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SPIRE CORP
Form 10-K/A
November 24, 2009

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

FORM 10-K/A
(Amendment No. 1)

- Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 For the fiscal year ended December 31, 2008 or
- Transition Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 For the transition period from _____ to _____

Commission file number: 0-12742

SPIRE CORPORATION

(Exact name of registrant as specified in its charter)

Massachusetts

04-2457335

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification Number)

One Patriots Park
Bedford, Massachusetts 01730-2396

(Address of principal executive offices)

(781) 275-6000

(Registrant's telephone number, including area code)

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

| Title of Each Class ----- | Name of Each Exchange on Which Registered ----- |
|--|---|
| Common Stock, \$0.01 par value per share | The Nasdaq Global Market |

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such

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filing requirements for the past 90 days. Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of 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. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange 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

Aggregate market value of the voting stock held by non-affiliates of the registrant based on the last sale price of such stock as reported by The Nasdaq Global Market on June 30, 2008: \$62,903,000

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement for the Special Meeting in Lieu of 2009 Annual Meeting of Stockholders to be held on May 21, 2009, are incorporated by reference in Part III of this Form 10-K.

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SPIRE CORPORATION
FORM 10-K
FOR THE YEAR ENDED DECEMBER 31, 2008

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EXPLANATORY NOTE

We are filing this Amendment No. 1 (the "Amended Report") to our Annual Report on Form 10-K for the year ended December 31, 2008 (the "Original Report") for the sole purpose of (i) indicating on the signature page hereto that (A) Roger G. Little, our Chairman, Chief Executive Officer and President, is signing in his capacity as our "principal executive officer" and (B) Christian Dufresne, our Chief Financial Officer and Treasurer, is signing in his capacity as both our "principal financial officer" and "principal accounting officer"; (ii) filing as an exhibit hereto our contract, dated November 28, 2008, with Federal Prisons Industries, Inc., otherwise known as UNICOR (the "UNICOR Contract") and amendments thereto; (iii) describing the material terms of the UNICOR Contract under Item 9B, "Other Information"; and (iv) revising the description of the UNICOR Contract under Item 1, "Business" to include such material terms.

For the reasons discussed above, we are filing this Amended Report in order to amend Item 1, "Business," Item 9B, "Other Information," Item 15, "Exhibits" and the signature page of the Original Report to the extent required to reflect the changes described above. The remaining Items of our Original Report are not amended hereby and are repeated herein only for the reader's convenience.

In order to preserve the nature and character of the disclosures set forth in the Original Report, except as expressly noted herein, this report speaks as of the date of the filing of the Original Report, March 31, 2009, and we have not updated the disclosures in this report to speak as of a later date. All information contained in this Amended Report is subject to updating and supplementing as provided in our reports filed with the Securities and Exchange Commission subsequent to the date of the Original Report.

FORWARD-LOOKING STATEMENTS

THIS REPORT CONTAINS FORWARD-LOOKING STATEMENTS WITHIN THE MEANING OF SECTION 27A OF THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND SECTION 21E OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED (THE "EXCHANGE ACT"), WHICH STATEMENTS INVOLVE RISKS AND UNCERTAINTIES. THESE STATEMENTS RELATE

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TO OUR FUTURE PLANS, OBJECTIVES, EXPECTATIONS AND INTENTIONS. THESE STATEMENTS MAY BE IDENTIFIED BY THE USE OF WORDS SUCH AS "MAY", "COULD", "WOULD", "SHOULD", "WILL", "EXPECTS", "ANTICIPATES", "INTENDS", "PLANS", "BELIEVES", "ESTIMATES" AND SIMILAR EXPRESSIONS. OUR ACTUAL RESULTS AND TIMING OF CERTAIN EVENTS COULD DIFFER MATERIALLY FROM THOSE DISCUSSED IN THESE STATEMENTS. FACTORS THAT COULD CONTRIBUTE TO THESE DIFFERENCES INCLUDE BUT ARE NOT LIMITED TO, THOSE DISCUSSED UNDER "ITEM 1A. RISK FACTORS", "MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS" AND ELSEWHERE IN THIS REPORT. READERS ARE ENCOURAGED TO CAREFULLY REVIEW THESE RISK FACTORS. THE CAUTIONARY STATEMENTS MADE IN THIS REPORT SHOULD BE READ AS BEING APPLICABLE TO ALL FORWARD-LOOKING STATEMENTS WHEREVER THEY APPEAR IN THIS REPORT. WE UNDERTAKE NO OBLIGATION TO UPDATE ANY FORWARD LOOKING STATEMENTS.

PART I

ITEM 1. BUSINESS

Spire Corporation ("Spire" or the "Company") is a Massachusetts corporation incorporated in 1969. Our principal offices are located at One Patriots Park, Bedford, Massachusetts, and our phone number is (781) 275-6000. Our SEC filings are available through our website, www.spirecorp.com. Our common stock trades on the Nasdaq Global Market under the symbol "SPIR".

PRINCIPAL PRODUCTS AND SERVICES

Overview

Spire has been in the solar business for over 30 years, initially pioneering developments in solar cell technology. Currently, we develop, manufacture, and market customized turnkey solutions for the solar industry, including individual pieces of manufacturing equipment and full turnkey lines for cell and module production and testing. We have been continually active in research and development in the space, with over \$100 million of R&D conducted and 35 issued patents. This expertise has provided the platform for development of our manufacturing equipment and turnkey lines. We have equipment deployed in approximately 50 countries and have among our customers some of the world's leading solar manufacturers including First Solar, BP Solar, Canadian Solar, Trina Solar Energy, Evergreen and Solaria Energia.

As the solar market continues to expand, and photovoltaic cell and module manufacturers ramp production to meet increasing demand, they require more turnkey equipment to produce additional photovoltaic cells and modules. We believe that we are one of the world's leading suppliers of the manufacturing equipment and technology needed to produce solar photovoltaic power systems. Our individual manufacturing equipment products and our SPI-LINETM integrated turnkey cell and module production lines can be highly scaled, customized, and automated with high throughput. These systems are designed to meet the needs of a broad customer base ranging from manufacturers relying on mostly manual processes, to some of the largest photovoltaic manufacturing companies in the world. With nearly forty years since our incorporation and over thirty years in the solar market, we have been in a good position to capitalize on the market's growth. Our total sales and revenues for 2008 increased approximately 85% compared to 2007.

In July 2007, we entered into a joint venture with Gloria Solar Co., Ltd., a leading cell and module manufacturer in Taiwan, which designs, sells and manages installations of photovoltaic systems. Our 45% ownership stake in the joint venture, Gloria Spire Solar, LLC, was obtained through the contribution of our building integrated photovoltaic business to Gloria Solar. This transaction has allowed us to focus more of our attention on our core solar business, while

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continuing to expand the Spire brand name in the marketplace.

In addition to our cell and module manufacturing solutions, our Spire Semiconductor subsidiary provides semiconductor foundry services and is currently developing triple-junction gallium arsenide ("GaAs") concentrator solar cells. This state-of-the-art semiconductor fabrication facility is the foundation of our solar cell process technology for silicon, polysilicon, thin-film, and GaAs concentrator cells. We also operate a small business line associated with advanced

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biomedical applications. The foundation for all of our business units is our industry-leading expertise in manufacturing, materials technologies and surface treatments; this proprietary knowledge enables us to further develop our offerings in each market we serve.

INDUSTRY OVERVIEW

Solar power has become one of the fastest growing sources of renewable energy in recent years. Key factors driving the demand for solar power include rising fossil fuel prices, security concerns over the dependence of fossil fuel imports from areas of volatility, environmental concerns over the hazards associated with fossil fuel use, government incentive programs making solar power more cost competitive, and overall changes in consumer preference. As a result, businesses, governments, and consumers have become increasingly supportive of the development of alternative sources of energy, such as solar power. Historically, the largest markets for PV systems have been in Europe and Japan with manufacturing located primarily in Europe and Asia. However, industry analysts predict that the U.S. will be the fastest growing market over the next several years due to a number of factors including the extension of the Section 48 business and Section 25D residential investment tax credits through 2016, and the alternative energy focus of the American Recovery and Reinvestment Act (ARRA).

