stock, or the Special Voting Share, with the Secretary of State of the State of Nevada, and designated one share of Preferred Stock as the Special Voting Share. In connection with the Arrangement, Meta shareholders may elect to receive either shares of Common Stock or Exchangeable Shares in exchange for such holder's Meta common shares. Immediately prior to the Effective Time, the Special Voting Share will be issued to a trustee and, while it is outstanding, will enable holders of Exchangeable Shares to cast votes on matters for which holders of the stockholders of the combined company are entitled to vote, and to receive dividends that are economically equivalent to any dividends declared with respect to the Common Stock of the combined company. A more detailed description of the preferences, rights and limitations of the Special Voting Share is set forth in the Definitive Proxy Statement we filed with the SEC on May 7, 2021. The foregoing description of the Series B Certificate of Designation does not purport to be complete and is qualified in its entirety by reference to the full text thereof, a copy of which is filed as Exhibit 3.3 to the Current Report on Form 8-K filed with the SEC on June 16, 2021.

No Cumulative Voting

Holders of shares of Common Stock are entitled to one vote per share on all matters which shareholders are entitled to vote upon at all meetings of shareholders. The holders of shares of Common Stock do not have cumulative voting rights, which mean that the holders of more than 50% of our outstanding voting securities can elect all of the directors of the Company.

Description of Warrants

We may offer warrants to purchase debt securities, preferred stock, depositary shares or common stock. We may offer warrants separately or together with one or more additional warrants, debt securities, preferred stock, depositary shares or common stock, or any combination of those

securities in the form of units, as described in the applicable prospectus supplement. If we issue warrants as part of a unit, the applicable prospectus supplement will specify whether those warrants may be separated from the other securities in the unit prior to the expiration date of the warrants. The applicable prospectus supplement will also describe the following terms of any warrants:

- the specific designation and aggregate number of, and the offering price at which we will issue, the warrants;
- the currency or currency units in which the offering price, if any, and the exercise price are payable;
- the date on which the right to exercise the warrants will begin and the date on which that right will expire or, if you may not continuously exercise the warrants throughout that period, the specific date or dates on which you may exercise the warrants;
- whether the warrants are to be sold separately or with other securities as parts of units;
- whether the warrants will be issued in definitive or global form or in any combination of these forms, although, in any case, the form of a warrant included in a unit will correspond to the form of the unit and of any security included in that unit;
- any applicable material U.S. federal income tax consequences;
- the identity of the warrant agent for the warrants and of any other depositaries, execution or paying agents, transfer agents, registrars or other agents;
- the proposed listing, if any, of the warrants or any securities purchasable upon exercise of the warrants on any securities exchange;
- the designation and terms of any equity securities purchasable upon exercise of the warrants;
- the designation, aggregate principal amount, currency and terms of any debt securities that may be purchased upon exercise of the warrants;
- if applicable, the designation and terms of the debt securities, preferred stock, depositary shares or common stock with which the warrants are issued and the number of warrants issued with each security;
- if applicable, the date from and after which any warrants issued as part of a unit and the related debt securities, preferred stock, depositary shares or common stock will be separately transferable;
- the number of shares of preferred stock, the number of depositary shares or the number of shares of common stock purchasable upon exercise of a warrant and the price at which those shares may be purchased;

- if applicable, the minimum or maximum amount of the warrants that may be exercised at any one time;

- information with respect to book-entry procedures, if any;

- the antidilution provisions, and other provisions for changes to or adjustment in the exercise price, of the warrants, if any;

- any redemption or call provisions; and

- any additional terms of the warrants, including terms, procedures and limitations relating to the exchange or exercise of the warrants.

Warrants (June 2022)

The material terms and provisions of the Warrants being offered pursuant to this prospectus supplement and the accompanying prospectus are summarized below. This summary is subject to and qualified in its entirety by the form of Warrant, which will be provided to the investors in this offering and will be filed with the SEC on a current report on Form 8-K in connection with this offering.

General Terms of the Warrants. The Warrants to be issued in this offering represent the rights to purchase up to an aggregate of 37,037,039 shares of Common Stock at an exercise price of $1.75 per share. Each Warrant will be exercisable six months from the date of issuance and will have a term of five and a half years from the date of issuance.

Exercise. Holders of the Warrants may exercise their Warrants to purchase shares of our Common Stock at any time prior to the expiration date by delivering (i) notice of exercise, appropriately completed and duly signed, and (ii) if such holder is not utilizing the cashless exercise provisions with respect to the Warrants, payment of the exercise price for the number of shares with respect to which the Warrant is being exercised. Warrants may be exercised in whole or in part, but only for full shares of Common Stock. We provide certain rescission and buy-in rights to a holder if we fail to deliver the shares of Common Stock issuable upon exercise of the Warrants by the date on which delivery of the stock certificate is required by the Warrant. With respect to the rescission rights, the holder has the right to rescind the exercise if the shares of Common Stock are not timely delivered to the holder in accordance with the terms of the Warrant. The buy-in rights apply if after the date on which delivery of the shares of Common Stock is required by the Warrant, the holder purchases (in an open market transaction or otherwise) shares of our Common Stock to deliver in satisfaction of a sale by the holder of the Warrant shares that the holder anticipated receiving from us upon exercise of the Warrant. In this event, we will:

- pay in cash to the holder the amount, if any, by which (a) the holder's total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (b) the amount obtained by multiplying (1) the number of Warrant

Shares that the Company was required to deliver, but did not deliver, to the holder in connection with the exercise at issue times (2) the price at which the sell order giving rise to such purchase obligation was executed; and

- at the option of the holder, either (a) reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or (b) deliver to the holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder.

In addition, the Warrant holders are entitled to a "cashless exercise" option if, at the time of exercise, there is no effective registration statement registering, or no current prospectus available for, the issuance or resale of the shares of Common Stock issuable upon exercise of the Warrants. This option entitles the Warrant holders to elect to receive fewer shares of Common Stock without paying the cash exercise price. The number of shares to be issued would be determined by a formula set forth in the Warrant.

The shares of Common Stock issuable on exercise of the Warrants will be, when issued and paid for in accordance with the Warrants, duly and validly authorized, issued and fully paid and non-assessable. We will authorize and reserve at least that number of shares of Common Stock equal to the number of shares of Common Stock issuable upon exercise of all outstanding Warrants.

Fundamental Transactions. If, at any time while this Warrant is outstanding, (i) we, directly or indirectly, in one or more related transactions effect any merger or consolidation, (ii) we, directly or indirectly, effect any sale, lease, license, assignment, transfer, conveyance or other disposition of all or substantially all of its assets in one or a series of related transactions, (iii) any, direct or indirect, purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of our Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by the holders of 50% or more of the outstanding Common Stock or 50% or more of the voting power of the common equity of the Company, (iv) we, directly or indirectly, in one or more related transactions, effect any reclassification, reorganization or recapitalization of our Common Stock or any compulsory share exchange pursuant to which our Common Stock is effectively converted into or exchanged for other securities, cash or property, or (v) we, directly or indirectly, in one or more related transactions consummate a stock or share purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off, merger or scheme of arrangement) with another person, group of persons or entity that acquires more than 50% of the outstanding shares of our Common Stock (each a "Fundamental Transaction"), then, upon any subsequent exercise of this Warrant, the holder shall have the right to receive, for each Warrant Share that would have been issuable upon such exercise immediately prior to the occurrence of such Fundamental Transaction, at the option of the holder, the number of shares of Common Stock of the successor or surviving corporation or of the Company, if it is the surviving corporation, and/or any additional consideration (the "Alternate Consideration ") receivable as a result of such Fundamental Transaction by a holder of the number of shares of Common Stock for which the Warrant is exercisable immediately prior to such Fundamental Transaction. In addition, in the event of a

fundamental transaction which is approved by our board of directors, the holders of the warrants have the right to require us or a successor entity to redeem the warrant for cash in the amount of the Black-Scholes value of the unexercised portion of the warrant on the date of the consummation of the fundamental transaction. In the event of a fundamental transaction which is not approved by our board of directors, the holders of the warrants have the right to require us or a successor entity to redeem the warrant for the consideration paid in the fundamental transaction in the amount of the Black Scholes value of the unexercised portion of the warrant on the date of the consummation of the Fundamental Transaction.

Subsequent Rights Offerings. If, at any time while the Warrants are outstanding, we grant, issue or sell any Common Stock Equivalents (as such term is defined in the Warrant) or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of shares of Common Stock (the "Purchase Rights"), then the holders of the Warrants will be entitled to acquire those, upon terms applicable to such Purchase Rights, the aggregate Purchase Rights which the holder could have acquired if the holder had held the number of shares of Common Stock acquirable upon complete exercise of the Warrant (without regard to any limitations on exercise thereof, including without limitation, the beneficial ownership limitation).

Pro Rata Distributions. If, at any time while the Warrants are outstanding, we declare or make a dividend or other distribution of assets (or rights to acquire assets) to all holders of our Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property or options by way of a dividend, spin off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (other than dividends or distributions subject to the Warrant) (a "Distribution"), at any time after the issuance of this Warrant, then, in each such case, the holder shall be entitled to participate in such Distribution to the same extent that the holder would have participated therein if the holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations on exercise hereof, including without limitation, the beneficial ownership limitation).

Certain Adjustments. The exercise price and the number of shares of Common Stock purchasable upon the exercise of the Warrants are subject to adjustment upon the occurrence of specific events, including stock dividends, stock splits, combinations and reclassifications of our Common Stock.

Delivery of Shares. Upon the holder's exercise of a Warrant, we will promptly, but in no event by that date that is the earliest of (i) two trading days, (ii) one trading day after delivery of the aggregate exercise price to the Company and (iii) the number of trading days comprising the standard settlement period after the delivery to us of the notice of exercise and provided that payment of the aggregate exercise price (other than in the case of a cashless exercise) is received within the earlier of (i) two trading days and (ii) the number of trading days comprising the standard settlement period following delivery of the notice of exercise, issue and deliver, or cause to be issued and delivered, the shares of Common Stock issuable upon exercise of the Warrant. In addition, we will, if the holder provides the necessary information to us, issue and deliver the shares electronically through The Depository Trust Corporation through its Deposit or Withdrawal at Custodian system ("DWAC") or another established clearing corporation performing similar functions. If we fail for any reason to timely deliver to the investor the

Warrant Shares, we will pay to the investor, in cash, as liquidated damages and not as a penalty, for each $1,000 of Warrant Shares subject to such exercise, $10 per trading day (increasing to $20 per trading day on the third trading day after such liquidated damages begin to accrue) for each trading day after the trading day on which the Warrant shares were required to be delivered, until such Warrant shares are delivered or the investor rescinds such exercise.

Notice of Corporate Action. We will provide notice to holders of the Warrants to provide them with the opportunity to exercise their Warrants and hold Common Stock in order to participate in or vote on the following corporate events:

- if we shall take a record of the holders of our Common Stock for the purpose of entitling them to receive a dividend or any other distribution in whatever form, or declare a special nonrecurring cash dividend on a redemption of Common Stock, or any warrant or right to subscribe for or purchase any shares of stock of any class or of any other right;

- any reclassification of our capital stock or any consolidation or merger with, or any sale, transfer or other disposition of all or substantially all of our property, assets or business to, or any compulsory share exchange whereby the Common Stock is converted into other securities, cash or property with, another corporation; or

- a voluntary or involuntary dissolution, liquidation or winding up of our Company.

Limitations on Exercise. Subject to limited exceptions, a holder of Warrants will not have the right to exercise any portion of its Warrants if the holder, together with its affiliates, would beneficially own in excess of 4.99% (or, 9.99% at the election of the holder prior to issuance) of the number of shares of our Common Stock outstanding immediately after giving effect to such exercise, provided that the holder may increase or decrease the beneficial ownership limitation, provided that such beneficial ownership limitation in no event exceeds 9.99%. Any increase in the beneficial ownership limitation shall not be effective until 61 days following notice of such change to us.

Dividend Policy

The holders of the Common Stock are entitled to receive ratably such dividends, if any, as may be declared by the Board of Directors of directors out of legally available funds.

The payment by us of dividends, if any, in the future rests within the discretion of our Board of Directors and will depend, among other things, upon our earnings, capital requirements and financial condition, as well as other relevant factors.

We have neither declared nor paid any cash dividends on our preferred or Common Stock. For the foreseeable future, we intend to retain any earnings to finance the development and expansion of our business, and do not anticipate paying any cash dividends on our preferred or Common Stock.

Anti-Takeover Provisions

Our Bylaws and Nevada law include certain provisions which may have the effect of delaying or deterring a change in control or in our management or encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our Board of Directors of directors rather than pursue non-negotiated takeover attempts. These provisions include authorized blank check Preferred Stock, restrictions on business combinations, and the availability of authorized but unissued Common Stock.

Listing

Our Common Stock is listed on the NASDAQ Capital Market under the symbol “MMAT.”

Transfer Agent

The transfer agent for our Common Stock is American Stock Transfer & Trust Company, LLC.

VOTING AND EXCHANGE TRUST AGREEMENT

AGREEMENT made as of the 28th day of June, 2021, between Torchlight Energy Resources, Inc., a corporation existing under the laws of the State of Nevada (hereinafter referred to as "**RTO Acquiror**"), Metamaterial Exchangeco Inc., a corporation existing under the laws of the Province of Ontario (hereinafter referred to as "**Canco**"), and AST Trust Company (Canada), a trust company incorporated under the laws of Canada (hereinafter referred to as the "**Trustee**").

RECITALS:

A. In connection with an arrangement agreement (the "**Arrangement Agreement**") made as of December 14, 2020 between RTO Acquiror, Canco, 2798831 Ontario Inc., a corporation existing under the laws of the Province of Ontario ("**Callco**") and Metamaterial Inc., a corporation existing under the laws of the Province of Ontario ("**META**"), the Exchangeable Shares are to be issued to certain holders of securities of META pursuant to the Plan of Arrangement contemplated in the Arrangement Agreement;

B. Pursuant to the Arrangement Agreement, RTO Acquiror and Canco are required to enter into this agreement.

In consideration of the foregoing and the mutual agreements contained herein (the receipt and sufficiency of which are acknowledged), the parties agree as follows:

ARTICLE 1 DEFINITIONS AND INTERPRETATION

1.1 Definitions

In this agreement, each initially capitalized term used and not otherwise defined herein shall have the meaning ascribed thereto in the rights, privileges, restrictions and conditions (collectively, the "**Share Provisions**") attaching to the Exchangeable Shares as set out in the articles of Canco and the following terms shall have the following meanings:

"**Agency**" means any domestic or foreign court, tribunal, federal, state, provincial or local government or governmental agency, department or authority or other regulatory authority (including the Exchange and NASDAQ) or administrative agency or commission (including the Securities Authorities and the SEC) or any elected or appointed public official.

"**Authorized Investments**" means short term interest-bearing or discount debt obligations issued or guaranteed by the Government of Canada or any province thereof or a Canadian chartered bank (which may include an affiliate or related party of the Trustee), maturing not more than one year from the date of investment, or an interest- bearing segregated account with a Canadian Schedule I chartered bank.

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"**Automatic Exchange Right**" means the benefit of the obligation of RTO Acquiror to effect the automatic exchange of Exchangeable Shares for RTO Acquiror Shares pursuant to Section 5.12.

"**Beneficiaries**" means the registered holders from time to time of Exchangeable Shares, other than RTO Acquiror and its affiliates.

"**Beneficiary Votes**" has the meaning ascribed thereto in Section 4.2(1). "**Board of Directors**" means the Board of Directors of Canco.
"**Exchange**" means the Canadian Securities Exchange, the Toronto Stock Exchange or such other recognized securities exchange upon which the Exchangeable Shares may be listed for trading from time to time.

"**Exchange Right**" has the meaning ascribed thereto in Section 5.1(1).

"**Exchangeable Share Consideration**" has the meaning ascribed thereto in Section 5.4. "**Exchangeable Shares**" means the exchangeable shares in the capital of Canco.
"**including**" means "including without limitation" and "**includes**" means "includes without limitation".

"**Indemnified Parties**" has the meaning ascribed thereto in Section 8.1(1).

"**Insolvency Event**" means (i) the institution by Canco of any proceeding to be adjudicated a bankrupt or insolvent or to be wound up, or the consent of Canco to the institution of bankruptcy, insolvency or winding-up proceedings against it, or (ii) the filing of a petition, answer or consent seeking dissolution or winding-up under any bankruptcy, insolvency or analogous laws, including the *Companies Creditors' Arrangement Act* (Canada) and the *Bankruptcy and Insolvency Act* (Canada), and the failure by Canco to contest in good faith any such proceedings commenced in respect of Canco within 30 days of becoming aware thereof, or the consent by Canco to the filing of any such petition or to the appointment of a receiver, or (iii) the making by Canco of a general assignment for the benefit of creditors, or the admission in writing by Canco of its inability to pay its debts generally as they become due, or (iv) Canco not being permitted, pursuant to solvency requirements of applicable law, to redeem any Retracted Shares pursuant to Section 6(6) of the Share Provisions.

"**Liquidation Event**" has the meaning ascribed thereto in Section 5.12(2).

"**Liquidation Event Effective Date**" has the meaning ascribed thereto in Section **Error! Reference source not found.**.

"**List**" has the meaning ascribed thereto in Section 4.6. "**NASDAQ**" means the NASDAQ Capital Market.

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"**Officer's Certificate**" means, with respect to RTO Acquiror or Canco, as the case may be, a certificate signed by any officer or director of RTO Acquiror or Canco, as the case may be.

"**Other Corporation**" has the meaning ascribed thereto in Section 10.4(c). "**Other Shares**" has the meaning ascribed thereto in Section 10.4(c). "**Privacy Laws**" has the meaning ascribed thereto in Section 6.18.
"**RTO Acquiror Consent**" has the meaning ascribed therein in Section 4.2(1). "**RTO Acquiror Meeting**" has the meaning ascribed thereto in Section 4.2(1).
"**RTO Acquiror Shares**" means the common stock, par value US$0.01 per share in the capital of RTO Acquiror.

"**RTO Acquiror Special Voting Share**" means the special voting share in the capital of RTO Acquiror which entitles the holder of record to a number of votes at meetings of holders of RTO Acquiror Shares equal to the number of Exchangeable Shares outstanding from time to time (excluding Exchangeable Shares held by RTO Acquiror and affiliates of RTO Acquiror), which share is to be issued to and voted by, the Trustee as described herein.

"**RTO Acquiror Successor**" has the meaning ascribed thereto in Section 10.1(a). "**SEC**" means the U.S. Securities and Exchange Commission.
"**Support Agreement**" means that certain support agreement of even date between Canco, Callco and RTO Acquiror substantially in the form of Schedule I to the Arrangement Agreement, as it may be amended and/or restated in accordance with the terms of the Support Agreement.

"**Trust**" means the trust created by this agreement.

"**Trust Estate**" means the RTO Acquiror Special Voting Share, any other securities, the Automatic Exchange Right, the Exchange Right and any money or other property which may be held by the Trustee from time to time pursuant to this agreement.

"**Trustee**" means such person appointed by Meta and RTO Acquiror (each acting reasonably) and, subject to the provisions of Article 9, includes any successor trustee.

"**Voting Rights**" means the voting rights attached to the RTO Acquiror Special Voting Share.

1.2 Interpretation Not Affected by Headings, etc.

The division of this agreement into Articles, sections and other portions and the insertion of headings are for convenience of reference only and do not affect the construction or

interpretation of this agreement. Unless otherwise specified, references to an "Article" or "section" refer to the specified Article or section of this agreement.

1.3 Number, Gender, etc.

Words importing the singular number only shall include the plural and vice versa. Words importing any gender shall include all genders.

1.4 Date for any Action

If any date on which any action is required to be taken under this agreement is not a business day, such action shall be required to be taken on the next succeeding business day.

2.1 Establishment of Trust

ARTICLE 2 PURPOSE OF AGREEMENT

The purpose of this agreement is to create the Trust for the benefit of the Beneficiaries as herein provided. RTO Acquiror, as the settlor of the Trust, hereby appoints the Trustee as trustee of the Trust. The delivery by RTO Acquiror of $1.00 for the purpose of settling the Trust is hereby acknowledged by the Trustee. The Trustee shall hold the RTO Acquiror Special Voting Share in order to enable the Trustee to exercise the Voting Rights and shall hold the Automatic Exchange Right and the Exchange Right in order to enable the Trustee to exercise such rights, in each case as trustee for and on behalf of the Beneficiaries as provided in this agreement.

