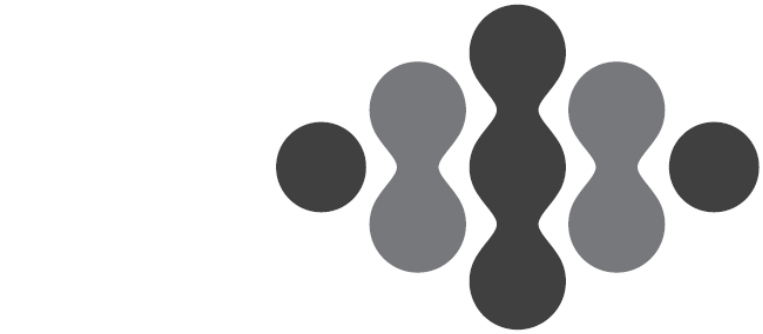

atomera

2016 Annual Report

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atomera

Dear Fellow Shareholders,

There is no manufacturing process as complicated as making a semiconductor chip. Since the 1950's, innovation in this field has driven a continuous march toward less expensive and higher performance chips. That trend is called Moore's law. Now the industry is wrestling with ways to continue the promise of Moore's law. Potential solutions demand many years of development before they become feasible, but if successful, frequently go on to widespread adoption by industry manufacturers. Dr. Mears founded our company back in 2001 and has spent over a decade of research and development creating a technology we hope will provide an extension to Moore's law. We call it Mears Silicon Technology™, or MST®, and it forms the foundation of our development stage, intellectual property licensing business.

2016 was certainly the greatest year of change and progress in the history of our company. In January we changed the name of our company to more accurately represent the advanced material science we are providing to the industry in an era when semiconductor advances are increasingly happening at the atomic level. With Atomera, we sought to convey a fresh, modern and more aggressive identity and culture for the company. We moved our headquarters to Silicon Valley, added several strong, experienced members to our senior management team, and started working toward becoming financially stable to support growth.

In March, we extended our runway through a private round of financing, and on August 5th we successfully completed an initial public offering of the company, raising $24.7 million which should put us on a solid footing for the next few years. The proceeds of our IPO allow us to make long term plans and partnerships to refine our core technology and accelerate our engagements with customers.

Significant structural improvements to our internal development process have already been put in place. We secured a facility with dedicated epitaxial tools for deposition of our MST® technology onto silicon wafers, and signed a contract with TSI Semiconductors to fabricate those MST® wafers to our specifications. Using an innovative, rapid development technique, we are now able to execute a cycle of learning five to ten times faster than at the beginning of 2016. We also announced a collaboration with Synopsys, Inc. to model our MST® technology in their market-leading TCAD development tools which we believe will allow our customers to move more rapidly through evaluation of our technology and reach a licensing decision.

Progress on the customer front has also been very encouraging. In early 2016, three customers were evaluating MST® in one of our four targeted market segments, and we had just started to promote the advantages of our technology more widely. Currently, we have eight customers engaged with us spanning all of our target market segments which provides significantly improved diversification of both our customers and target markets.

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408-442-5248 | fx. 408-560-9556 | www.atomera.com

Atomera has a solid strategy and our outlook is very good, but as is true in any development stage company, we still have a lot to do. Our primary objective is to prove our business can be financially successful. Establishing the effectiveness of our technology will not be enough. We also need to convince customers to adopt our technology in production and generate revenue through license agreements. To do that, we must continue adding value to our technology, accelerate integration time into customer factories, and provide solutions to the problems semiconductor companies are experiencing today.

We continue to believe that our technology provides the basis for a compelling business model, but we know that this is something we have yet to demonstrate commercially and are focused on doing so. With our strong team of engineers and scientists, exceptional management team, and fully engaged board, I am confident we will succeed.

Thank you for your trust and support,

Scott A. Bibaud
President and Chief Executive Officer
Atomera Incorporated
April 2017

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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2016

or

☐ **TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to

Commission file number: 001-37850

ATOMERA INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware	**30-0509586**
(State or Other jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification Number)

750 University Avenue, Suite 280
Los Gatos, California 95032
(Address, including zip code, of registrant's principal executive offices)

(408) 442-5248
(Registrant's telephone number, including area code**)**

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

Title of each class:	**Name of each exchange on which registered**
Common stock: Par value $.001	Nasdaq Capital Market

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

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 Exchange 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 past 12 months (or for 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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers in response to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of the registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company (as defined in Rule 12b-2 of the Act):

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer ☐	Smaller reporting company ☒
(Do not check if a smaller reporting company)	

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act) Yes ☐ No ☒

State the aggregate market value of voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter: $85,851,285. The registrant has elected to use September 30, 2016, which was the last business day of the registrant's most recently completed third fiscal quarter, as the calculation date because on June 30, 2016 (the last business day of the registrant's most recently completed second fiscal quarter), the registrant was a privately-held company and therefore the registrant is unable to calculate market value as of that date. Shares of the registrant's common stock held by each executive officer, director and holder of 10% or more of the outstanding common stock (as determined based on public filings) have been excluded in that such persons may be deemed to be affiliates. This calculation does not reflect a determination that certain persons are affiliates of the registrant for any other purpose.

As of March 27, 2017, there were 12,104,737 shares of the registrant's common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

The registrant intends to file a definitive proxy statement pursuant to Regulation 14A within 120 days after the end of the fiscal year ended December 31, 2016. Portions of such proxy statement are incorporated by reference into Part III of this Form 10-K.

ATOMERA INCORPORATED

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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, that are intended to be covered by the "safe harbor" created by those sections. The words "believe," "may," "will," "potentially," "estimate," "continue," "anticipate," "intend," "could," "would," "project," "plan," "expect" and similar expressions that convey uncertainty of future events or outcomes are intended to identify forward-looking statements. These forward-looking statements include, but are not limited to, statements concerning the following:

- our future financial and operating results;
- our intentions, expectations and beliefs regarding anticipated growth, market penetration and trends in our business;
- the timing and success of our plan of commercialization;
- our ability to operate our royalty-based business model;
- the effects of market conditions on our stock price and operating results;
- our ability to maintain our competitive technological advantages against competitors in our industry;
- our ability to have our technology solutions gain market acceptance;
- our ability to maintain, protect and enhance our intellectual property;
- the effects of increased competition in our market and our ability to compete effectively;
- costs associated with initiating and defending intellectual property infringement and other claims;
- our expectations concerning our relationships with potential customers, partners and other third parties;
- the attraction and retention of qualified employees and key personnel;
- future acquisitions of or investments in complementary companies or technologies; and
- our ability to comply with evolving legal standards and regulations, particularly concerning requirements for being a public company.

These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in "Risk Factors" and elsewhere in this Annual Report and our subsequently filed Quarterly Reports on Form 10-Q. Moreover, we operate in a very competitive and rapidly changing environment, and 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 forward-looking events and circumstances discussed in this Annual Report may not occur and actual results could differ materially and adversely from those anticipated or implied in our forward-looking statements.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in our forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances described in the forward-looking statements will be achieved or occur. Moreover, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this Annual Report to conform these statements to actual results or to changes in our expectations, except as required by law.

You should read this Annual Report and the documents that we reference in this Annual Report and have filed with the Securities and Exchange Commission as exhibits with the understanding that our actual future results, levels of activity, performance and events and circumstances may be materially different from what we expect.

PART I

Item 1. Business

General

We are engaged in the business of developing, commercializing and licensing proprietary processes and technologies for the $350+ billion semiconductor industry. Our lead technology, named Mears Silicon Technology™, or MST®, is a thin film of reengineered silicon that can be applied as a transistor channel enhancement to complementary metal-oxide semiconductor, or CMOS, type transistors, the most widely used transistor type in the semiconductor industry. MST® is our proprietary and patent protected performance enhancement technology that we believe addresses a number of key engineering challenges facing the semiconductor industry. We believe that by incorporating MST®, transistors can be smaller, with increased speed, reliability and energy efficiency. In addition, since MST® is an additive and low cost technology, it can be deployed on an industrial scale, with machines commonly used in semiconductor manufacturing. We believe that MST® can be widely incorporated into the most common types of semiconductor products, including analog, logic, memory and optical integrated circuits.

We do not intend to design or manufacture integrated circuits directly. Instead, we intend to develop and license technologies and processes that will offer the designers and manufacturers of integrated circuits a low-cost solution to the industry need for greater performance and lower power consumption.

In the mid-1980s, our founder, Dr. Robert Mears, was part of a team that re-engineered silica optical fiber to invent the erbium-doped fiber amplifier, or EDFA, a technology that increased the bandwidth of optical fiber more than 1,000 times. The invention of EDFA helped to revolutionize the development of broadband and to this day remains a key technology in the multi-hundred billion dollar optical communications industry. Dr. Mears anticipated scaling problems for silicon semiconductors and founded Atomera Incorporated in order to address those problems for the semiconductor industry.

Over the last 11 years, we have undertaken significant laboratory testing and engaged with a range of semiconductor industry and academic technology leaders to evaluate the effects of MST® on the performance of test chips in industrial fabrication environments. We believe this testing has demonstrated that MST® offers performance benefits, including increased speed, reliability and energy efficiency, beyond and in most cases additive to those provided by semiconductor performance enhancement technologies that are already widely used, such as dual stress liners and source/drain channel stressors, including eSiGe/eSiC, and can be implemented without significant additional cost or significant modification to the current semiconductor fabrication process.

We are now in the process of transitioning our MST® toward commercial adoption. Our intended initial customers are integrated device manufacturers, or IDMs, and foundries. During the evaluation phase of their engagement with us, potential customers test and evaluate the incorporation of our MST® technology into the integrated circuits they produce. As of the date of this Annual Report, we are in evaluations with two leading integrated device manufacturers, or IDMs, and one foundry. We are also collaborating with manufacturers of semiconductor fabrication equipment and developers of modeling tools. These parties are part of a semiconductor infrastructure supporting the industry with capital equipment for transistor production and transistor process modeling software, and we are in discussions with certain equipment manufacturers and tool developers concerning their incorporation of our MST® technology into the equipment and tools they offer to the industry. We are also marketing our MST® technology to fabless semiconductor manufacturers concerning their incorporation of MST® into the integrated circuits they design.

Atomera is currently focused on the CMOS semiconductor market due to the large opportunity it presents. However, we believe that the technologies underlying MST® are part of a larger platform of reengineered materials that have potential applications beyond CMOS, including:

- faster and more efficient nano-structured semiconductor materials for electronic applications;
- enhanced nano-structured materials for application in photonics;
- improved magnetic materials for advanced memory; and
- more responsive “lead-free” piezo-electric materials (commonly used in antenna and transducers).

Industry Overview

Semiconductors, Generally

Recent years have seen a remarkable proliferation of consumer and commercial products, especially in wireless, automotive and mobile electronic devices. The growth of the Internet and cloud computing has provided people with new ways to create, store and share information. At the same time, the increasing use of electronics in cars, buildings, appliances and other consumer products is creating a broad landscape of "smart" devices and the evolution of wearable technologies and The Internet of Things.

These developments depend, in large part, on integrated circuits, or microchips, which are sets of electronic circuits on a single chip of semiconductor material, normally silicon. It is common for a single semiconductor chip to combine many components (processor, communications, memory, custom logic, input/output) resulting in highly complex chip designs. Transistors are the building blocks of integrated circuits and the most complex semiconductor chips today contain more than a billion transistors, each of which may have features that are much less than $1/1{,}000^{th}$ the diameter of a human hair.

The most widely used transistors in semiconductor chips today are based on the CMOS technology. Among its many attributes, CMOS allows for a higher density of transistors on a chip and lower power usage than non-CMOS technologies.

The Pursuit of Increased Semiconductor Performance

For years, the semiconductor industry was able to almost double the number of transistors it could pack into a single microchip about every two years, a rate of improvement commonly known as "Moore's Law." The semiconductor industry uses the term "node" to describe the minimum line width or geometry on a semiconductor chip, expressed in nanometers (nm) for today's technologies. Historically, the smaller the node, the smaller the transistors and the more closely they are packed together, producing chips that are denser and thus less costly on a per-transistor basis. Frequently, smaller nodes also correspond to an improvement in chip performance, making them the mile markers of Moore's Law, with each node marking a new generation of chip-manufacturing technology.

Until recently, the industry succeeded at maintaining the rate of improvement predicted by Moore's Law by scaling the key transistor parameters, such as shrinking feature sizes and operating voltages, thereby allowing more transistors to be packed onto a single microchip. This trend was facilitated in large part by the development of the CMOS technologies. However, a discontinuity in the rate of improvement delivered by scaling appeared a few years ago when transistor technology reached feature sizes below 100 nanometers. The industry responded with advanced materials to supplement the ongoing geometry shrinks. Some of those materials advances included strained silicon, Silicon on Insulator and High-K/Metal Gate.

In addition, due to the popularity of mobile devices and other electronic products, there is increasing demand for integrated circuits and systems with greater functionality and performance, reduced size, and much less power consumption as key requirements.

The designers and manufacturers of integrated circuits and systems — our potential customers — are facing intense pressure to deliver innovative products at ever shorter times-to-market, as well as at lower prices. In other words, innovation in chip and system design today often hinges on "better, sooner and cheaper." We believe that the semiconductor industry has accepted that moving forward in the nano-era will require adoption of new innovations that extend the scaling formula, including those based on the use of new engineered materials, a market opportunity our MST® technology seeks to address. Because shrinking geometries at the smaller nodes incurs higher capital and manufacturing costs, only limited products can take on the increased cost burden and still be economically viable. We believe cost sensitive devices will turn to engineered materials, like MST®, to solve this problem.

Vertical Disaggregation of the Industry

In trying to keep research and development costs manageable, while attempting to satisfy the demand for increasingly complex semiconductors, certain designers and manufacturers of integrated circuits have transitioned to an open innovation model in which competing companies and third-party providers actively collaborate to address performance issues through various alliances, joint ventures, and licensing of externally developed technology.