PHOTOVOLTAIC MODULE MANUFACTURING OVERVIEW

Several technologies have been developed to harness the sun's energy. Most prolific is the direct conversion of photons of light into electricity through the use of photovoltaic cells. Though various thin film photovoltaic materials are growing in popularity due low production costs, the majority of the photovoltaic market, roughly 85%, is composed of crystalline silicon. The popularity of silicon is largely based on its technological legacy, abundant raw material (silicate), and high conversion efficiency. Bottlenecks in silicon solar cell supply that existed prior to 2008 have now been relieved, and there is abundant supply for the industry.

Crystalline solar cells and modules are produced in five basic stages: (i) polysilicon production; (ii) ingot growth; (iii) ingot wafering; (iv) cell production; and (v) module assembly. The value chain begins with the processing of quartz sand to produce silicon. The resulting silicon is purified to solar grade polysilicon, which is then processed into ingots. The ingots are sliced into wafers, which are manufactured into solar cells through an etching, doping and coating process. The solar cells are combined into modules through another series of steps, which include testing, sorting and stringing the cells, transferring the strings onto glass, and laminating and framing the module for final assembly. Not all solar cell and module manufacturers participate in each stage of the production process. Some manufacturers are integrated across multiple stages while others specialize in one stage of the process.

PRODUCTS AND SERVICES

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Our core business is in the solar market, where we provide individual pieces of manufacturing equipment, turnkey cell and module lines, integrated cell supply, solar factory management services, and solar systems through our joint venture. Our solar business was responsible for over 75% of our revenues in 2008. We also operate smaller businesses in the semiconductor and biomedical device markets, both of which derived from our core expertise in solar cell fabrication.

Spire Solar

We believe that we are one of the world's leading suppliers of manufacturing equipment and technology needed to manufacture solar photovoltaic power systems. Our individual items of manufacturing equipment and our SPI-LINETM module production lines span the full photovoltaic module fabrication process, which currently include:

- o Sorting solar cells into performance groups
- o Assembling and soldering strings of cells interconnected with metal ribbons or "tabs"
- o Completing the module circuit by soldering bus ribbons to connect the strings together
- o Cutting polymer, fiberglass and back cover to length and assembling them with the glass and module circuit in preparation for encapsulation
- o Laminating the module assembly and curing the encapsulating polymer
- o Final assembly, including edge trimming, installing an edge gasket and frame, and attaching a junction box
- o Performing a high voltage isolation test to guarantee safe voltage isolation between the cell circuit and the module frame

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- o Electrically testing the module performance by measuring a current-voltage curve under simulated sunlight

The fabrication of photovoltaic modules uses solar cells and module materials as input and produces functional photovoltaic modules, ready for use. We provide the necessary equipment and training for implementing these process steps for individual equipment items and for fully integrated production lines.

Our primary customers have been new entrants in the solar PV market. These entrants are primarily local manufacturers that are encouraged to produce PV modules by governmental incentive programs. We offer a turnkey solution with enabling technology to allow these companies to quickly enter into the market, or to expand existing capacity, within one year of their initial investment decision. We also sell individual equipment to existing silicon module manufacturers as well as certain pieces of our module equipment to "thin film" manufacturers, specifically lamination and testing equipment. We provide full turnkey solar cell and wafer lines to customers to vertically integrate their manufacturing lines (for these production lines) by providing integration services using equipment purchased from third parties. We provide a customized proprietary cell line process technology solution along with our own proprietary process technology. We currently have three customers under contract to deliver 50MW of cell line production.

On July 31, 2007, we entered into a contractual relationship with Gloria Solar Co., Ltd. ("Gloria Solar"), a leading cell and module manufacturer in Taiwan organized under the laws of the Republic of China (Taiwan). Under the agreement, we agreed to sell Gloria Solar certain assets pertaining to our solar

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systems business for \$4 million. In addition, we agreed to form a joint venture for the purpose of pursuing the solar photovoltaic systems market within the United States. The joint venture designs, sells and manages the installations of solar systems for the generation of electrical power by solar photovoltaic means in primarily commercial/industrial and utility segments of the market (the "JV Systems Business"). Gloria Solar owns 55% of the joint venture and we own 45%. In connection with the formation of the joint venture, we contributed our solar photovoltaic system assets related to the JV Systems Business, including certain intellectual property and know-how, access to information technology assets and relationships, relationships with current and previous customers, contract backlog and project leads, certain registered trademarks, and employment relationships with staff members; Gloria Solar contributed \$5 million in cash.

In November 2008, we received a contract worth nearly \$54 million from the Federal Prison Industries, Inc, otherwise known as UNICOR, to supply solar cells for the Spire-installed Turnkey Photovoltaic Module Factory located at the Federal Correctional Institution (FCI) in Otisville, New York. UNICOR is a wholly-owned government corporation that is authorized to operate industries in federal correctional institutions and disciplinary barracks throughout the United States. The Spire-supplied turnkey module line at FCI Otisville is to be operated by inmates who will be trained to find employment in the rapidly growing United States solar industry. Modules manufactured at FCI Otisville will be sold for government installations. Successful performance of the factory may lead to similar factories at other UNICOR locations. The contract has an initial term of twenty two (22) months. Delivery commences in the first quarter of 2009 with approximately 30% of the contract value being delivered in 2009 and 70% being delivered in 2010. The contract allows UNICOR to exercise, at its option, three separate one-year extensions. The three, one-year extensions are worth up to \$266.3 million in the aggregate. Under the terms of the contract, UNICOR can terminate the contract for convenience at any time.

Spire Semiconductor

Spire Semiconductor operates a state-of-the-art semiconductor foundry and fabrication facility in Hudson, New Hampshire, equipped with advanced and sophisticated metal-organic chemical vapor deposition ("MOCVD") reactors and fabrication equipment. Our fabrication facility has been designed with flexibility to engage in quick-turn research and prototyping, as well as for economical full-rate volume production services.

Spire Semiconductor offers double- and triple-junction gallium arsenide (GaAs) solar cells and has recently been awarded a contract by the Department of Energy's National Renewable Energy Laboratory (NREL) for a \$3.7 million, 20% cost share program to develop a 40%+ conversion efficiency solar cell design. GaAs concentrator cells represent a significant market opportunity and, as one of the pioneers in GaAs fabrication, we have the expertise to provide customers with turnkey cell products. We currently have capacity for 25 MW of high efficiency solar cell production with opportunities to expand. We also have capabilities for fabricating thermo-photovoltaic ("TPV") cells.

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Spire Biomedical

Through our Spire Biomedical subsidiary, we provide advanced medical device surface treatment processes for performance improvement of orthopedic and cardiovascular devices, enhancing properties such as wear resistance, infection resistance and thromboresistance. Additionally, we offer a wide range of high

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performance vascular access catheters for hemodialysis treatment in patients with chronic kidney disease, including advanced catheters coated with heparin to minimize thrombus and fibrin sheath accumulation. As previously announced, we are currently evaluating strategic alternatives for our catheter product line to further focus our resources on our solar business.

PRINCIPAL DISTRIBUTION METHODS

Our products and services are sold primarily by our direct, internal sales staff with four notable exceptions: (i) in certain offshore markets, we utilize independent sales representatives to aid our sales efforts to sell our solar equipment, (ii) our hemodialysis catheter products are sold via independent distributors, and (iii) proposals for sponsored research and development work are prepared by our scientists and researchers.

PHYSICIAN RELATIONSHIPS

We have engaged certain physicians to serve as consultants to us. These physicians enter into written contracts that specify their duties and compensation for periods of one or more years. The compensation for these consultants is the result of arm's length negotiations and generally depends upon competitive factors in the local market, the physician's professional qualifications and the specific duties and responsibilities of the physician.