ARTICLE 3
RTO ACQUIROR SPECIAL VOTING SHARE

3.1 Issue and Ownership of the RTO Acquiror Special Voting Share

Immediately following execution of this agreement, RTO Acquiror shall issue to the Trustee the RTO Acquiror Special Voting Share (and shall deliver the certificate representing such share to the Trustee) to be hereafter held of record by the Trustee as trustee for and on behalf of, and for the use and benefit of, the Beneficiaries and in accordance with the provisions of this agreement. RTO Acquiror hereby acknowledges receipt from the Trustee as trustee for and on behalf of the Beneficiaries of $1.00 and other good and valuable consideration (and the adequacy thereof) for the issuance of the RTO Acquiror Special Voting Share by RTO Acquiror to the Trustee. During the term of the Trust and subject to the terms and conditions of this agreement, the Trustee shall possess and be vested with full legal ownership of the RTO Acquiror Special Voting Share and shall be entitled to exercise all of the rights and powers of an owner with respect to the RTO Acquiror Special Voting Share provided that the Trustee shall:

(a) hold the RTO Acquiror Special Voting Share and the legal title thereto as trustee solely for the use and benefit of the Beneficiaries in accordance with the provisions of this agreement; and

(b) except as specifically authorized by this agreement, have no power or authority to sell, transfer, vote or otherwise deal in or with the RTO Acquiror Special Voting Share and the RTO Acquiror Special Voting Share shall not be used, sold, transferred, voted, dealt with or disposed of by the Trustee for any purpose (including for exercising dissent or appraisal rights relating to the RTO Acquiror Special Voting Shares) other than the purposes for which this Trust is created pursuant to this agreement and in accordance with this agreement.

3.2 Legended Share Certificates

Canco shall cause each certificate or ownership statement under a direct registration system representing Exchangeable Shares to bear an appropriate legend notifying each Beneficiary of their right to instruct the Trustee in respect of the exercise of their portion of the Voting Rights in respect of the Exchangeable Shares held by each such Beneficiary.

3.3 Safe Keeping of Certificate

The certificate representing the RTO Acquiror Special Voting Share shall at all times be held in safe keeping by the Trustee or its duly authorized agent.

ARTICLE 4 EXERCISE OF VOTING RIGHTS

4.1 Voting Rights

The Trustee, as the holder of record of the RTO Acquiror Special Voting Share, shall be entitled to exercise all of the Voting Rights, including the right to consent to or vote in person or by proxy attaching to the RTO Acquiror Special Voting Share on any matters, questions, proposals or propositions whatsoever that may properly come before the shareholders of RTO Acquiror at an RTO Acquiror Meeting. The Voting Rights shall be and remain vested in and exercised by the Trustee on behalf of the Beneficiaries subject to the terms of this agreement. Subject to Section 6.15:

(a) the Trustee shall exercise the Voting Rights only on the basis of instructions received pursuant to this Article 4 from Beneficiaries on the record date established by RTO Acquiror or by applicable law for such RTO Acquiror Meeting or RTO Acquiror Consent who are entitled to instruct the Trustee as to the voting thereof;

(b) to the extent that no instructions are received from a Beneficiary with respect to the Voting Rights to which such Beneficiary is entitled, the Trustee shall not exercise or permit the exercise of such Voting Rights; and

(c) without prejudice to paragraph (b) above, under no circumstances shall the Trustee exercise or permit the exercise of a number of Voting Rights which is greater than the number of Exchangeable Shares outstanding and not owned by RTO Acquiror and its affiliates at the relevant time.

4.2 Number of Votes

(1) With respect to all meetings of shareholders of RTO Acquiror at which holders of RTO Acquiror Shares are entitled to vote (each, an "**RTO Acquiror Meeting**") and with respect to all written consents sought from holders of the RTO Acquiror Shares (each, an "**RTO Acquiror Consent**"), each Beneficiary shall be entitled to instruct the Trustee to cast and exercise that number of votes equal to a pro rata number of Voting Rights determined by reference to the total number of outstanding Exchangeable Shares not owned by RTO Acquiror and its affiliates on the record date established by RTO Acquiror or by applicable law for such RTO Acquiror Meeting or RTO Acquiror Consent, for each Exchangeable Share owned of record by a Beneficiary on the record date established by RTO Acquiror or by applicable law for such RTO Acquiror Meeting or RTO Acquiror Consent, as the case may be (collectively, the "**Beneficiary Votes**"), in respect of each matter, question, proposal or proposition to be voted on at such RTO Acquiror Meeting or consented to in connection with such RTO Acquiror Consent.

(2) The aggregate Voting Rights on a poll at an RTO Acquiror Meeting shall consist of a number of votes equal to one vote per outstanding Exchangeable Share from time to time not owned by RTO Acquiror and its affiliates on the record date established by RTO Acquiror or by applicable law for such RTO Acquiror Meeting or RTO Acquiror Consent, and for which the Trustee has received voting instructions from the Beneficiaries in accordance with this Agreement. Pursuant to the terms of the Special Voting Share, the Trustee or its proxy is entitled on a vote on a show of hands to one vote in addition to any votes which may be cast by a Beneficiary (or its nominee) on a show of hands as proxy for the Trustee. Any Beneficiary who chooses to attend an RTO Acquiror Meeting in person, and who is entitled to vote in accordance with Section 4.8(2), shall be entitled to one vote on a show of hands.

4.3 Mailings to Shareholders

(1) With respect to each RTO Acquiror Meeting or RTO Acquiror Consent, the Trustee shall use its reasonable efforts to promptly mail or cause to be mailed (or otherwise communicate in the same manner as RTO Acquiror utilizes in communications to holders of RTO Acquiror Shares subject to applicable regulatory requirements and provided that such manner of communications is reasonably available to the Trustee) to each of the Beneficiaries named in the List to the extent practicable on the same day as the mailing or notice (or other communication) with respect thereto is commenced by RTO Acquiror to its shareholders:

(a) a copy of such notice, together with any related materials, including any circular or information statement or listing particulars, to be provided to shareholders of RTO Acquiror;

(b) a statement that such Beneficiary is entitled to instruct the Trustee as to the exercise of the Beneficiary Votes with respect to such RTO Acquiror Meeting or RTO Acquiror Consent or, pursuant to Section 4.7, to attend such RTO Acquiror Meeting and to exercise personally the Beneficiary Votes thereat;

(c) a statement as to the manner in which such instructions may be given to the Trustee, including an express indication that instructions may be given to the Trustee to give:

(i) a proxy to such Beneficiary or his, her or its designee to exercise personally the Beneficiary Votes; or

(ii) a proxy to a designated agent or other representative of RTO Acquiror to exercise such Beneficiary Votes;

(d) a statement that if no such instructions are received from the Beneficiary, the Beneficiary Votes to which such Beneficiary is entitled will not be exercised;

(e) a form of direction whereby the Beneficiary may so direct and instruct the Trustee as contemplated herein; and

(f) a statement of the time and date by which such instructions must be received by the Trustee in order to be binding upon it, which in the case of an RTO Acquiror Meeting shall not be earlier than the close of business on the fourth business day prior to such meeting, and of the method for revoking or amending such instructions.

(2) The materials referred to in this Section 4.3 shall be provided to the Trustee by RTO Acquiror, and the materials referred to in Section 4.3(1)(c), Section 4.3(1)(e) and Section 4.3(1)(f) shall (if reasonably practicable to do so) be subject to reasonable comment by the Trustee in a timely manner. Subject to the foregoing, RTO Acquiror shall ensure that the materials to be provided to the Trustee are provided in sufficient time to permit the Trustee to comment as aforesaid and to send all materials to each Beneficiary at the same time as such materials are first sent to holders of RTO Acquiror Shares. RTO Acquiror agrees not to communicate with holders of RTO Acquiror Shares with respect to the materials referred to in this Section 4.3 otherwise than by mail unless such method of communication is also reasonably available to the Trustee for communication with the Beneficiaries. Notwithstanding the foregoing, RTO Acquiror may at its option exercise the duties of the Trustee to deliver copies of all materials to all Beneficiaries as required by this Section 4.3 so long as in each case RTO Acquiror delivers a certificate to the Trustee stating that RTO Acquiror has undertaken to perform the obligations set forth in this Section 4.3.

(3) For the purpose of determining the number of Beneficiary Votes to which a Beneficiary is entitled in respect of any RTO Acquiror Meeting or RTO Consent, the number of Exchangeable Shares owned of record by the Beneficiary shall be determined at the close of business on the record date established by RTO Acquiror or by applicable law for purposes of determining shareholders entitled to vote at such RTO Acquiror Meeting or

in respect of such RTO Acquiror Consent. RTO Acquiror shall notify the Trustee of any decision of the board of directors of RTO Acquiror with respect to the calling of any RTO Acquiror Meeting and shall provide all necessary information and materials to the Trustee in each case promptly and in any event in sufficient time to enable the Trustee to perform its obligations contemplated by this Section 4.3.

4.4 Copies of Shareholder Information

RTO Acquiror shall deliver to the Trustee copies of all proxy materials (including notices of RTO Acquiror Meetings but excluding proxies to vote RTO Acquiror Shares), information statements, reports (including all interim and annual financial statements) and other written communications that, in each case, are to be distributed by RTO Acquiror from time to time to holders of RTO Acquiror Shares in sufficient quantities and in sufficient time so as to enable the Trustee to send or cause to send those materials to each Beneficiary at the same time as such materials are first sent to holders of RTO Acquiror Shares. The Trustee shall mail or otherwise send to each Beneficiary, at the expense of RTO Acquiror, copies of all such materials (and all materials specifically directed to the Beneficiaries or to the Trustee for the benefit of the Beneficiaries by RTO Acquiror) received by the Trustee from RTO Acquiror contemporaneously with the sending of such materials to holders of RTO Acquiror Shares. The Trustee shall also make available for inspection during regular business hours by any Beneficiary at the Trustee's principal office in Toronto, Ontario all proxy materials, information statements, reports and other written communications that are (a) received by the Trustee as the registered holder of the Special Voting Share, and (b) made available by the RTO Acquiror generally to the holders of its shares or specifically directed to the Beneficiaries or to the Trustee for the benefit of the Beneficiaries by the RTO Acquiror.

Notwithstanding the foregoing, RTO Acquiror at its option may exercise the duties of the Trustee to deliver copies of all such materials to each Beneficiary as required by this Section 4.4 so long as in each case RTO Acquiror delivers a certificate to the Trustee stating that RTO Acquiror has undertaken to perform the obligations set forth in this Section 4.4.

4.5 Other Materials

As soon as reasonably practicable after receipt by RTO Acquiror or shareholders of RTO Acquiror (if such receipt is known by RTO Acquiror) of any material sent or given by or on behalf of a third party to holders of RTO Acquiror Shares generally, including dissident proxy and information circulars (and related information and material) and tender offer, take-over bid and securities exchange take-over bid circulars (and related information and material), provided such material has not been sent to the Beneficiaries by or on behalf of such third party, RTO Acquiror shall use its reasonable efforts to obtain and deliver to the Trustee copies thereof in sufficient quantities so as to enable the Trustee to forward such material (unless the same has been provided directly to Beneficiaries by such third party) to each Beneficiary as soon as possible thereafter. As soon as reasonably practicable after receipt thereof, the Trustee shall mail or otherwise send to each Beneficiary, at the expense of RTO Acquiror, copies of all such materials

received by the Trustee from RTO Acquiror. The Trustee shall also make available for inspection during regular business hours by any Beneficiary at the Trustee's principal office in Toronto, Ontario copies of all such materials. Notwithstanding the foregoing, RTO Acquiror at its option may exercise the duties of the Trustee to deliver copies of all such materials to each Beneficiary as required by this Section 4.5 so long as in each case RTO Acquiror delivers a certificate to the Trustee stating that RTO Acquiror has undertaken to perform the obligations set forth in this Section 4.5.

4.6 List of Persons Entitled to Vote

Canco shall, (a) prior to each annual, general, special, extraordinary or other RTO Acquiror Meeting or the seeking of any RTO Acquiror Consent and (b) forthwith upon each request made at any time by the Trustee in writing, prepare or cause to be prepared a list (a "**List**") of the names and addresses of the Beneficiaries arranged in alphabetical order and showing the number of Exchangeable Shares held of record by each such Beneficiary, in each case at the close of business on the date specified by the Trustee in such request or, in the case of a List prepared in connection with an RTO Acquiror Meeting, or RTO Acquiror Consent at the close of business on the record date established by RTO Acquiror or pursuant to applicable law for determining the holders of RTO Acquiror Shares entitled to receive notice of and/or to vote at such RTO Acquiror Meeting or to give consent. Each such List shall be delivered to the Trustee promptly after receipt by Canco of such request or the record date for such meeting or seeking of consent, as applicable, and in any event within sufficient time as to permit the Trustee to perform its obligations under this agreement. RTO Acquiror agrees to give Canco notice (with a copy to the Trustee) of the calling of any RTO Acquiror Meeting, together with the record date therefor, sufficiently prior to the date of the calling of such meeting so as to enable Canco to perform its obligations under this Section 4.6.

4.7 Entitlement to Direct Votes

Subject to Section 4.8 and Section 4.11, any Beneficiary named in a List prepared in connection with any RTO Acquiror Meeting or RTO Acquiror Consent shall be entitled
(a) to instruct the Trustee in the manner described in Section 4.2 with respect to the exercise of the Beneficiary Votes to which such Beneficiary is entitled, (b) to attend such meeting and personally exercise thereat, as the proxy of the Trustee, the Beneficiary Votes to which such Beneficiary is entitled, or (c) appoint a third party as the proxy of the Trustee to attend such meeting and exercise thereat the Beneficiary Votes to which such Beneficiary is entitled except, in each case, to the extent that such Beneficiary has transferred the ownership of any Exchangeable Shares in respect of which such Beneficiary is entitled to Beneficiary Votes after the close of business on the record date for such meeting or seeking of consent.

4.8 Voting by Trustee and Attendance of Trustee Representative at Meeting

(1) In connection with each RTO Acquiror Meeting or RTO Acquiror Consent, the Trustee shall exercise, either in person or by proxy, in accordance with the instructions received from a Beneficiary pursuant to Section 4.3, the Beneficiary Votes as to which such

Beneficiary is entitled to direct the vote (or any lesser number thereof as may be set forth in the instructions) other than any Beneficiary Votes that are the subject of Section 4.8(2); provided, however, that such written instructions are received by the Trustee from the Beneficiary prior to the time and date fixed by the Trustee for receipt of such instruction in the notice given by the Trustee to the Beneficiary pursuant to Section 4.3.

(2) To the extent so instructed in accordance with the terms of this Agreement, the Trustee shall cause a representative who is empowered by it to sign and deliver, on behalf of the Trustee, proxies for Voting Rights enabling a Beneficiary to attend each RTO Acquiror Meeting. Upon submission by a Beneficiary (or its designee) named in the List prepared in connection with the relevant meeting of identification satisfactory to the Trustee's representative, and at the Beneficiary's request, such representative shall sign and deliver to such Beneficiary (or its designee) a proxy to exercise personally the Beneficiary Votes as to which such Beneficiary is otherwise entitled hereunder to direct the vote, if such Beneficiary either (i) has not previously given the Trustee instructions pursuant to Section 4.3 in respect of such meeting or (ii) submits to such representative written revocation of any such previous instructions. At such meeting, the Beneficiary (or its designee) exercising such Beneficiary Votes in accordance with such proxy shall have the same rights in respect of such Beneficiary Votes as the Trustee to speak at the meeting in favour of any matter, question, proposal or proposition, to vote by way of ballot at the meeting in respect of any matter, question, proposal or proposition, and to vote at such meeting by way of a show of hands in respect of any matter, question or proposition.

4.9 Distribution of Written Materials

Any written materials distributed by the Trustee pursuant to this Agreement shall be sent by mail (or otherwise communicated in the same manner as RTO Acquiror utilizes in communications to holders of RTO Acquiror Shares subject to applicable regulatory requirements and provided such manner of communications is reasonably available to the Trustee) to each Beneficiary at its address as shown on the books of Canco. RTO Acquiror agrees not to communicate with holders of RTO Acquiror Shares with respect to such written materials otherwise than by mail unless such method of communication is also reasonably available to the Trustee for communication with the Beneficiaries. Canco shall provide or cause to be provided to the Trustee for purposes of communication, on a timely basis and without charge or other expense:

(a) a current List; and

(b) upon the request of the Trustee, mailing labels to enable the Trustee to carry out its duties under this agreement.

Canco's obligations under this Section 4.9 shall be deemed satisfied to the extent RTO Acquiror exercises its option to perform the duties of the Trustee to deliver copies of materials to each Beneficiary and Canco provides the required information and materials to RTO Acquiror.

4.10 Termination of Voting Rights

All of the rights of a Beneficiary with respect to the Beneficiary Votes exercisable in respect of the Exchangeable Shares held by such Beneficiary, including the right to instruct the Trustee as to the voting of or to vote personally such Beneficiary Votes, shall be deemed to be surrendered by the Beneficiary to RTO Acquiror or Callco, as the case may be, and such Beneficiary Votes and the Voting Rights represented thereby shall cease immediately upon (i) the delivery by such holder to the Trustee of the certificates representing such Exchangeable Shares in connection with the occurrence of the automatic exchange of Exchangeable Shares for RTO Acquiror Shares, as specified in Article 5 (unless RTO Acquiror shall not have delivered the requisite RTO Acquiror Shares issuable in exchange therefor to the Trustee pending delivery to the Beneficiaries), or (ii) the retraction or redemption of Exchangeable Shares pursuant to Section 6 or 7 of the Share Provisions, or (iii) the effective date of the liquidation, dissolution or winding- up of Canco pursuant to Section 5 of the Share Provisions, or (iv) the purchase of Exchangeable Shares from the holder thereof by RTO Acquiror or Callco pursuant to the exercise by RTO Acquiror or Callco of the Retraction Call Right, the Redemption Call Right or the Liquidation Call Right, or upon the purchase of Exchangeable Shares form the holders thereof by RTO Acquiror or Callco pursuant to the exercise by RTO Acquiror or Callco of the Change of Law Call Right (as defined in the Plan of Arrangement) (unless, in any case, RTO Acquiror or Callco, as the case may be, shall not have delivered the requisite consideration in exchange therefor).

4.11 Disclosure of Interest in Exchangeable Shares

The Trustee and/or Canco shall be entitled to require any Beneficiary or any person who the Trustee and/or Canco know or have reasonable cause to believe to hold any interest whatsoever in an Exchangeable Share to confirm that fact or to give such details as to whom has an interest in such Exchangeable Share as would be required (if the Exchangeable Shares were a class of "voting or equity securities" of Canco) under Section 5.2 of National Instrument 62-104 *Take Over Bids and Issuer Bids*, as amended from time to time, or as would be required under the articles of RTO Acquiror or any laws or regulations, or pursuant to the rules or regulations of any Agency, if the Exchangeable Shares were RTO Acquiror Shares. If a Beneficiary does not provide the information required to be provided by such Beneficiary pursuant to this Section 4.11, the board of directors of RTO Acquiror may take any action permitted under the articles of RTO Acquiror or any laws or regulations, or pursuant to the rules or regulations of any Agency, with respect to the Voting Rights relating to the Exchangeable Shares held by such Beneficiary.

ARTICLE 5
EXCHANGE AND AUTOMATIC EXCHANGE

5.1 Grant of Exchange Right and Automatic Exchange Right

(1) RTO Acquiror hereby grants to Trustee as trustee for and on behalf of, and for the use and benefit of, the Beneficiaries the right (the "**Exchange Right**"), upon the occurrence

and during the continuance of an Insolvency Event, to require RTO Acquiror to purchase from each or any Beneficiary all or any part of the Exchangeable Shares held by such Beneficiary and the Automatic Exchange Right, all in accordance with the provisions of this agreement. RTO Acquiror hereby acknowledges receipt from the Trustee as trustee for and on behalf of the Beneficiaries of good and valuable consideration (and the adequacy thereof) for the grant of the Exchange Right and the Automatic Exchange Right by RTO Acquiror to the Trustee.