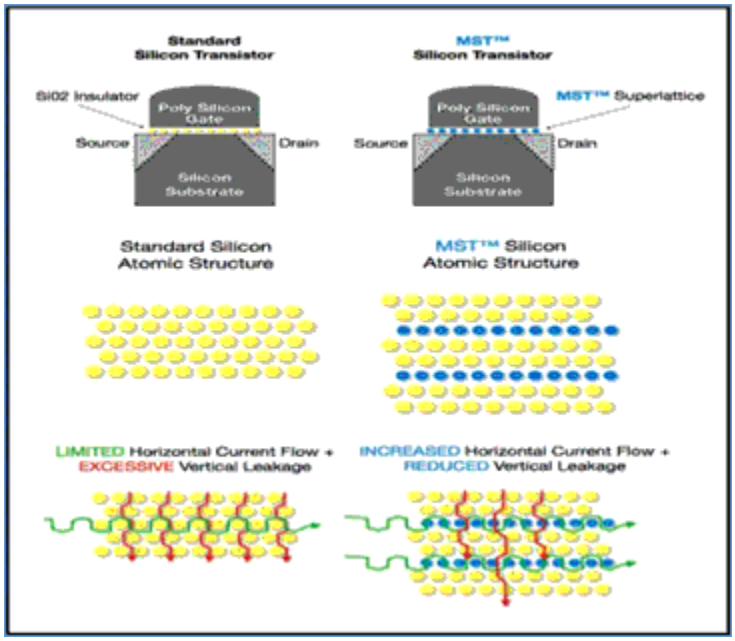
Historically, most semiconductor companies were vertically integrated. They designed, fabricated, packaged and tested their semiconductors using internally developed software design tools and manufacturing processes and equipment. As the cost and skills required for designing and manufacturing complex semiconductors have increased, the semiconductor industry has become disaggregated, with companies concentrating on one or more individual stages of the semiconductor development and production process. This disaggregation has fueled the growth of fabless semiconductor companies, design tool vendors, semiconductor

equipment manufacturers, third-party semiconductor manufacturers (or foundries), semiconductor assembly, package and test companies, and intellectual property companies that develop and license technology to others.

While specialization has enabled greater development and manufacturing efficiency, it has also created an opportunity for IP-based companies, such as Atomera, that develop and license technology to meet fundamental, industry-wide challenges. These intellectual property companies have been able to gain broad adoption of their technology throughout the industry by working with companies within the semiconductor supply chain to evaluate and integrate their technology. Manufacturers and designers of semiconductors increasingly find it more cost-effective to license technologies from IP-based companies than internally developing processes that are not their core competence. Industry participants often will share a portion of the large up-front development cost of these technologies in exchange for a lower licensing fee or royalty rate. We believe this collaboration and integration benefits semiconductor companies by enabling them to bring new technology to market faster and more cost-effectively.

Our Initial Application of Mears Silicon Technology

The initial application of our MST® will be for CMOS integrated circuits, the most widely used type of integrated circuits in the semiconductor industry. As applied to CMOS-type transistors, MST® is a thin film of reengineered silicon, typically 100 to 300 angstroms (or approximately 20 to 60 silicon atomic cell units) thick, that functions as a transistor channel enhancement. We believe MST® has the potential to overcome the key challenges found in the implementation of next generation nano-scale semiconductor devices incorporating CMOS-type transistors, namely enhancing drive current, reducing gate leakage and reducing variability. In addition, we believe that MST® has the potential to deliver these benefits through a single technology that requires relatively minor modifications to the industry standard CMOS manufacturing flow. Consequently, we believe that by incorporating MST®, designers can make transistors with increased speed, reliability and energy efficiency, without significantly altering the current fabrication process or cost of production.



As illustrated by the accompanying diagram, MST® is a "silicon-on-silicon" solution that provides multiple benefits through a relatively simple modification to the standard CMOS manufacturing flow. MST® improvements are delivered through our proprietary and patent protected silicon band engineering approach that is based on the quantum mechanics of modern deep sub-micron devices. The MST® film creates channels that allow electrons to flow more freely in the plane of the transistor, thereby enhancing drive current, while reducing electron flow or "leakage" in the transverse direction. Our MST® film can also create more controlled doping profiles which allow dopants to be held in the desired locations, thereby reducing variability and improving production yield.

We believe we have demonstrated in simulations and on test chips that MST® provides performance enhancements, including increased speed, reliability and energy efficiency, to most CMOS-type transistors equivalent to the enhancements enabled by approximately one-half to a full node of improvement depending on the device technology and application and, therefore, it extends the productive life of capital equipment and wafer fabrication facilities. We believe that MST® CMOS compares favorably to other alternatives for enhancing performance of CMOS-type transistors as follows:

- *Strained Silicon and Silicon-on-Insulator, or SOI*: Unlike strained silicon or SOI, we believe that MST® delivers in a single film multiple benefits at once and in a cost-effective manner, including enhanced transistor drive current, reduced leakage, and reduced variability. Also, strained silicon tends to lose much of its effectiveness below 45nm, constraining its scalability, while the MST® thin film approach is expected to be scalable below 22nm. Also, based on our own research and development and third-party evaluations, we believe that MST® can deliver improved cost-benefit performance, in most cases in an additive manner, compared to already successful strain technologies, such as dual stress liners and SiGe.

- *High-K/Metal Gate, or HKMG*: Unlike HKMG, MST® is silicon-based. As a "silicon-on-silicon" solution, MST® does not require new materials or equipment, which in our opinion makes it much easier and less costly to adopt than HKMG for devices not requiring ultra-thin gate dielectrics. For devices with HKMG, we believe MST® still benefits transistor performance and variability in a similar manner to that observed in non-HKMG devices.

Because of its physical characteristics in the channel region of the transistor, we believe MST® has the further benefit of being complementary and additive to the performance enhancing technologies noted above, making MST® broadly applicable across multiple devices and process flows to meet a wide variety of customer design objectives. Given the costs of moving to more advanced technologies, we believe one of the most compelling aspect of MST® may be its cost/benefit profile. We believe that MST® will provide a lower cost of production due to our technology's potential to reduce die size while leveraging existing manufacturing tools, thereby providing chip makers with increased performance at all process nodes with significantly fewer disruptions to manufacturing processes and less incremental cost than other advanced technologies.

We believe MST® properties can improve transistor performance in a variety of device types including microprocessors; logic products; DRAM, SRAM, and other memory integrated circuits; as well as analog, radio frequency, and mixed-signal devices. We have therefore developed different MST® product options that can be applied to the critical industry segments and technology nodes. As of the date of this Annual Report, we have done technology simulation work with universities and leading industry players at nodes from 180nm to 7nm. We have also simulated devices with leading industry research facilities and built and electrically verified test chips using MST® in customer manufacturing facilities which have produced results that demonstrate many of the benefits described above. In January 2017, we announced an agreement with TSI Semiconductors to provide us with engineering services in their semiconductor manufacturing facility in California. By running tests in TSI Semiconductor's facility, which we utilize to run tests on a contract basis, we are able to build and test devices that incorporate MST® much more quickly than when we test in our potential customers' facilities. We believe this arrangement will allow for faster product development, test, and integration, and should accelerate our time to market.

MST® Commercialization

We do not intend to design or manufacture integrated circuits directly. Instead, we intend to develop and license technologies and processes that will offer the designers and manufacturers of integrated circuits a low-cost solution to the industry need for increased performance. Our customers and partners are expected to include:

- foundries, which manufacture integrated circuits on behalf of fabless manufacturers;

- integrated device manufacturers, or IDMs, which are the fully integrated designers and manufacturers of integrated circuits;

- fabless semiconductor manufacturers, which are designers of integrated circuits who outsource the manufacture of their chips to foundries;

- original equipment manufacturers, or OEMs, that manufacture the epitaxial, or EPI, machines used to deposit semiconductor layers, such as MST® onto the base silicon wafer; and

- electronic design automation companies, which make tools used throughout the industry to simulate performance of semiconductor products using different materials, design structures and process technologies.

We intend to generate revenue through licensing arrangements whereby foundries and IDMs pay us a license fee for their use of MST® technology in the manufacture of silicon wafers as well as a royalty for each silicon wafer or device that incorporates our MST® technology. We also intend to enter into licensing arrangements with fabless semiconductor manufacturers pursuant to which we will charge them a royalty for each device they sell that incorporates our MST® technology. The IDMs and fabless semiconductor manufacturers are the primary beneficiaries of our commercialization activities, as they are producers and distributors of the integrated circuits onto which we will endeavor to incorporate our MST® technology. The foundries and OEMs also play an important role in our commercialization strategy in that these parties have traditionally sought to provide new technologies to their customers, which in the case of the foundries are the fabless semiconductor manufacturers and in the case of the OEMs are the IDMs and foundries that purchase EPI machines.

In the semiconductor industry, new technologies are vetted thoroughly and carefully by early adopters but, once proven, tend to be adopted broadly by the industry and, wherever possible, exploited for several generations until their full potential is reached. Before introducing a new technology into its fabrication process, the customer will conduct a formal and rigorous multi-phase testing process, which can range from 18 to 36 months.

Our engagements with manufacturers who are potential customers consists of the following phases:

1. Engineering Planning: In this phase we engage in a technical exchange of information under a non-disclosure agreement to understand the customer's manufacturing process and to determine how best to integrate the deposition of MST film onto the customer's semiconductor wafers.

2. Set-up for MST® Integration: We agree upon the technical evaluation details, including the expected rounds of evaluation testing, the parameters to be tested and allocation of costs. Customers provide us with wafers for our internal processing and testing.

3. Evaluation. Typically this phase includes several rounds of tests that involve building test devices on a semiconductor wafer using our MST technology within the customer's manufacturing process flow. We have not had any customers move beyond phase three as of the date of this Annual Report and we believe this phase will continue to be the longest in our customer engagement process due to the fact that we frequently modify tests runs as the results of initial rounds of testing are evaluated in an effort to optimize integration of MST.

4. Process Installation. Prior to enabling a customer to install and use MST technology on Epi machines in their own fab, we will require execution of a license for use of our patents and proprietary know-how. Although we have not executed a license with a customer to date, requiring a license at this stage is a customary and accepted practice in the semiconductor industry.

5. Technology qualification. After installation of MST in the fab, the customer will conduct additional testing to ensure manufacturing reliability under accelerated test conditions that simulate volume production. Upon successfully completing the qualification phase, products can be built and shipped using this manufacturing process.

6. Production. We expect that our license agreements will provide that upon commencement of sales of wafers or devices built using MST, our customer will pay us a royalty that will be a percentage of the selling price of the wafer or device, depending on the type of customer.

We believe that our success is dependent upon the adoption of our MST® technology by at least one IDM, foundry, or fabless semiconductor manufacturer. MST® is currently in the evaluation phase with three potential customers, two of which are IDMs and one of which is a foundry. Subject to process and subsequent product qualifications that demonstrate, in commercial scale production, the enhancements we believe our MST® technology offers, including increased speed, reliability and energy efficiency, we expect to license our MST® technology to one or more of these companies. We are also engaged at different stages of customer development with other potential customers.

We are also undergoing process development and equipment certification with OEMs. If we meet the development and certification requirements of the OEMs, we believe they will promote the incorporation of our MST® technology in the OEM's EPI machines as an option to their standard offering. By doing so, we believe they will simultaneously stimulate additional sales of their capital equipment and encourage more customers to adopt MST®.

We market our MST® technology directly to the semiconductor industry through our significant industry contacts and relationships. We also sponsor academic research and participate in industry conferences and associations. In certain foreign jurisdictions, we engage sales representatives to pursue and assist us in establishing relationships with local customers.

Competition

Our lead product, MST®, is a proprietary and patent protected performance enhancement technology that we believe addresses a number of key engineering challenges facing the semiconductor industry. We compete with IDMs, OEMs, foundries, fabless manufacturers of semiconductors and semiconductor IP licensing companies, for the development and commercialization of technologies that improve the performance of semiconductors. Historically, when a new fabrication process proves to be a low-cost improvement to the standard fabrication process, and is additive, rather than in place of other performance technologies, it has been successfully adopted industry-wide. Good examples of such advances have been strained silicon, such as SiGe. We believe that MST® has the potential to be one of these low-cost additive technologies, in which case MST® would not be subject to significant direct competition from other technologies.

Research and Development

We are focused on designing and developing engineered semiconductor material technologies and processes for the semiconductor and other industries. We believe that our success depends in part on our ability to achieve the following in a cost-effective and timely manner:

- develop new technologies that meet the changing needs of the semiconductor industry;
- improve our existing technologies to enable growth into new application areas; and
- expand our intellectual property portfolio.

Our research and development is conducted internally, but we work closely with third parties in the semiconductor industry to evaluate and qualify our technology for incorporation into semiconductor products and fabrication equipment. During the years ended December 31, 2016 and 2015, we incurred research and development expenses of approximately $4.0 million and $2.0 million, respectively.

Intellectual Property Rights

We regard the protection of our technologies and intellectual property rights as an important element of our business operations and crucial to our success. We rely primarily on a combination of patent laws, trade secret laws, confidentiality procedures, and contractual provisions to protect our proprietary technology. We require our employees, consultants, and advisors to enter into confidentiality agreements. These agreements provide that all confidential information developed or made known to the individual during the course of the individual's relationship with us is to be kept confidential and not disclosed to third parties except under specific circumstances. In the case of our employees and certain consultants, the agreements provide that all of the technology that is conceived by the individual during the course of employment is our exclusive property. The development of our technology and many of our processes are dependent upon the knowledge, experience, and skills of key scientific and technical personnel.