COMPETITIVE CONDITIONS

The markets in which we operate are highly competitive and characterized by changes due to technological improvements and developments. We compete with many other manufacturers and service providers in each of our product and service areas; many of these competitors have greater resources and sales. Additionally, our products and services compete with products and services utilizing alternative technologies. For example, our solar photovoltaic systems compete with other forms of renewable energy such as wind, solar thermal and geo-thermal. Price, service and product performance are significant elements of competition in the sale of each of our products. We believe that there are considerable barriers to entry into the markets we serve, including a significant investment in specialized capital equipment and product design and development, and the need for a staff with sophisticated scientific and technological knowledge.

SOURCES AND AVAILABILITY OF RAW MATERIALS

Principal raw materials purchased by us include polymer extrusions, molded plastic parts, silicon photovoltaic cells, compound semiconductor wafer substrates, high purity industrial gases, custom metal welded structures, fasteners, position sensors, electrical motors, electrical power conditioning inverters, and electrical controls. All of these items are available from several suppliers and we generally rely on more than one supplier for each item. Up until the third quarter of 2008, there has been a multi-year shortage in semiconductor grade silicon leading to huge increases in the spot market price. However, at the end of 2008 new capacity has been added and further capacity is expected to come online in 2009 given that the spot market is expected to remain above production costs for 2009. This has as resulted in a significant reduction in the cost of crystalline silicon based material. If poly-silicon production scheduled to come on line is delayed or scaled back there is potential for a new shortage which would cause users of our equipment to either scale back or delay their expansion plans.

SOURCES AND AVAILABILITY OF MANUFACTURING SERVICES

We employ an outsourcing-model supply chain in our biomedical products business by which certain manufacturing services, such as polymer extrusion,

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assembly, packaging and sterilization, are obtained from third party contractors. We have identified multiple potential sources for the services we require; however, certain elements of the supply chain currently involve only one qualified contractor. As sales volume expands, we plan to reassess our supply chain to eliminate potential "bottlenecks" and reduce dependence on sole-source, single site contract services.

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KEY LICENSES AND PATENTS, GOVERNMENT RIGHTS TO INTELLECTUAL PROPERTY

Through over 30 years of research and development, we have accumulated extensive scientific and technological expertise. We protect our technological advances as trade secrets, in part through confidentiality agreements with employees, consultants and third parties. We also seek and enforce patents as appropriate. We currently have 33 issued United States patents, three of which are jointly owned, two foreign patents, 26 patents pending in the United States, and eight foreign patents pending, all of which cover elements of our materials and processing technologies.

The United States government retains the right to obtain a patent on any invention developed under government contracts as to which we do not seek and obtain a patent, and may require us to grant a third party license of such invention if steps to achieving practical application of the invention have not been taken. The United States government also retains a non-exclusive, royalty-free, non-transferable license to all technology developed under government contracts, whether or not patented, for government use, including use by other parties to United States government contracts. Furthermore, our United States government contracts prohibit us from granting exclusive rights to use or sell any inventions unless the grantee agrees that any product using the invention will be manufactured substantially in the United States.

GOVERNMENT REGULATION OF MEDICAL PRODUCTS

Our hemodialysis catheters and accessory products require the approval of the United States Food & Drug Administration ("FDA") prior to sale within the United States. Sales within the European Union ("EU") require the CE Mark certification and sales within Canada require a medical device license issued by Health Canada.

Within the United States, the process requires that a pre-market notification (the "510(k) Submission") be made to the FDA to demonstrate that the device is as safe and effective, substantially equivalent to a legally marketed device that is not subject to pre-market approval. FDA guidance documents are used to prepare the 510(k) Submission. Applicants must compare this device to one or more similar devices commercially available in the United States, known as the "predicate" device(s), and make and support their substantial equivalency claims. Applicants must submit descriptive data and performance data to establish that the device is substantially equivalent to a predicate device. In some instances, data from human clinical trials must also be submitted in support of a 510(k) Submission. If so, the data must be collected in a manner that conforms to specific requirements in accordance with federal regulations. The FDA must issue a 510(k) letter order finding substantial equivalence before commercial distribution can occur. Upon receipt of the 510(k) application by the FDA, up to a 90-day response period is allowed before the FDA must respond.

We currently hold all required approvals and certifications to market our Heparin coated and uncoated hemodialysis catheters and accessory products in the USA, and our uncoated catheters in the EU, Canada, Australia and Hong Kong. We are committed to maintaining these critical approvals and certifications and

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the stringent quality requirements applicable to the development, testing, manufacturing, labeling, marketing and distribution of these products.

Recent actions by the FDA to improve the quality of the supply chains of medical device manufacturers has had an indirect effect on our biomedical processing services. However, our current quality control systems have been more than adequate to meet the increased demands of our customers.

GOVERNMENT REGULATION OF CONTRACTS

Our United States government contracts are subject to a large number of federal regulations and oversight requirements. Compliance with the array of government regulations requires extensive record keeping and the maintenance of complex policies and procedures relating to all aspects of our business, as well as to work performed for us by any subcontractors. We believe that we have put in place systems and personnel to ensure compliance with all such federal regulations and oversight requirements. All contracts with United States government agencies have been audited by the government through December 2006. We have not incurred substantial losses as a result of these incurred cost audits.

RESEARCH AND DEVELOPMENT

Our policy is to support as much of our research and development as possible through government contract funding, which we recognize as revenue. Revenues from our research and development contracts and Natural Renewable Energy Laboratory ("NREL") funded by the United States government, and their percent of consolidated net sales and revenues were \$1,709,000, or 2%, and \$1,303,000, or 4%, for the years ended December 31, 2008 and 2007, respectively.

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Our contracts with the United States government grant to us proprietary rights in any technology developed pursuant to such contracts and grant to the United States government a non-exclusive license to utilize the technology for its benefit. The United States government retains the right to pursue patent protection on any inventions made under these contracts as to which patent protection is not sought and obtained by us. To date, the Government has not exercised its rights to patent nor indicated it has or it will do so. We still have the ability to sell our rights to develop technology and has successfully sold the rights in the past. Our rights to technology developed under contracts with private companies vary, depending upon negotiated terms.

Our internally funded research and development expenditures were \$803,000 and \$313,000 for the years ended December 31, 2008 and 2007, respectively.

CUSTOMERS AND MARKETS

We did not have any customers that accounted for more than 10% of our consolidated net sales and revenues during the year ended December 31, 2008. One customer accounted for more than 10% of our consolidated net sales and revenues in 2007 (approximately 15%).

Our export sales, which amounted to 56% and 47% of net sales and revenues for 2008 and 2007, respectively, continue to constitute a significant portion of our net sales and revenues. Over 90% of export sales in 2008 and 2007 were to solar equipment customers with the remainder to biomedical and optoelectronic related customers.

The following table shows net sales and revenues by geographic area

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(based on customer location) for the years ended December 31:

| | 2008 | % | 2007 | % |
|-------------------|---------------|------|---------------|------|
| United States | \$ 30,377,000 | 44% | \$ 19,714,000 | 53% |
| Europe/N. Africa | 14,665,000 | 22% | 9,129,000 | 25% |
| Asia | 22,782,000 | 33% | 7,643,000 | 21% |
| Rest of the world | 828,000 | 1% | 582,000 | 1% |
| | \$ 68,652,000 | 100% | \$ 37,068,000 | 100% |

ENVIRONMENTAL QUALITY

Compliance with federal, state and local provisions regulating the discharge of materials into the environment has not materially affected our capital expenditures, earnings or its competitive position. Currently there are no lawsuits related to the environment or material administrative proceedings pending against us.