(2) During the term of the Trust and subject to the terms and conditions of this agreement, the Trustee shall possess and be vested with full legal ownership of the Automatic Exchange Right and the Exchange Right and shall be entitled to exercise all of the rights and powers of an owner with respect to the Automatic Exchange Right and the Exchange Right, provided that the Trustee shall:

(a) hold the Automatic Exchange Right and the Exchange Right and the legal title thereto as trustee solely for the use and benefit of the Beneficiaries in accordance with the provisions of this agreement; and

(b) except as specifically authorized by this agreement, have no power or authority to exercise or otherwise deal in or with the Automatic Exchange Right or the Exchange Right, and the Trustee shall not exercise any such rights for any purpose other than the purposes for which the Trust is created pursuant to this agreement.

(3) The obligations of RTO Acquiror to issue RTO Acquiror Shares pursuant to the Automatic Exchange Right or the Exchange Right are subject to all applicable laws and regulatory or stock exchange requirements.

5.2 Legended Share Certificates

Canco shall cause each certificate representing Exchangeable Shares to bear an appropriate legend notifying the Beneficiaries of:

(a) their right to instruct the Trustee with respect to the exercise of the Exchange Right in respect of the Exchangeable Shares held by a Beneficiary; and

(b) the Automatic Exchange Right.

5.3 General Exercise of Exchange Right

The Exchange Right shall be and remain vested in and exercisable by Trustee. Subject to Section 6.15, the Trustee shall exercise the Exchange Right only on the basis of instructions received pursuant to this Article 5 from Beneficiaries entitled to instruct the Trustee as to the exercise thereof. To the extent that no instructions are received from a Beneficiary with respect to the Exchange Right, the Trustee shall not exercise or permit the exercise of the Exchange Right.

5.4 Purchase Price

The purchase price payable by RTO Acquiror for each Exchangeable Share to be purchased by RTO Acquiror under the Exchange Right shall be an amount per share equal to (i) the Current Market Price of an RTO Acquiror Share on the day before the exchange, which shall be satisfied in full by RTO Acquiror issuing to the Beneficiary one RTO Acquiror Share, plus (ii) an additional amount equal to the full amount of all declared and unpaid dividends on each such Exchangeable Share held by such holder on any dividend record date which occurred prior to the date of the exchange (collectively the "**Exchangeable Share Consideration**"). In connection with each exercise of the Exchange Right, RTO Acquiror shall provide to the Trustee an Officer's Certificate setting forth the calculation of the purchase price for each Exchangeable Share.

5.5 Exercise Instructions

Subject to the terms and conditions set forth herein, a Beneficiary shall be entitled upon the occurrence and during the continuance of an Insolvency Event, to instruct the Trustee to exercise the Exchange Right with respect to all or any part of the Exchangeable Shares registered in the name of such Beneficiary on the books of Canco. To cause the exercise of the Exchange Right by the Trustee, the Beneficiary shall deliver to the Trustee, in person or by certified or registered mail, at its principal office in Toronto, Ontario or at such other place as the Trustee may from time to time designate by written notice to the Beneficiaries, the certificates representing the Exchangeable Shares which such Beneficiary desires RTO Acquiror to purchase, duly endorsed in blank for transfer, and accompanied by such other documents and instruments as the Trustee, RTO Acquiror and Canco may reasonably require together with (a) a duly completed form of notice of exercise of the Exchange Right, contained on the reverse of or attached to the Exchangeable Share certificates, stating (i) that the Beneficiary thereby instructs the Trustee to exercise the Exchange Right so as to require RTO Acquiror to purchase from the Beneficiary the number of Exchangeable Shares specified therein, (ii) that such Beneficiary has good title to and owns all such Exchangeable Shares to be acquired by RTO Acquiror free and clear of all liens, claims, security interests and encumbrances,
(iii) the names in which the certificates representing RTO Acquiror Shares issuable in connection with the exercise of the Exchange Right are to be issued, and (iv) the names and addresses of the persons to whom such new certificates should be delivered, and (b) payment (or evidence satisfactory to the Trustee, RTO Acquiror and Canco of payment) of the taxes payable, if any, as contemplated by Section 5.7 of this agreement. If only a part of the Exchangeable Shares represented by any certificate or certificates delivered to the Trustee are to be purchased by RTO Acquiror under the Exchange Right, a new certificate for the balance of such Exchangeable Shares shall be issued to the holder at the expense of Canco.

5.6 Delivery of RTO Acquiror Shares; Effect of Exercise

Promptly after the receipt by the Trustee of the certificates representing the Exchangeable Shares which the Beneficiary desires RTO Acquiror to purchase under the Exchange Right, together with such documents and instruments of transfer and a duly completed

form of notice of exercise of the Exchange Right (and payment of taxes payable, if any, as contemplated by Section 5.7 or evidence thereof), duly endorsed for transfer to RTO Acquiror, the Trustee shall notify RTO Acquiror and Canco of its receipt of the same, which notice to RTO Acquiror and Canco shall constitute exercise of the Exchange Right by the Trustee on behalf of the Beneficiary in respect of such Exchangeable Shares, and RTO Acquiror shall promptly thereafter deliver or cause to be delivered to the Trustee, for delivery to the Beneficiary in respect of such Exchangeable Shares (or to such other persons, if any, properly designated by such Beneficiary) the Exchangeable Share Consideration deliverable in connection with the exercise of the Exchange Right; provided, however, that no such delivery shall be made unless and until the Beneficiary requesting the same shall have paid (or provided evidence satisfactory to the Trustee, Canco and RTO Acquiror of the payment of) the taxes payable, if any, as contemplated by Section 5.7 of this agreement. Immediately upon the giving of notice by the Trustee to RTO Acquiror and Canco of the exercise of the Exchange Right, as provided in this Section 5.6, and with no further action required by the parties, the closing of the transaction of purchase and sale contemplated by the Exchange Right shall be deemed to have occurred, and the Beneficiary of such Exchangeable Shares shall be deemed to have transferred to RTO Acquiror all of such Beneficiary's right, title and interest in and to such Exchangeable Shares and in the related interest in the Trust Estate and shall cease to be a holder of such Exchangeable Shares and shall not be entitled to exercise any of the rights of a holder in respect thereof, other than the right to receive his proportionate part of the total Exchangeable Share Consideration therefor, unless such Exchangeable Share Consideration is not delivered by RTO Acquiror to the Trustee for delivery to such Beneficiary (or to such other person, if any, properly designated by such Beneficiary) within three business days of the date of the giving of such notice by the Trustee, in which case the rights of the Beneficiary shall remain unaffected until such Exchangeable Share Consideration is delivered by RTO Acquiror. Upon delivery of such Exchangeable Share Consideration to the Trustee, the Trustee shall promptly deliver such Exchangeable Share Consideration to such Beneficiary (or to such other person, if any, properly designated by such Beneficiary). Concurrently with such Beneficiary ceasing to be a holder of Exchangeable Shares, the Beneficiary shall be considered and deemed for all purposes to be the holder of the RTO Acquiror Shares delivered to it pursuant to the Exchange Right.

5.7 Stamp, Transfer or Other Taxes

Upon any sale or transfer of Exchangeable Shares to RTO Acquiror pursuant to the Exchange Right or the Automatic Exchange Right, the share certificate or certificates representing RTO Acquiror Shares to be delivered in connection with the payment of the purchase price therefor shall be issued in the name of the Beneficiary in respect of the Exchangeable Shares so sold or transferred or in such names as such Beneficiary may otherwise direct in writing without charge to the holder of the Exchangeable Shares so sold or transferred; provided, however, that such Beneficiary (a) shall pay (and none of RTO Acquiror, Canco or the Trustee shall be required to pay) any documentary, stamp, transfer of other taxes or duties that may be payable in respect of any transfer involved in the issuance or delivery of such shares to a person other than such Beneficiary or (b) shall

have evidenced to the satisfaction of RTO Acquiror that such taxes or duties, if any, have been paid.

5.8 Notice of Insolvency Event

As soon as practicable following the occurrence of an Insolvency Event or any event that with the giving of notice or the passage of time or both would be an Insolvency Event, Canco and RTO Acquiror shall give written notice thereof to the Trustee. As soon as practicable following the receipt of notice from Canco and RTO Acquiror of the occurrence of an Insolvency Event, or upon the Trustee becoming aware of an Insolvency Event, the Trustee shall mail to each Beneficiary, at the expense of RTO Acquiror (such funds to be received in advance), a notice of such Insolvency Event in the form provided by RTO Acquiror, which notice shall contain a brief statement of the rights of the Beneficiaries with respect to the Exchange Right.

5.9 Failure to Retract

Upon the occurrence of an event referred to in paragraph (iv) of the definition of Insolvency Event, Canco hereby agrees with the Trustee and in favour of the Beneficiary promptly to forward or cause to be forwarded to the Trustee all relevant materials delivered by the Beneficiary to Canco or to the transfer agent of the Exchangeable Shares (including a copy of the retraction request delivered pursuant to Section 6(1) of the Share Provisions) in connection with such proposed redemption of the Retracted Shares.

5.10 Listing of RTO Acquiror Shares

RTO Acquiror covenants that if any RTO Acquiror Shares to be issued and delivered pursuant to the Automatic Exchange Right or the Exchange Right require registration or qualification with or approval of or the filing of any document, including any prospectus or similar document, or the taking of any proceeding with or the obtaining of any order, ruling or consent from any Agency under any United States or Canadian federal, provincial or territorial law or regulation or pursuant to the rules and regulations of any Agency including any stock exchange upon which a security of the RTO Acquiror is listed or the fulfillment of any other United States or Canadian legal requirement before such shares may be issued and delivered by RTO Acquiror to the initial holder thereof or in order that such shares may be freely traded (other than any restrictions of general application on transfer by reason of a holder being a "control person" or the equivalent of RTO Acquiror for purposes of Canadian securities Law or any United States equivalent), RTO Acquiror shall use its commercially reasonable efforts (which, for greater certainty, shall not require RTO Acquiror to consent to a term or condition of an approval or consent which RTO Acquiror reasonably determines could have a materially adverse effect on RTO Acquiror or its subsidiaries) to cause such RTO Acquiror Shares (or such other shares or securities) to be and remain duly registered, qualified or approved. RTO Acquiror shall use its commercially reasonable efforts (which, for greater certainty, shall not require RTO Acquiror to consent to a term or condition of an approval or consent which RTO Acquiror reasonably determines could have a materially adverse effect on RTO Acquiror or its subsidiaries) to cause all RTO Acquiror Shares (or such other shares

or securities) to be delivered pursuant to the Automatic Exchange Right or the Exchange Right to be listed, quoted or posted for trading on all stock exchanges and quotation systems on which outstanding RTO Acquiror Shares have been listed by RTO Acquiror and remain listed and are quoted or posted for trading at such time.

5.11 RTO Acquiror Shares

RTO Acquiror hereby represents, warrants and covenants that the RTO Acquiror Shares issuable as described herein will be duly authorized and validly issued as fully paid and non assessable.

5.12 Automatic Exchange on Liquidation of RTO Acquiror

(1) RTO Acquiror shall give the Trustee written notice of each of the following events at the time set forth below:

(a) in the event of any determination by the board of directors of RTO Acquiror to institute voluntary liquidation, dissolution or winding-up proceedings with respect to RTO Acquiror or to effect any other distribution of assets of RTO Acquiror among its shareholders for the purpose of winding up its affairs, at least 60 days prior to the proposed effective date of such liquidation, dissolution, winding-up or other distribution; and

(b) as soon as practicable following the earlier of (A) receipt by RTO Acquiror of notice of, and (B) RTO Acquiror otherwise becoming aware of any instituted claim, suit, petition or other proceedings with respect to the involuntary liquidation, dissolution or winding-up of RTO Acquiror or to effect any other distribution of assets of RTO Acquiror among its shareholders for the purpose of winding up its affairs, in each case where RTO Acquiror has failed to contest in good faith any such proceeding commenced in respect of RTO Acquiror within 30 days of becoming aware thereof.

(2) As soon as practicable following receipt by the Trustee from RTO Acquiror of notice of any event (a "**Liquidation Event**") contemplated by Section 5.12(1)(a) or Section 5.12(1)(b), the Trustee shall give notice thereof to the Beneficiaries. Such notice shall be provided to the Trustee by RTO Acquiror and shall include a brief description of the automatic exchange of Exchangeable Shares for RTO Acquiror Shares provided for in Section **Error! Reference source not found.**.

(3) In order that the Beneficiaries will be able to participate on a pro rata basis with the holders of RTO Acquiror Shares in the distribution of assets of RTO Acquiror in connection with a Liquidation Event, immediately prior to the effective date (the "**Liquidation Event Effective Date**") of a Liquidation Event, each of the then outstanding Exchangeable Shares (other than Exchangeable Shares held by RTO Acquiror and its affiliates) shall be automatically exchanged for one RTO Acquiror Share. To effect such automatic exchange, RTO Acquiror shall purchase each Exchangeable Share outstanding immediately prior to the Liquidation Event Effective Date and held by Beneficiaries, and each Beneficiary shall sell the Exchangeable Shares

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held by it at such time, free and clear of any lien, claim or encumbrance, for a purchase price per share equal to (i) the Current Market Price of an RTO Acquiror Share on the day prior to the Liquidation Event Effective Date, which shall be satisfied in full by RTO Acquiror issuing to the Beneficiary one RTO Acquiror Share for each Exchangeable Share, plus (ii) an additional amount equal to the full amount of all declared and unpaid dividends on each such Exchangeable Share held by such holder on any dividend record date which occurred prior to the date of the exchange. RTO Acquiror shall provide the Trustee with an Officer's Certificate in connection with each automatic exchange setting forth the calculation of the purchase price for each Exchangeable Share. Upon payment by RTO Acquiror of such purchase price, the relevant Beneficiary shall cease to have any right to be paid by Canco any amount in respect of declared and unpaid dividends on each Exchangeable Share.

(4) The closing of the transaction of purchase and sale contemplated by the automatic exchange of Exchangeable Shares for RTO Acquiror Shares shall be deemed to have occurred immediately prior to the Liquidation Event Effective Date, and each Beneficiary shall be deemed to have transferred to RTO Acquiror all of the Beneficiary's right, title and interest in and to such Beneficiary's Exchangeable Shares free and clear of any lien, claim or encumbrance and the related interest in the Trust Estate and each such Beneficiary shall cease to be a holder of such Exchangeable Shares and RTO Acquiror shall issue to the Beneficiary the RTO Acquiror Shares issuable upon the automatic exchange of Exchangeable Shares for RTO Acquiror Shares and on the applicable payment date shall deliver to the Trustee for delivery to the Beneficiary a cheque for the balance, if any, of the purchase price for such Exchangeable Shares, without interest, in each case less any amounts withheld pursuant to Section 5.13. Concurrently with such Beneficiary ceasing to be a holder of Exchangeable Shares, the Beneficiary shall become the holder of the RTO Acquiror Shares issued pursuant to the automatic exchange of such Beneficiary's Exchangeable Shares for RTO Acquiror Shares and the certificates held by the Beneficiary previously representing the Exchangeable Shares exchanged by the Beneficiary with RTO Acquiror pursuant to such automatic exchange shall thereafter be deemed to represent RTO Acquiror Shares issued to the Beneficiary by RTO Acquiror pursuant to such automatic exchange. Upon the request of a Beneficiary and the surrender by the Beneficiary of Exchangeable Share certificates deemed to represent RTO Acquiror Shares, duly endorsed in blank and accompanied by such instruments of transfer as RTO Acquiror may reasonably require, RTO Acquiror shall deliver or cause to be delivered to the Beneficiary certificates representing the RTO Acquiror Shares of which the Beneficiary is the holder.

5.13 Withholding Rights

Notwithstanding any other provision of this agreement, RTO Acquiror, Canco and the Trustee shall be entitled to deduct and withhold from any dividend, distribution, consideration, purchase price or other amounts otherwise payable under this agreement to any holder of Exchangeable Shares or RTO Acquiror Shares such amounts as RTO Acquiror, Canco or the Trustee is required to deduct and withhold with respect to such payment under the *Income Tax Act* (Canada) or United States tax Laws or any provision of federal, provincial, state, local or foreign tax Law, in each case as amended or

succeeded. The Trustee may act and rely on the advice of counsel with respect to such matters. To the extent that amounts are so deducted and withheld, such withheld amounts shall be treated for all purposes as having been paid to the holder of the shares in respect of which such deduction and withholding was made, provided that such withheld amounts are actually remitted to the appropriate taxing Agency. To the extent that the amount so required to be deducted or withheld from any payment to a holder exceeds the cash portion of the consideration otherwise payable to the holder, RTO Acquiror, Canco and the Trustee are hereby authorized to sell or otherwise dispose of such portion of the consideration as is necessary to provide sufficient funds to RTO Acquiror, Canco or the Trustee, as the case may be, to enable it to comply with such deduction or withholding requirement and RTO Acquiror, Canco or the Trustee shall notify the holder thereof and remit to such holder any unapplied balance of the net proceeds of such sale.

5.14 No Fractional Shares

A holder of an Exchangeable Share shall not be entitled to any fraction of an RTO Acquiror Share upon the exercise of the Exchange Right or Automatic Exchange Right hereunder and no certificates or other evidence of ownership representing any such fractional interest shall be issued but rather the number of RTO Acquiror Shares issuable shall be rounded down to the nearest whole number without payment in respect of such fractional share.

ARTICLE 6 CONCERNING THE TRUSTEE

6.1 Powers and Duties of the Trustee

(1) The rights, powers, duties and authorities of the Trustee under this agreement, in its capacity as Trustee of the Trust, shall include:

(a) receipt and deposit of the RTO Acquiror Special Voting Share from RTO Acquiror as trustee for and on behalf of the Beneficiaries in accordance with the provisions of this agreement;

(b) granting proxies and distributing materials to Beneficiaries as provided in this agreement;

(c) voting the Beneficiary Votes in accordance with the provisions of this agreement;

(d) receiving the grant of the Automatic Exchange Right and the Exchange Right from RTO Acquiror as trustee for and on behalf of the Beneficiaries in accordance with the provisions of this agreement;

(e) enforcing the benefit of the Automatic Exchange Right and the Exchange Right, in each case in accordance with the provisions of this agreement, and in connection therewith receiving from Beneficiaries Exchangeable Shares and other requisite documents and distributing to such Beneficiaries RTO Acquiror Shares

and cheques, if any, to which such Beneficiaries are entitled pursuant to the Automatic Exchange Right or the Exchange Right, as the case may be;

(f) holding title to the Trust Estate;

(g) investing any moneys forming, from time to time, a part of the Trust Estate as provided in this agreement;

(h) taking action at the direction of a Beneficiary or Beneficiaries to enforce the obligations of RTO Acquiror and Canco under this agreement; and

(i) taking such other actions and doing such other things as are specifically provided in this agreement to be carried out by the Trustee whether alone, jointly or in the alternative.

(2) In the exercise of such rights, powers, duties and authorities the Trustee shall have (and is granted) such incidental and additional rights, powers, duties and authority not in conflict with any of the provisions of this agreement as the Trustee, acting in good faith and in the reasonable exercise of its discretion, may deem necessary, appropriate or desirable to effect the purpose of the Trust. Any exercise of such discretionary rights, powers, duties and authorities by the Trustee shall be final, conclusive and binding upon all persons.

(3) The Trustee in exercising its rights, powers, duties and authorities hereunder shall act honestly and in good faith and with a view to the best interests of the Beneficiaries and shall exercise the care, diligence and skill that a reasonably prudent trustee would exercise in comparable circumstances.

(4) The Trustee shall not be bound to give notice or do or take any act, action or proceeding by virtue of the powers conferred on it hereby unless and until it shall be specifically required to do so under the terms hereof; nor shall the Trustee be required to take any notice of, or to do, or to take any act, action or proceeding as a result of any default or breach of any provision hereunder, unless and until notified in writing of such default or breach, which notices shall distinctly specify the default or breach desired to be brought to the attention of the Trustee, and in the absence of such notice the Trustee may for all purposes of this agreement conclusively assume that no default or breach has been made in the observance or performance of any of the representations, warranties, covenants, agreements or conditions contained herein.

6.2 No Conflict of Interest

The Trustee represents to RTO Acquiror and Canco that at the date of execution and delivery of this agreement there exists no material conflict of interest in the role of the Trustee as a fiduciary hereunder and the role of the Trustee in any other capacity. The Trustee shall, within 30 days after it becomes aware that such material conflict of interest exists, either eliminate such material conflict of interest or resign in the manner and with the effect specified in Article 9. If, notwithstanding the foregoing provisions of this Section 6.2, the Trustee has such a material conflict of interest, the validity and enforceability of this agreement shall not be affected in any manner whatsoever by reason

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only of the existence of such material conflict of interest. If the Trustee contravenes the foregoing provisions of this Section 6.2, any interested party may apply to the Superior Court of Justice (Ontario) for an order that the Trustee be replaced as Trustee hereunder.