We have been granted more than 50 patents in the U.S. and more than 50 abroad. Our core patents relating to MST® cover materials, physical structures and manufacturing processes. Our core patents relating to MST® were filed beginning on August 22, 2003 and have grant dates beginning on December 14, 2004. Our MST patent portfolio begins to expire commencing August 22, 2023. While we believe our core patents adequately block competitors from using our MST® without our approval, there can be no assurance that one or more of our core patents would survive a legal challenge to their scope, validity, or enforceability, or provide significant protection for us. The failure of our patents, or the failure of trade secret laws, to adequately protect our technology, might make it easier for our competitors to offer similar products or technologies or for our potential customers to build products with methods and materials similar to MST® without paying us a license fee. In addition, patents may not issue from any of our current or future applications.

We also hold registered trademarks in the United States for the mark "MST" and in China for the mark "Mears". We have applied with the U.S. Patent and Trademark Office for the registration of the mark "Atomera" in the United States.

We have entered into a License Agreement dated December 22, 2006 with ASM International, NV, a semiconductor OEM located in Almere, The Netherlands, pursuant to which ASM has granted to us a non-exclusive, worldwide license to make, and sublicense others to make, semiconductor devices using certain ASM patents. The ASM license restricts us and our sublicensees from using the ASM licensed rights in the manufacture of EPI machines or any other machines used to manufacture semiconductors. The ASM license is coterminous with patents licensed by ASM, which expires on January 8, 2019, and requires us to pay ASM a royalty of 5% of net royalty revenue, generally defined as gross royalty revenue less certain customer offsets and credits, from the sale of any product incorporating the ASM licensed patents not manufactured on ASM equipment and a royalty of 2.5% of net revenue from the sale of any product incorporating ASM licensed patents manufactured on ASM equipment. As of

the date of this Annual Report, all semiconductor devices incorporating our MST® technology manufactured prior to January 8, 2019 will be subject to the ASM license royalty.

Employees

As of the date of this Annual Report, we employ 15 people on a full-time basis.

Available Information

Our website is located at www.atomera.com. The information on or accessible through our website is not part of this Annual Report on Form 10-K. A copy of this Annual Report on Form 10-K is located at the SEC's Public Reference Room at 100 F Street, NE, Washington, D.C. 20549. Information on the operation of the Public Reference Room can be obtained by calling the SEC at 1-800-SEC-0330. The SEC also maintains an internet site that contains reports and other information regarding our filings at www.sec.gov.

Item 1A. Risk Factors

We are subject to various risks that may harm our business, prospects, financial condition and results of operation or prevent us from achieving our goals. If any of these risks occur, our business, financial condition or results of operation may be materially adversely affected. In such case, the trading price of our common stock could decline and investors could lose all or part of their investment.

Risks Related to Our Business

Since we have not commenced revenue-producing operations, it is difficult for potential investors to evaluate our business. We have not commenced revenue-producing operations. To date, our operations have consisted of technology research and development, testing, and joint development work with leading potential customers and strategic partners. Our limited operating history makes it difficult to evaluate our technology or prospective operations. As an early stage company, we are subject to all the risks inherent in the initial organization, financing, expenditures, complications and delays in a new business. Investors should evaluate an investment in us in light of the uncertainties encountered by developing companies in a competitive environment. There can be no assurance that our efforts will be successful or that we will ultimately be able to attain profitability.

We have a history of significant operating losses and anticipate continued operating losses for at least the near term. For the years ended December 31, 2016 and 2015, we have incurred net losses of approximately $12.6 million and $9.5 million, respectively, and our operations have used approximately $6.8 million and $4.4 million of cash, respectively. As of December 31, 2016 and December 31, 2015, we had accumulated deficits of approximately $96.0 million and $83.4 million, respectively. We will continue to experience negative cash flows from operations until at least such time as we are able to secure one or more foundries, IDMs or fabless semiconductor manufacturers to qualify and license MST® and start full-scale industrial production of a device that incorporates our MST® technology. While management will endeavor to generate positive cash flows from the commercialization of our MST® technology, there can be no assurance that we will be successful in generating positive cash flows from operations. If we are unable to generate positive cash flow within a reasonable period of time, we may be unable to further pursue our business plan or continue operations, in which case you may lose your entire investment.

We may need additional financing to execute our business plan and fund operations, which additional financing may not be available on reasonable terms or at all. As of December 31, 2016, we had total assets of approximately $26.9 million and working capital of approximately $25.8 million. On August 10, 2016, we received net proceeds of approximately $24.7 million from our initial public offering. We believe that we have sufficient capital in order to fund our current business plan over, at least, the 12 months following the date of this Annual Report, including the securing of one or more foundries, IDMs or fabless semiconductor manufacturers to qualify and license our MST® and start full-scale industrial production of a device that incorporates our MST® technology. However, the semiconductor industry is generally slow to adopt new manufacturing process technologies and conducts long testing and qualification processes which we have limited ability to control. Accordingly, we may require additional capital in order to get to full-scale industrial production of a device that incorporates our MST ® technology, the receipt of which cannot be assured. In the event we require additional capital over and above the amount of our presently available working capital, we will endeavor to seek additional funds through various financing sources, including the sale of our equity and debt securities, licensing fees for our technology and joint ventures with industry partners. In addition, we will consider alternatives to our current business plan that may enable to us to achieve revenue producing operations and meaningful commercial success with a smaller amount of capital. However, there can be no guarantees that such funds will be available on commercially reasonable terms, if at all. If such financing is not available on satisfactory terms, we may be unable to further pursue our business plan and we may be unable to continue operations.

While the preliminary testing of our MST® technology has been successful to-date, there can be no assurance that we will be able to replicate the process, along with all of the expected economic advantages, on a large commercial scale. As of the date of this Annual Report, we have performed technology simulation work on our MST® with universities and potential customers at nodes from 180 nanometers (nm) to 7nm. Together with leading industry research facilities and in customer manufacturing facilities, we have also built and tested test element group transistors using MST®. The test element group transistors using MST® consistently demonstrated increased speed, reliability and energy efficiency over test element group transistors without MST®. While we believe that our development and testing to date has proven the effectiveness and benefits of our MST® technology, a MST®-enabled product has not been qualified and manufactured on a commercial scale. Our principal focus for the next 12 months from the date of this Report will be on securing one or more foundries, IDMs or fabless semiconductor manufacturers as a licensee-customer and to enable that licensee-customer to start full-scale industrial production of a device that incorporates MST® technology. However, there can be no assurance that we will be able to secure the adoption of our technology by a potential customer or, if we are successful in doing so, that a MST® enabled product manufactured on a commercial scale will provide the expected performance enhancements at the projected cost.

The long-term success of our business is dependent on a royalty-based business model, which is inherently risky. The long-term success of our business is dependent on future royalties paid to us by licensee-customers. Royalty payments under our licenses may be based, among other things, upon the number of silicon substrates, or wafers, onto which our MST® is deposited or a percentage of the net sales of MST®-enabled products. We will depend upon our ability to structure, negotiate and enforce agreements for the determination and payment of royalties, as well as upon our licensees' compliance with their agreements. We face risks inherent in a royalty-based business model, many of which are outside of our control, such as the following:

- the rate of adoption and incorporation of our technology by semiconductor designers and manufacturers and the manufacturers of semiconductor fabrication equipment;
- the length of the design cycle and the ability to successfully integrate our MST® technology into integrated circuits;
- the demand for products incorporating semiconductors that use our licensed technology;
- the cyclicality of supply and demand for products using our licensed technology;
- the impact of economic downturns; and
- the timing of receipt of royalty reports may not meet our revenue recognition criteria resulting in fluctuation in our results of operations.

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. If we are able to secure the adoption of our MST® by one or more foundries, IDMs or fabless semiconductor manufacturers and commence revenue producing operations, we expect that for at least the first few years we will earn a significant amount of our revenues from a limited number of customers. Due to the concentration and ongoing consolidation within the semiconductor industry, we may also find that over the longer term our revenues are dependent on a relatively few customers. If we lose any of these customers, or these customers do not pay us, our revenues could be materially adversely affected.

It may be difficult for us to verify royalty amounts owed to us under our licensing agreements, and this may cause us to lose revenues. We will endeavor to provide that the terms of our license agreements require our licensees to document their use of our technology and report related data to us on a regular basis. We will endeavor to provide that the terms of our license agreements give us the right to audit books and records of our licensees to verify this information, however audits can be expensive, time consuming, and may not be cost justified based on our understanding of our licensees' businesses. We will endeavor to audit certain licensees to review the accuracy of the information contained in their royalty reports in an effort to decrease the likelihood that we will not receive the royalty revenues to which we are entitled under the terms of our license agreements, but we cannot give assurances that such audits will be effective to that end.

We expect that our product qualification and licensing cycle will be lengthy and costly, and our marketing, engineering and sales efforts may be unsuccessful. We expect to incur significant engineering, marketing and sales expenses prior to entering into our license agreements, generating a license fee and establishing a royalty stream from each licensee. The introduction of any new process technology into semiconductor manufacturing is a lengthy process. Since we have not yet signed a license agreement with any customer, we cannot forecast the length of time it takes to establish a new licensing relationship. Based on our engagements with potential customers to date, we believe the time from initial engagement until our customers execute a license and subsequently incorporate our technologies in their integrated circuits, can take 18 to 36 months or longer. As such, we will incur significant expenses in any particular period before any associated revenue stream begins. If our engineering, marketing and sales efforts are unsuccessful, then the expenses incurred could have an adverse effect on our financial condition, results of operations and cash flows.

Our business operations could suffer in the event of information technology systems' failures or security breaches. While we believe that we have implemented adequate security measures within our internal information technology and networking systems,

our information technology systems may be subject to security breaches, damages from computer viruses, natural disasters, terrorism, and telecommunication failures. Any system failure or security breach could cause interruptions in our operations in addition to the possibility of losing proprietary information and trade secrets. To the extent that any disruption or security breach results in inappropriate disclosure of our confidential information, our competitive position may be adversely effected and we may incur liability or additional costs to remedy the damages caused by these disruptions or security breaches.

If we fail to protect and enforce our intellectual property rights and our confidential information, our business will suffer. We rely primarily on a combination of nondisclosure agreements and other contractual provisions and patent, trade secret and copyright laws to protect our technology and intellectual property. If we fail to protect our technology and intellectual property, our licensees and others may seek to use our technology and intellectual property without the payment of license fees and royalties, which could weaken our competitive position, reduce our operating results and increase the likelihood of costly litigation. The growth of our business depends in large part on our ability to secure intellectual property rights in a timely manner, our ability to convince third parties of the applicability of our intellectual property rights to their products, and our ability to enforce our intellectual property rights. In certain instances, we attempt to obtain patent protection for portions of our technology, and our license agreements typically include both issued patents and pending patent applications. If we fail to obtain patents in a timely manner or if the patents issued to us do not cover all of the inventions disclosed in our patent applications, others could use portions of our technology and intellectual property without the payment of license fees and royalties.

We also rely on trade secret laws rather than patent laws to protect other portions of our proprietary technology. However, trade secrets can be difficult to protect. The misappropriation of our trade secrets or other proprietary information could seriously harm our business. We protect our proprietary technology and processes, in part, through confidentiality agreements with our employees, consultants, suppliers and customers. We cannot be certain that these contracts have not been and will not be breached, that we will be able to timely detect unauthorized use or transfer of our technology and intellectual property, that we will have adequate remedies for any breach, or that our trade secrets will not otherwise become known or be independently discovered by competitors. If we fail to use these mechanisms to protect our technology and intellectual property, or if a court fails to enforce our intellectual property rights, our business will suffer. We cannot be certain that these protection mechanisms can be successfully asserted in the future or will not be invalidated or challenged. Further, 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. A court invalidation or limitation of our key patents could significantly harm our business. Our patent portfolio contains some patents that are particularly significant to our MST® technology and other business prospects. If any of these key patents are invalidated, or if a court limits the scope of the claims in any of these key patents, the likelihood that companies will take new licenses and that any current licensees will continue to agree to pay under their existing licenses could be significantly reduced. The resulting loss in license fees and royalties could significantly harm our business. Moreover, our stock price may fluctuate based on developments in the course of ongoing litigation.

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 infringe our patents. In that event, we initially seek to license the manufacturer of the infringing products, however if the manufacturer is unwilling to enter into a license agreement, we 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 relationships with existing licensees, who may, as a result 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 license 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 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 diverts our 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 licensed technology or otherwise negatively impact our stock price or our business and financial position, results of operations and cash flows.

Even if we prevail in our legal actions, significant contingencies may exist to their 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 be obligated to pay us royalties 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. The semiconductor industry is 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.

If we are unable to manage future expansion effectively, our business, operations and financial condition may suffer significantly, resulting in decreased productivity. If our MST® proves to be commercially valuable, it is likely that we will experience a rapid growth phase that could place a significant strain on our managerial, administrative, technical, operational and financial resources. Our organization, procedures and management may not be adequate to fully support the expansion of our operations or the efficient execution of our business strategy. If we are unable to manage future expansion effectively, our business, operations and financial condition may suffer significantly, resulting in decreased productivity.

If integrated circuits incorporating our technologies are used in defective products, we may be subject to product liability or other claims. If our MST® 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 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 licensees and customers.

Risks Related to Owning Our Common Stock

Prior to the completion of our initial public offering in August 2016, there was no public trading market for our common stock. Our common stock has traded on the Nasdaq Capital Market since August 5, 2016. Since that date, our common stock has been relatively thinly traded. There can be no assurance that we will be able to successfully develop a liquid market for our common shares. The stock market in general, and early stage public companies in particular, has experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of such companies. If we are unable to develop an active trading market for our common shares, you may not be able to sell your common shares at prices you consider to be fair or at times that are convenient for you, or at all.