EMPLOYEES

At December 31, 2008, we had approximately 229 employees, of whom 217 worked full time. Our year end head count included 154 employees in manufacturing operations, 6 employees in research and development, and 69 employees in sales, general and administrative. We also employ part-time employees and hire independent contractors. Our employees are not represented by any collective bargaining agreement, and we have never experienced a work stoppage. We believe that our employee relations are good.

ITEM 1A. RISK FACTORS

In addition to the other information in this Form 10-K, the following risk factors inherent in and affecting our business should be considered. The descriptions in this Form 10-K contain forward-looking statements that involve risks and uncertainties. Our actual results and the timing of certain events may differ materially from the results and timing described in the forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those described below and in "Management's Discussion and Analysis of Financial Condition and Results of Operations" and above in "Business."

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RISKS RELATING TO OUR BUSINESS

OUR SUCCESS WILL DEPEND UPON OUR ABILITY TO EFFECTIVELY IMPLEMENT OUR BUSINESS MODEL OF CREATING OR ACQUIRING SCIENTIFICALLY ADVANCED TECHNOLOGY, DEVELOPING AND MANUFACTURING COMMERCIALY VIABLE PRODUCTS FROM SUCH TECHNOLOGY AND SUCCESSFULLY MARKETING AND DISTRIBUTING SUCH PRODUCTS. THE FAILURE TO SUCCESSFULLY EXECUTE ANY STAGE OF THIS PROCESS COULD HAVE A MATERIALLY NEGATIVE IMPACT ON OUR BUSINESS AND RESULTS OF OPERATIONS.

We believe that our continued success will depend upon our ability to create or acquire scientifically advanced technology, apply our technology cost-effectively across product lines and markets, develop or acquire proprietary products, attract and retain skilled development personnel, obtain patent or other protection for our products, obtain required regulatory

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approvals, manufacture and successfully market our products either directly or through outside distributors and sales representatives and supply sufficient inventory to meet customer demand. There can be no assurance that we will realize financial benefit from our technology development and application efforts, that we will continue to be successful in identifying, developing and marketing new products or enhancing our existing products, or that products or technologies developed by others will not render our products or technologies non-competitive or obsolete.

WE HAVE EXPERIENCED LOSSES FROM OPERATIONS, BEFORE THE SALE OF CERTAIN TECHNOLOGY LICENSES AND GAIN ON TERMINATION OF CONTRACT, AND WE EXPECT THAT OUR OPERATING RESULTS WILL FLUCTUATE IN THE FUTURE.

We have experienced losses from operations before non-recurring gains in each of the past two fiscal years. These losses have contributed to an accumulated deficit of approximately \$6.9 million as of December 31, 2008. Our revenues have not been sufficient to cover our operating expenses, and we anticipate that we may sustain future losses from operations if revenues do not increase. Future fluctuations in operating results may also be caused by a number of factors, many of which are outside our control. Additional factors that could affect our future operating results include the following:

- o Availability of raw materials processed by the capital equipment we provide to our buyers, particularly the polysilicon used in the manufacture of the silicon wafers and solar cells;
- o Delays, postponements or cancellations of orders and shipments of our products, particularly in our solar equipment and solar systems businesses where individual order sizes may be large and thus may represent a significant portion of annual revenue;
- o Changes in our receipt of license fees, milestone payments and royalty payments relating to our intellectual property;
- o Loss of major customers, particularly as a result of customers changing their own product designs in such ways as reduce or eliminate the need for the manufacturing services we provide;
- o Reductions in the selling prices of our products and services as a result of competitive pressures;
- o Variation in capacity, capacity utilization and manufacturing yields within the third party medical contract manufacturing service providers that constitute the supply chain for our biomedical products that, in turn, cause variation in our ability to timely ship our products;
- o Increased competition from current and future competitors, including competition resulting from services and products utilizing competing technologies;
- o Variation in the timing of customer orders and inventory levels at our customers, particularly within our biomedical manufacturing services business;
- o Termination of existing grants with government agencies or delays in funding of grants awarded;
- o Delays in introducing and gaining physician acceptance for new products and product improvements, particularly in our biomedical products business; and
- o Disruption in the distributor sales channels by which we bring our biomedical products to market.

If we are unable to reach and sustain profitability from our operations, we risk depleting our working capital balances and our business may not continue as a going concern. Even if we are profitable, we may require additional working capital to meet expected growth. Although future sales of assets or technology licenses may be pursued, such sales cannot be assured. In addition, we may need to raise additional capital, or arrange other sources of funds, in order to sustain our operations. There can be no assurance that we will be able to raise

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such funds if they are required. Even if new financing were available, it may not be on commercially reasonable terms or terms that are acceptable to us.

OUR ABILITY TO EXPAND REVENUE AND SUSTAIN PROFITABILITY DEPENDS SUBSTANTIALLY ON THE STABILITY AND GROWTH OF THE VARIOUS MARKETS FOR OUR PRODUCTS AND SERVICES. SHOULD WE BE UNABLE TO EXPAND OUR REVENUE, OUR ABILITY TO REACH AND SUSTAIN PROFITABILITY WOULD BE IMPAIRED.

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- o The world demand for photovoltaic manufacturing equipment depends on sustained expansion in the demand for decentralized power sources, especially in developing countries, and on domestic and foreign government funding of initiatives to invest in solar energy as an alternative to the burning of fossil fuels and other energy production methods. There can be no assurance that government funding for such initiatives will be available, or that solar energy will prove to be a cost-effective alternative to other energy sources and thus gain acceptance where traditional energy sources continue to be available. Should demand for solar photovoltaic power sources not increase, demand for new photovoltaic manufacturing equipment would not materialize and our business would be adversely affected.
- o Most of our research and development revenues are generated by contracts with the United States government. There can be no assurance that the United States government will fund our research and development projects at the same level as it has in the past. Should federal research funding priorities change, and should we be unable to adjust our research focus to reflect the shift, our business could be adversely affected.
- o The growth of our biomedical products business depends on increased physician acceptance of our hemodialysis catheter products, our ability to manage the production of higher unit volumes of catheter products and our ability to effectively distribute those products. Should our hemodialysis catheters not gain market acceptance or should we not be able to meet demand for our products, our biomedical products business could be adversely affected.
- o The growth of our biomedical services business depends upon our customers' ability to serve demand for the end-use items, such as orthopedic prostheses, on which our services are performed and thus is substantially beyond our control.
- o Our ability to expand our biomedical business depends upon our ability to introduce new products and services. The marketing of new biomedical products requires pre-approval of government regulatory authorities, the completion of which can be lengthy and more costly than originally planned.
- o The growth of our optoelectronics business depends upon growth in demand for compound semiconductor wafers from manufacturers of microwave and optoelectronic circuits and sensors that, in turn, are used in diverse biomedical, telecommunications and aerospace products. Should these end-use markets not experience anticipated levels of growth and, in the case of telecommunications uses, experience a recovery from currently depressed business levels, our optoelectronics business could be adversely affected.
- o We have made a substantial investment in equipment at Spire Semiconductor in anticipation of future revenues under its agreement

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with Principia Lightworks. Subsequent to December 31, 2008, the parties have terminated this agreement by mutual consent. Spire Semiconductor is planning to redirect the use of equipment to manufacture solar concentrator cells. If we are not successful in manufacturing solar concentrator cells, we will have significant unutilized capacity and may not recover our investment in the equipment.

DISRUPTIONS IN THE CAPITAL AND CREDIT MARKETS RELATED TO THE CURRENT NATIONAL AND WORLD-WIDE FINANCIAL CRISIS, WHICH MAY CONTINUE OR INTENSIFY, COULD ADVERSELY AFFECT OUR RESULTS OF OPERATIONS, CASH FLOWS AND FINANCIAL CONDITION, OR THOSE OF OUR CUSTOMERS OR SUPPLIERS.