6.3 Dealings with Transfer Agents, Registrars, etc.

(1) Each of RTO Acquiror and Canco irrevocably authorizes the Trustee, from time to time, to:

(a) consult, communicate and otherwise deal with the respective registrars and transfer agents, and with any such subsequent registrar or transfer agent, of the Exchangeable Shares and RTO Acquiror Shares; and

(b) requisition, from time to time, (i) from any such registrar or transfer agent any information readily available from the records maintained by it which the Trustee may reasonably require for the discharge of its duties and responsibilities under this agreement and (ii) from the transfer agent of RTO Acquiror Shares, and any subsequent transfer agent of such shares, the share certificates issuable upon the exercise from time to time of the Automatic Exchange Right and pursuant to the Exchange Right.

(2) RTO Acquiror and Canco shall authorize their respective registrars and transfer agents to comply with all such requests. RTO Acquiror covenants that it shall supply its transfer agent with duly executed share certificates for the purpose of completing the exercise from time to time of the Automatic Exchange Right and the Exchange Right, in each case pursuant to Article 5.

6.4 Books and Records

The Trustee shall keep available for inspection by RTO Acquiror and Canco at the Trustee's principal office in Toronto, Ontario correct and complete books and records of account relating to the Trust created by this agreement, including all relevant data relating to mailings and instructions to and from Beneficiaries and all transactions pursuant to the Automatic Exchange Right and the Exchange Right. On or before December 31, 2021, and on or before December 31 in every year thereafter, so long as the RTO Acquiror Special Voting Share is registered in the name of the Trustee, the Trustee shall transmit to RTO Acquiror and Canco a brief report, dated as of the preceding December 31st, with respect to:

(a) the property and funds comprising the Trust Estate as of that date;

(b) the number of exercises of the Automatic Exchange Right, if any, and the aggregate number of Exchangeable Shares received by the Trustee on behalf of Beneficiaries in consideration of the issuance by RTO Acquiror of RTO Acquiror Shares in connection with the Automatic Exchange Right, during the calendar year ended on such December 31st; and

(c) any action taken by the Trustee in the performance of its duties under this agreement which it had not previously reported.

6.5 Income Tax Returns and Reports

The Trustee shall, to the extent necessary, prepare and file, or cause to be prepared and filed, on behalf of the Trust appropriate Canadian income tax returns and any other returns or reports as may be required by applicable law or pursuant to the rules and regulations of any other Agency, including any securities exchange or other trading system through which the Exchangeable Shares are traded. In connection therewith, the Trustee may obtain the advice and assistance of such experts or advisors as the Trustee considers necessary or advisable (who may be experts or advisors to RTO Acquiror or Canco). If requested by the Trustee, RTO Acquiror or Canco shall retain qualified experts or advisors for the purpose of providing such tax advice or assistance.

6.6 Indemnification Prior to Certain Actions by Trustee

(1) The Trustee shall exercise any or all of the rights, duties, powers or authorities vested in it by this agreement at the request, order or direction of any Beneficiary upon such Beneficiary furnishing to the Trustee reasonable funding, security or indemnity against the costs, expenses and liabilities which may be incurred by the Trustee therein or thereby, provided that no Beneficiary shall be obligated to furnish to the Trustee any such funding, security or indemnity in connection with the exercise by the Trustee of any of its rights, duties, powers and authorities with respect to the RTO Acquiror Special Voting Share pursuant to Article 4, subject to Section 6.15, and with respect to the Automatic Exchange Right and the Exchange Right pursuant to Article 5.

(2) None of the provisions contained in this agreement shall require the Trustee to expend or risk its own funds or otherwise incur financial expenses in the exercise of any of its rights, powers, duties, or authorities unless funded, given security and indemnified as aforesaid.

6.7 Action of Beneficiaries

No Beneficiary shall have the right to institute any action, suit or proceeding or to exercise any other remedy authorized by this agreement for the purpose of enforcing any of its rights or for the execution of any trust or power hereunder unless the Beneficiary has requested the Trustee to take or institute such action, suit or proceeding and furnished the Trustee with the funding, security or indemnity referred to in Section 6.6 and the Trustee shall have failed to act within a reasonable time thereafter. In such case, but not otherwise, the Beneficiary shall be entitled to take proceedings in any court of competent jurisdiction such as the Trustee might have taken; it being understood and intended that no one or more Beneficiaries shall have any right in any manner whatsoever to affect, disturb or prejudice the rights hereby created by any such action, or to enforce any right hereunder or the Voting Rights, the Automatic Exchange Right or the Exchange Right except subject to the conditions and in the manner herein provided, and that all powers and trusts hereunder shall be exercised and all proceedings at law shall be instituted, had

and maintained by the Trustee, except only as herein provided, and in any event for the equal benefit of all Beneficiaries.

6.8 Reliance Upon Declarations

The Trustee shall not be considered to be in contravention of any of its rights, powers, duties and authorities hereunder if, when required, it acts and relies in good faith upon statutory declarations, certificates, opinions or reports furnished pursuant to the provisions hereof or required by the Trustee to be furnished to it in the exercise of its rights, powers, duties and authorities hereunder if such statutory declarations, certificates, opinions or reports comply with the provisions of Section 6.9, if applicable, and with any other applicable provisions of this agreement.

6.9 Evidence and Authority to Trustee

(1) RTO Acquiror and/or Canco shall furnish to the Trustee evidence of compliance with the conditions provided for in this agreement relating to any action or step required or permitted to be taken by RTO Acquiror and/or Canco or the Trustee under this agreement or as a result of any obligation imposed under this agreement, including in respect of the Voting Rights or the Automatic Exchange Right or the Exchange Right and the taking of any other action to be taken by the Trustee at the request of or on the application of RTO Acquiror and/or Canco promptly if and when:

(a) such evidence is required by any other section of this agreement to be furnished to the Trustee in accordance with the terms of this Section 6.9; or

(b) the Trustee, in the exercise of its rights, powers, duties and authorities under this agreement, gives RTO Acquiror and/or Canco written notice requiring it to furnish such evidence in relation to any particular action or obligation specified in such notice.

(2) Such evidence shall consist of an Officer's Certificate of RTO Acquiror and/or Canco or a statutory declaration or a certificate made by persons entitled to sign an Officer's Certificate stating that any such condition has been complied with in accordance with the terms of this agreement.

(3) Whenever such evidence relates to a matter other than the Voting Rights or the Automatic Exchange Right or the Exchange Right or the taking of any other action to be taken by the Trustee at the request or on the application of RTO Acquiror and/or Canco, and except as otherwise specifically provided herein, such evidence may consist of a report or opinion of any solicitor, attorney, auditor, accountant, appraiser, valuer or other expert or any other person whose qualifications give authority to a statement made by him, provided that if such report or opinion is furnished by a director, officer or employee of RTO Acquiror and/or Canco it shall be in the form of an Officer's Certificate or a statutory declaration.

(4) Each statutory declaration, Officer's Certificate, opinion or report furnished to the Trustee as evidence of compliance with a condition provided for in this agreement shall include a statement by the person giving the evidence:

(a) declaring that he has read and understands the provisions of this agreement relating to the condition in question;

(b) describing the nature and scope of the examination or investigation upon which he based the statutory declaration, certificate, statement or opinion; and

(c) declaring that he has made such examination or investigation as he believes is necessary to enable him to make the statements or give the opinions contained or expressed therein.

6.10 Experts, Advisers and Agents

The Trustee may:

(a) in relation to these presents act and rely on the opinion or advice of or information obtained from any solicitor, attorney, auditor, accountant, appraiser, valuer or other expert, whether retained by the Trustee or by RTO Acquiror and/ or Canco or otherwise, and may retain or employ such assistants as may be necessary to the proper discharge of its powers and duties and determination of its rights hereunder and may pay proper and reasonable compensation for all such legal and other advice or assistance as aforesaid;

(b) employ such agents and other assistants as it may reasonably require for the proper determination and discharge of its powers and duties hereunder; and

(c) pay reasonable remuneration for all services performed for it (and shall be entitled to receive reasonable remuneration for all services performed by it) in the discharge of the trusts hereof and compensation for all reasonable disbursements, costs and expenses made or incurred by it in the discharge of its duties hereunder and in the management of the Trust.

6.11 Investment of Moneys Held by Trustee

Unless otherwise provided in this agreement, any moneys held by or on behalf of the Trustee which under the terms of this agreement may or ought to be invested or which may be on deposit with the Trustee or which may be in the hands of the Trustee shall, upon the receipt by the Trustee of the written direction of Canco, be invested or reinvested in the name or under the control of the Trustee in Authorized Investments, or as otherwise agreed upon in writing by the Trustee and Canco. Any direction of Canco to the Trustee as to investment or reinvestment of funds shall be in writing. If no such direction is received, the Trustee shall not have any obligation to invest the monies and pending receipt of such a direction all interest or other income and such moneys may be deposited in the name of the Trustee in any chartered bank in Canada or, with the consent of Canco, in the deposit department of the Trustee or any other specified loan or trust

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company authorized to accept deposits under the laws of Canada or any province thereof at the rate of interest then current on similar deposits. The Trustee shall not be held liable for any losses incurred in the investment of any funds as herein provided that the trustee has not acted in bad faith or with fraud, gross negligence or wilful misconduct in investing any such funds.

6.12 Trustee Not Required to Give Security

The Trustee shall not be required to give any bond or security in respect of the execution of the trusts, rights, duties, powers and authorities of this agreement or otherwise in respect of the premises.

6.13 Trustee Not Bound to Act on Request

Except as in this agreement otherwise specifically provided, the Trustee shall not be bound to act in accordance with any direction or request of RTO Acquiror and/or Canco or of the directors thereof until a duly authenticated copy of the instrument or resolution containing such direction or request shall have been delivered to the Trustee, and the Trustee shall be empowered to act upon any such copy purporting to be authenticated and believed by the Trustee to be genuine.

6.14 Authority to Carry on Business

The Trustee represents to RTO Acquiror and Canco that at the date of execution and delivery by it of this agreement it is authorized to carry on the business of a trust company in each of the provinces of Canada but if, notwithstanding the provisions of this Section 6.14, it ceases to be so authorized to carry on business, the validity and enforceability of this agreement and the Voting Rights, the Automatic Exchange Right and the Exchange Right shall not be affected in any manner whatsoever by reason only of such event but the Trustee shall, within 90 days after ceasing to be authorized to carry on the business of a trust company in any province of Canada, either become so authorized or resign in the manner and with the effect specified in Article 9.

6.15 Conflicting Claims

(1) If conflicting claims or demands are made or asserted with respect to any interest of any Beneficiary in any Exchangeable Shares, including any disagreement between the heirs, representatives, successors or assigns succeeding to all or any part of the interest of any Beneficiary in any Exchangeable Shares, resulting in conflicting claims or demands being made in connection with such interest, then the Trustee shall be entitled, in its sole discretion, to refuse to recognize or to comply with any such claims or demands. In so refusing, the Trustee may elect not to exercise any Voting Rights, Automatic Exchange Right or Exchange Right subject to such conflicting claims or demands and, in so doing, the Trustee shall not be or become liable to any person on account of such election or its failure or refusal to comply with any such conflicting claims or demands. The Trustee shall be entitled to continue to refrain from acting and to refuse to act until:

(a) the rights of all adverse claimants with respect to the Voting Rights, Automatic Exchange Right or Exchange Right subject to such conflicting claims or demands have been adjudicated by a final judgement of a court of competent jurisdiction; or

(b) all differences with respect to the Voting Rights, Automatic Exchange Right or Exchange Right subject to such conflicting claims or demands have been conclusively settled by a valid written agreement binding on all such adverse claimants, and the Trustee shall have been furnished with an executed copy of such agreement certified to be in full force and effect.

(2) If the Trustee elects to recognize any claim or comply with any demand made by any such adverse claimant, it may in its discretion require such claimant to furnish such surety bond or other security satisfactory to the Trustee as it shall deem appropriate to fully indemnify it as between all conflicting claims or demands.

6.16 Acceptance of Trust

The Trustee hereby accepts the Trust created and provided for, by and in this agreement and agrees to perform the same upon the terms and conditions herein set forth and to hold all rights, privileges and benefits conferred hereby and by law in trust for the various persons who shall from time to time be Beneficiaries, subject to all the terms and conditions herein set forth.

6.17 Third Party Interests

Each party to this agreement hereby represents to the Trustee that any account to be opened by, or interest to be held by the Trustee in connection with this agreement, for or to the credit of such party, either (i) is not intended to be used by or on behalf of any third party; or (ii) is intended to be used by or on behalf of a third party, in which case such party hereto agrees to complete and execute forthwith a declaration in the Trustee's prescribed form as to the particulars of such third party.

6.18 Privacy

The parties acknowledge that Canadian federal and/or provincial legislation that addresses the protection of individuals' personal information (collectively, "**Privacy Laws**") applies to obligations and activities under this agreement. Despite any other provision of this agreement, no party shall take or direct any action that would contravene, or cause the others to contravene, applicable Privacy Laws. The parties shall, prior to transferring or causing to be transferred personal information to the Trustee, obtain and retain required consents of the relevant individuals to the collection, use and disclosure of their personal information, or shall have determined that such consents either have previously been given upon which the parties can rely or are not required under the Privacy Laws. Specifically, the Trustee agrees: (a) to have a designated chief privacy officer; (b) to maintain policies and procedures to protect personal information and to receive and respond to any privacy complaint or inquiry; (c) to use personal information solely for the purposes of providing its services under or ancillary to this

agreement and not to use it for any purpose except with the consent of or direction from the other parties or the individual involved; (d) not to sell or otherwise improperly disclose personal information to any third party; and (e) to employ administrative, physical and technological safeguards to reasonably secure and protect personal information against loss, theft, or unauthorized access, use or modification.

ARTICLE 7 COMPENSATION

7.1 Fees and Expenses of the Trustee

Canco agrees to pay the Trustee reasonable compensation for all of the services rendered by it under this agreement and shall reimburse the Trustee for all reasonable and documented expenses (including, but not limited to, taxes other than taxes based on the net income or capital of the Trustee, fees paid to legal counsel and other experts and advisors and travel expenses) and disbursements, including the reasonable cost and expense of any suit or litigation of any character and any proceedings before any governmental Agency, reasonably incurred by the Trustee in connection with its duties under this agreement; provided that Canco shall have no obligation to reimburse the Trustee for any expenses or disbursements paid, incurred or suffered by the Trustee in any suit or litigation or any such proceedings in which the Trustee is determined to have acted in bad faith or with fraud, gross negligence or wilful misconduct or to have materially breached any provision hereof.

ARTICLE 8
INDEMNIFICATION AND LIMITATION OF LIABILITY

8.1 Indemnification of the Trustee

(1) RTO Acquiror and Canco jointly and severally agree to indemnify and hold harmless the Trustee and each of its directors, officers, employees and agents appointed and acting in accordance with this agreement (collectively, the "**Indemnified Parties**") against all claims, losses (other than loss of profits), damages, reasonable costs, penalties, fines and reasonable expenses (including reasonable expenses of the Trustee's legal counsel) which, without fraud, gross negligence, wilful misconduct or bad faith on the part of such Indemnified Party or a material breach of any provision hereof, may be paid, incurred or suffered by the Indemnified Party by reason or as a result of the Trustee's acceptance or administration of the Trust, its compliance with its duties set forth in this agreement, or any written or oral instruction delivered to the Trustee by RTO Acquiror or Canco pursuant hereto.

(2) In no case shall RTO Acquiror or Canco be liable under this indemnity for any claim against any of the Indemnified Parties unless RTO Acquiror and Canco shall be notified by the Trustee of the written assertion of a claim or of any action commenced against the Indemnified Parties, promptly after any of the Indemnified Parties shall have received any such written assertion of a claim or shall have been served with a summons or other first legal process giving information as to the nature and basis of the claim. Subject to

(ii) below, RTO Acquiror and Canco shall be entitled to participate at their own expense in the defence and, if RTO Acquiror and Canco so elect at any time after receipt of such notice, either of them may assume the defence of any suit brought to enforce any such claim. The Trustee shall have the right to employ separate counsel in any such suit and participate in the defence thereof, but the fees and expenses of such counsel shall be at the expense of the Trustee unless: (i) the employment of such counsel has been authorized by RTO Acquiror or Canco; or (ii) the named parties to any such suit include both the Trustee and RTO Acquiror or Canco and the Trustee shall have been advised by counsel acceptable to RTO Acquiror or Canco that there may be one or more legal defences available to the Trustee that are different from or in addition to those available to RTO Acquiror or Canco and that, in the judgement of such counsel, would present a conflict of interest were a joint representation to be undertaken (in which case RTO Acquiror and Canco shall not have the right to assume the defence of such suit on behalf of the Trustee but shall be liable to pay the reasonable fees and expenses of counsel for the Trustee). This indemnity shall survive the termination of the Trust and the resignation or removal of the Trustee.

8.2 Limitation of Liability

The Trustee shall not be held liable for any loss which may occur by reason of depreciation of the value of any part of the Trust Estate or any loss incurred on any investment of funds pursuant to this agreement, except to the extent that such loss is attributable to the fraud, gross negligence, wilful misconduct or bad faith on the part of the Trustee or to have resulted from a material breach by the Trustee of any provision hereof.

9.1 Resignation

ARTICLE 9 CHANGE OF TRUSTEE

The Trustee, or any trustee hereafter appointed, may at any time resign by giving written notice of such resignation to RTO Acquiror and Canco specifying the date on which it desires to resign, provided that such notice shall not be given less than thirty (30) days before such desired resignation date unless RTO Acquiror and Canco otherwise agree and provided further that such resignation shall not take effect until the date of the appointment of a successor trustee and the acceptance of such appointment by the successor trustee. Upon receiving such notice of resignation, RTO Acquiror and Canco shall promptly appoint a successor trustee, which shall be a corporation organized and existing under the laws of Canada and authorized to carry on the business of a trust company in all provinces of Canada, by written instrument in duplicate, one copy of which shall be delivered to the resigning trustee and one copy to the successor trustee. Failing the appointment and acceptance of a successor trustee, a successor trustee may be appointed by order of a court of competent jurisdiction upon application of one or more of the parties to this agreement. If the retiring trustee is the party initiating an application for the appointment of a successor trustee by order of a court of competent jurisdiction,

RTO Acquiror and Canco shall be jointly and severally liable to reimburse the retiring trustee for its legal costs and expenses in connection with same.

9.2 Removal

The Trustee, or any trustee hereafter appointed, may (provided a successor trustee is appointed) be removed at any time on not less than 30 days' prior notice by written instrument executed by RTO Acquiror and Canco, in duplicate, one copy of which shall be delivered to the trustee so removed and one copy to the successor trustee.

9.3 Successor Trustee

Any successor trustee appointed as provided under this agreement shall execute, acknowledge and deliver to RTO Acquiror and Canco and to its predecessor trustee an instrument accepting such appointment. Thereupon the resignation or removal of the predecessor trustee shall become effective and such successor trustee, without any further act, deed or conveyance, shall become vested with all the rights, powers, duties and obligations of its predecessor under this agreement, with the like effect as if originally named as trustee in this agreement. However, on the written request of RTO Acquiror and Canco or of the successor trustee, the trustee ceasing to act shall, upon payment of any amounts then due to it pursuant to the provisions of this agreement, execute and deliver an instrument transferring to such successor trustee all the rights and powers of the trustee so ceasing to act. Upon the request of any such successor trustee, RTO Acquiror, Canco and such predecessor trustee shall execute any and all instruments in writing for more fully and certainly vesting in and confirming to such successor trustee all such rights and powers.

9.4 Notice of Successor Trustee

Upon acceptance of appointment by a successor trustee as provided herein, RTO Acquiror and Canco shall cause to be mailed notice of the succession of such trustee hereunder to each Beneficiary specified in a List. If RTO Acquiror or Canco shall fail to cause such notice to be mailed within 10 days after acceptance of appointment by the successor trustee, the successor trustee shall cause such notice to be mailed at the expense of RTO Acquiror and Canco.