We are an "emerging growth company" under the JOBS Act of 2012 and we cannot be certain if the reduced disclosure requirements applicable to emerging growth companies will make our common stock less attractive to investors. We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012 ("JOBS Act"), and we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not "emerging growth companies" including, but not limited to:

- not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements;
- exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments; and
- extended transition periods available for complying with new or revised accounting standards.

We have chosen to "opt out" of the extended transition periods available for complying with new or revised accounting standards, but we intend to take advantage of all of the other benefits available under the JOBS Act, including the exemptions discussed above. If some investors find our common stock less attractive as a result of our reliance on these exemptions, there may be a less active trading market for our common stock and our stock price may be more volatile.

We will remain an "emerging growth company" until December 31, 2021, although we will lose that status sooner if our revenues exceed $1 billion, if we issue more than $1 billion in non-convertible debt in a three-year period, or if the market value of our common stock that is held by non-affiliates exceeds $700 million as of any June 30.

Our status as an "emerging growth company" under the JOBS Act may make it more difficult to raise capital as and when we need it. Because of the exemptions from various reporting requirements provided to us as an "emerging growth company," we may be less attractive to investors and it may be difficult for us to raise additional capital when we need it or on favorable terms. Investors may be unable to compare our business with other companies in our industry if they believe that our reporting is not as transparent as other companies in our industry. If we are unable to raise additional capital as and when we need it, our financial condition and results of operations may be materially and adversely affected.

We have not paid dividends in the past and have no immediate plans to pay dividends. We plan to reinvest all of our earnings, to the extent we have earnings, to cover operating costs and otherwise become and 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.

We expect to continue to incur significant increased costs as a result of being a public company that reports to the Securities and Exchange Commission and our management will be required to devote substantial time to meet compliance obligations. As a public company reporting to the Securities and Exchange Commission, we incur significant legal, accounting and other expenses that we did not incur as a private company. We are subject to reporting requirements of the Securities Exchange Act of 1934 and the Sarbanes-Oxley Act of 2002, as well as rules subsequently implemented by the Securities and Exchange Commission that impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. In addition, on July 21, 2010, the Dodd-Frank Wall Street Reform and Protection Act was enacted. There are significant corporate governance and executive compensation-related provisions in the Dodd-Frank Act that increased our legal and financial compliance costs, make some activities more difficult, time-consuming or costly and may also place undue strain on our personnel, systems and resources. Our management and other personnel devote a substantial amount of time to these compliance initiatives. In addition, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance, and we may be required to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage. As a result, it may be more difficult for us to attract and retain qualified people to serve on our board of directors, our board committees or as executive officers.

Shares eligible for future sale may adversely affect the market for our common stock. We and all of our officers and directors have agreed not to sell, transfer or pledge, or offer to do any of the same, directly or indirectly, any of our securities prior to August 10, 2017. Virtually all of our other outstanding common shares are subject to similar lock-up agreements that began expiring in February 2017. Those lockup agreements provided that on February 1, 2017 and on every subsequent 31st day thereafter, 15% of such holder's securities shall be released from the lock-up until August 10, 2017, as of which none of the holder's securities shall be subject to the lock-up. The 3,680,000 shares we sold in our IPO are not subject to any lock-up restriction. As of the date of this Annual Report, 1,618,636 shares have been released from the lockup and 6,806,101 remain subject to lock-up.

Our charter documents and Delaware law may inhibit a takeover that stockholders consider favorable. Provisions of our Certificate of Incorporation ("Certificate") and bylaws and applicable provisions of Delaware law may delay or discourage transactions involving an actual or potential change in control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares, or transactions that our stockholders might otherwise deem to be in their best interests. The provisions in our Certificate and bylaws:

- limit who may call stockholder meetings;
- do not permit stockholders to act by written consent;
- do not provide for cumulative voting rights; and
- provide that all vacancies may be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum.

In addition, Section 203 of the Delaware General Corporation Law may limit our ability to engage in any business combination with a person who beneficially owns 15% or more of our outstanding voting stock unless certain conditions are satisfied. This restriction lasts for a period of three years following the share acquisition. These provisions may have the effect of entrenching our management team and may deprive you of the opportunity to sell your shares to potential acquirers at a premium over prevailing prices. This potential inability to obtain a control premium could reduce the price of our common stock.

Our bylaws designate the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain litigation that may be initiated by our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with the Company. Our bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on our

behalf, (ii) any action asserting a claim of breach of fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders, (iii) any action asserting a claim against us or any our directors, officers or other employees arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation or bylaws, or (iv) any action asserting a claim against us or any our directors, officers or other employees governed by the internal affairs doctrine. This forum selection provision in our bylaws may limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or any our directors, officers or other employees.

Our board of directors may issue blank check preferred stock, which may affect the voting rights of our holders and could deter or delay an attempt to obtain control of us. Our board of directors is authorized, without stockholder approval, to issue preferred stock in series and to fix and state the voting rights and powers, designation, preferences and relative, participating, optional or other special rights of the shares of each such series and the qualifications, limitations and restrictions thereof. Preferred stock may rank prior to our common stock with respect to dividends rights, liquidation preferences, or both, and may have full or limited voting rights. If issued, such preferred stock would increase the number of outstanding shares of our capital stock, adversely affect the voting power of holders of our common stock, and could have the effect of deterring or delaying an attempt to obtain control of us.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

Our executive offices are presently located in a 3,396 square foot facility in Los Gatos, California pursuant to a two-year lease, expiring on January 31, 2018, at the rate of $13,074 per month.

We lease shared office space in Cambridge Massachusetts from which we conduct certain research activities. The Cambridge facilities are occupied pursuant to a month-to-month lease at a rate of $2,074 per month.

Item 3. Legal Proceedings

To the best of our knowledge, based on information currently available as of the date of this report, there are no pending legal proceedings.

Item 4. Mine Safety Disclosures

Inapplicable.

PART II

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

Our common stock has traded on the NASDAQ Capital Market under the symbol "ATOM," since November 14, 2016. Between our IPO on August 5, 2016 and November 11, 2016, our common stock traded on the NASDAQ Capital Market under the symbol "ATMR". Since our IPO, our common stock has been relatively thinly traded and has experienced, and is expected to experience in the future, significant price and volume volatility. The following table shows the reported high and low prices per share for our common stock based on information provided by the NASDAQ Capital Market for the periods indicated.

Fiscal Year Ended December 31, 2016	High	Low
Fourth Quarter	$ 8.30	$ 6.00
Third Quarter (commencing on August 5, 2016)	$ 10.25	$ 7.78

Holders of Record

As of March 27, 2017, there were 512 holders of record of our common stock.

Dividend Policy

We have never declared or paid cash dividends on our common stock. We presently intend to retain earnings, if any, to finance the operation and expansion of our business.

Item 6. Selected Financial Data

As a "smaller reporting company" under Item 10 of Regulation S-K, we are not required to provide the information under this item.

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

The following discussion and analysis of our results of operations and financial condition should be read in conjunction with our financial statements and the notes to those financial statements that are included elsewhere in this report. Our discussion includes forward-looking statements based upon current expectations that involve risks and uncertainties, such as our plans, objectives, expectations and intentions. Actual results and the timing of events could differ materially from those anticipated in these forward-looking statements as a result of a number of factors, including those set forth under the "Business" section and elsewhere in this report. We use words such as "anticipate," "estimate," "plan," "project," "continuing," "ongoing," "expect," "believe," "intend," "may," "will," "should," "could," and similar expressions to identify forward-looking statements. All forward-looking statements included in this report are based on information available to us on the date hereof and, except as required by law, we assume no obligation to update any such forward-looking statements.

Overview

We are engaged in the business of developing, commercializing and licensing proprietary processes and technologies for the $350+ billion semiconductor industry. Our lead technology, named Mears Silicon Technology™, or MST®, is a thin film of reengineered silicon, typically 100 to 300 angstroms (or approximately 20 to 60 silicon atomic unit cells) thick. MST® can be applied as a transistor channel enhancement to CMOS-type transistors, the most widely used transistor type in the semiconductor industry. MST® is our proprietary and patent-protected performance enhancement technology that we believe addresses a number of key engineering challenges facing the semiconductor industry. We believe that by incorporating MST®, transistors can be smaller, with increased speed, reliability and energy efficiency. In addition, since MST® is an additive and low cost technology, it can be deployed on an industrial scale, with machines commonly used in semiconductor manufacturing. We believe that MST® can be widely incorporated into the most common types of semiconductor products, including analog, logic, optical and memory integrated circuits.

We do not intend to design or manufacture integrated circuits directly. Instead, we intend to develop and license technologies and processes that will offer the designers and manufacturers of integrated circuits a low-cost solution to the industry need for greater performance and lower power consumption. Our customers and partners are expected to include:

- foundries, which manufacture integrated circuits on behalf of fabless manufacturers;

- integrated device manufacturers, or IDMs, which are the fully integrated designers and manufacturers of integrated circuits;
- fabless semiconductor manufacturers, which are designers of integrated circuits who outsource the manufacture of their chips to foundries;
- original equipment manufacturers, or OEMs, that manufacture the epitaxial, or EPI, machines used to deposit semiconductor layers, such as the MST® onto the base silicon wafer; and
- electronic design automation companies, which make tools used throughout the industry to simulate performance of semiconductor products using different materials, design structures and process technologies.

We intend to generate revenue through licensing arrangements whereby foundries and IDMs pay us a license fee for their use of MST® technology in the manufacture of silicon wafers as well as a royalty for each silicon wafer or device that incorporates our MST® technology. We also intend to enter into licensing arrangements with fabless semiconductor manufacturers pursuant to which we will charge them a royalty for each device they sell that incorporates our MST® technology.

We were organized as a Delaware limited liability company under the name Nanovis LLC on November 26, 2001. On March 13, 2007, we converted to a Delaware corporation under the name Mears Technologies, Inc. On January 12, 2016, we changed our name to Atomera Incorporated.

On March 17, 2015, we completed the private placement of $14.75 million in senior secured convertible promissory notes, which we issued for cash consideration of $7.40 million and the exchange for previously issued promissory notes that at the time of exchange had principal and accrued interest in the aggregate amount of $7.35 million. On April 1, 2016 we completed the private placement of an additional $5.96 million in senior secured convertible notes on the same terms as the promissory notes placed in March 2015. We refer to these promissory notes in this Annual Report as our "Secured Notes."

During October 2015, we conducted a recapitalization of our outstanding options and warrants to purchase shares of our common stock. Pursuant to the recapitalization, we offered all holders of our options and warrants as of December 31, 2014 a one-time opportunity to exchange their options and warrants for shares of our common stock at a ratio of two options or warrants for one share of common stock regardless of exercise price. The offer resulted in 166,230 options and 601,861 warrants converting to a total of 384,045 shares of common stock. In connection with the recapitalization, we incurred a one-time non-cash charge of approximately $2.09 million in the fourth quarter of 2015 relating to our loss on the exchange of the options and warrants for the common stock.

On December 11, 2015, we effected a 1-for-15 reverse stock split of our common stock. All historical share amounts and share price information presented in this report have been proportionally adjusted to reflect the impact of this reverse stock split.

On August 10, 2016, we closed our initial public offering of 3,680,000 share of common stock at a public offering price of $7.50 per share. The common stock included 480,000 shares sold as a result of the underwriter's exercise in full of its overallotment option. Gross proceeds to us from this offering were $27,600,000 before deducting underwriting discounts, commissions and other offering expenses. In accordance with the terms of the Secured Notes, all principal plus accrued interest (totaling approximately $23.5 million) converted automatically upon consummation of the IPO into 6,264,659 million shares of common stock.

Results of Operations for the Years Ended December 31, 2016 and 2015

Revenues. We have not commenced revenue-producing operations.

Operating Expenses. Operating expenses consist of research and development, general and administrative, and selling and marketing expenses. For the years ended December 31, 2016 and 2015 our operating expenses totaled approximately $10.0 million and $5.5 million, respectively.

Research and development expense. To date, our operations have focused on the research, development, patent protection, and commercialization of our processes and technologies, including our proprietary and patent-protected MST® performance enhancement technology. Our research and development costs primarily consist of payroll and benefit costs for our engineering staff and costs of outsourced fabrication and metrology of semiconductor wafers incorporating our MST® technology. The timing and amount of our outsourced fabrication and metrology is highly dependent on evaluations by our prospective customers and partners. As a result, the level of our research and development costs can vary significantly among accounting periods. For the years ended December 31, 2016 and 2015, we incurred approximately $4.0 million and $2.0 million, respectively, of research and development expense, an increase of approximately $2.0 million or 97%. The increase in research and development expense is primarily due to an increase of approximately $939,000 in spending on outsourced fabrication and metrology to support increased engagements with potential customers evaluating our MST® and an increase of approximately $783,000 in payroll expense

reflecting an increase in engineering headcount and accrual of bonus expenses under a program implemented during 2016. We expect that engineering headcount in 2017 will remain at or above the level of 2016.

General and administrative expense. General and administrative expenses consist primarily of payroll and benefit costs for administrative personnel, office-related costs and professional fees. General and administrative costs for the years ended December 2016 and 2015 were approximately $5.1 million and $3.4 million, respectively, representing an increase of approximately $1.7 million or 48%. The increase in costs was primarily due to an increase of $2.8 million in compensation expense (including an increase of $1.6 million in stock compensation expense) resulting from the hiring of our Chief Executive Officer in October 2015 and our Chief Financial Officer in February 2016, severance payments totaling approximately $208,000 to three employees in connection with moving our headquarters to California in 2016, our commencement of compensation in both cash and equity of our non-employee directors after the IPO, payment of an IPO incentive bonus to our Chief Executive officer in the amount of $250,000, accrual of approximately $429,000 in bonus expense in 2016 and approximately $1.4 million of equity compensation expense resulting from awards of restricted stock to certain directors and officers upon completion of the IPO. These increases were offset in part by a $1.5 million decrease in professional fees, reflecting a charge of approximately $1.0 million to general and administrative expense for the fair value of a warrant issued for strategic consulting services in 2015, as well as the move of our former Chief Executive Officer to the role of Executive Vice President of Strategic Business Development and a $249,000 decrease in legal and accounting expense related to our recapitalization in 2015 whereas in 2016 the legal and accounting expenses related to our IPO were capitalized and offset against additional paid-in capital upon closing the offering. We anticipate that general and administrative expense in 2017 will increase from the 2016 level.