The current disruptions in the capital and credit markets may continue indefinitely or intensify, and adversely impact our results of operations, cash flows and financial condition, or those of our customers and suppliers. These disruptions could adversely affect our ability to draw on our bank credit facilities. Disruptions in the capital and credit markets as a result of uncertainty, changing or increased regulation, reduced alternatives or failures of significant financial institutions could adversely affect our access to liquidity needed to conduct or expand our businesses or conduct acquisitions or make other discretionary investments, as well as our ability to effectively hedge our currency or interest rates. These same conditions and disruptions may also adversely impact the capital needs of our customers and suppliers, which, in turn, could adversely affect our results of operations, cash flows and financial condition.

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OUR BUSINESS RELIES IN PART ON A LIMITED NUMBER OF CUSTOMERS, AND UNFAVORABLE DEVELOPMENTS IN RELATION TO A MAJOR CUSTOMER MAY ADVERSELY AFFECT OUR REVENUES, OPERATING RESULTS AND CASH FLOWS.

We did not have any customers that accounted for more than 10% of consolidated net sales and revenues during the year ended December 31, 2008. One customer accounted for more than 10% of consolidated net sales and revenues in 2007 (approximately 15%). In addition, we have had such customers in other years and may have them again in the future. If an unfavorable development were to occur with respect to any significant customer it would likely have a material adverse affect on our business, financial condition, operating results, cash flows and future prospects.

WE SELL OUR PRODUCTS AND SERVICES AGAINST ESTABLISHED COMPETITORS, AND ENTITIES NOW OPERATING IN RELATED MARKETS MAY ENTER OUR MARKETS. SOME OF OUR CURRENT AND POTENTIAL COMPETITORS HAVE GREATER FINANCIAL AND TECHNICAL RESOURCES THAN WE DO. SHOULD WE BE UNABLE TO OFFER OUR CUSTOMERS PRODUCTS AND SERVICES THAT REPRESENT ATTRACTIVE PRICE VERSUS VALUE, OUR BUSINESS WOULD SUFFER.

Although we believe that there are considerable barriers to entry into the markets we serve, including a significant investment in specialized capital equipment, product design and development, and the need for a staff with sophisticated scientific and technological knowledge, there can be no assurance that new or existing entities would not seek to enter our markets or that we would be able to compete effectively against such entities.

- o In our biomedical products business, our hemodialysis catheter products directly compete against the already established product offerings of larger competitors. Although we believe that our catheter products offer significant advantages, widespread physician acceptance of these products in preference to the more established products of competitors cannot be assured.

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- o In our optoelectronics business, our manufacturing services may compete against the internal manufacturing capabilities of our customers. Although we believe that we offer significant advantages in terms of timely response, reduced total cost and reduced capital investment over the captive fabrication facilities of our customers, customers may elect to maintain their internal capabilities despite economic incentives to outsource these services from us.

IF WE ARE UNABLE TO DEVELOP AND INTRODUCE NEW PRODUCTS SUCCESSFULLY OR TO ACHIEVE MARKET ACCEPTANCE OF OUR NEW PRODUCTS, OUR OPERATING RESULTS WOULD BE ADVERSELY AFFECTED.

We compete in markets characterized by technological advances and improvements in manufacturing efficiencies. Our ability to operate profitably depends in large part on our timely access to, or development of, technological advances, and on our ability to use those advances to improve existing products, develop new products and manufacture those products efficiently. There can be no assurance that we will realize financial benefit from our development programs, will continue to be successful in identifying, developing and marketing new products or enhancing our existing products, or that products or technologies developed by others will not render our products or technologies non-competitive or obsolete. The failure to introduce new or enhanced products on a timely and cost competitive basis, or to attain market acceptance for commercial products, could have a material adverse effect on our business, results of operations or financial condition.

IF WE ARE NOT SUCCESSFUL IN PROTECTING OUR INTELLECTUAL PROPERTY RIGHTS, OUR ABILITY TO COMPETE MAY BE HARMED.

We rely on a combination of patent, copyright, trademark and trade secret protections as well as confidentiality agreements and other methods, to protect our proprietary technologies and processes. For example, we enter into confidentiality agreements with our employees, consultants and business partners, and control access to and distribution of our proprietary information. We have been issued 41 United States patents, one of which is jointly owned, and have a number of pending patent applications. However, despite our efforts to protect our intellectual property, we cannot assure that:

- o The steps we take to prevent misappropriation or infringement of our intellectual property will be successful;
- o Any existing or future patents will not be challenged, invalidated or circumvented;
- o Any pending patent applications or future applications will be approved;
- o Others will not independently develop similar products or processes to ours or design around our patents; or
- o Any of the measures described above would provide meaningful protection.

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A failure by us to meaningfully protect our intellectual property could have a material adverse effect on our business, financial condition, operating results and ability to compete. In addition, effective patent, copyright, trademark and trade secret protection may be unavailable or limited in certain countries.

From time to time we may be subject to lawsuits by other parties seeking to enforce their intellectual property rights. Any litigation could result in the expenditure of significant financial resources and the diversion of

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management's time and resources. In addition, litigation in which we are accused of infringement may have an impact on prospective customers, cause product delays, require us to develop non-infringing technology, make substantial payments to third parties or enter into royalty or license agreements, which may not be available on acceptable terms, or at all. If a successful claim of infringement were made against us and we could not develop non-infringing technology or license the infringed or similar technology on a timely and cost-effective basis, we may be forced to stop selling current products or abandon new products under development and we could be exposed to legal actions by our customers.

WE DEPEND ON OTHERS, PARTICULARLY ON AGENCIES OF THE UNITED STATES GOVERNMENT, FOR FUNDING OUR RESEARCH AND DEVELOPMENT EFFORT.

Most of our research and development work is funded by agencies of the United States government either directly or via their contractors. Loss of outside funding may materially adversely affect our ability to further develop our proprietary technologies and to apply these technologies to our current products and products under development. If we are unable to maintain our current level of such funding for any reason, we would need to generate funds for such research from other sources, reduce our research and development effort or increase our internal funding for research and development. An increase in internally funded research and development would have a negative impact on our profitability.

Additionally, the process of bidding for, obtaining, retaining and performing United States government contracts is subject to a large number of United States government regulations and oversight requirements. Compliance with these government regulations requires extensive record keeping and the maintenance of complex policies and procedures relating to all aspects of our business, as well as to work performed for us by any subcontractors. Any failure to comply with applicable regulations, or to require our subcontractors so to comply, could result in a variety of adverse consequences, ranging from remedial requirements to termination of contracts, reimbursement of fees, reduction of fees on a going forward basis and prohibition from obtaining future United States government contracts. While we believe that we have in place systems and personnel to ensure compliance with all United States government regulations relating to contracting, we cannot assure that we will at all times be in compliance or that any failure to comply will not have a material adverse effect on our business, results of operations or financial condition.

THE U.S. GOVERNMENT HAS CERTAIN RIGHTS RELATING TO OUR INTELLECTUAL PROPERTY.

The United States government retains the right to obtain a patent on any invention developed under government contracts as to which we do not seek and obtain a patent, and may require us to grant a third party license of such invention if steps to achieving practical application of the invention have not been taken. The United States government also retains a non-exclusive, royalty-free, non-transferable license to all technology developed under government contracts, whether or not patented, for government use, including use by other parties to United States government contracts. Furthermore, our United States government contracts prohibit us from granting exclusive rights to use or sell any inventions unless the grantee agrees that any product using the invention will be manufactured substantially in the United States.

WE DEPEND ON THIRD-PARTY CONTRACTORS TO MANUFACTURE SUBSTANTIALLY ALL OF OUR CURRENT BIOMEDICAL PRODUCTS.