ARTICLE 10
RTO ACQUIROR SUCCESSORS

10.1 Certain Requirements in Respect of Combination, etc.

So long as any Exchangeable Shares not owned by RTO Acquiror or its affiliates are outstanding, RTO Acquiror shall not consummate any transaction (whether by way of reconstruction, reorganization, consolidation, arrangement, amalgamation, merger, transfer, sale, lease or otherwise) whereby all or substantially all of its undertaking, property and assets would become the property of any other person or, in the case of a merger, of the continuing corporation resulting therefrom, provided that it may do so if:

(a) such other person or continuing corporation (the "**RTO Acquiror Successor**"), by operation of law, becomes, without more, bound by the terms and provisions of this agreement or, if not so bound, executes, prior to or contemporaneously with the consummation of such transaction, a trust agreement supplemental hereto and such other instruments (if any) as are necessary or advisable to evidence the assumption by the RTO Acquiror Successor of liability for all moneys payable and property deliverable hereunder and the covenant of such RTO Acquiror Successor to pay and deliver or cause to be delivered the same and its agreement to observe and perform all the covenants and obligations of RTO Acquiror under this agreement: and

(b) such transaction shall be upon such terms and conditions as substantially to preserve and not to impair in any material respect any of the rights, duties, powers and authorities of the Trustee or of the Beneficiaries hereunder.

Notwithstanding the foregoing provisions of Section 10.1, RTO Acquiror shall be permitted to consummate an Asset Sale Transaction (as such term is defined in the terms of the preferred stock of the RTO Acquiror).

10.2 Vesting of Powers in Successor

Whenever the conditions of Section 10.1 have been duly observed and performed, the Trustee, RTO Acquiror Successor and Canco shall, if required by Section 10.1, execute and deliver the supplemental trust agreement provided for in Article 11 and thereupon RTO Acquiror Successor and such other person that may then be the issuer of the RTO Acquiror Shares shall possess and from time to time may exercise each and every right and power of RTO Acquiror under this agreement in the name of RTO Acquiror or otherwise and any act or proceeding by any provision of this agreement required to be done or performed by the board of directors of RTO Acquiror or any officers of RTO Acquiror may be done and performed with like force and effect by the directors or officers of such RTO Acquiror Successor.

10.3 Wholly-Owned Subsidiaries

Nothing herein shall be construed as preventing (i) the amalgamation or merger of any wholly-owned direct or indirect subsidiary of RTO Acquiror (other than Canco or Callco) with or into RTO Acquiror, (ii) the winding-up, liquidation or dissolution of any wholly- owned direct or indirect subsidiary of RTO Acquiror (other than Canco or Callco), or (iii) any other distribution of the assets of any wholly-owned direct or indirect subsidiary of RTO Acquiror (other than Canco or Callco) among the shareholders of such subsidiary for the purpose of winding up its affairs, and any such transactions are expressly permitted by this Article 10.

10.4 Successor Transactions

Notwithstanding the foregoing provisions of this Article 10, in the event of an RTO Acquiror Control Transaction:

(a) in which RTO Acquiror merges or amalgamates with, or in which all or substantially all of the then outstanding RTO Acquiror Shares are acquired by, one or more other corporations to which RTO Acquiror is, immediately before such merger, amalgamation or acquisition, "related" within the meaning of the ITA (otherwise than by virtue of a right referred to in paragraph 251(5)(b) thereof);

(b) which does not result in an acceleration of the Redemption Date in accordance with paragraph (b) of that definition in the Share Provisions; and

(c) in which all or substantially all of the then outstanding RTO Acquiror Shares are converted into or exchanged for shares or rights to receive such shares (the "**Other Shares**") of another corporation (the "**Other Corporation**") that, immediately after such RTO Acquiror Control Transaction, owns or controls, directly or indirectly, RTO Acquiror,

then, (i) all references herein to "RTO Acquiror" shall thereafter be and be deemed to be references to "Other Corporation" and all references herein to "RTO Acquiror Shares" shall thereafter be and be deemed to be references to "Other Shares" (with appropriate adjustments, if any, as are required to result in a holder of Exchangeable Shares on the exchange, redemption or retraction of such shares pursuant to the Share Provisions or Article 5 of the Plan of Arrangement or exchange of such shares pursuant to this agreement immediately subsequent to the RTO Acquiror Control Transaction being entitled to receive that number of Other Shares equal to the number of Other Shares such holder of Exchangeable Shares would have received if the exchange, redemption or retraction of such shares pursuant to he Share Provisions or Article 5 of the Plan of Arrangement, or exchange of such shares pursuant to this agreement had occurred immediately prior to the RTO Acquiror Control Transaction and the RTO Acquiror Control Transaction was completed) without any need to amend the terms and conditions of this agreement and without any further action required; and (ii) RTO Acquiror shall cause the Other Corporation to deposit one or more voting securities of such Other Corporation to allow Beneficiaries to exercise voting rights in respect of the Other Corporation substantially similar to those provided for in this agreement.

ARTICLE 11
AMENDMENTS AND SUPPLEMENTAL TRUST AGREEMENTS

11.1 Amendments, Modifications, etc.

Subject to Sections 11.2, 11.4 and 13.1, this agreement may not be amended or modified except by an agreement in writing executed by RTO Acquiror, Canco and the Trustee and approved by the Beneficiaries in accordance with Section 11(2) of the Share Provisions.

11.2 Ministerial Amendments

Notwithstanding the provisions of Section 11.1, the parties to this agreement may in writing, at any time and from time to time, without the approval of the Beneficiaries, amend or modify this agreement for the purposes of:

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(a) adding to the covenants of any or all parties hereto for the protection of the Beneficiaries hereunder provided that each of Canco and RTO Acquiror shall be of the good faith opinion and the Trustee, acting on the advice of counsel, shall be of the opinion that such additions will not be materially prejudicial to the rights or interests of the Beneficiaries;

(b) making such amendments or modifications not inconsistent with this agreement as may be necessary or desirable with respect to matters or questions which, in the good faith opinion of each of RTO Acquiror and Canco and in the opinion of the Trustee, having in mind the best interests of the Beneficiaries, it may be expedient to make, provided that RTO Acquiror, Canco and the Trustee, acting on the advice of counsel, shall be of the opinion that such amendments and modifications will not be materially prejudicial to the interests of the Beneficiaries;

(c) making such changes or corrections which, on the advice of counsel to RTO Acquiror, Canco and the Trustee, are required for the purpose of curing or correcting any ambiguity or defect or inconsistent provision or clerical omission or mistake or manifest error; or

(d) making changes to provide added protection or benefit to or for the benefit of Beneficiaries hereunder provided that each of Canco and RTO Acquiror shall be of the good faith opinion and the Trustee, acting on the advice of counsel, shall be of the opinion that such changes will not be materially prejudicial to the rights or interests of the Beneficiaries.

11.3 Meeting to Consider Amendments

Canco, at the request of RTO Acquiror, shall call a meeting or meetings of the Beneficiaries for the purpose of considering any proposed amendment or modification requiring approval pursuant hereto. Any such meeting or meetings shall be called and held in accordance with the by-laws of Canco, the Share Provisions and all applicable laws.

11.4 Changes in Capital of RTO Acquiror and Canco

At all times after the occurrence of any event contemplated pursuant to Section 2.7 or 2.8 of the Support Agreement or otherwise, as a result of which either RTO Acquiror Shares or the Exchangeable Shares or both are in any way changed, this agreement shall forthwith be amended and modified as necessary in order that it shall apply with full force and effect, *mutatis mutandis*, to all new securities into which RTO Acquiror Shares or the Exchangeable Shares or both are so changed and the parties hereto shall execute and deliver a supplemental trust agreement giving effect to and evidencing such necessary amendments and modifications.

11.5 Execution of Supplemental Trust Agreements

From time to time Canco (when authorized by a resolution of its Board of Directors), RTO Acquiror (when authorized by a resolution of its board of directors) and the Trustee may, subject to the provisions of these presents, and they shall, when so directed by these presents, execute and deliver by their proper officers, trust agreements or other instruments supplemental hereto, which thereafter shall form part hereof, for any one or more of the following purposes:

(a) evidencing the succession of RTO Acquiror Successors and the covenants of and obligations assumed by each such RTO Acquiror Successor in accordance with the provisions of Article 9 and the successors of the Trustee or any successor trustee in accordance with the provisions of Article 9;

(b) making any additions to, deletions from or alterations of the provisions of this agreement or the Voting Rights, the Automatic Exchange Right or the Exchange Right which, in the opinion of the Trustee, will not be materially prejudicial to the interests of the Beneficiaries or are, in the opinion of counsel to the Trustee, necessary or advisable in order to incorporate, reflect or comply with any legislation the provisions of which apply to RTO Acquiror, Canco, the Trustee or this agreement; and

(c) for any other purposes not inconsistent with the provisions of this agreement, including to make or evidence any amendment or modification to this agreement as contemplated hereby; provided that, in the opinion of the Trustee, the rights of the Beneficiaries will not be materially prejudiced thereby.

ARTICLE 12 TERMINATION

12.1 Term

The Trust created by this agreement shall continue until the earliest to occur of the following events:

(a) no outstanding Exchangeable Shares are held by a Beneficiary; and

(b) each of RTO Acquiror and Canco elects in writing to terminate the Trust and such termination is approved by the Beneficiaries in accordance with Section 12 of the Share Provisions.

12.2 Survival of Agreement

This agreement shall survive any termination of the Trust and shall continue until there are no Exchangeable Shares outstanding held by a Beneficiary; provided, however, that the provisions of Article 7 and Article 8 shall survive any such termination of this agreement.

13.1 Severability

ARTICLE 13 GENERAL

If any term or other provision of this agreement is invalid, illegal or incapable of being enforced by any rule or law, or public policy, all other conditions and provisions of this agreement shall nevertheless remain in full force and effect so long as the economic or legal substance of the transactions contemplated hereby is not affected in any manner materially adverse to any party. Upon such determination that any term or other provision is invalid, illegal or incapable of being enforced, the parties hereto shall negotiate in good faith to modify this agreement so as to effect the original intent of the parties as closely as possible in an acceptable manner to the end that the transactions contemplated hereby are fulfilled to the fullest extent possible.

13.2 Enurement

This agreement shall be binding upon and enure to the benefit of the parties hereto and their respective successors and assigns and, subject to the terms hereof, to the benefit of the Beneficiaries.

13.3 Notices to Parties

Any notice and other communications required or permitted to be given pursuant to this agreement shall be sufficiently given if delivered in person or if sent by facsimile transmission (provided such transmission is recorded as being transmitted successfully) to the parties at the following addresses:

(i) In the case of RTO Acquiror or Canco to the following address: Bay Adelaide Centre
333 Bay Street, Suite 2400
P.O. Box 20
Toronto, ON M5H 2T6

Attention: Kenneth Rice, CFO and Executive Vice President E-mail: ken.rice@metamaterial.com

with a copy to (which shall not constitute notice):

Fasken Martineau DuMoulin LLP Attn: Mr. John Sabetti
Bay Adelaide Centre
333 Bay Street, Suite 2400
P.O. Box 20
Toronto, ON M5H 2T6 Tel: 416 366 8381

and

Wilson Sonsini Goodrich & Rosati PC 12235 El Camino Real
San Diego, CA 92130-3002

Attention: Martin Waters and Ethan Lutske Email:
mwaters@wsgr.com; elutske@wsgr.com

(ii) In the case of Trustee to:

AST Trust Company (Canada) 1 Toronto Street,
Suite 1200 Toronto, Ontario M6C 2V6

Attention, VP, Corporate Trust
Email: corporatetrust@astfinancial.com

or at such other address as the party to which such notice or other communication is to be given has last notified the party given the same in the manner provided in this section, and if not given the same shall be deemed to have been received on the date of such delivery or sending.

13.4 Notice to Beneficiaries

Any and all notices to be given and any documents to be sent to any Beneficiaries may be given or sent to the address of such Beneficiary shown on the register of holders of Exchangeable Shares in any manner permitted by the by-laws of Canco from time to time in force in respect of notices to shareholders and shall be deemed to be received (if given or sent in such manner) at the time specified in such by-laws, the provisions of which by- laws shall apply *mutatis mutandis* to notices or documents as aforesaid sent to such Beneficiaries.

13.5 Counterparts

This agreement may be executed in counterparts, each of which shall be deemed an original, but all of which taken together shall constitute one and the same instrument.

13.6 Jurisdiction

This agreement shall be construed and enforced in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

13.7 Attornment

Each of the Trustee, RTO Acquiror, and Canco agrees that any action or proceeding arising out of or relating to this agreement may be instituted in the courts of Ontario, waives any objection which it may have now or hereafter to the venue of any such action

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or proceeding, irrevocably submits to the non-exclusive jurisdiction of the said courts in any such action or proceeding, agrees to be bound by any judgement of the said courts and not to seek, and hereby waives, any review of the merits of any such judgement by the courts of any other jurisdiction, and RTO Acquiror hereby appoints Canco at its registered office in the Province of Ontario as attorney for service of process.

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

METAMATERIAL EXCHANGECO INC.

By: _____ Name: John Brda
Title: Chief Executive Officer

AST TRUST COMPANY (CANADA)

By: _____ Name:
Title:

AST TRUST COMPANY (CANADA)

By: _____ Name:
Title:

TORCHLIGHT ENERGY RESOURCES, INC.

By: _

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IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.
Name: Title:

#00023
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IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

John Brda
Chief Executive Officer

#00023
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IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

METAMATERIAL EXCHANGECO INC.

By: _____ Name:
Title:

AST TRUST COMPANY (CANADA)

By: _____ Name: Nelia Andrade

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

Title:

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

Authorized Signatory

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

AST TRUST COMPANY (CANADA)

By: _

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

Name: Title:

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

Francine Beauséjour Authorized Signatory

IN WITNESS WHEREOF the parties hereto have caused this agreement to be duly executed as of the date first above written.

TORCHLIGHT ENERGY RESOURCES, INC.

By: _____ Name:
Title:

Exhibit 10.5.0

2022

Lease relating to
Suite 7, Level 1, QMB Innovation Centre, London

Queen Mary BioEnterprises Innovation Centre (1) and
Medical Wireless Sensing Limited and Lamda Guard Technologies Limited (2)

Womble Bond Dickinson (UK) LLP
Tel +44(0)345 415 0000
www.wombleborddickinson.com

CONTENTS

Clause Page

DATE

PARTIES

(1) Queen Mary Bioenterprises Limited (No. 04324033) whose registered office is The QMB Innovation Centre, 42 New Road, London E1 2AX.

(2) Medical Wireless Sensing Limited (No. 07469550) and Lamda Guard Technologies Limited (No. 07470116) each having a registered office address at Suite 7 QMB Innovation Centre, 42 New Road, London, E1 2AX

AGREED TERMS

1. PARTICULARS

Business Day a day on which banks are open for business in London which is not a Saturday or Sunday or bank holiday.

Building the Queen Mary Bioenterprises Innovation Centre 42 New Road Whitechapel E1 2AX being all the land comprised in Title Number EGL520546.

Group Company a company that is a member of the same group as the Tenant within the meaning of Section 42 of the Landlord and Tenant Act 1954 (as amended).

Premises Suite 7, First Floor of The Queen Mary Bioenterprises Innovation Centre 42 New Road Whitechapel E1 2AX shown edged yellow on the Plan which forms Schedule 6 hereto which includes:

(a) all additions and improvements to the Premises;

(b) all Landlord's fixtures and fittings and all other fixtures of every kind which shall from time to time be in or upon the Premises (whether originally affixed or fastened to or upon the Premises or otherwise) except any trade fixtures installed by the Tenant which can be removed from the Premises without causing any material damage to the Premises;

(c) the internal faces (including the plaster paint and other decorative finishes but not any other part) of the walls which enclose the Premises and of the walls within the Premises;

(d) the screed and finish (but not any other part) of the floors within the Premises;

(e) the suspended ceiling and the internal faces including the tiles plaster paint and other decorative finishes of it and all light fittings therein;

(f) all doors door furniture door frames and glass in such door within premises;

But excluding:

(a) the windows in the exterior walls and their frames and fittings;

(b) the whole of the interior structural load bearing walls and columns within that part of the Building other than their plasterwork and other than the doors and windows and their

frames and fittings within such walls;

(c) all service media within that part of the Building which do not exclusively serve that part of the Building; and

(d) the void between the suspended ceiling and the concrete slab separating the first floor of the Building from the second floor of the Building.

Term a term commencing on 20 October 2022 and expiring on 19 October 2027.

Rent in respect of the Rent Commencement Date to and including 19 October 2025 the sum of £59,360.00 plus VAT per annum and then as revised in accordance with clause 10 of this Lease. The Rent is inclusive of charges for the provision of Landlord services relating to facilities infrastructure building fabric as set out in Schedule 4 but excludes business rates or any additional charges payable by the Tenant as itemised in Schedule 5.

Rent Commencement Date

20 October 2022.

Rent Payment Dates the 1st day in any calendar month

Review Date 20 October 2024

Permitted Use research and development within Use Class B1 of the Schedule to the Town & Country Planning (Use Classes) Order 1987.

2. DEFINITIONS

Break Date 20 October 2025

Break Notice written notice to terminate this lease on the Break Date specifying the Break Date and served in accordance with Clause 8 or clause 9 (as appropriate).

Deposit a sum equal to two months' annual Rent plus a sum equal to VAT on that amount.

Insured Risk such risks as are specified in the Superior Lease.

Interest interest during the period from the date on which the payment is due to the date of payment both before and after any judgment at the Interest Rate or should the base rate referred to in clause 2.4 cease to exist such other rate of interest as is most closely comparable with the Interest Rate to be determined by the Landlord.

Interest Rate three per cent (3%) above the base rate of the Bank of England.

Minimum Amount the sum equal to 2 months' annual Rent plus a sum equal to VAT on that amount.

Planning Acts the Town and County Planning Act 1990 the Planning (Listed Building and Conservation Areas) Act 1990 the Planning (Consequential Provisions) Act 1990 the Planning (Hazardous Substances) Act 1990 the Planning and Compensation Act 1991 the Planning Act 2008 and all statutes regulations and orders included

by virtue of clause 3.5.

Previous Leases the leases dated 19 October 2012; 19 October 2017 and 19 October 2020 made between (1) the Landlord and (2) the Tenant and all documents supplemental or collateral to those leases.

Superior Landlord Queen Mary and Westfield College, University of London.

Superior Lease a lease dated 15 March 2007 and made between (1) the Superior Landlord and (2) Queen Mary Innovation Limited.

VAT Value Added Tax or any other such imposition or levy of a like nature which may extend or replace Value Added Tax.

3. INTERPRETATION

3.1 The expressions the **Superior Landlord** the **Landlord** and the **Tenant** wherever the context so admits include their respective successors in title.

3.2 Words importing the one gender include all other genders and words importing the singular include the plural and vice versa.

3.3 References to any right of the Landlord to have access to the Premises shall be construed as extending to all persons reasonably authorised by the Landlord and also the Superior Landlord.

3.4 Any covenant by the Tenant not to do an act or thing shall be deemed to include an obligation not to permit such act or thing to be done.

3.5 Any reference to a specific statute includes any statutory extension or modification or re- enactment of such statute and any regulations or orders made there under and any general reference to ‘statute’ or ‘statutes’ includes any regulations or orders made there under.

4. GRANT

4.1 The Landlord lets the Premises to the Tenant for the Term with full title guarantee.

4.2 The grant is made together with the rights specified in Schedule 1 excepting and reserving to the Landlord the rights specified in Schedule 2 and subject to the matters referred to in Schedule 3.

4.3 The grant is made with the Tenant paying the following as rent to the Landlord:

4.3.1 the Rent and all VAT in respect of it;

4.3.2 all interest payable under this Lease; and

4.3.3 all other sums due under this Lease.

5. TENANT’S COVENANTS

The Tenant covenants with the Landlord:

5.1 Rents

To pay the Rent and any VAT in respect of it (whether formally demanded or not) without any deduction or set off by twelve (12) equal monthly instalments in advance on or before the Rent Payment Dates. The payments shall be made by electronic means and the first such payment shall be made on the date of this Lease and shall be a proportionate sum in respect of the period

from and including the Rent Commencement Date to and including the day before the Rent Payment Date next following.