Selling and marketing expense. Selling and marketing expenses consist primarily of salary and benefits for our sales and marketing personnel and business development consulting services. Selling and marketing expenses for the years ended December 31, 2016 and 2015 were approximately $901,000 and $36,000, respectively. The increase of approximately $865,000 was primarily due to our former Chief Executive Officer moving to the role of Executive Vice President of Business Development effective January 1, 2016. Of this $865,000 increase, approximately $418,000 consisted of increased stock compensation expense, primarily reflecting the grant of restricted stock to our Executive Vice President of Business Development as part of our IPO bonus and approximately $336,000 consisted of increased payroll expense resulting from the move of this executive from the role of CEO. Due to increased engagement with potential customers, we expect selling and marketing expense in 2017 to increase from 2016.

Interest income and expense. Interest income and interest expense for the periods indicated, consisted of the following (in thousands):

	Year Ended December,	
	2016	**2015**
Interest income	$ 29	$ 5
Interest expense	(2,640)	(1,930)
	$ (2,611)	$ (1,925)

Interest expense consists of interest accrued on our Secured Notes and the fair value of a warrant issued to the placement agent for our offering of the Secured Notes. We made no interest payments in the periods presented. The increase in interest expense in the year ended December 31, 2016 compared to the year ended December 31, 2015 was due to our issuance of approximately $5.96 million in principal amount of Secured Notes on April 1, 2016. The warrant we issued to the placement agent in our offering of Secured Notes provided that the number of shares issuable upon exercise of the warrant would be adjusted and the exercise price of that warrant would be adjusted to equal the conversion price of the Secured Notes. When we completed our IPO on August 10, 2016, our Secured Noted converted into shares of common stock and the number of shares issuable upon exercise the warrant issued to the underwriter of our Secured Notes became determinable and was increased by an additional 96,458 shares and the warrant exercise price was modified to $3.75 per share. The increase in fair value of the warrant was determined to be approximately $709,000 and was recorded as interest expense in the year ended December 31, 2016.

Loss on settlement of options and warrants. For the year ended December 31, 2015, we incurred a loss on an exchange of certain of options and warrants into shares of common stock. In October 2015, we offered all warrant and option holders as of December 31, 2014, a one-time opportunity to exchange the instrument for share of common stock in a 2:1 exchange for common stock. We recorded a loss of approximately $2.1 million on this exchange based on the incremental increase in value of the instrument compared to before the exchange.

Liquidity and Capital Resources

As of December 2016, we had total assets of approximately $26.9 million and a working capital of approximately $25.8 million. On August 10, 2016 we consummated our IPO of 3,680,000 shares of common stock through which we raised net proceeds of approximately $24.7 million. In connection with the completion of the IPO, our Secured Notes were converted into 6,264,659 shares of common stock, thus extinguishing the debt associated with the Secured Notes.

Cash Flows from Operating, Investing and Financing Activities:

We believe that our available working capital is sufficient to fund our presently forecasted working capital requirements for, at least, the next 12 months following the date of the filing of this report, including securing one or more foundries, IDMs or fabless semiconductor manufacturers to qualify and license our MST® technology and start full-scale industrial production of a device that incorporates our MST® technology. However, the semiconductor industry is generally slow to adopt new manufacturing process technologies and conducts long testing and qualification processes which we have limited ability to control. Accordingly, we may require additional capital in order to get to full-scale industrial production of a device that incorporates our MST®. In the event we require additional capital over and above the amount raised and on hand, we will endeavor to acquire additional funds through various financing sources, including follow-on equity offerings, debt financing, licensing fees for our technology and joint ventures with industry partners. In addition, we will consider alternatives to our current business plan that may enable to us to achieve revenue producing operations and meaningful commercial success with a smaller amount of capital. However, there can be no guarantees that additional capital will be available on commercially reasonable terms, if at all. If such financing is not available on satisfactory terms, we may be unable to further pursue our business plan and we may be unable to continue operations.

Net cash used in operating activities of approximately $6.8 million for the year ended December 31, 2016 resulted primarily from our net loss of approximately $12.6 million, adjusted by approximately $2.5 million for stock-based compensation expense, approximately $1.1 million for non-cash interest expense and approximately $1.5 million for the amortization of debt issuance costs.

Net cash used in operating activities of approximately $4.4 million for the year ended December 31, 2015 resulted primarily from our net loss of approximately $9.5 million, adjusted by approximately $2.1 million for a non-cash loss on the option and warrant exchange, approximately $1.7 million in non-cash interest expense and approximately $1.0 or warrants fair value expense for services rendered.

Net cash used in investing activities of $13,000 for the year ended December 31, 2016 consisted of approximately $28,000 for the purchase of property and equipment offset by the release of a $15,000 restricted investment.

Net cash used in investing activities of $4,000 for the year ended December 31, 2015 consisted of the purchase of property and equipment.

Net cash provided by financing activities of $30.3 million for the year ended December 31, 2016 consisted primarily of net proceeds of approximately $24.7 million from the issuance of shares in public offering of $7.50 per share after deducting expenses of the offering and approximately $5.5 million in net proceeds from our April 2016 senior secured convertible promissory notes issuance.

Net cash provided by financing activities of $7.6 million for the year ended December 31, 2015 consisted primarily of net proceeds of $6.7 million in net proceeds from our March 2015 senior secured convertible promissory notes issuance.

Off-Balance Sheet Arrangements

We have not entered into off-balance sheet arrangements or issued guarantees to third parties.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 8. Financial Statements and Supplementary Data

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Audit Committee of the
Board of Directors and Shareholders
of Atomera Incorporated

We have audited the accompanying balance sheets of Atomera Incorporated (the "Company") as of December 31, 2016 and 2015, and the related statements of operations, stockholders' equity (deficit) and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. Our audit included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, 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. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of Atomera Incorporated, as of December 31, 2016 and 2015, and the results of its operations and its cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America.

/s/ Marcum LLP

Marcum LLP
New York, NY
March 31, 2017

Atomera Incorporated
Balance Sheets
(in thousands, except per share data)

	December 31, 2016	December 31, 2015
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 26,718	$ 3,197
Restricted investment	–	15
Prepaid expenses and other current assets	96	48
Total current assets	26,814	3,260
Property and equipment, net	28	15
Deferred offering costs	–	145
Security deposit	37	–
Total assets	$ 26,879	$ 3,420
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current liabilities:		
Accounts payable	$ 353	$ 301
Accrued expenses	168	131
Accrued payroll related expenses	510	14
Senior secured convertible promissory notes payable, net	–	16,095
Total liabilities	1,031	16,541
Commitments and contingencies (see Note 7)		
Stockholders' equity (deficit):		
Preferred stock, $0.001 par value, authorized 2,500 shares; none issued and outstanding at December 31, 2016 and 2015	–	–
Common stock, $0.001 par value, authorized 47,500 shares; 12,025 shares issued and outstanding at December 31, 2016 and 1,617 issued and outstanding as of December 31, 2015	12	2
Additional paid-in capital	121,833	70,452
Subscription receivable	–	(188)
Accumulated deficit	(95,997)	(83,387)
Total stockholders' equity (deficit)	25,848	(13,121)
Total liabilities and stockholders' equity (deficit)	$ 26,879	$ 3,420

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

Atomera Incorporated
Statements of Operations
(in thousands, except per share data)

	Years Ended December 31,	
	2016	**2015**
Operating Expenses:		
Research and development	$ 3,993	$ 2,022
General and administrative	5,105	3,441
Selling and marketing	901	36
Total operating expenses	$ 9,999	$ 5,499
Loss from operations	(9,999)	(5,499)
Other income/(expense):		
Interest income	29	5
Interest expense	(2,640)	(1,930)
Loss on settlement of options and warrants	–	(2,089)
Total other expense, net	(2,611)	(4,014)
Net loss	$ (12,610)	$ (9,513)
Net loss per common share, basic and diluted	$ (2.22)	$ (7.55)
Weighted average number of common shares outstanding, basic and diluted	5,682	1,260

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

Atomera Incorporated
Statement of Stockholders' Equity (Deficit)
(in thousands)

	Common Stock		Additional Paid-in Capital	Subscription Receivable	Accumulated Deficit	Total Stockholders' Equity (Deficit)
	Shares	Amount				
Balance January 1, 2015	1,233	$ 1	$ 66,759	$ (188)	$ (73,874)	$ (7,302)
Issuance of common stock for the settlement of options and warrants	384	1	2,089	–	–	2,090
Stock-based compensation	–	–	431	–	–	431
Issuance of common stock warrants	–	–	1,173	–		1,173
Net loss	–	–	–	–	(9,513)	(9,513)
Balance December 31, 2015	1,617	2	70,452	(188)	(83,387)	(13,121)
Sale of stock	3,680	4	27,596	–	–	27,600
Conversion of secured notes	6,265	6	23,486	–	–	23,492
Compensation in exchange for forgiveness of subscription receivable	–	–	–	188	–	188
Stock-based compensation	462	–	2,468	–	–	2,468
Stock option exercises	1	–	4			4
Issuance of common stock warrants	–	–	1,249	–	–	1,249
Debt offering costs	–	–	(3,422)	–	–	(3,422)
Net loss	–	–	–	–	(12,610)	(12,610)
Balance December 31, 2016	12,025	$ 12	$ 121,833	$ –	$ (95,997)	$ 25,848

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

Atomera Incorporated
Statements of Cash Flows
(in thousands)

	Years Ended December 31,	
	2016	**2015**
CASH FLOWS FROM OPERATING ACTIVITIES		
Net Loss	$ (12,610)	$ (9,513)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	15	10
Debt issuance cost amortization	1,526	224
Stock-based compensation	2,468	431
Non-cash warrant fair value for services rendered	–	1,016
Non-cash interest expense	1,114	1,708
Non-cash loss on option and warrant exchange	–	2,089
Compensation in exchange for settlement of subscription receivable	188	–
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(48)	(24)
Security deposit	(37)	–
Accounts payable	52	(329)
Accrued expenses	37	(13)
Accrued payroll expenses	496	14
Net cash used in operating activities	(6,799)	(4,387)
NET CASH FROM INVESTING ACTIVITIES		
Acquisition of property and equipment	(28)	(4)
Release of restricted investment	15	–
Net cash used in investing activities	(13)	(4)
CASH FLOWS FROM FINANCING ACTIVITIES		
Proceeds from unsecured convertible promissory notes payable	–	1,097
Net proceeds from senior secured convertible promissory notes payable	5,467	6,615
Proceeds from initial public offering	27,600	–
Payment of offering costs	(2,738)	(145)
Proceeds from exercise of stock options	4	–
Net cash provided by financing activities	30,333	7,567
Net increase in cash and cash equivalents	23,521	3,176
Cash and cash equivalents at beginning of period	3,197	21
Cash and cash equivalents at end of period	$ 26,718	$ 3,197
Non-cash financing activities:		
Warrant issued as debt discount on secured notes	$ 710	$ 156
Warrant issued for underwriting of initial public offering	$ 539	$ –
Conversion of secured notes into equity	$ 23,492	$ –

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

Atomera Incorporated
Notes to the Financial Statements

1. NATURE OF OPERATIONS

Atomera Incorporated ("Atomera" or the "Company") was incorporated in the state of Delaware in March 2007 under the name MEARS Technologies, Inc. and is engaged in the development, commercialization and licensing of proprietary processes and technologies for the semiconductor industry. On January 12, 2016, the Company changed its name to Atomera Incorporated.

The Company is in the development stage, having not yet started planned principal operations, and is devoting substantially all of its efforts toward technology research and development. The Company has primarily financed operations through private placements of equity and debt securities and the Company's Initial Public Offering (the "IPO") which was consummated on August 10, 2016 (see Note 10).

2. LIQUIDITY AND MANAGEMENT PLANS

At December 31, 2016, the Company had cash and cash equivalents of approximately $26.7 million and working capital of approximately $25.8 million. The Company has not generated revenues since inception and has incurred recurring operating losses. At December 31, 2016, the Company had an accumulated deficit of approximately $96.0 million. In August 2016, the Company completed its IPO of 3,680,000 shares of common stock, raising net proceeds of approximately $24.7 million.

During 2017, the Company's operating plans include increased headcount in research and development and sales and business development. Based on the funds it has available as of the date of the filing of this report, the Company believes that it has sufficient capital to fund its current business plans and obligations over, at least, 12 months from the date of filing this Annual Report, and to enable one or more customers to license and qualify its technology and start full-scale industrial production of devices that incorporate the Company's technology. However, as a development stage company the Company is subject to all the risks inherent in the initial organization, financing, expenditures, complications and delays in a new business. Accordingly, the Company may require additional capital, the receipt of which cannot be assured. In the event the Company requires additional capital, there can be no guarantee that funds will be available on commercially reasonable terms, if at all.

3. REVERSE STOCK SPLIT

On December 8, 2015, the Company's Board of Directors approved a 1-for-15 reverse split of the Company's common stock. The reverse stock split became effective on December 11, 2015. Upon the effectiveness of the reverse stock split, (i) every 15 shares of outstanding common stock were combined into one share of common stock, (ii) the number of shares of common stock into which each outstanding option or warrant to purchase common stock is exercisable was proportionally decreased and (iii) the exercise price of each outstanding option or warrant to purchase common stock was proportionately increased. The authorized common and preferred stock shares decreased to 47.5 million and 2.5 million, respectively. The par value remained the same. All share and per share amounts have been retroactively restated to reflect the reverse stock split in the accompanying financial statements and notes.

4. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of presentation

The financial statements are presented in accordance with generally accepted accounting principles in the United States of America ("GAAP") and reflect the financial position, results of operations and cash flows for all periods presented.

Fair Value of Financial Instruments

Authoritative guidance requires disclosure of the fair value of financial instruments. The Company's financial instruments consist of cash and cash equivalents, certificate of deposits, accounts payable, and bridge loan notes payable, the carrying amounts of which approximate their estimated fair values primarily due to the short-term nature of the instruments or based on information obtained from market sources and management estimates. The Company measures the fair value of certain of its financial assets and liabilities on a recurring basis. A fair value hierarchy is used to rank the quality and reliability of the information used to determine fair values. Financial assets and liabilities carried at fair value which is not equivalent to cost will be classified and disclosed in one of the following three categories:

Level 1 — Quoted prices (unadjusted) in active markets for identical assets and liabilities.

Level 2 — Inputs other than Level 1 that are observable, either directly or indirectly, such as unadjusted quoted prices for similar assets and liabilities, unadjusted quoted prices in the markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Cash and cash equivalents

The Company maintains its operating accounts in a single reputable financial institution. The balances are insured by the U.S. Federal Deposit Insurance Corporation ("FDIC") up to specified limits. The Company's cash is maintained in checking accounts and money market funds with maturities of less than three months when purchased, which are readily convertible to known amounts of cash, and which in the opinion of management are subject to insignificant risk of loss in value.

Restricted Investment

The Company's restricted investment consists of a certificate of deposit held as collateral to secure borrowing limits for certain corporate credit cards. As of September 2016, the Company was no longer required to maintain this certificate of deposit. The certificate of deposit was liquidated and the amounts were transferred to the Company's operating accounts.

Deferred offering costs

The Company complies with the requirements of the Accounting Standards Codification ("ASC") Topic 340, *Other Assets and Deferred Costs*. Deferred offering costs of approximately $145,000 as of December 31, 2015 consisted principally of legal, accounting, and filing fees incurred through the balance sheet date that were related to the IPO. The offering was completed on August 10, 2016 and approximately $3.4 million of deferred offering costs were charged to additional paid-in capital on the balance sheet as of December 31, 2016.

Income Taxes

In accordance with authoritative guidance, deferred tax assets and liabilities are recorded for temporary differences between the financial reporting and tax bases of assets and liabilities using the current enacted tax rate expected to be in effect when the differences are expected to reverse. A valuation allowance is recorded on deferred tax assets unless realization is considered more likely than not.

The Company evaluates its tax positions taken or expected to be taken in the course of preparing the Company's tax returns to determine whether the tax positions are "more-likely-than-not" of being sustained by the applicable tax authority. Tax positions not deemed to meet the "more-likely-than-not" threshold are not recorded as a tax benefit or expense in the current year. The Company recognizes interest and penalties, if any, related to uncertain tax positions in interest expense. No interest and penalties related to uncertain tax positions were accrued at December 31, 2016.

The Company follows authoritative guidance which requires the evaluation of existing tax positions. Management has analyzed all open tax years, as defined by the statute of limitations, for all major jurisdictions, which includes federal and certain states, the principal state being Massachusetts. Open tax years are those that are open for examination by taxing authorities.

Property and equipment

Items capitalized as property and equipment are stated at cost. Maintenance and routine repairs are charged to operations when incurred, while betterments and renewals are capitalized. Depreciation and amortization are computed using the straight-line method over the estimated useful lives of the respective assets starting when the asset is placed in service.

Debt Discounts

Debt discounts are amortized to interest expense using the straight-line method, which approximates the interest rate method, over the earlier of the term of the related debt or their earliest date of redemption.

Research and development expenses

In accordance with authoritative guidance, the Company charges research and development costs to operations as incurred. Research and development expenses consist of personnel costs for the design, development, testing and enhancement of the Company's technology, and certain other allocated costs, such as depreciation and other facilities related expenditures.

Common stock warrants

The Company classifies as equity any warrants that (i) require physical settlement or net-share settlement or (ii) provide the Company with a choice of net-cash settlement or settlement in its own shares (physical settlement or net-share settlement). The Company classifies as assets or liabilities any contracts that (i) require net-cash settlement (including a requirement to net cash settle the contract if an event occurs and if that event is outside the Company's control), (ii) gives the counterparty a choice of net-cash settlement or settlement in shares (physical settlement or net-share settlement) or (iii) that contain reset provisions that do not qualify for the scope exception. The Company assesses classification of its common stock warrants and other freestanding derivatives at each reporting date to determine whether a change in classification between assets and liabilities is required. The Company's freestanding derivatives consist of warrants to purchase common stock that were issued in connection with its notes payable. The Company evaluated these warrants to assess their proper classification and determined that the common stock warrants meet the criteria for equity classification in the balance sheet. Such warrants are measured at fair value, which the Company determines using the Black-Scholes-Merton option-pricing model.

Stock-based compensation

The Company computes stock-based compensation in accordance with authoritative guidance. The Company uses the Black-Scholes-Merton option-pricing model to determine the fair value of its stock options. The Black-Scholes-Merton option-pricing model includes various assumptions, including the fair market value of the common stock of the Company, expected life of stock options, the expected volatility and the expected risk-free interest rate, among others. These assumptions reflect the Company's best estimates, but they involve inherent uncertainties based on market conditions generally outside the control of the Company.

As a result, if other assumptions had been used, stock-based compensation cost, as determined in accordance with authoritative guidance, could have been materially impacted. Furthermore, if the Company uses different assumptions on future grants, stock-based compensation cost could be materially affected in future periods.

The Company accounts for the fair value of equity instruments issued to non-employees using either the fair value of the services received or the fair value of the equity instrument, whichever is considered more reliable. The Company utilizes the Black-Scholes-Merton option-pricing model to measure the fair value of options issued to non-employees.

Use of estimates

The preparation of financial statements in conformity with GAAP requires the Company's management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of expenses during the reporting period. Significant estimates include the fair value of stock-based compensation and warrants, valuation allowance against deferred tax assets and related disclosures. Actual results could differ from those estimates.

Adoption of recent accounting standards

In June 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-12, *Accounting for Share-Based Payments When the Terms of an Award Provide That a Performance Target Could Be Achieved after the Requisite Service Period*. ASU 2014-12 requires that a performance target that affects vesting and could be achieved after the requisite service period be treated as a performance condition. ASU 2014-12 is effective for the Company in its first quarter of 2016 with early adoption permitted. The adoption of this standard did not have a material impact on the Company's financial position, results of operations or financial statement disclosures.

In August 2014, the FASB issued ASU No. 2014-15, *Disclosure of Uncertainties About an Entity's Ability to Continue as a Going Concern*. The new standard provides guidance around management's responsibility to evaluate whether there is substantial doubt about an entity's ability to continue as a going concern and to provide related footnote disclosures. The new standard is effective for fiscal years, and interim periods within those fiscal years, ending after December 15, 2016. The adoption of this standard did not have a material impact on the Company's financial position, results of operations or financial statement disclosures.

In May 2015, the FASB issued ASU 2015-07, *Fair Value Measurement*, to remove the requirement to categorize within the fair value hierarchy all investments for which fair value is measured using the net asset value per share practical expedient. The amendments also remove the requirement to make certain disclosures for all investments that are eligible to be measured at fair value using the net asset value per share practical expedient. The ASU is effective for annual periods, and interim periods within those annual periods, beginning after December 15, 2015, with early adoption permitted. The adoption of this standard did not have a material impact on the Company's financial position, results of operations or financial statement disclosures.

In November 2015, the FASB issued ASU No. 2015-17, *Balance Sheet Classification of Deferred Taxes*. The standard amends the current requirement for organizations to present deferred tax liabilities and assets as current and noncurrent in a classified balance sheet. Instead, companies will now be required to classify all deferred tax assets and liabilities as noncurrent. The ASU is effective for fiscal years, and interim periods within those years, beginning after December 15, 2016, with early adoption permitted. The Company has early adopted ASU 2015-17 as of December 31, 2016. The ASU did not have a material effect on the Company's financial condition or results of operations.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation-Stock Compensation (Topic 718),* ("ASU 2016-09"). ASU 2016-09 makes several modifications to Topic 718 related to the accounting for forfeitures, employer tax withholding on share-based compensation and the financial statement presentation of excess tax benefits or deficiencies. ASU 2016-09 also clarifies the statement of cash flows presentation for certain components of share-based awards. The standard is effective for interim and annual reporting periods beginning after December 15, 2016. The Company has adopted this update in the fourth quarter of 2015 with prospective application as of January 1, 2016, and the adoption did not have a cumulative effect to prior year financial statements. Please see Note 14 for further information.

Recent accounting standards

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, which supersedes the revenue recognition requirements in Topic 605, *Revenue Recognition* and requires entities to recognize revenue in a way that depicts the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In August 2015, the FASB issued ASU 2015-14, which defers by one year the effective date of ASU 2014-09. Accordingly, this guidance is effective for interim and annual periods beginning after December 15, 2017 with early adoption permitted for interim and annual periods beginning after December 15, 2016. In March 2016, the FASB issued ASU 2016-08 *Principal versus Agent Considerations (Reporting Revenue Gross versus Net),* which finalizes its amendments to the guidance in the new revenue standard on assessing whether an entity is a principal or an agent in a revenue transaction. This conclusion impacts whether an entity reports revenue on a gross or net basis. In April 2016, the FASB issued ASU 2016-10 *Identifying Performance Obligations and Licensing,* which finalizes its amendments to the guidance in the new revenue standard regarding the identification of performance obligations and accounting for the license of intellectual property. In May 2016, the FASB issued ASU 2016-12 *Narrow-Scope Improvements and Practical Expedients,* which finalizes its amendments to the guidance in the new revenue standard on collectability, noncash consideration, presentation of sales tax, and transition. In December 2016, the FASB issued ASU 2016-20, *Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers,* which continues the FASB's ongoing project to issue technical corrections and improvements to clarify the codification or correct unintended applications of guidance. The amendments are intended to make the guidance more operable and lead to more consistent application. The amendments have the same effective date and transition requirements as the new revenue recognition standard. The Company is currently evaluating the effects, if any, that the adoption of this guidance will have on the Company's financial position, results of operations or financial statements disclosures.

In February 2016, the FASB issued ASU No. 2016-02, which replaces the existing guidance in ASC Topic 840 *Leases*. The new standard establishes a right-of-use ("ROU") model that requires a lessee to record a ROU asset and a lease liability on the balance sheet for all leases with terms longer than 12 months. Leases will be classified as either finance or operating, with classification affecting the pattern of expense recognition in the income statement. The guidance is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years and requires retrospective application. The Company has not yet adopted this update and is currently evaluating the impact it may have on its financial condition and results of operations.

In March 2016, the FASB issued ASU No. 2016-06, *Derivatives and Hedging (Topic 815): Contingent Put and Call Options in Debt Instruments*. This new standard simplifies the embedded derivative analysis for debt instruments containing contingent call or put options by removing the requirement to assess whether a contingent event is related to interest rates or credit risks. This new standard will be effective for us on January 1, 2017. We do not expect this standard to have a material impact on the Company's financial position, results of operations or financial statement disclosures.

On August 26, 2016, the FASB issued ASU No. 2016-15, *Classification of Certain Cash Receipts and Cash Payments (a consensus of the Emerging Issues Task Force)*. The amendments in ASU 2016-15 address eight specific cash flow issues and apply

to all entities, including both business entities and not-for-profit entities that are required to present a statement of cash flows under FASB Accounting Standards Codification 230, Statement of Cash Flows. The amendments in ASU 2016-15 are effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted, including adoption in an interim period. The Company has not yet adopted this update and is currently evaluating the impact it may have on its financial condition and results of operations.

5. BASIC AND DILUTED LOSS PER SHARE

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares outstanding for the period. Diluted net loss per share is computed by dividing the net loss by the weighted-average number of shares and dilutive share equivalents outstanding for the period, determined using the treasury-stock and if-converted methods. Since the Company has had net losses for all periods presented, all potentially dilutive securities are anti-dilutive. Accordingly, basic and diluted net loss per share are equal.

The following potential common stock equivalents were not included in the calculation of diluted net loss per common share because the inclusion thereof would be anti-dilutive (in thousands):

	Year Ended December 31,	
	2016	2015
Stock Options	1,515	511
Warrants	765	303
Conversion of Notes Payable	–	2,230
	2,280	3,044

6. PROPERTY AND EQUIPMENT

Property and equipment consisted of the following (in thousands):

	December 31,	
	2016	2015
Computer equipment	$ 60	$ 39
Laboratory equipment	55	184
Software	5	5
Office equipment	2	16
Furniture and fixtures	–	1
	122	245
Less: Accumulated depreciation and amortization	(94)	(230)
	$ 28	$ 15

Depreciation and amortization expense relating to property and equipment was approximately $15,000 and $10,000 for the years ended December 31, 2016 and 2015, respectively. The company depreciates computer equipment, laboratory equipment and office equipment on straight-line basis over three years. The Company amortizes software on straight-line basis over three years.

During the year ended December 31, 2016, the Company disposed of property and equipment with a cost of approximately $151,000 in connection with the relocation of its Massachusetts's office. The net book value of the assets at the time of the disposal was approximately $0.

7. COMMITMENTS AND CONTINGENCIES

Operating leases

In November 2014, the Company entered into a lease agreement for the use of 1,730 square feet of office space in Wellesley Hills, Massachusetts. The lease with monthly payments of $4,613 commenced on December 1, 2014 and expired on November 30, 2016.

In October 2016, the Company entered into lease agreement for approximately 200 square feet of office space in Cambridge, Massachusetts. The lease with monthly payments of $2,074 per month commenced on October 24, 2016. The lease is a month to month and can be cancelled with a 30-day notice.