We depend on third-party subcontractors in the U.S. for the manufacturing, assembly and packaging of our biomedical products. Any difficulty in obtaining parts or services from these subcontractors could affect our ability to meet scheduled product deliveries to customers, which could in turn

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have a material adverse effect on our customer relationships, business and financial results. Several significant risks are associated with reliance on third-party subcontractors, including:

- o The lack of assured product supply and the potential for product shortages;
- o Reduced control over inventory located at contractors' premises;
- o Limited control over delivery schedules, manufacturing yields and production costs;
- o Direct control over product quality;
- o The temporary or permanent unavailability of, or delays in obtaining, access to key process technologies; and

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- o Dependence on single source contractors to provide critical services.

OUR SUCCESS DEPENDS ON OUR ABILITY TO HIRE AND RETAIN QUALIFIED TECHNICAL PERSONNEL, AND IF WE ARE UNABLE TO DO SO, OUR PRODUCT DEVELOPMENT EFFORTS AND CUSTOMER RELATIONS WILL SUFFER.

Our products require sophisticated manufacturing, research and development, marketing and sales, and technical support. Our success depends on our ability to attract, train and retain qualified technical personnel in each of these areas. Competition for personnel in all of these areas is intense and we may not be able to hire or retain sufficient personnel to achieve our goals or support the anticipated growth in our business. The market for the highly trained personnel we require is very competitive, due to the limited number of people available with the necessary technical skills and understanding of our products and technology. If we fail to hire and retain qualified personnel, our product development efforts and customer relations will suffer.

WE ARE SUBJECT TO ENVIRONMENTAL LAWS AND OTHER LEGAL REQUIREMENTS THAT HAVE THE POTENTIAL TO SUBJECT US TO SUBSTANTIAL LIABILITY AND INCREASE OUR COSTS OF DOING BUSINESS.

Our properties and business operations are subject to a wide variety of federal, state, and local environmental, health and safety laws and other legal requirements, including those relating to the storage, use, discharge and disposal of toxic, volatile or otherwise hazardous substances used in our manufacturing processes. We cannot assure that these legal requirements will not impose on us the need for additional capital expenditures or other requirements. If we fail to obtain required permits or otherwise fail to operate within these or future legal requirements, we may be required to pay substantial penalties, suspend our operations or make costly changes to our manufacturing processes or facilities. Although we believe that we are in compliance and have complied with all applicable legal requirements, we may also be required to incur additional costs to comply with current or future legal requirements.

OUR INTERNATIONAL SALES SUBJECT US TO RISKS THAT COULD ADVERSELY AFFECT OUR REVENUE AND OPERATING RESULTS.

Sales to customers located outside the U.S. have historically accounted for a significant percentage of our revenue (approximately 56% in 2008) and we anticipate that such sales will continue to be a significant percentage of our revenue. International sales involve a variety of risks and uncertainties, including risks related to:

- o Reliance on strategic alliance partners such as representatives and licensees;
- o Compliance with changing foreign regulatory requirements and tax laws;

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- o Reduced protection for intellectual property rights in some countries;
- o Longer payment cycles to collect accounts receivable in some countries;
- o Increased costs or reduced revenues as a result of movements in foreign currency exchange rates;
- o Political instability;
- o Economic downturns in international markets; and
- o Changing restrictions imposed by United States export laws.

Failure to successfully address these risks and uncertainties could adversely affect our international sales, which could in turn have a material and adverse effect on our results of operations and financial condition.

THE USE OF OUR CATHETER AND OTHER MEDICAL RELATED PRODUCTS ENTAILS A RISK OF PHYSICAL INJURY; THE DEFENSE OF CLAIMS ARISING FROM SUCH RISK MAY EXCEED OUR INSURANCE COVERAGE AND DISTRACT OUR MANAGEMENT.

The use of orthopedic and other medical devices may entail a risk of physical injury to patients. To the extent we have been involved in the design and manufacturing of these products, we may be exposed to potential product liability and other damage claims. Furthermore, the use of our photovoltaic module manufacturing equipment could result in operator injury. We have had cases brought against us in which it was alleged that we have been a party to the manufacture and sale of defective heart valves with other defendants. In the past, we have settled a case alleging that our catheter contributed to a patient's death in Ohio. No other claims of product liability or other damages have been initiated against us. We maintain product liability and umbrella insurance coverage; however, there can be no assurance that any product liability claim assessed against us would not exceed our insurance coverage, or that insurance coverage would continue to be available. While we typically obtain agreements of indemnity from manufacturers of biomedical products for which we provide manufacturing services, there can be no assurance that any such indemnity agreements will be enforceable or that such manufacturers will have adequate funds to meet their obligations under such agreements. The cost of defending a product

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liability, negligence or other action, and/or assessment of damages in excess of insurance coverage, could have a material adverse effect on our business, results of operations, or financial condition.

RISKS RELATED TO OUR COMPANY

WE MAY NOT BE ABLE TO MAINTAIN OUR LISTING ON THE NASDAQ GLOBAL MARKET, WHICH WOULD ADVERSELY AFFECT THE PRICE AND LIQUIDITY OF OUR COMMON STOCK.

Our stock is currently listed on the Nasdaq Global Market. On December 1, 2008, we received a letter from The Nasdaq Stock Market ("Nasdaq") advising that for the prior ten (10) consecutive trading days, the market value of our listed securities was below the minimum \$50,000,000 requirement for continued inclusion on The Nasdaq Global Market under Marketplace Rule 4450(b)(1)(A) (the "Rule"). Nasdaq also noted that at the time we did not comply with Marketplace Rule 4450(b)(1)(B), which alternatively requires total assets and total revenue of at least \$50,000,000 each for the most recently completed fiscal year or two of the three most recently completed fiscal years. On March 3, 2009, we received a Staff Determination Letter from Nasdaq indicating that we have not regained compliance with the Rule as the market value of our common stock has remained below the minimum \$50,000,000 required for continued inclusion on The Nasdaq Global Market. Accordingly, our common stock is subject to delisting from the

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Nasdaq Global Market. We have requested a hearing before a Nasdaq Listing Qualifications Panel to review the Staff Determination. The request for a hearing will stay the Staff Determination and, as a result, our common stock will remain listed on The Nasdaq Global Market until the Panel issues its decision after the hearing. There can be no assurance the Panel will grant our request for continued listing. However, we expect to regain compliance with alternative continued listing requirements upon the filing of this Annual Report on Form 10-K as we believe we now meet both (i) Marketplace Rule 4450(b)(1)(B), which alternatively requires total assets and total revenue of at least \$50,000,000 each for the most recently completed fiscal year or two of the three most recently completed fiscal years and (ii) Marketplace Rule 4450(a)(3), which alternatively requires stockholders' equity of at least \$10,000,000. Even if we are able to regain compliance with the alternative continued listing requirements, there is no assurance that in the future we will continue to satisfy Nasdaq continued listing requirements. At various times in the past, we have received other deficiency notices from Nasdaq and have been able to regain compliance prior to delisting, but, as noted above, we cannot assure you that we will always be able to regain or maintain compliance with Nasdaq continued listing requirements.

If we fail to maintain compliance with these rules and our common stock is delisted from the Nasdaq Global Market, there could be a number of negative implications, including reduced liquidity in the common stock as a result of the loss of market efficiencies associated with the Nasdaq Global Market, the loss of federal preemption of state securities laws, the potential loss of confidence by suppliers, customers and employees, as well as the loss of analyst coverage and institutional investor interest, fewer business development opportunities and greater difficulty in obtaining financing.

OUR COMPANY IS SUBJECT TO CONTROL BY PRINCIPAL STOCKHOLDER.

Roger G. Little, our founder, Chairman of the Board, Chief Executive Officer and President, controls approximately 26% of our outstanding common stock. As a result, Mr. Little is in a position to exert significant influence over actions which require stockholder approval and generally to direct our affairs, including the election of directors, potential acquisitions and sales or otherwise preventing or delaying changes in control of our Company that may be otherwise viewed as beneficial by shareholders other than Mr. Little.

WE DO NOT PAY DIVIDENDS AND WE MAY NOT PAY DIVIDENDS IN THE FUTURE.