5.2 Security Deposit

5.2.1 On or before the date of this Lease the Tenant shall pay the Deposit to the Landlord. The Deposit shall belong to the Tenant subject to the terms of this Lease;

5.2.2 The Tenant shall pay to the Landlord such sum or sums necessary to ensure that the Deposit is not less than the Minimum Amount within 10 Business Days of the date upon which each and every review of Rent is settled in accordance with the terms of this Lease (and the Landlord shall provide the Tenant with a written demand for such payment)

5.2.3 If:

(a) an event of default by the Tenant (as set out in clause 7.1) exists under this Lease at any time or;

(b) the Tenant fails to comply with the yielding up requirements of clause 5.11 on or following the expiry of the Term (however so determined);

the Landlord shall forthwith give notice thereof to the Tenant in writing and may use or apply or retain the whole or any part of the Deposit to the extent necessary to cure the event of default;

5.2.4 If at any time during or following the Term of this Lease the Landlord applies all or a portion of the Deposit to cure the Tenant's event of default the Tenant shall repay to the Landlord within ten (10) Business Days after written demand by the Landlord any amount necessary to restore the Deposit to the Minimum Amount;

5.2.5 At the end of the Term (howsoever determined) the Tenant shall at its own cost appoint an independent consultant (such appointment to be approved by the Landlord such approval not to be unreasonably withheld or delayed) to inspect the Premises, the ceiling void air supply and extract ductwork, the ceiling void ductwork connected to the Tenant's ducted fume hoods and ducted equipment and provide a certificate of decontamination to confirm that the Premises are free from contamination by radioactive or other toxic substances and that there has been no spread of any contamination into the ceiling void ductwork or otherwise. In the event that a satisfactory decontamination certificate is not produced within five (5) Business Days after the end of the Term (howsoever determined) the Landlord may:

(a) require the Tenant to remove at its own cost and within a period of fifteen (15) Business Days after the end of the Term the fume hoods (such works to be carried out to the satisfaction of the Landlord); and or

(b) implement its own decontamination processes on the Premises and ceiling void ductwork using an independent consultant (and using reasonable endeavours to complete these processes within twelve months after the end of the Term) and if at any time the costs incurred by the Landlord in carrying out its decontamination processes exceed the Deposit the Tenant shall pay the balance sum to the Landlord within ten (10) Business Days of written demand.

5.2.6 If the Tenant has provided a certificate of decontamination in accordance with clause 5.2.4 the Deposit or the balance of it (if any) shall be returned to the Tenant within three (3) months of the end of the Term;

5.2.7 If the Landlord requires the Tenant to remove the fume hoods as detailed in clause 5.2.4 (a) the Deposit or the balance of it (if any) shall be returned to the Tenant within 3 months of the date on which the removal works have been completed to the satisfaction of the Landlord or within 3 months of the date on which the Landlord's decontamination process has been concluded, whichever is the latest;

5.2.8 If the Landlord implements its own decontamination processes as detailed in clause 5.2.4 (b) the Deposit or the balance of it (if any) shall be returned to the Tenant within 3 months of the date on which the Landlord's decontamination processes have been concluded or within 3 months of the date on which the fume hood removal works have been completed to the satisfaction of the Landlord, whichever is the latest.

5.3 Operating Expenses

The Tenant agrees to pay to the Landlord within twenty (20) Business Days of written demand any and all operating expenses expressly set out below:

5.3.1 Sub-metered chargeable electrical usage for the Premises as evidenced by the Landlord (see Schedule 5 of this Lease);

5.3.2 Use of other fee-for-use services such as usage of the telecoms lines and meeting room usage;

5.3.3 Electricity charges as evidenced by the Landlord covering the air handling systems connected to any Tenant's ducted equipment e.g. fume hoods (every three (3) months payable within twenty (20) Business Days of written demand).

5.4 Outgoings

To pay and indemnify the Landlord against all rates taxes assessments duties charges impositions and outgoings which are now or during the Term shall be charged assessed or imposed on the Premises or upon the owner or occupier of them excluding any payable by the Landlord which in the absence of a direct assessment shall be reasonably determined by the Landlord.

5.5 Repair

To keep the Premises in good repair and decorative order and in a clean and tidy state and condition at all times.

5.6 Alterations and Additions

5.6.1 Structural alterations external alterations and additions are not permitted;

5.6.2 Not to make any internal non-structural alterations or additions (including partitioning) to the whole or any part of the Premises without the Landlord's prior written consent and approval of previously submitted drawings and/or specification in a form reasonably required by the Landlord and if such consent is granted to comply with the Planning Acts in the carrying out of such alterations or additions;

5.6.3 For the avoidance of doubt, if the Landlord gives consent to the carrying out by the Tenant of any alterations to the Premises pursuant to clause 5.6.2 above, unless the Superior Landlord agrees to insure any such works from the date on which they are completed, they will at all times be at the sole risk of the Tenant.

5.7 Use

5.7.1 Not to use the Premises for any purpose other than the Permitted Use;

5.7.2 The Tenant covenants not under any circumstances to introduce Schedule 5 Pathogens into the Premises. Schedule 5 Pathogens are defined within the U.K. government's Act entitled 'The Schedule 5 to the Anti-Terrorism, Crime and Security Act 2001 (Modification) Order 2007' and any subsequent modifying Statutory Instruments;

5.7.3 The Tenant covenants not under any circumstances to introduce human pathogens within hazard group categories 2, 3 and 4, as defined by the U.K. Government's Health & Safety Executive Advisory Committee on Dangerous Pathogens, in their document entitled 'The Approved List of Biological Agents', dated 15 August 2013;

5.7.4 The Tenant covenants to indemnify the Landlord against all expenses costs claims damage and loss arising directly or indirectly from any breach of the provisions of clause 5.7.

5.8 Access of Landlord and Notice to Repair

5.8.1 Subject to the proviso in paragraph 3 of Schedule 2 to permit the Landlord at all reasonable times and upon prior reasonable notice (save in an emergency);

(a) to enter upon the Premises for the purpose of ascertaining that the covenants and conditions of this Lease have been observed and performed or for any other reasonable purpose;

(b) to view the state of repair and condition of the Premises;

5.8.2 If within one (1) month (or sooner in emergency) of the service of a notice by the Landlord on the Tenant to carry out specified repairs to the Premises which the Tenant has failed to carry out under the terms of this Lease the Tenant has not commenced or is not proceeding diligently with the work referred to in such notice or if the Tenant fails to complete the work within three (3) months (or sooner in emergency) the Tenant shall permit the Landlord to enter the Premises to execute the outstanding work and must pay to the Landlord the proper cost of so doing and all reasonable expenses properly incurred by the Landlord (including legal costs and surveyor's fees) within seven (7)Business Days of a written demand.

5.9 Alienation

Not to assign underlet charge or part with or share possession or occupation of the whole or any part of the Premises or hold the whole or any part of the Premises on trust for another.

5.10 Nuisance and Residential Restrictions

5.10.1 Not to do or permit to be done or suffer to remain upon the Premises anything which in the reasonable opinion of the Landlord may be or become or cause a nuisance annoyance injury or damage to the Landlord or its tenants or the occupiers of adjacent or neighbouring premises and not to obstruct others who are lawfully using any adjoining parts of the Premises;

5.10.2 Not to use the Premises for any dangerous noxious noisy or offensive trade or business nor for any illegal or immoral act or purpose and not to sleep or allow any person to sleep in the Premises;

5.10.3 Without prejudice to the generality of clauses 5.10.1 and 5.22 of this Lease, unless the lights are switched off, the Tenant must ensure that all blinds and curtains at the windows of the Premises are pulled down at dusk and remain down during all hours of darkness so that no disturbance, nuisance or inconvenience is caused to any neighbouring properties;

5.11 Yield Up

5.11.1 At the expiry of the Term to yield up the Premises with vacant possession and in accordance with the Tenant's covenants in this Lease and to give up all keys (if any) of the Premises to the Landlord, reinstate any alterations or additions made to the Premises during the Term or during the term of the Previous Leases if required by the Landlord and remove all signage erected by the Tenant in upon or near the Premises

and forthwith to make good damage caused by such removal or reinstatement at the Tenant's expense;

5.11.2 At the expiry of the Term the Premises should be delivered in a clean and tidy condition and laboratories will be decommissioned and inspected by a qualified independent consultant at tenant's cost (who shall be first approved by the Landlord) at or before the expiration of the Term and the Tenant shall upon termination of this Lease remove from the Premises all the Tenant's personal property and any and all owned or leased fixtures and equipment save as provided in clause 5.2 hereof.

5.12 Interest on Arrears

The Tenant must pay Interest on any of the Rent or other sums due under this Lease that are not paid within seven (7) Business Days of the date due whether formally demanded or not. Nothing in this clause entitles the Tenant to withhold or delay any payment of the Rent or any other sum due under this Lease or affects the rights of the Landlord in relation to any non-payment.

5.13 Costs

5.13.1 The Tenant shall pay the costs and expenses of the Landlord including any solicitors' or other professionals' costs and expenses incurred (both during and after the end of the Term) in connection with or in contemplation of any of the following:

(a) the enforcement of the tenant covenants of this Lease;

(b) serving any notice in connection with this Lease under section 146 or 147 of the Law of Property Act 1925 or taking any proceedings under either of those sections, notwithstanding that forfeiture is avoided otherwise than by relief granted by the court;

(c) serving any notice in connection with this Lease under section 17 of the Landlord and Tenant (Covenants) Act 1995;

(d) the preparation and service of a schedule of dilapidations in connection with this Lease; or

(e) any consent or approval applied for under this Lease, whether or not it is granted (unless the consent or approval is unreasonably withheld by the Landlord in circumstances where the Landlord is not unreasonably to withhold it).

5.13.2 Where the Tenant is obliged to pay or indemnify the Landlord against any solicitors' or other professionals' costs and expenses (whether under this or any other clause of this Lease) that obligation extends to those costs and expenses assessed on a full indemnity basis;

5.14 Keyholders

The Tenant must ensure that at all times the Landlord has written notice of the name home address and home telephone number and mobile telephone number of at least two (2) codeholders or keyholders (as appropriate) of the Premises.

5.15 Notices

To pass to the Landlord within ten (10) Business Days of receipt any notices or communications received from any public authority affecting the Premises.

5.16 Defective Premises

The Tenant must give notice to the Landlord of any defect in the Premises which might give rise

to an obligation on the Landlord to do or refrain from doing any act or thing in order to comply

with the provisions of this Lease or the duty of care imposed on the Landlord pursuant to the Defective Premises Act 1972 or otherwise and at all times to display and maintain all notices which the Landlord may from time to time reasonably require to display at the Premises.

5.17 Signs

Not to place any sign or advertisement outside the Premises or lettering upon the windows or any other part of the Premises without the prior written consent of the Landlord such consent not to be unreasonably withheld.

5.18 Insurance

5.18.1 Not to do or suffer to be done on the Premises anything whereby any policy of insurance effected by the Superior Landlord or the Landlord may become void or voidable or whereby the premiums payable in respect thereof may be increased;

5.18.2 To indemnify the Landlord against any loss or damage suffered due to the Tenant's failure to comply with clause 5.18.1;

5.18.3 To insure its own fixtures and fittings and effects including personal property insurance and public liability insurance in respect of its directors and staff and visitors and any other persons at the Premises and to provide the Landlord on demand with evidence of a valid certificate of insurance.

5.19 Regulations

The Tenant shall comply with the Superior Landlord's and the Landlord's reasonable regulations from time to time relating to the Building including the disposal of refuse.

5.20 Indemnity

To be responsible for and to keep the Landlord fully indemnified against all costs expenses claims and liabilities arising directly out of any act omission or negligence of the Tenant or any persons at the Premises or in the Building expressly or impliedly with the Tenant's authority or any breach or non-observance by the Tenant of the covenants conditions or other provisions of this Lease.

5.21 Pollution

Not to permit to be discharged into any pipes or conduits serving the Premises or the Building any oil or grease or any deleterious objectionable dangerous poisonous or explosive matter or substance and to take all reasonable measures to ensure that any effluent so discharged will not be corrosive or otherwise harmful to the said pipes or conduits or cause obstruction or deposit in them.

5.22 Compliance with Statute

To comply with all legal requirements statutes regulations and orders and all directly applicable EC Law for the time being in force and any requirements or directions of any competent authority relating to the Premises.

5.23 VAT

To pay to the Landlord VAT chargeable in respect of Rent or any other payment made by the Tenant under any of the provisions of or in connection with this Lease or paid by the Landlord or any payment made by the Landlord where the Tenant agrees in this Lease to reimburse the Landlord for such payment and the Landlord is not entitled to recover the same by way of set off from H M Revenue and Customs.

5.24 Superior Lease

To observe and perform the tenant covenants in the Superior Lease in so far as they relate to the Premises except for the covenant to pay rent.

5.25 Compliance with Queen Mary Bioenterprises Management processes

5.25.1 If appropriate upon request to complete sign and date the 'Queen Mary Bioenterprises Lab Questionnaire' on or prior to completion a signed and dated copy of which is annexed to this Lease and to review and assess annually;

5.25.2 To provide the Landlord with information relating to jobs brought to the Landlord and any jobs or employment created within the Term to enable the Landlord to provide quarterly reports to the London Development Agency (the **LDA**) or its successor;

5.25.3 To reasonably assist the management of the Landlord prior to the occupation of the space in carrying out credit-worthiness checks of the Tenant which may include: a standard commercial credit check; checking that the company directors are not disqualified; copies of the current balance sheet and business plan (including cash flow forecast);

5.25.4 To provide every half year interim accounts and a written directors' report outlining the development plans of the business with regards to the occupied space;

5.25.5 To provide half yearly job forecasts due to grant reporting demands by the Landlord's funders;

5.25.6 Upon request to complete sign and date the 'Queen Mary Bioenterprises Health & Safety Policy' on or prior to completion of signing this Lease.

6. LANDLORD'S COVENANTS

The Landlord covenants with the Tenant:

6.1 Quiet Enjoyment

To permit the Tenant peaceably and quietly to hold and enjoy the Premises without any lawful interruption or disturbance from or by the Landlord or any person claiming under or in trust for the Landlord or by title paramount.

6.2 Superior Lease

The Landlord shall observe and perform the tenant covenants in the Superior Lease including to pay the rent save where they are the responsibility of the Tenant or another occupier of all or any part of the Building and shall procure so far as possible the Superior Landlord's compliance with the landlord covenants in the Superior Lease.

6.3 Services

Subject to payment by the Tenant of the Rent the Landlord shall provide those services listed in Schedule 4 (the **Services**) **PROVIDED THAT**:

6.3.1 the Landlord shall not be liable for any temporary delay or interruption in or disruption to the provisions of any of the Services ;

6.3.2 the Landlord shall not be liable for any delay or interruption in or disruption to the provisions of any of the Services for any reason that is outside the reasonable control of the Landlord;

6.3.3 the Landlord shall not be liable for any defect or want of repair affecting the Premises unless the Landlord has received notice in writing thereof from the Tenant.

6.4 Option to Terminate

If the whole or a substantial part of the Premises shall be damaged or destroyed by any of the Insured Risks such that reinstatement of the Premises is impracticable either party may determine this Lease by giving three (3) months' notice to the other after such damage or destruction and if so determined the Landlord shall not be under any obligation to reinstate the Premises and such determination shall be without prejudice to any antecedent breaches and the insurance monies shall belong to the Landlord (but not monies received by the Tenant under its own policy for loss of its own equipment and effects).

6.5 Confidentiality

To keep confidential all commercial and financial information provided by the Tenant in compliance with clause 5.25.1 (but for the avoidance of doubt the Landlord shall not be required to keep the information provided in accordance with clauses 5.24.2 and 5.24.5 confidential but the Landlord shall only share such information with the LDA or its successor).

7. PROVISO

7.1 Re-entry

If at any time during the Term:

7.1.1 the Rent (or any part thereof) is outstanding for twenty one (21) calendar days after becoming due (whether formally demanded or not); or

7.1.2 the Tenant breaches any of the covenants and conditions contained in this Lease; or

7.1.3 the Tenant (being an individual) becomes bankrupt or (being a company) enters into liquidation whether compulsory or voluntary (save for the purpose of amalgamation or reconstruction of a solvent company) or has a receiver appointed or (in either case) enters into an arrangement or composition for the benefit of its creditors

the Landlord may at any time (and notwithstanding the waiver of any previous right of re-entry) re-enter the Premises or any part of them in the name of the whole and thereupon the Term shall absolutely cease and determine but without prejudice to any rights or remedies which may have accrued to the Landlord against the Tenant in respect of any antecedent breach of any of the covenants and conditions contained in this Lease (including the breach in relation to which re- entry is made).

7.2 Representations

The Tenant acknowledges that this Lease has not been entered into in reliance wholly or partly on any statement or representation made by or on behalf of the Landlord except any such statement or representation that is expressly set out in this Lease.

7.3 Suspension of Rent

If the Premises or the access there to is destroyed or damaged by any of the Insured Risks as listed in the Superior Lease so as to make the Premises or access thereto unfit for beneficial occupation or use or reasonable access to the Premises unavailable and the insurance effected by the Landlord has not been vitiated or payment of the policy monies wholly or partly withheld or refused by reason of any act neglect or default or omission of the Tenant or any person deriving title under the Tenant or their respective servants agents licensees or invitees the Rent or a fair proportion thereof according to the nature and extent of the damage shall not be payable until the Premises are again rendered fit for beneficial use and (as the case may be) occupation and any dispute shall be referred to the award of a single arbitrator to be appointed in default of

agreement upon the application of the Landlord by the President for the time being of the Royal Institute of Chartered Surveyors in accordance with the provisions of the Arbitration Act 1996.

7.4 Lien

The Landlord shall be entitled to sell any goods on which it may have a lien pursuant to this Lease which have been left at the Premises for more than ten (10) Business Days after the end of the Term (howsoever determined) at such price and upon such terms as the Landlord in its discretion may think fit and the net proceeds of any such sale shall be applied firstly towards payment of any such sums due by the Tenant to the Landlord and any balance shall be paid to the Tenant after deduction of all reasonable costs and expenses incurred by the Landlord.

7.5 No Implied Easements

Nothing in this Lease shall operate expressly or impliedly to confer upon or grant to the Tenant any easement right or privilege other than those expressly hereby granted.

7.6 No Warranty as to Use

Nothing in this Lease or in any consent granted by the Landlord under this Lease is to imply or warrant either the state or condition of the Premises or that the Premises may be lawfully used under the Planning Acts for the Permitted Use.

7.7 Landlord's Obligations

Nothing in the Lease shall by implication or otherwise render the Landlord obliged to do anything that the Landlord has not specifically covenanted to do.

7.8 Jurisdiction

Disputes and differences between the parties arising out of or in relation to this Lease shall be referred to the exclusive jurisdiction of the English Courts This Lease shall be governed by and construed in accordance with English Law.

7.9 Contracts (Rights of Third Parties) Act

The parties hereby confirm that notwithstanding any other provision of this Lease this Lease shall not and shall not purport to confer on any third party any right to enforce any term of this agreement for the purposes of the Contracts (Rights of Third Parties) Act 1999.

8. TENANT OPTION TO BREAK

8.1 The Tenant may terminate this lease by serving a Break Notice on the Landlord at least three months before the Break Date.

8.2 A Break Notice served by the Tenant shall be of no effect if, at the Break Date stated in the Break Notice:

8.2.1 the Tenant has not paid any part of the Rent, or any VAT in respect of it, which was due to have been paid; or

8.2.2 there is a subsisting material breach of any of the tenant covenants of this lease.

8.3 Subject to Clause 8.2, following service of a Break Notice this lease shall terminate on the Break Date.

8.4 Termination of this Lease on the Break Date shall not affect any other right or remedy that either party may have in relation to any earlier breach of this lease.

8.5 If this lease terminates in accordance with Clause 8.1 then, within 30 Business Days after the Break Date, the Landlord shall refund to the Tenant the proportion of the Rent, and any VAT paid in respect of it, for the period from and excluding the Break Date up to and excluding the next Rent Payment Date, calculated on a daily basis.

9. LANDLORD OPTION TO BREAK

9.1 The Landlord may determine this Lease by serving a Break Notice on the Tenant at least three months before the Break Date.

9.2 Following service of a Break Notice by the Landlord in accordance with this clause 9, this Lease shall terminate on the Break Date.

9.3 Termination of this Lease on the Break Date shall not affect any other right or remedy that either party may have in relation to any earlier breach of this Lease.

9.4 If this Lease terminates in accordance with this clause, then, within 30 Business Days after the Break Date, the Landlord shall refund to the Tenant the proportion of the Rent, and any VAT paid in respect of it, for the period from and excluding the Break Date up to and excluding the next Rent Payment Date, calculated on a daily basis.

10. RENT REVIEW

10.1 In this clause the "**President**" is the President for the time being of the Royal Institution of Chartered Surveyors or a person acting on his behalf, and the "**Surveyor**" is the independent valuer appointed pursuant to clause 10.8.