In January 2016, the Company entered into a lease agreement for a 3,396 square foot office facility in Los Gatos, California as its new corporate headquarters. The lease commenced on February 1, 2016 and expires on January 31, 2018. The lease rate is $12,395 per month, which will increase to $13,074 per month commencing February 1, 2017.

Approximate future minimum lease payments required under the operating leases are as follows (in thousands):

Years ending December 31,	Amount
2017	$ 156
2018	13
Total	$ 169

Licensing agreement

In December 2006, the Company entered into licensing agreement with ASM International, NV, a semiconductor OEM located in Almere, The Netherlands, pursuant to which ASM has granted to the Company a non-exclusive, worldwide license to make, and sublicense others to make, semiconductor devices using certain ASM patents. The ASM license restricts the Company and its sublicensees from using the ASM licensed rights in the manufacture of EPI machines or any other machines used to manufacture semiconductors. The ASM license is coterminous with patents licensed by ASM, which expires on January 8, 2019, and requires the Company to pay ASM a royalty of 5% of net royalty revenue, generally defined as gross royalty revenue less certain customer offsets and credits, from the sale of any product incorporating the ASM licensed patents not manufactured on ASM equipment and a royalty of 2.5% of net revenue from the sale of any product incorporating ASM licensed patents manufactured on ASM equipment. All semiconductor devices incorporating the Company's MST® technology manufactured prior to January 8, 2019 will be subject to the ASM license royalty. The Company has not incurred any royalty obligation under license agreement as of December 31, 2016.

8. NOTES PAYABLE

From January 9, 2015 through February 5, 2015, the Company issued promissory notes to certain investors in the aggregate principal amount of approximately $1.1 million.

On March 17, 2015, the Company issued Senior Secured Convertible Notes (the "Secured Notes") to certain investors under which the Company borrowed approximately $7.4 million. National Securities Corporation ("NSC") acted as placement agent and the Company paid brokerage commissions to NSC of approximately $785,700 and issued to NSC a warrant (the "2015 NSC Warrant") to purchase ten percent of the common shares issuable upon conversion of Secured Notes in the principal amount of $7,372,557 at an exercise price of $7.362 per share, subject to adjustment to an exercise price equal to the conversion price of the Secured Notes when such conversion price became determinable. The number of shares issuable upon exercise of the 2015 NSC Warrant was initially set at 100,144 shares of the Company's common stock, subject to later adjustment to a number of shares equal to 10% of the shares issuable upon conversion of the Secured Notes. The brokerage commissions are being amortized as interest expense over the life of the loan.

In addition, on March 17, 2015, the Company exchanged all of its existing unsecured convertible promissory notes for Secured Notes with an aggregate principal balance of approximately $7.3 million. The total closing represented $14.75 million. The Secured Notes were due on May 31, 2016 and accrued interest at a rate of 10% per annum, except in any event of default in which case the interest rate shall be 12% per annum. During March 2016, the maturity date of the Secured Notes was extended to May 31, 2017. All other terms of the Secured Notes remained the same. The Secured Notes were automatically convertible into common stock in the event of an IPO of the Company and were optionally convertible upon a subsequent placement of equity other than an IPO or at the discretion of the note holder. Based on the method of conversion, the Secured Notes were convertible into common stock at the Conversion Price, as defined in the agreement.

During April 2016, the Company issued additional Secured Notes in the aggregate principal amount of approximately $5,958,000. These notes have the same terms as the previous Secured Notes and mature on May 31, 2017. NSC acted as placement agent and the Company paid NSC a brokerage commission in the amount of ten percent of the proceeds from the Secured Notes placed by NSC, or approximately $438,000, and issued to NSC a warrant to purchase ten percent of the common shares issuable upon conversion of Secured Notes in the principal amount of approximately $4.4 million at an exercise price equal to the conversion price of the Secured Notes. In June 2016, and prior to any exercise of the warrant, NSC elected to cancel the warrant in full and for no consideration.

During the year ended December 31, 2016 and 2015, the interest expense on the Secured Notes was approximately $2.6 million and $1.9 million, respectively. On August 10, 2016, upon consummation of the IPO, all principal and accrued interest due under the Secured Notes, totaling approximately $23.5 million converted into 6,264,659 shares of common stock of the Company, which

was based on a conversion price of $3.75 (50% of the price of shares sold in to the public in the IPO, as provided in the terms of the Secured Notes). The determination of the conversion price and number of shares issuable upon conversion of the Secured Notes triggered an adjustment to the 2015 NSC Warrant, increasing the number of shares issuable by 96,458 (to a total of 196,502 shares) and setting the exercise price at $3.75 per share. The modification of the number of shares issuable and exercise price of the 2015 NSC Warrant increased its fair value resulting in addition interest expense recognized in August, 2016 (See Note 11).

At December 31, 2015, the senior secured convertible promissory notes payable consisted of the following (in thousands):

Senior Notes	$	14,750
Accrued interest		1,670
Debt Discount		(325)
Senior secured convertible promissory notes payable, net	$	16,095

9. RELATED PARTY TRANSACTIONS

On January 14, 2005, the Company executed a Secured Promissory Note (the "Promissory Note") with an officer of the Company. Under the Promissory Note, the officer borrowed $187,500 from the Company. The Promissory Note bore interest at a fixed rate of 3.76% per annum, with interest-only payments due annually through the maturity date of January 14, 2014. In December 2015, the Company agreed to extend the term of the note to January 14, 2019, subject to acceleration in the event of the sale of the sale or liquidation of the Company, bankruptcy or like event. Effective January 2016, the Company cancelled the outstanding principal of the note in the amount of $187,500. The cancellation of this note was recognized as a bonus to the officer and included in general and administrative expenses in the accompanying statement of operations for the year ended December 31, 2016. As of the date of the cancellation of the Promissory Note, there was accrued and unpaid interest under the note in the amount of approximately $7,000, which amount has been repaid by the officer. In return for the cancellation of the note, the officer was required to reimburse the Company for withholding taxes payable by the Company, in the amount of approximately $14,000.

During the years ended December 31, 2016 and 2015, a director, who is also a shareholder of the Company, was paid $3,000 and $10,000, respectively, for his work as a consultant for the Company.

A director and shareholder of the Company is a partner of a law firm that serves as legal counsel for the Company. During the years ended December 31, 2016 and 2015, this law firm billed the Company $2,000 and approximately $34,000, respectively for the reimbursement of expenses. Included in accounts payable on the accompanying balance sheets at December 2016 and 2015, is $0 and approximately $1,000, respectively, owed to this law firm.

10. STOCKHOLDERS' EQUITY

The Company is authorized to issue to up 2,500,000 shares of preferred stock, $.001 par value. As of December 31, 2016, no shares have been authorized and no shares are issued and outstanding. Preferred stock may rank prior to common stock with respect to dividends rights, liquidation preferences, or both, and may have full or limited voting rights.

As of December 31, 2016, the Company has reserved 2.7 million shares of common stock for stock options and warrants.

During October 2015, the Company offered all option holders as of December 31, 2014 a one-time opportunity to exchange their options for shares of restricted common stock in a ratio of two options for one share of restricted common stock regardless of exercise price. The offer resulted in 166,230 options converting to 83,115 shares of restricted common stock on December 7, 2015. The Company recorded a loss of approximately $428,000 on this exchange based on the incremental increase in value of the options after the exchange compared to before the exchange.

During October 2015, the Company offered all warrant holders as of December 31, 2014 a one-time opportunity to exchange their warrants for shares of common stock in a ratio of two warrants for one share of common stock regardless of exercise price. The offer resulted in 601,861 warrants converting to 300,930 shares of common stock on December 7, 2015. The Company recorded a loss of approximately $1.7 million on this exchange based on the incremental increase in value of the warrants after the exchange compared to before the exchange.

In August 2016, the Company closed its IPO of 3,680,000 shares of common stock at a public offering price of $7.50 per share. In accordance with the terms of the Secured Notes, all principal plus accrued interest (totaling approximately $23.5 million) converted automatically upon consummation of the IPO into 6,264,659 shares (see Note 8).

11. WARRANTS

On February 9, 2015, the Company issued a five-year warrant to purchase 198,767 shares of common stock at $0.15 per share to Liquid Patent Advisors, LLC (formerly known as Liquid Patent Consulting, LLC) ("LPC"). The warrant represented consideration for business, strategic and intellectual property development to be performed during 2015. The fair value of the warrant was determined to be approximating $1.0 million and was recorded as consulting expense and is included in general and administrative expenses in the statement of operations in year ended December 31, 2015. During July 2015, the exercise price for 188,829 shares of common stock was modified to an exercise price of $0.87 per share. The modification resulted in a decrease in the fair value of the warrant; such decrease is not recognized under authoritative guidance.

As a result of the conversion of the Secured Notes to common stock on August 10, 2016, the 2015 NSC Warrant was adjusted in accordance with its terms (See Note 5). This adjustment consisted of (i) an increase in the number of shares issuable upon exercise of the warrant by 96,458 to a total of 196,602 (10% of the common shares issued upon conversion of the Secured Notes) and (ii) modified the per-share exercise price of the original warrant issued to $3.75. The adjustment increased the fair value of the warrant by approximately $710,000 and was recorded as additional interest expense in the year ended December 31, 2016 in the statement of operations. The modified warrant expires at the same time as the original warrant, March 17, 2020.

On August 4, 2016, the Company issued a five-year warrant to purchase 368,000 shares of common stock at $9.375 per share to NSC in consideration for underwriting the Company's IPO in August 2016. The fair value of these warrants was determined to be approximately $539,000 and is included as a charge to additional paid-in capital as of December 31, 2016 as a deferred offering cost.

The Company estimated the fair value of warrants using the Black-Scholes option pricing model. The fair value of warrants was estimated using the following weighted-average assumptions:

	Year Ended December 31,	
	2016	2015
Weighted average exercise price:	$ 7.42	$ 2.57
Weighted average grant date fair value:	$ 2.49	$ 3.92
Assumptions:		
Expected volatility	43.1%	43.94%
Weighted average expected term (in years)	2.2	5.0
Risk-free interest rate	0.6%	1.5%
Expected dividend yield	0.0%	0.0%

The risk-free interest rate was obtained from U.S. Treasury rates for the applicable periods. The Company's expected volatility was based upon the historical volatility for industry peers and used an average of those volatilities. The expected life of the Company's options was determined using the simplified method as a result of limited historical data regarding the Company's activity. The dividend yield considers that the Company has not historically paid dividends, and does not expect to pay dividends in the foreseeable future.

A summary of warrant activity for the years ended December 31, 2016 is as follows (shares in thousands except per share and contractual term):

	Number of Shares	Weighted-Average Exercise Prices	Weighted-Average Remaining Contractual Term (In Years)
Outstanding at January 1, 2016	303	$ 3.41	
Issued	464	$ 8.21	
Expired	(2)	$ 33.75	
Outstanding and exercisable at December 31, 2016	765	$ 5.75	3.9

The warrants outstanding at December 31, 2016 had an intrinsic value of approximately $1.8 million based on a per-share stock price of $6.75 as of December 31, 2016.

12. STOCK BASED COMPENSATION

The Company granted options under an Employee Option Plan (the "Old Plan"), which authorized the granting of options to employees, directors and consultants to purchase common stock. Option grants are no longer authorized under the Old Plan which had 1,370 vested options outstanding at December 31, 2014 and no vested options outstanding at December 31, 2015.

On March 14, 2007, the Company's stockholders approved the 2007 Equity Incentive Plan (the "2007 Plan"). Generally, stock options vest and become exercisable over a two to four-year period from the date of grant; however, during 2015 and 2016 certain options granted provided for immediate vesting or were milestone based. Stock options expire no later than ten years after the grant date. In addition, non-vested shares that are released from or reacquired by the Company from outstanding awards under the 2007 Plan become available for grant under the 2007 Plan and may be reissued as new awards. The 2007 Plan is authorized to issue up to 1,222,306 shares as of December 31, 2016.

The following table summarizes the stock-based compensation expense recorded in the Company's results of operations during the years ended December 31, 2016 and 2015 for stock options and restricted stock (in thousands):

	Year Ended December 31,	
	2016	2015
Research and development	$ 157	$ 137
General and administrative	1,893	294
Selling and Marketing	418	–
	$ 2,468	$ 431

As of December 31, 2016, there was approximately $5.5 million of total unrecognized compensation expense related to non-vested share-based compensation arrangements that are expected to vest. This cost is expected to be recognized over a weighted-average period of 2.2 years.

The Company records compensation expense for employee awards with graded vesting using the straight-line method. The Company records compensation expense for nonemployee awards with graded vesting using the accelerated expense attribution method. The Company recognizes compensation expense over the requisite service period applicable to each individual award, which generally equals the vesting term. The Company estimates the fair value of each option award using the Black-Scholes-Merton option pricing model. Forfeitures are recognized when realized.

The Company estimated the fair value of employee and non-employee stock options using the Black-Scholes option pricing model. The fair value of employee stock options is being amortized on a straight-line basis over the requisite service periods of the respective awards. The Company has decided to early adopt ASU 2016-09 in the fourth quarter of 2016 and has elected to recognizing forfeitures as they occur rather than estimate their forfeiture rate. The fair value of employee stock options issued was estimated using the following weighted-average assumptions:

	Year Ended December 31,	
	2016	2015
Weighted average exercise price:	$ 7.47	$ 6.06
Weighted average grant date fair value:	$ 3.50	$ 2.14
Assumptions:		
Expected volatility	44.1%	43.94%
Weighted average expected term (in years)	5.8	5.4
Risk-free interest rate	1.46%	1.5%
Expected dividend yield	0.0%	0.0%

The risk-free interest rate was obtained from U.S. Treasury rates for the applicable periods. The Company's expected volatility was based upon the historical volatility for industry peers and used an average of those volatilities. The expected life of the Company's options was determined using the simplified method as a result of limited historical data regarding the Company's activity. The dividend yield considers that the Company has not historically paid dividends, and does not expect to pay dividends in the foreseeable future.