We have paid no cash dividends since our inception. We anticipate retaining any future earnings for reinvestment in operations and do not anticipate that dividends will be paid in the foreseeable future. Accordingly, the return on investment should be expected to depend on changes in the market price of our common stock.

THE MARKET PRICE FOR OUR COMMON STOCK HAS BEEN VOLATILE AND FUTURE VOLATILITY COULD CAUSE THE VALUE OF INVESTMENTS IN OUR COMPANY TO FLUCTUATE.

Our stock price has experienced significant volatility. While our revenues have increased since 2000, we expect that uncertainty regarding demand for our products will cause our stock price to continue to be volatile. In addition, the value of your investment could decline due to the impact of any of the following factors, among others, upon the market price of our common stock:

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- o Overall economic conditions and general market volatility;
- o Changes in investment analysts' estimates of our revenues and operating results;

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- o Our failure to meet investment analysts' performance expectations; and
- o Changes in market valuations of other companies in the alternative energy, semiconductor or biomedical industries.

In addition, many of the risks described elsewhere in this section could materially and adversely affect our stock price, as discussed in those risk factors. U.S. financial markets have recently experienced substantial price and volume volatility. Fluctuations such as these have affected and are likely to continue to affect the market price of our common stock.

OUR JOINT VENTURE TRANSACTION WITH GLORIA SOLAR MAY NOT REALIZE ALL OF ITS INTENDED BENEFITS

On September 4, 2007, we closed a contractual relationship with Gloria Solar. Pursuant to this transaction, among other things, we formed a joint venture, owned 55% by Gloria Solar and 45% by us, for the purpose of pursuing the solar photovoltaic systems market within the United States. The joint venture will design, market, sell and manage the installation of systems for the generation of electrical power by solar photovoltaic means in primarily commercial/industrial and utility segments of such market (the "JV Systems Business"). In connection with the formation of the joint venture, (i) we contributed to the joint venture our assets primarily relating to the JV Systems Business, including certain intellectual property and know-how, access to information technology assets and relationships, relationships with current and previous customers, contract backlog and project opportunities, certain registered trademarks, and employment relationships with staff members and (ii) Gloria Solar contributed \$5,000,000 in cash. In connection with the establishment of the joint venture, we may experience:

- o Difficulties in integrating our and Gloria Solar's respective corporate cultures and business objectives into the new joint venture;
- o Diversion of our management's time and attention from other business concerns;
- o Higher than anticipated costs of integration at the joint venture;
- o Difficulties in retaining key employees who are necessary to manage the joint venture; or
- o Difficulties in working with an entity based in Taiwan and thus remote or inconvenient to our Bedford, Massachusetts headquarters.

For any of these reasons or as a result of other factors, we may not realize the anticipated benefits of the joint venture, and cash flow or profits derived from our ownership interest in the joint venture may be less than the cash flow or profits that could have been derived had we retained the transferred assets and continued to operate the JV Systems Business ourselves. Either party has the right, at any time upon certain material breaches by the other party of obligations under the joint venture documents, to acquire all of the breaching party's interest in the joint venture at 90% fair market value. In addition, in the event of a "change in control" of a member, the other members may purchase such member's interest in the joint venture at fair market value. Furthermore, our further participation in the business of the joint venture is restricted; until September 2010, we may not mass manufacture, market or sell solar cell modules with less than 575 watt capacity, and may do so thereafter only outside the United States.

SOME OF THE REQUIREMENTS OF SARBANES-OXLEY AFFECT US AS A SMALL COMPANY DISPROPORTIONATELY, AND WE MAY NOT BE ABLE TO COMPLY IN A TIMELY MANNER DESPITE SUBSTANTIAL EFFORT AND EXPENSE.

The Sarbanes-Oxley Act of 2002 imposed many new requirements on public companies, the most significant of which involves the documentation, testing and reporting of the effectiveness of our internal control over financial reporting.

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We are required to report on our assessment of the effectiveness of our internal control over financial reporting in this Annual Report on Form 10-K. We have documented and tested our internal controls in 2008 and this effort involved substantial time and expense. We have identified material weaknesses, as discussed below, from our internal assessment and our independent registered public accounting firm has also identified items in its annual audit of our financial statements.

Based on this evaluation, management concluded that the following material weaknesses in internal control over financial reporting existed as of December 31, 2008: we did not have adequate staffing with the necessary knowledge, experience and training to ensure the completeness and accuracy of our financial statements. Additionally, our internal policies and procedures related to internal control over financial reporting were not effective. As a result of these material

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weaknesses, issues related to accounting for inventory, accruals, reserves, income taxes and revenues existed in our internal preliminary 2008 fiscal year consolidated financial statements and resulted in a restatement of 2007 and 2008 results. For more detailed information see "Item 9A(T). Controls and Procedures."

We are working to address the issues raised by this material weakness, but we may not be successful in remediating them in a timely manner.

OUR CREDIT AGREEMENTS WITH SILICON VALLEY BANK SUBJECTS US TO VARIOUS RESTRICTIONS, WHICH MAY LIMIT OUR ABILITY TO PURSUE BUSINESS OPPORTUNITIES.

Our credit agreements with Silicon Valley Bank subjects us to various restrictions on our ability to engage in certain activities without the prior written consent of the bank, including, among other things, our ability to:

- o Dispose of or encumber assets, other than in the ordinary course of business,
- o Incur additional indebtedness,
- o Merge or consolidate with other entities, or acquire other businesses, and
- o Make investments.

The agreements also subject us to various financial and other covenants with which we must comply on an ongoing or periodic basis. For example under our equipment line, as long as any commitment remains outstanding under the facility, we must comply with an adjusted quick ratio covenant and a rolling six month average minimum net income covenant. If we violate these or any other covenant, any outstanding debt under these agreements could become immediately due and payable, the bank could proceed against any collateral securing indebtedness and our ability to borrow funds in the future may be restricted or eliminated. These restrictions may also limit our ability to pursue business opportunities or strategies that we would otherwise consider to be in the best interests of the company.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

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Our corporate headquarters are located at One Patriots Park, Bedford, Massachusetts. This 144,230 square foot facility is leased and contains our administrative offices, sales and marketing offices, research and development facilities and the manufacturing facilities of our biomedical and solar equipment and systems businesses. The lease expires in November 2012. We lease an approximately 90,000 square foot facility located at 25 Sagamore Park Road, Hudson, New Hampshire that contains a semiconductor wafer growth and fabrication facility and administrative offices used primarily by our optoelectronics business unit including Spire Semiconductor. The lease expires in August 2015. We believe that our facilities are suitable for their present intended purposes and adequate for our current level of operations.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we are subject to legal proceedings and claims arising from the conduct of our business operations.

During the second quarter of 2005 a suit was filed by Arrow International, Inc. against Spire Biomedical, Inc., our wholly owned subsidiary, alleging patent infringement by us. The complaint claimed one of our catheter products induced and contributed to infringement when medical professionals inserted it. We responded to the complaint denying all allegations and filed certain counterclaims. We also filed a motion for summary judgment, asserting patent invalidity resulting from plaintiff's failure to follow the administrative procedures of the U.S. Patent and Trademark Office ("USPTO"). On August 4, 2006, the Court granted our motion and dismissed this lawsuit without prejudice. Plaintiffs applied to revive the applicable patent, which application was granted by the USPTO later in August 2006. Plaintiffs refiled their lawsuit against us on August 31, 2006. We have filed our answer and resumed our defense. We have filed summary judgment motions with the Court and a hearing was held on November 12, 2008. Following this hearing, the Judge ordered discovery reopened on the issue of possible inequitable conduct by the plaintiff, Arrow International, Inc. Based on information presently available to us, we believe we have meritorious legal defenses with respect to this action. If we are unsuccessful in our defenses, a portion of our product line may be enjoined or we may need to redesign certain products to

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avoid future infringement. However, if the plaintiff's patent is found valid and infringed, the parties have already agreed to a stipulated calculation of damages based on a pre-specified nominal non-punitive royalty rate.