10.2 The amount of Rent shall be reviewed on the Review Date to equal:

10.2.1 the Rent payable immediately before the Review Date (or which would then be payable but for any abatement or suspension of the Rent or restriction on the right to collect it) or, if greater;

10.2.2 the open market rent agreed or determined pursuant to this clause (the **New Rent**).

10.3 The New Rent may be agreed between the Landlord and the Tenant at any time before it is determined by the Surveyor.

10.4 If the Landlord and the Tenant have not agreed the New Rent, either of them may, not earlier than three months before the Review Date or at any time, after the Review Date, require the market rent to be determined by the Surveyor.

10.5 The open market rent shall be the amount that the Surveyor determines is the annual rent (exclusive of any VAT) at which the Premises could reasonably be expected to be let:

10.5.1 in the open market;

10.5.2 at the Review Date;

10.5.3 on the assumptions listed in clause 10.6; and

10.5.4 disregarding the matters listed in clause 10.7.

10.6 The assumptions are:

10.6.1 the Premises are available to let in the open market:

(a) by a willing lessor to a willing lessee;

(b) as a whole;

(c) with vacant possession;

(d) without a fine or a premium;

(e) for a term equal to the unexpired residue of the Term at the Review Date or a term of two years commencing on the Review Date, if longer; and

(f) otherwise on the terms of this Lease other than as to:

(i) the amount of the Rent;

(ii) the inclusion of clauses 8 and 9 (landlord and tenant options to determine); and

(iii) the inclusion of provisions for review of the Rent.

10.6.2 the willing lessee has had the benefit of any rent-free or other concession or contribution which would be offered in the open market at the Review Date in relation to fitting out works at the Premises;

10.6.3 the Premises may lawfully be used and occupied, and are in a physical state to enable them to be lawfully used any occupied, by the willing lessee (or any potential undertenant or assignee of the willing lessee) for any purpose permitted by this Lease;

10.6.4 the Tenant has fully complied with its obligations in this Lease;

10.6.5 if the Premises or any means of access to them have been destroyed or damaged, they have been fully restored;

10.6.6 no work has been carried out on the Premises that has diminished their rental value;

10.6.7 any fixtures, fittings, machinery or equipment supplied to the Premises by the Landlord that have been removed by or at the request of the Tenant or its predecessors in title (otherwise than to comply with any law) remain at the Premises; and

10.7 The matters to be disregarded are:

10.7.1 any effect on rent of the fact that the Tenant or any of their predecessors in business have been in occupation of the Premises;

10.7.2 any goodwill attached to the Premises by reason of any business carried out there by the Tenant or by any of their predecessors in business;

10.7.3 any effect on rent attributable to any physical improvement to the Premises carried out after the date of the Previous Leases, by or at the expense of the Tenant or any of their predecessors in business with all necessary consents, approvals and authorisations and not pursuant to an obligation to the Landlord (other than an obligation to comply with any law);

10.7.4 any effect on rent of any obligation on the Tenant to fit out the Premises;

10.7.5 any statutory restriction on rents or the right to recover them.

10.8 The Surveyor shall be an independent valuer who is a Member or Fellow of the Royal Institution of Chartered Surveyors. The Landlord and the Tenant may, by agreement, appoint the Surveyor at any time before either of them applies to the President for the Surveyor to be appointed.

10.9 The Surveyor shall act as an expert and not as an arbitrator. The Surveyor shall determine the open market rent. The Surveyor's decision shall be given in writing, and the Surveyor shall provide reasons for any determination. The Surveyor's written decision on the matters referred to him shall be final and binding in the absence of manifest error or fraud.

10.10 The Surveyor shall give the Landlord and the Tenant an opportunity to make written representations to the Surveyor and to make written counter-representations commenting on the representations of the other party to the Surveyor. The parties will provide (or procure that others provide) the Surveyor with such assistance and documents as the Surveyor reasonably requires for the purpose of reaching a decision.

10.11 If the Surveyor dies, or becomes unwilling or incapable of acting, or unreasonably delays in making any determination, then either the Landlord or the Tenant may apply to the President to discharge the Surveyor and clause 10.8 shall then apply in relation to the appointment of a replacement.

10.12 The fees and expenses of the Surveyor and the cost of the Surveyor's appointment and any counsel's fees, or other fees, reasonably incurred by the Surveyor shall be payable by the Landlord and the Tenant in the proportions that the Surveyor directs (or if the Surveyor makes no direction, then equally). The Landlord and the Tenant shall otherwise each bear their own costs in connection with the rent review.

10.13 Time shall not be of the essence for the purposes of this clause.

10.14 If at any time there is a guarantor, the guarantor shall not have any right to participate in the review of the Rent.

11. EXCLUSION OF SECURITY OF TENURE

The Landlord has served on the Tenant a notice on the form set out in schedule 1 to the Regulatory Reform (Business Tenancies) (England and Wales) Order 2003 (the **Order**) and the Tenant has made a statutory declaration in the form set out in paragraph 8 of schedule 2 to the Order and the parties agree that the provisions of sections 24-28 (inclusive) of the Landlord and Tenant Act 1954 shall not apply to this Lease.

This document has been executed as a deed and is delivered and takes effect on the date stated at the beginning of it.

SCHEDULE 1

Rights Granted

The following rights are granted to the Tenant such rights being exercisable in common with the Landlord and those authorised by the Landlord:

1. The right to use the toilet and shower facilities (subject to availability) in the Building.

2. The right of access to and from the Premises through the common parts of the Building.

3. The free passage of water soil gas electricity and telecommunications and other services for the Premises through the conduits which are in other parts of the Building and which serve the Premises.

4. Support shelter and protection from other parts of the Building.

SCHEDULE 2

Rights Reserved

Excepting and reserving in favour of the Superior Landlord the Landlord and those authorised by the Landlord:

1. The right to the free passage of water soil gas electricity and telecommunications and other services from and to any other parts of the Building through the conduits which are now in upon or under the Premises or which may be subsequently installed or constructed during the Term.

2. All rights of light air support shelter and protection for the parts of the Building not included in the Premises and all such rights (if any) as shall now or hereafter belong to or be enjoyed by any land or premises adjacent to the Building.

3. All rights of entry upon the Premises for the purposes and in manner authorised by this Lease (including to carry out the services referred to in this Lease) and in addition to carry out such works or things as may be required for any repairs alterations or improvements provided always that the Landlord when exercising its rights causes as little damage and disturbance to the Tenant and its business as reasonably practical and making good any damage caused forthwith to the reasonable satisfaction of the Tenant.

4. The right to erect scaffolding for the purposes of repairing or cleaning the exterior of the Building notwithstanding that such scaffolding may temporarily interfere with the access to or enjoyment and use of the Premises.

5. Such rights of way in emergency only over the Premises as may be required from time to time by the Fire Authority.

6. All rights of entry upon the Premises upon twenty four (24) hours' notice to the Tenant by the Landlord for the purposes of assessing the extent and safe storage of organic solvents strong acids and strong alkalis hazardous chemicals and compressed gas bottles.

SCHEDULE 3

Subjections

All those easements quasi-easements restrictions covenants or provisions to which the Building or any part thereof is subject.

SCHEDULE 4

Services

1. WASTE DISPOSAL

The Landlord will cover the disposal cost of domestic, office and recyclable waste only from the Ashfield Street (goods in yard) bins for the entire Term.

For the avoidance of doubt, the Landlord will not cover the disposal cost of clinical, biological and radioactive and non-radioactive chemical waste from the Ashfield Street goods in yard.

2. CLEANING

The cleaning of the Building, cleaning services to the main communal corridors plus communal toilets proximal to lifts.

3. FACILITIES

Domestic water air conditioning and heating services. There will be an electronic card entry system into the building and in the lifts. The front door to the first floor Premises will be protected exclusively by a mechanical digital-lock system which will be provided by the Landlord. The mechanical digital-lock entry code cannot be changed by the Tenant without the permission of the Landlord (such permission not to be unreasonably withheld or delayed) and if this permission is given then the code must be made available to the Landlord. If the Tenant with the prior consent of the Landlord installs a card access lock on the Tenant's demise front door, then the Tenant must provide three valid key cards to Landlord.

4. AUTOCLAVE

The Landlord has a utilities room containing two autoclaves an ice machine and a RO water purifier, which are for use of tenants occupying space on the 1st floor and 2nd floor, subject to availability.

The Tenant will have free use of the autoclave (tenant operated) for the length of the Lease, subject to availability. One Tenant employee per company will be trained to use the autoclave (the Landlord will cover this cost for one employee for the Lease term period only - subsequent training for additional staff will be the responsibility of the Tenant to implement and to pay for). The Landlord insists as a condition of the Lease that all Tenant staff using the autoclave must undergo training and that an evidence trail for the training be established by the Tenant. Yearly maintenance services of the autoclave for general use will be covered by the Landlord. Tenant specific calibration including Tenant specific load testing will be a cost to the Tenant.

It is the responsibility of the Tenant to ensure that the purity of the RO water is of sufficient quality for their specific use by inspecting the LED alarm.

5. SECURITY & FRONT DESK SUPPORT

24 hour security will be provided for the perimeter and communal areas via CCTVs connected to the Whitechapel security room of Queen Mary and Westfield College, University of London patrolling security guards in the evenings and weekends and a front desk presence during normal working hours (Monday to Friday 0830 to 1730) but for the avoidance of doubt there will be no front desk coverage on Bank holiday or during Queen Mary and Westfield College, University of London closure days.

6. AIR CONDITIONING AND HEATING

The Landlord will provide free air conditioning via the Building's original air-handling systems with the exception of all electricity and energy costs associated with air supply and extract to the Tenant's ducted microbiological safety cabinets Tenant's ducted fume hoods Tenant's other

ducted equipment and any Tenant's installed air handling system not connected to the base-build air handling system in the central west riser. The costs for the Tenant's ducted equipment will be covered by the Tenant.

The Landlord will cover the cost of the domestic water supply to the Premises subject to a cap of 1125 cubic metres per annum. The Tenant will pay any excess above this cap. The Landlord reserves the right to install a water meter in the Premises at any time during the Term.

If the Tenant installs any freezers and or fridges and or computer server units and or ovens and or laboratory equipment in the original write up space and or converts the original write up space to laboratory space or workshop space, the Landlord is not obliged to install additional chilling capacity and or additional cooling capacity.

The Landlord does not guarantee either continuity or sufficiency of electricity water heating cooling air supply and air extract in the event of a mains electricity grid failure or mains electricity grid voltage reduction but shall otherwise ensure that the Landlord's systems for the provision of such services shall be adequately maintained and kept in good repair at all times.

The Tenant cannot connect electrical equipment to the Landlord's essential red plug electricity supply without the Landlord's written permission and if the Landlord's permission is granted, the Landlord does not guarantee either continuity or sufficiency of the essential red plug electricity supply.

The Landlord requires that the last Saturday of every quarter year is used for building maintenance and that all air-conditioning, ventilation and water can be switched off by the Landlord between 08.00 hours and 20.00 hours on this aforementioned day and, if required by the Landlord, the electricity can be switched off for up to 90 minutes within this same period. The Landlord requires that the Tenant indemnifies the Landlord against any loss by the Tenant due to the lack of these utilities during this aforementioned day.

SCHEDULE 5

Services

Services which are exclusive of the rental charge are:

1. MEETING ROOM USAGE

Meeting room usage is charged on hourly, half day or full day rate basis only. Details of the meeting room charges can be found in the tenant handbook which is updated annually.

2. METERED ELECTRICITY USAGE

Readings will be taken once a quarter and the Tenant will be re-charged.

3. USE OF FIBRE OPTIC AND COPPER TELECOMMUNICATIONS LINES

Internet access and phone line services have to be individually sourced and installed by the Tenant.

The Landlord will provide the Cat 5e/6 cabling connecting the demise to the external fibre optic connection points and or external telephone copper wire connection points within the 1st floor west riser shaft.

4. CLEANING SERVICES FOR THE SPECIFIED TENANT PREMISES

All cleaning costs within the Premises are the responsibility of the Tenant.

5. STORAGE AND TRANSPORT OF CHEMICALS, BIOLOGICAL MATERIALS AND WASTE

The safe transport of chemicals and biological materials and waste by the Tenant or its contractors including but not limited to solid carbon dioxide, pressurised carbon dioxide, liquid nitrogen, pressurised liquid nitrogen and compressed gases will be the responsibility of the Tenant. The Tenant or its contractors are not allowed to transport solid carbon dioxide, liquid nitrogen and compressed gases in the lifts when humans are present in the lifts. The landlord will enable sole use of the lifts, upon request by the tenant and subject to availability. The safe transport of all waste by the Tenant or its contractors including domestic/office, clinical, biological and radioactive and non-radioactive chemical waste to and from the 'Ashfield Street' goods in yard will be the responsibility of the Tenant. The storage of any pressurized vessel within the Premises is only allowed with the prior written permission of the Landlord. The safe transport of all chemicals, and biologicals and waste via the Landlord's corridors and lifts must comply with the Landlord's procedures (available upon request).

Pathogenic and or infectious biological and clinical wastes must be either:-

5.1 moved by the Tenant along the common parts of the Building in clear robust autoclave bags to the autoclave room. Then after sterilization by the Tenant, the clear bags are to be placed in yellow and or orange plastic bags with tags. The Tenant may then move them out of the Building via the common corridors, stairwells and lifts, to the Ashfield St goods in yard; or

5.2 placed in closed impact resistant containers with source identification labels and then moved by the Tenant directly out of the Building, via the common corridors, stairwells and lifts to the Ashfield St. goods in yard.

Non-pathogenic and or non-infectious biological and clinical wastes must be bagged in orange and or yellow plastic bags with source identification labels. The bags can then be moved by the Tenant directly out the Building, via the common corridors, stairwells and lifts, to the Ashfield St. goods in yard

Sharps materials must be in closed, impact resistant containers with source identification labels. These can then be moved by the Tenant directly out of the Building, via the common corridors, stairwells and lifts, to the Ashfield St. goods in yard. Sharps materials cannot be enclosed in orange and or yellow bags.

Chemical and radioactive wastes must be in closed, impact resistant and chemical resistant containers with source and material identification labels. The Tenant may then move such containers out of the Building, via the common corridors, stairwells and lifts, to the Ashfield St. goods in yard.

It will be the responsibility of the Tenant to separate non-radioactive solvent waste into chlorinated organic waste and non-chlorinated organic waste and aqueous base waste and aqueous acid waste streams and deliver these to a nearby centralised collection points outside the Building designated by the Landlord for the Term of the Lease. Special waste including furniture, radioactive waste, batteries, heavy metal salts, electronic and laboratory equipment has to be dealt with by the Tenant at the Tenant's own cost.

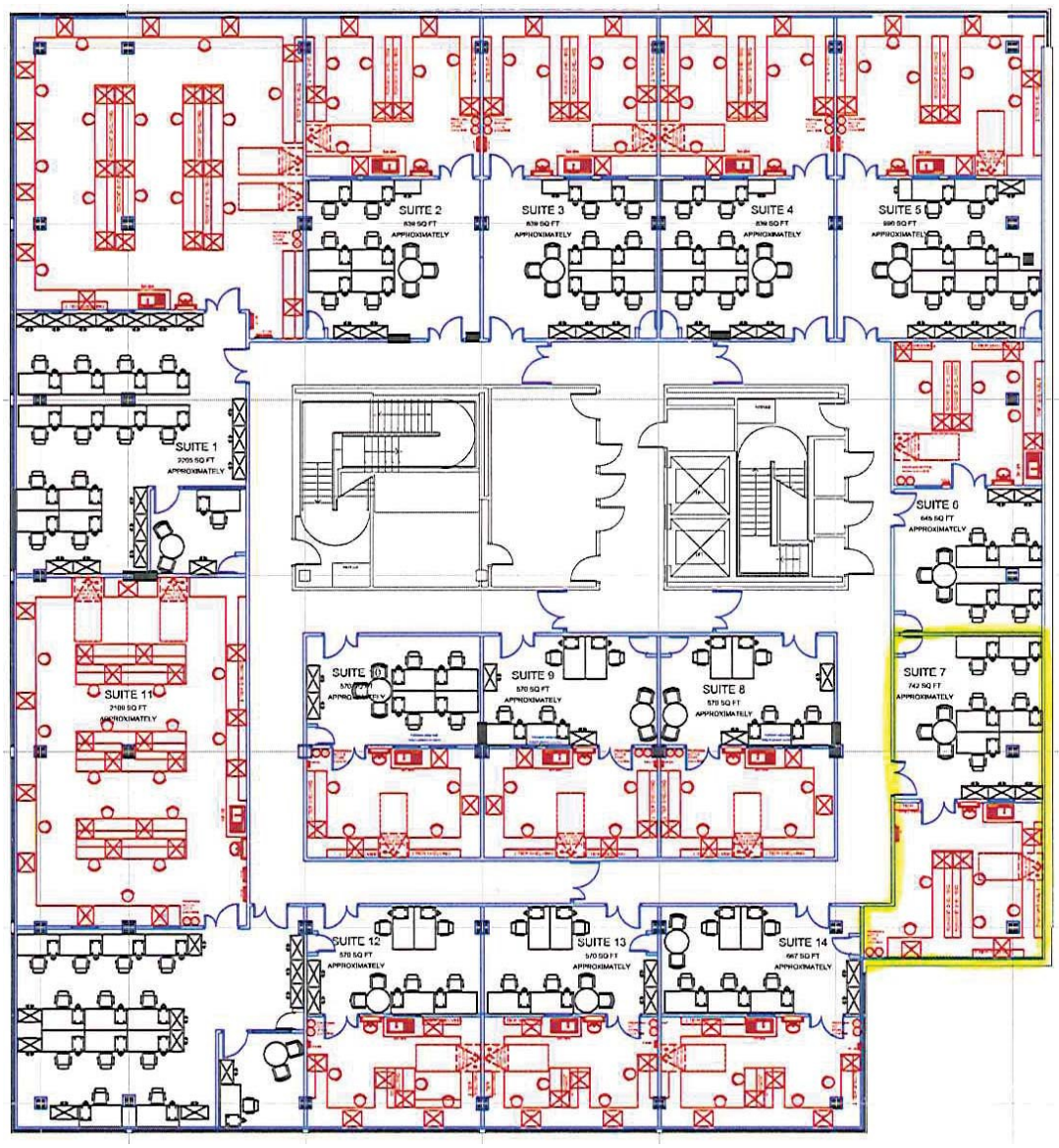
6. AUTOCLAVE

The Landlord does not provide an autoclave service, or glassware washing service to the Tenant. The Tenant must operate the first floor autoclave and glassware washing machinery itself.
Landlord yearly maintenance of the autoclaves will be completed. Any tenant specific testing and calibration outside the Landlord provided maintenance will be the responsibility of the Tenant.

The Tenant is not allowed to store overnight any waste in the first floor autoclave room or in any common parts.

SCHEDULE 6

Plan


SUITE 1
SUITE 2
SUITE 3
SUITE 4
SUITE 5
SUITE 6
SUITE 7
SUITE 8
SUITE 9
SUITE 10
SUITE 11
SUITE 12
SUITE 13
SUITE 14

TK FB

SCHEDULE 7

Rent

Suite	Rate	Total square Feet	Annual	Quarterly
7	In respect of the period 20 October 2022 to 19 October 2025 the sum of £80.00 plus VAT per square foot per annum and thereafter as determined in accordance with the rent review provisions contained in this Lease.	742 sq. ft.	£59,360.00 plus VAT per annum in respect of the period from and including 20 October 2022 to and including 19 October 2025 and thereafter as reviewed in accordance with the terms of this Lease	£14,840.00 plus VAT in respect of the period from and including 20 October 2022 to and including 19 October 2025 and thereafter as reviewed in accordance with the terms of this Lease.

Exhibit 10.6.0

LEASE MODIFICATION AND EXPANSION AGREEMENT

THIS AGREEMENT is dated the 25th day of February, 2022.