Prior to the Company's IPO in August 2016, the fair value of the common stock was determined by the board of directors based on a variety of factors, including valuations prepared by third parties, the Company's financial position, the status of development efforts within the Company, the current climate in the marketplace and the prospects of a liquidity event, among others.

The following table summarizes stock option activity during the year ended December 31, 2016 (in thousands except exercise prices and contractual terms):

	Number of Shares	Weighted-Average Exercise Prices	Weighted-Average Remaining Contractual Term (In Years)	Intrinsic Value
Outstanding at January 1, 2016	511	$ 7.05		
Granted	1,011	$ 7.47		
Exercised	(1)	$ 5.70		
Expired	(6)	$ 31.61		
Outstanding at December 31, 2016	1,515	$ 7.21	8.8	$ 382
Exercisable at December 31, 2016	480	$ 7.48	8.5	$ 125

During the year ended December 31, 2016, the Company granted options under its 2007 Plan to purchase 1,011,265 shares of its common stock to its employees. The fair value of these options was approximately $3.5 million.

In August 2016, the Company issued 440,364 shares of restricted stock as a management bonus for completing the IPO, with a fair value of approximately $3.5 million to be amortized over the vesting period. The following table summarizes all restricted stock activity during year ended December 31, 2016 (in thousands except per share data):

	Number of Shares	Weighted-Average Grant Date Fair Value
Outstanding at January 1, 2016	–	–
Granted	462	$ 8.07
Cancelled	–	–
Outstanding non-vested shares at December 31, 2016	462	$ 8.07

During April 2016, the Board of Directors of the Company resolved that upon the completion of an IPO the 2007 Plan shall be amended to increase common shares issuable thereunder to 3,199,447 shares of common stock, representing 20% of the total issued and outstanding shares of Common Stock on a fully-diluted basis immediately after the IPO. On August 12, 2016, the Company filed a registration statement on Form S-8 (which became effective upon filing) for the registration of 3,199,447 shares of common stock pursuant to the 2007 Plan.

13. 401(k) PLAN

During 2002, the Company established a plan under Section 401(k) of the Internal Revenue Code (the 401(k) Plan). The 401(k) Plan covers substantially all of its employees who have attained 18 years of age. Employees may elect to contribute part of their annual compensation to the 401(k) Plan, up to the maximum deferral allowance for individuals by the Internal Revenue Service under Code Section 401(k), and the Company may make a matching contribution. During 2016 and 2015, there were no matching contributions made by the Company.

14. INCOME TAXES

The income/(loss) before provision for income taxes consisted of the following (in thousands):

	Year Ended December 31,	
	2016	2015
Domestic	$ (12,610)	$ (9,513)
International	–	–
Total	$ (12,610)	$ (9,513)

The Company had no income tax expense due to operating losses incurred for the year ended December 31, 2016. The Company accounts for income taxes in accordance with ASC 740, which requires that the tax benefit of net operating losses, temporary differences and credit carryforwards be recorded as an asset to the extent that management assesses that realization is "more likely than not." Realization of the future tax benefits is dependent on the Company's ability to generate sufficient taxable

income within the carryforward period. Because of the Company's recent history of operating losses, management believes that recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not likely to be realized and, accordingly, has provided a full valuation allowance.

The Company's deferred tax assets are as follows (in thousands):

	Year Ended December 31,	
	2016	2015
Deferred tax assets:		
Net operating loss carryforwards	$ 19,431	$ 8,982
Tax credit	695	999
Fixed assets and intangibles	3,239	11,158
Stock compensation	1,302	2,725
Accruals and other	152	672
Total deferred tax assets	$ 24,819	$ 24,536
Valuation allowance	(24,819)	(24,536)
Net deferred tax asset	$ –	$ –

The Company has decided to early adopt ASU 2016-09 in the fourth quarter of 2016 and has elected to recognizing forfeitures as they occur rather than estimate their forfeiture rate. The ASU 2016-09 is considered to be effective from the beginning of the year of adoption. In the year of adoption, ASU 2016-09 requires that the cumulative effect adjustment be recorded to retained earnings. Due to the full valuation allowance, there is no cumulative effect adjustment to record. Excess windfall net operating loss carryforwards are converted into deferred tax net operating losses with a corresponding increase in valuation allowance as of the beginning of 2016; the year of adoption.

Net operating losses and tax credit carryforwards as of December 31, 2016, are as follows (in thousands):

	Amount	Expiration in years
Net operating losses, federal	$ 53,418	2027-2036
Net operating losses, state	$ 24,188	2030-2036
Tax credits, federal	$ 744	2027-2036
Tax credits, state	$ 583	2022-2031

The effective tax rate of the Company's provision (benefit) for income taxes differs from the federal statutory rate as follows:

	Year ending December 31,	
	2016	2015
Statutory rate	34.00%	34.00%
State rate	(9.63)%	4.76%
Non-deductible items	(2.72)%	(5.96)%
Change in valuation allowance	(16.93)%	(33.20)%
Change in tax credits	(2.82)%	0.40%
Non-deductible interest expense	(1.90)%	–
Total	–	–

Utilization of U.S. net operating losses and tax credit carryforwards may be limited by "ownership change" rules, as defined in Section 382 of the Internal Revenue Code. Similar rules may apply under state tax laws. The Company has not conducted a study to-date to assess whether a limitation would apply under Section 382 of the Internal Revenue Code as and when it starts utilizing its net operating losses and tax credits. The Company will continue to monitor activities in the future. In the event the Company previously experienced an ownership change, or should experience an ownership change in the future, the amount of net operating losses and research and development credit carryovers available in any taxable year could be limited and may expire unutilized.

The Company establishes reserves for uncertain tax positions based on the largest amount that is more-likely-than-not to be sustained. An uncertain income tax position will not be recognized if it has less than a 50% likelihood of being sustained. It is the Company's policy to recognize interest and penalties related to income tax matters in income tax expense. As of December 31, 2016 and December 31, 2015, respectively, the Company has no accrued interest or penalties related to uncertain tax positions.

The Company files income tax returns in the U.S. federal jurisdiction and various state jurisdictions. In the normal course of business, the Company is subject to examination by their respective taxing authorities. The Company is not currently under audit by the Internal Revenue Service or other similar state or local authority. All tax years remain effectively open to examination by major taxing jurisdictions to which the Company is subject to due to net operating loss and credit carryforwards.

The following table summarizes the activity related to the Company's gross unrecognized tax benefits from December 31, 2015 to December 31, 2016 (in thousands):

	2016	2015
January 1 – unrecognized tax benefits	$ –	$ –
Increases – prior year tax positions	463	–
Increases – current year tax positions	47	–
December 31 - unrecognized tax benefits	$ 510	$ –

The following table summarizes the activity in the Company's Valuation Allowance and Qualifying Accounts for the years ended December 31, 2016 and 2015 (in thousands):

	Balance at Beginning of Year	Additions	Deductions	Balance at End of Year
Deferred tax assets valuation allowance				
Year ended December 31, 2016	$ 24,536	$ 11,296	$ 11,013	$ 24,819
Year ended December 31, 2015	$ 21,378	$ 3,163	$ 5	$ 24,536

15. LEGAL MATTERS

To the best of the Company's knowledge, based on information currently available, the Company is not subject to any pending legal proceedings.

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

Not applicable.

Item 9A. Controls and Procedures

(a) *Evaluation of Disclosure Controls and Procedures.*

Our management, with the participation of our chief executive officer and chief financial officer evaluated the effectiveness of our disclosure controls and procedures pursuant to Rule 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Based upon that evaluation, our management, including our chief executive officer and chief financial officer, concluded that our disclosure controls and procedures were effective as of December 31, 2016 in ensuring all material information required to be filed has been made known in a timely manner.

(b) Changes in internal control over financial reporting.

There were no changes to our internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act that occurred during the quarter ended December 31, 2016 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(c) Management's report on internal controls over financial reporting.

This report does not include a report of management's assessment regarding internal control over financial reporting or an attestation report of our registered public accounting firm due to a transition period established by rules of the Securities and Exchange Commission for newly public companies.

Item 9B. Other Information

Not applicable.

PART III

The information required by Part III is omitted from this report because we will file a definitive proxy statement within 120 days after the end of our 2016 fiscal year pursuant to Regulation 14A for our 2017 Annual Meeting of Stockholders, or the 2017 Proxy Statement, and the information to be included in the 2017 Proxy Statement is incorporated herein by reference.

Item 10. Directors, Executive Officers and Corporate Governance

The information required under this item will be contained in the 2017 Proxy Statement and is hereby incorporated by reference.

Item 11. Executive Compensation

The information required under this item will be contained in the 2017 Proxy Statement and is hereby incorporated by reference.

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

The information required under this item will be contained in the 2017 Proxy Statement and is hereby incorporated by reference.

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

The information required under this item will be contained in the 2017 Proxy Statement and is hereby incorporated by reference.

Item 14. Principal Accountant Fees and Services

The information required under this item will be contained in the 2017 Proxy Statement and is hereby incorporated by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Financial Statements

(1) Financial statements for our company are listed in the index under Item 8 of this document

(2) All financial statement schedules are omitted because they are not applicable, not material or the required information is shown in the financial statements or notes thereto.

Exhibit No.	Description	Method of Filing
3.1	Amended and Restated Certificate of Incorporation of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
3.2	Amended and Restated Bylaws of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
3.3	Certificate of Amendment to Amended and Restated Certificate of Incorporation of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
3.4	Certificate of Amendment to Amended and Restated Certificate of Incorporation of the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
4.1	Warrant dated February 9, 2015 issued to Liquid Patent Advisors, LLC	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
4.2	Form of Senior Secured Convertible Promissory Note issued by the Registrant to investors in the offering completed on March 17, 2015	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
4.3	Warrant dated March 17, 2015 issued to National Securities Corporation	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
4.4	Form of Senior Secured Convertible Promissory Note issued by the Registrant to investors in the offering completed on April 1, 2016	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
4.5	Warrant dated August 10, 2016 issued to National Securities Corporation	Incorporated by reference from the Registrant's Quarterly Report on Form 10-Q filed on September 19, 2016.
10.1	Assignment of Patent Rights dated April 3, 2009 between Dr. Robert Mears and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.2	License Agreement dated December 22, 2006 between ASM International, NV and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.

10.3+	2007 Stock Incentive Plan	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.4	Exclusive License and Collaboration Agreement dated March 3, 2010 between K2 Energy Limited and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.5	Letter Agreement dated June 6, 2014 between K2 Energy Limited and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.6+	Executive Employment Agreement dated October 16, 2015 between Scott Bibaud and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.7	Allonge to Secured Promissory Note dated December 4, 2015 between Dr. Robert Mears and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.8+	Employment Agreement dated January 1, 2016 between Erwin Trautmann and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.9+	Employment Agreement dated January 1, 2016 between Ron Cope and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.10+	Employment Agreement dated January 13, 2016 between Dr. Robert Mears and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.11+	Letter Agreement regarding loan forgiveness dated January 13, 2016 between Dr. Robert Mears and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.12	Lease Agreement dated January 19, 2016 between 750 University, LLC and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.13+	Employment Agreement dated February 23, 2016 between Francis Laurencio and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.14+	Amendment No. 1 dated February 26, 2016 to Employment Agreement dated October 12, 2015 between Scott Bibaud and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.15	Securities Purchase Agreement dated April 1, 2016 between the Purchasers of Senior Secured Convertible Promissory Notes and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.16	Amended and Restated Registration Rights Agreement dated April 1, 2016 between the Purchasers of Senior Secured Convertible Promissory Notes and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
10.17	Amended and Restated Security Agreement dated April 1, 2016 between the Purchasers of Senior Secured Convertible Promissory Notes and the Registrant	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.

10.18	Form of Restricted Stock Agreement	Incorporated by reference from the Registrant's Amendment No. 1 to Registration Statement on Form S-1 filed on July 29, 2016
21.1	List of Subsidiaries	Incorporated by reference from the Registrant's Registration Statement on Form S-1 filed on June 30, 2016.
23.1	Consent of Marcum LLP, Independent Registered Public Accounting Firm	Filed electronically herewith
31.1	Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed electronically herewith
31.2	Certifications Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed electronically herewith
32.1	Certification of Principal Executive Officer and Principal Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350).	Filed electronically herewith
101.INS	XBRL Instance Document	Filed electronically herewith
101.SCH	XBRL Taxonomy Extension Schema Document	Filed electronically herewith
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document	Filed electronically herewith
101.LAB	XBRL Taxonomy Extension Label Linkbase Document	Filed electronically herewith
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document	Filed electronically herewith
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document	Filed electronically herewith

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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.

ATOMERA INCORPORATED.

Date: March 31, 2017

By: */s/ Scott A. Bibaud*
Scott A. Bibaud
Chief Executive Officer,
(Principal Executive Officer)
and Director

Date: March 31, 2017

By: */s/ Francis B. Laurencio*
Francis B. Laurencio
Chief Financial Officer
(Principal Financial and
Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/*Scott A. Bibaud* Scott A. Bibaud	Chief Executive Officer and Director *(Principal Executive Officer)*	March 31, 2017
/s/*John D. Gerber* John Gerber	Director and Chairman	March 31, 2017
/s/ *Erwin Trautmann* Erwin Trautmann	Executive Vice President of Strategic Business Development and Director	March 31, 2017
/s/*Rolf Stadheim* Rolf Stadheim	Director	March 31, 2017
/s/*C. Rinn Cleavelin* C. Rinn Cleavelin, Ph.D.	Director	March 31, 2017
/s/ *Steven K. Shevick* Steven K. Shevick	Director	March 31, 2017