BETWEEN:

INDUSTRIAL ALLIANCE INSURANCE AND FINANCIAL SERVICES INC.
(the "**Landlord**")

- and -

NANOTECH SECURITY CORP.
(the "**Tenant**")

OF THE FIRST PART,

WHEREAS:

A. By a lease agreement dated the 9th day of January, 2015 (the "**Original Lease**"), the Landlord did demise and lease certain the premises known as Suite 505 (the "Original Premises") containing approximately 5,519 square feet in the building located at 3292 Production Way (the "Building") for a term of five (5) years commencing on the 1st day of May, 2015 and expiring on the 30th day of April, 2020 (the "**Original Premises Term**") upon the terms and conditions as are contained in the Original Lease;

B. By a lease amending agreement dated the 14th day of February, 2018 (the "First Amendment"), the Landlord agreed to lease to the Tenant additional premises known as Suite 604 containing approximately 2,341 square feet (the "Additional Premises") in the Building for a term of five (5) years commencing on the 1st day of June, 2018 and expiring on the 31st day of May, 2023 (the "Additional Premises Term") upon the terms and conditions as are contained in the First Amendment;

C. By a lease extension and modification agreement dated the 6th day of November, 2019 (the "Extension and Modification Agreement"), the Landlord and the Tenant agreed to extend the Original Premises Term and the Additional Premises Term so they run co-terminus expiring on the 30th day of April, 2025, and the parties therein further agreed to modify the Original Lease upon the terms and conditions as are contained in the Extension and Modification Agreement;

D. The Landlord has agreed to lease to the Tenant additional premises containing approximately 1,994 square feet on the fifth (5th) floor of the Building known as Suite 502 (the "Expansion Premises") in the Building as approximately shown outlined in red on the floor plan attached hereto as Schedule "A" for a period of two (2) years and eleven (11) months commencing on the 1st day of June, 2022 (the "Commencement Date of the Expansion Term") and expiring the 30th day of April, 2025 (the "Expansion Premises Term") upon the terms and conditions as are contained herein.

E. In this Agreement, the Original Lease, the First Amendment and the Extension and Modification Agreement shall collectively be referred to as the "Lease", and the Original Premises and the Additional Premises shall be collectively referred to as the "Premises" or the "Existing Premises"

interchangeably, and further, the Original Premises Term, the Additional Premises Term and the Expansion Premises Term shall be collectively and interchangeably be referred to as the "Term".

F. The Landlord and the Tenant have agreed to further amend the Lease on the terms and conditions set forth in this Agreement.

THEREFORE, in consideration of the mutual covenants and agreements between the parties and the sum of $1.00 that has been paid by each of the parties to the other(s), the receipt and sufficiency of which are acknowledged, THE PARTIES AGREE AS FOLLOWS:

1. The foregoing recitals are true. Capitalized words and phrases used herein but not defined herein shall have the meaning given to them in the Lease.

2. DELAY IN COMMENCEMENT DATE OF THE EXPANSION PREMISES

No delay in the delivery of vacant possession of the Expansion Premises to the Tenant shall extend the Expansion Premises Term which shall expire on the 30th day of April, 2025, however, the Commencement Date of the Expansion Premises shall be postponed equal to the number of days in delay of possession provided that the conditions of the Alterations Period are complied with in full satisfaction to the Landlord.

For clarity, the Landlord and the Tenant agree that in the event of a delay in the delivery of vacant possession of the Premises, the Expansion Premises Term shall be adjusted only such that the expiration date of the Expansion Premises Term remains the same and is co-terminus with the Term of the Lease for the Existing Premises.

3. CONDITION OF THE EXPANSION PREMISES

(a) the Tenant will accept the Expansion Premises in an "as is" condition, save and except that the Landlord shall, at its sole expense, remove one door on the demising wall and seal the opening (the "Landlord's Work") to ensure that the Expansion Premises meets all applicable building, fire and handicap access codes;

(b) the Landlord acknowledges that, to the best of its knowledge as at the date hereof, all lighting, heating, ventilating, air conditioning, electrical, plumbing and mechanical systems are fully operational, in addition to the foregoing being adequately sized and distributed for normal occupancy within the Expansion Premises;

(c) Except as provided in subsection (a) above, the Tenant shall be responsible for the preparation of all space planning with respect to any new improvements to the Expansion Premises. The Tenant shall also submit to the Landlord, working drawings of the proposed new improvements to the Expansion Premises, which drawings must be approved by the Landlord (such approval not to be unreasonably withheld or delayed) prior to the Tenant securing the necessary building permits and commencement of any work associated with the new improvements to the Expansion Premises;

(d) Except as provided in subsection (a) above, it shall be the responsibility of the Tenant to secure all necessary building permits and approvals required by the City of Burnaby prior to any new improvements proposed to be made to the Expansion Premises. The Tenant shall also be responsible for making application for a certificate of occupancy as required by the City of Burnaby as it applies to the new improvements or any leasehold improvements. The Landlord shall co-operate fully with the Tenant to enable the Tenant to obtain the necessary permits and approvals. The Tenant must provide the Landlord

with copies of all permits received from the City of Burnaby with respect to the Expansion Premises without demand or notice.

4. EARLY POSSESSION DATE FOR ALTERATIONS

(a) Provided that the Landlord has confirmed delivery of vacant possession of the Expansion Premises, the Tenant will be granted a minimum of three (3) months (the "Alterations Period") prior to the Commencement Date of the Expansion Premises in which to carry out the planning and construction of its leasehold improvements upon full satisfaction of all of the following:

i. The execution and delivery of this Agreement;

ii. The delivery of the Additional Security Deposit in the amount specified in Section 8 below; and

iii. The delivery of satisfactory proof of insurance in accordance with the Lease.

The Tenant acknowledges and understands that the Landlord, its contractors and/or others authorized by the Landlord may also have access to the Expansion Premises during the Alterations Period in order to complete any Landlord's Work.

During the Alterations Period, the Tenant will not be required to pay Annual Base Rent or the Tenant's Percentage Share of Operating Expenses or Tenant's Percentage Share of Taxes, however, the Tenant shall abide by all other terms of the Lease including, without limitation, the Tenant's obligation to obtain and maintain insurance at all times prior to commencing Tenant Alterations, during the Alterations Period, and thereafter throughout the Term, as may be extended or renewed. The Tenant shall pay for utilities used in or for the Expansion Premises during the Alterations Period.

Further, the Tenant shall be permitted to conduct its business simultaneously with the Tenant's Alterations within the Expansion Premises during the Alterations Period strictly provided that the Tenant has obtained its occupancy permit and any other permit issued by the City of Burnaby that are required to operate the Tenant's business from the Expansion Premises.

5. ANNUAL BASE RENT FOR THE EXPANSION PREMISES

(a) throughout the Expansion Premises Term, the Tenant shall pay to the Landlord Annual Base Rent as follows:

Year	Price per Square Foot	Annual Base Rent	Monthly Rent
June 1, 2022 to April 30, 2023	$33.00	$65,802.00	$5,483.50
May 1, 2023 to April 30, 2024	$34.00	$67,796.00	$5,649.67
May 1, 2024 to April 30, 2025	$35.00	$69,790.00	$5,815.83

(b) in addition to the Annual Base Rent payments set out above, during the Expansion Premises Term, the Tenant shall be responsible for the payment of Additional Rent, Tenant's Taxes, Tenant's Percentage Share of Operating Expenses, Tenant's Percentage Share of Taxes, Special Tenant Expenses and all other costs, expenses and charges, including applicable tax thereon, contemplated by the Lease as applicable to the Expansion Premises and at the time and in the manner contemplated by the Lease. The Tenant's Percentage Share of Operating Expenses and the Tenant's Percentage Share of Taxes for the year ending December 31, 2022 is currently estimated at fifteen dollars and thirty-three cents ($15.33) per rentable square foot of the Expansion Premises, per annum, plus applicable taxes. Utility costs are the responsibility of the Tenant.

6. USE OF EXPANSION PREMISES

The Expansion Premises shall only be used for the purpose of a business office and in full compliance with Part 7 of the Lease.

7. PARKING

The Landlord shall make available to the Tenant up to four (4) additional reserved parking stalls to be located in the sub-grade parking garage of the Building at the prevailing monthly parking rate throughout the Expansion Premises Term as may be extended or renewed. Prior to the Commencement Date of the Expansion Premises, the Tenant shall confirm the total number of stalls it shall require.

Should the Tenant require additional stalls, the Landlord, then subject to availability, may make available unreserved parking stalls located in the sub-grade parking garage of the Building which stalls shall be charged at the prevailing parking rates per month, per stall, plus applicable taxes.

The rental rate and locations of such parking stalls may be changed by the Landlord from time to time.

The Tenant shall execute a separate parking agreement in the Landlord's standard form at the Landlord's option and discretion.

8. ADDITIONAL SECURITY DEPOSIT FOR THE EXPANSION PREMISES

The Tenant shall pay to the Landlord the amount of $17,213.71 (the "Additional Security Deposit") for the Expansion Premises to be applied to the first months' Rent as it comes due and payable, and the balance shall be held as security in accordance with Clause 4.5 of the Lease. The Landlord acknowledges that it currently holds a Security Deposit in the amount of
$25,261.81 in accordance with Clause 4.5 of the Lease. The parties acknowledge and agree that the Landlord reserves the right to obtain from the Tenant a replenishment of the Security Deposit for the Premises in an amount equal to the last months' Rent which the Tenant shall tender to the Landlord within ten (10) days after demand therefor.

9. FURTHER AMENDMENTS

(i) Clause 1.1(n) shall be deleted in its entirety and replaced with the following: "(n) Landlord's address for Notices:

Industrial Alliance Insurance and Financial Services Inc.
1910-1188 West Georgia Street

Vancouver, BC V6E 4A2 With a copy to:

Epic Investment Services (BC) Inc.
340-1085 Homer Street Vancouver, BC V6B 1J4"

(ii) There shall be added to the Lease as Clause 1.1B, the following: "Lease Summary for Expansion Premises

1.1B The parties acknowledge that the following summarize certain matters relevant to this Lease for the Expansion Premises. The following summary does not limit the meaning of any other provision of this Lease. If any other provision of this Lease is inconsistent with the following summary, the other provisions of this Lease will prevail. The Tenant acknowledges that it does not rely on estimates set forth in this Section 1.1B.

(a) Expansion Premises: Suite 502 on the 5th floor, 3292 Production Way, Burnaby, British Columbia;

(b) Expansion Premises Rentable Area: approximately one thousand, nine hundred and ninety-four (1,994) square feet (subject to adjustment under Clause 2.3);

(c) Building Rentable Area: one hundred and thirteen thousand, one hundred and sixty-one (113,161) square feet;

(d) Tenant's Percentage Share: one point seventy-six percent (1.76%)"

(ii) The parties acknowledge that the Clause 8 in the First Amendment and Clause 1.2 in the Lease shall be deleted in their entirety so that they shall have no force or effect;

(iii) The Landlord hereby grants to the Tenant an option to renew the Term of the Lease for a further period of five (5) years upon the terms and conditions contained below. This Option to Renew is intended to be applicable for the Existing Premises and the Expansion Premises collectively and shall be incorporated *mutatis mutandis* with the intent of this Agreement. The parties agree to insert the following as Clause 1.2 to the Lease and the references to "Premises" shall be deemed to include the Expansion Premises and the Existing Premises:

"1.2 Option to Renew

If the Tenant pays the Rent as and when due and performs and observes each and every of the covenants and conditions to be observed or performed by the Tenant under this Lease, and provided the Tenant is still **Nanotech Security Corp.** and is itself in possession of substantially the whole of the Premises, the Tenant will have the option to renew this Lease for a further term of five (5) years (the "Renewal Term"), upon giving the Landlord written notice of its intention to do so no less than six (6) clear calendar months prior to the expiry of the then current Term. The Renewal Term shall be on the same terms and conditions as are set out in the Lease, except that:

(a) there will be no further option to renew the Term following the expiration of the

Renewal Term;

(b) any requirement on the Landlord's part to do any Landlord's work or to pay to the Tenant any construction allowance, inducement, loan or other amount in connection with the Lease or improvements in the Premises, will not apply during the Renewal Term; and

(c) the Annual Base Rent shall be mutually agreed upon between the Landlord and the Tenant based upon the Current Market Rent, at the commencement of the Renewal Term for similarly improved premises of similar size in the Building or if there are no such similar premises, for similarly improved premises of similar size, quality, use and location in buildings of a similar size, quality and location as the Building but shall not in any event be less than the Annual Base Rent payable in respect of the last year of the then-current Term.

If the parties are unable to agree to such Annual Base Rent by no later than 90 days prior to the expiry of the then-current Term, then the annual Base Rent shall be determined by arbitration in accordance with the *Commercial Arbitration Act (British Columbia)* as then in force and applying the criteria set out above. If the Annual Base Rent has not been determined by the commencement of the Renewal Term, the Tenant shall pay Annual Base Rent at the rate applicable to overholding as set out in this Lease, and within 10 days after the Annual Base Rent for the Renewal Term is determined, the parties shall retroactively adjust the Annual Base Rent owing from the commencement of the Renewal Term.

If the Tenant fails to exercise this option to renew the Term in accordance with the foregoing, or if the foregoing conditions are not satisfied, this option to renew shall be null and void."

10. The parties confirm and agree that the terms and conditions related to the Existing Premises shall extend to the Expansion Premises, unless specifically stated otherwise hereunder and shall apply *mutatis mutandis* to the Expansion Premises and/or run co-terminus with the Expansion Premises Term.

11. The parties confirm that the terms, covenants and conditions of the Lease remain unchanged and in full force and effect, except as modified by this Agreement.

12. This Agreement may be executed in any number of counterparts, each of which will be deemed to be an original and all of which taken together will be deemed to constitute one and the same document. Counterparts may be executed either in original or electronic form and the parties may adopt any signatures received electronically as original signatures of the parties.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK; SIGNATURE PAGE FOLLOWS]

13. This Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective successors and permitted assigns, as the case may be.

IN WITNESS WHEREOF the parties have duly executed this Agreement as at the date first written above.

INDUSTRIAL ALLIANCE INSURANCE AND FINANCIAL SERVICES INC.

Signature numérique de Mathieu Arpin
Date : 2022.03.14 20:16:20 -04'00'
Signature numérique de Claude Sirois Date : 2022.03.15 09:06:17 -04'00'(Landlord)

Per:

Per:

I/We have the authority to bind the corporation.

NANOTECH SECURITY CORP.
(Tenant)

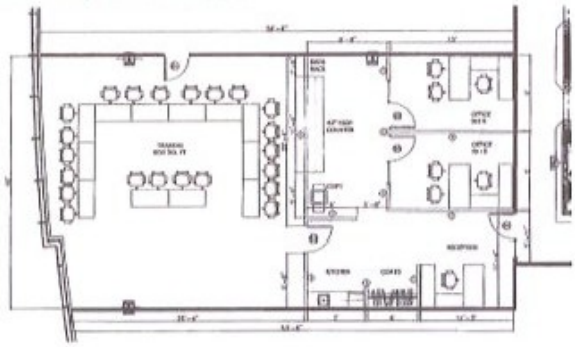
Per: ____
Ken Rice

I/We have the authority to bind the corporation.

SCHEDULE "A"

(approximately 1,994 square feet – for clarity, the Expansion Premises does NOT include any furniture)

5TH FLOOR - UNIT 502



ADDENDUM / AMENDMENT TO OFFER TO LEASE

March 3, 2022

NanoTech Security Corporation c/o CBRE
Limited
1021 West Hastings Street, Suite 2500 Vancouver, BC V6E
0C3

RE: Offer to Lease dated January 20, 2022 (the "Offer to Lease") between Epic Investment Services (BC) Inc. (the "Landlord") and NanoTech Security Corporation (the "Tenant"), in respect to the premises located at 505 – 3292 Production Way, Burnaby, BC (the "Premises")

Pursuant to the above noted Offer to Lease, for good and valuable consideration, the Landlord and the Tenant hereby agree to the following:

1. To waive the Tenant's Conditions Precedent outlined in Clause 14, items 1 and 2 of the Offer to Lease, being:

    1. The Tenant's senior management approval;
    2. The Tenant's being satisfied, in its sole discretion of the review and approval of the space plan and budget required to complete the tenant improvement work within the Premises.

2. To waive the Landlord's Conditions Precedent outlined in Clause 15, item 1 of the Offer to Lease, being:

    1. The Landlord confirming it can deliver vacant possession of the Premises.

Pursuant to the above noted Offer to Lease, for good and valuable consideration, the Landlord and the Tenant hereby agree that the following Landlord's Condition shall be waived in seven (7) business days after removal of all other conditions:

15. Landlord's Conditions Precedent

2. the Landlord's Senior Management approval.

3. The Landlord and the Tenant agree to amend the Commencement Date from May 1st, 2022 to now being June 1st, 2022 and expiring May 31st, 2025 (the "Expiration Date").

All other terms and conditions remain in full force and effect.

By signing in the appropriate spaces provided below, all parties hereby agree to the terms contained herein and time remains of the essence.

3/3/2022

Dated this ___ day of March, 2022.

NanoTech Security Corporation (Tenant)

Per: ____ (Authorized Signatory)

Dated this ___ day of March, 2022.

Epic Investment Services (BC) Inc. (Landlord)

Per: ____ (Authorized Signatory)

Exhibit 10.15.0

Outside Director Compensation Plan

Initial Equity Award	$100,000 in RSUs
Annual Equity Award	$100,000 in RSUs
Equity Deferral	Voluntary
Severance	Upon retirement of an outside Director, all unvested RSUs will automatically vest in full. The treatment of unvested RSUs held by an outside Director upon a change in control will be determined by the terms of the 2021 Equity Incentive Plan.
Cash Compensation	Annual Retainer: $50,000 Additional Retainer for Non-Executive Chairman: $35,000 Additional Retainer for Committee Chairs: Audit: $20,000 Human Resources and Compensation: $20,000 Governance and Nominating: $15,000
Share Ownership Guidelines	5x annual cash retainer to be achieved within 5 years.

Exhibit 21.1.0

List of Subsidiaries

Name	Jurisdiction
2798331 Ontario Inc.	Ontario, Canada
Metamaterial Exchangeco Inc.	Ontario, Canada
Metamaterial Inc.	Ontario, Canada
Metamaterial Technologies Canada Inc.	Federal, Canada
Nanotech Security Corp.	British Columbia, Canada
1315115 BC Inc.	British Columbia, Canada
Metamaterial Technologies USA Inc.	California, United States
Medical Wireless Sensing Ltd.	London, United Kingdom
Plasma App. Ltd.	Oxford, United Kingdom
Meta Material Single Member S.A.	Greece

Exhibit 23.1.0

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Meta Materials Inc.

We consent to the use of our report dated March 23, 2023, with respect to the consolidated financial statements of Meta Materials Inc. (the "Entity") which comprise the consolidated balance sheets as of December 31, 2022 and 2021, the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows for each of the years in the two-year period ended December 31, 2022, and the related notes (collectively, the "consolidated financial statements"), which is included in the Annual Report on Form 10-K of the Entity for the fiscal year ended December 31, 2022.

We also consent to the incorporation by reference of such report in the Registration Statements (Nos. 333-233653, 333-248316, 333-249062, 333-256632, 333-256636, 333-265371, 333-265844, 333-266276 and 333-268282) on Form S-3, and the Registration Statements (Nos. 333-210812, 333-259073 and 333-263769) on Form S-8.

We also consent to the reference to our firm under the heading "Experts" in the Registration Statements.

/s/ KPMG LLP

Chartered Professional Accountants, Licensed Public Accountants

March 23, 2023
Vaughan, Canada

Exhibit 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a) AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, George Palikaras, certify that

1. I have reviewed this annual report on Form 10-K of Meta Materials Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2022 By: /s/ **George Palikaras**

George Palikaras

President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002
CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO
SECURITIES EXCHANGE ACT RULES 13a-14(a) AND 15d-14(a), AS ADOPTED PURSUANT
TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Kenneth Rice, certify that:

1. I have reviewed this annual report on Form 10-K of Meta Materials Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 23, 2022 By: /s/ **Ken Rice**

Ken Rice

Chief Financial Officer and Chief Operating Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED
PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, I, George Palikaras, Chief Executive Officer of Meta Materials Inc. (the "Company"), hereby certify, that, to my knowledge:

i. the Annual Report of the Company on Form 10-K for the period ended December 31, 2022 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and

ii. the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2022 By: /s/ **George Palikaras**

George Palikaras

President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED
PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2022, I, Ken Rice, the Chief Financial Officer of Meta Materials Inc. (the "Company"), hereby certify, that, to the best of my knowledge:

(i) the Annual Report of the Company on Form 10-K for the year ended December 31, 2022 (the "Report"), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(ii) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: March 23, 2022 By: /s/ **Ken Rice**

Ken Rice

Chief Financial Officer and Chief Operating Officer
(Principal Financial and Accounting Officer