We are not aware of any other current or pending legal proceedings to which we are or may be party that we believe could materially adversely affect our results of operations or financial condition or cash flows.

ITEM 4. SUBMISSION OF MATTERS TO A VOTE OF SECURITY HOLDERS

No matters were submitted to a vote of our security holders in the fourth quarter of 2008.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

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MARKET INFORMATION

Our common stock is traded on the Nasdaq Global Market under the symbol "SPIR." The following chart sets forth the high and low bid prices for the common stock for the periods shown:

| | High Bid | Low Bid |
|----------------|----------|----------|
| | ----- | ----- |
| 2008 | | |
| ---- | | |
| First Quarter | \$25.82 | \$ 10.36 |
| Second Quarter | 18.75 | 9.80 |
| Third Quarter | 14.48 | 8.80 |
| Fourth Quarter | 15.64 | 2.94 |
| 2007 | | |
| ---- | | |
| First Quarter | \$11.84 | \$ 7.63 |
| Second Quarter | 11.19 | 8.61 |
| Third Quarter | 14.95 | 8.39 |
| Fourth Quarter | 26.78 | 11.33 |

These prices do not reflect retail mark-ups, markdowns or commissions and may not reflect actual transactions. The closing price of the common stock on March 27, 2009 was \$4.21, and on that date, there were 179 stockholders of record. The number of holders does not include individuals or entities who beneficially own shares but whose shares are held of record by a broker or clearing agency, but does include each such broker or clearing agency as one record holder.

DIVIDENDS

We did not pay any cash dividends during 2008 or 2007 and currently do not intend to pay dividends in the foreseeable future so that we may reinvest our earnings in the development of our business. The payment of dividends in the future will be at the discretion of the Board of Directors. In addition, under our credit agreements with Silicon Valley Bank, we may not pay dividends on our common stock without the consent of the bank.

ITEM 6. SELECTED FINANCIAL DATA

Not required as we are a smaller reporting company.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND

RESULTS OF OPERATIONS

THIS MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS SECTION AND OTHER PARTS OF THIS REPORT CONTAIN FORWARD-LOOKING STATEMENTS WITHIN THE MEANING OF SECTION 27A OF THE SECURITIES ACT OF 1933, AS AMENDED (THE "SECURITIES ACT"), AND SECTION 21E OF THE SECURITIES EXCHANGE ACT OF 1934, AS AMENDED (THE "EXCHANGE ACT"), WHICH STATEMENTS INVOLVE RISKS AND UNCERTAINTIES. THESE STATEMENTS RELATE TO OUR FUTURE PLANS, OBJECTIVES, EXPECTATIONS AND INTENTIONS. THESE STATEMENTS MAY BE IDENTIFIED BY THE USE OF WORDS SUCH AS "MAY", "COULD", "WOULD",

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"SHOULD", "WILL", "EXPECTS", "ANTICIPATES", "INTENDS", "PLANS", "BELIEVES", "ESTIMATES", AND SIMILAR EXPRESSIONS. OUR ACTUAL RESULTS AND THE TIMING OF CERTAIN EVENTS MAY DIFFER SIGNIFICANTLY FROM THE RESULTS AND TIMING DESCRIBED IN THE FORWARD-LOOKING STATEMENTS. FACTORS THAT COULD CAUSE OR CONTRIBUTE TO SUCH DIFFERENCES INCLUDE, BUT ARE NOT LIMITED TO, THOSE FACTORS DESCRIBED BELOW AND ABOVE UNDER "ITEM 1A. RISK FACTORS" AND "ITEM 1. BUSINESS." READERS ARE ENCOURAGED TO CAREFULLY REVIEW THOSE RISK FACTORS. THE FOLLOWING DISCUSSION AND ANALYSIS OF OUR FINANCIAL CONDITION AND RESULTS OF OPERATIONS SHOULD BE READ IN LIGHT OF THOSE FACTORS AND IN CONJUNCTION WITH OUR ACCOMPANYING CONSOLIDATED FINANCIAL STATEMENTS, INCLUDING THE NOTES THERETO.

OVERVIEW

We develop, manufacture and market highly-engineered products and services in three principal business areas: (i) capital equipment for the PV solar industry, (ii) biomedical and (iii) optoelectronics, generally bringing to bear expertise in materials technologies, surface science and thin films across all three business areas, discussed below.

In the PV solar area, we develop, manufacture and market specialized equipment for the production of terrestrial photovoltaic modules from solar cells. Our equipment has been installed in approximately 200 factories in 50 countries.

In the biomedical area, we provides value-added surface treatments to manufacturers of orthopedic and other medical devices that enhance the durability, antimicrobial characteristics or other material characteristics of their products; develops and markets coated and uncoated hemodialysis catheters and related devices for the treatment of chronic kidney disease; and performs sponsored research programs into practical applications of advanced biomedical and biophotonic technologies.

In the optoelectronics area, we provide custom compound semiconductor foundry and fabrication services on a merchant basis to customers involved in biomedical/biophotonic instruments, telecommunications and defense applications. Services include compound semiconductor wafer growth, other thin film processes and related device processing and fabrication services. We also provide materials testing services and perform services in support of sponsored research into practical applications of optoelectronic technologies.

Operating results will depend upon revenue growth and product mix, as well as the timing of shipments of higher priced products from our solar equipment line and delivery of solar systems. Export sales, which amounted to 56% of net sales and revenues for 2008, continue to constitute a significant portion of our net sales and revenues.

RESULTS OF OPERATIONS

The following table sets forth certain items as a percentage of net sales and revenues for the periods presented:

| | Year Ended December 31, | |
|--|-------------------------|------|
| | 2008 | 2007 |
| Net sales and revenues | 100% | 100% |
| Cost of sales and revenues | (71) | (81) |
| Gross profit | 29 | 19 |
| Selling, general and administrative expenses | (29) | (36) |
| Internal research and development expenses | (1) | (1) |

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| | | |
|---|-------|-------|
| Gain on sales of trademark | - | 7 |
| Gain on termination of contract | 10 | - |
| | ----- | ----- |
| Income (loss) from operations | 9 | (11) |
| Other expense, net | (2) | - |
| | ----- | ----- |
| Income (loss) before income taxes | 7 | (11) |
| Income tax (provision) benefit | - | 2 |
| | ----- | ----- |
| Income (loss) before extraordinary gain | 7 | (9) |
| Extraordinary gain, net of taxes | - | 4 |
| | ----- | ----- |
| Net income (loss) | 7% | (5)% |
| | ===== | ===== |

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OVERALL

Our total net sales and revenues for the year ended December 31, 2008 ("2008") increased 85% to \$68,652,000 as compared to \$37,068,000 for the year ended December 31, 2007 ("2007"). The increase came primarily from our solar business unit, while our biomedical and optoelectronics business units achieved a small increase.

SOLAR BUSINESS UNIT

Sales in our solar business unit increased 139% to \$51,901,000 in 2008 as compared to \$21,748,000 in 2007, primarily due to a 154% increase in solar equipment sales resulting from higher volume and a 388% increase in royalties offset by a 63% decrease in solar systems sales.

BIOMEDICAL BUSINESS UNIT

Revenues of our biomedical business unit increased 5% to \$11,643,000 in 2008 as compared to \$11,106,000 in 2007, as a result of a 31% increase in revenue from research and development activities and 9% increase in biomedical services offset by a 10% decrease in revenue from our line of hemodialysis catheters.

OPTOELECTRONICS BUSINESS UNIT

Sales in our optoelectronics business unit increased 21% in 2008 to \$5,108,000 as compared to \$4,214,000 in 2007.

Year Ended December 31, 2008 Compared to Year Ended December 31, 2007

 Net Sales and Revenues

The following table categorizes our net sales and revenues for the periods presented:

| | Year Ended December 31, | | Increase |
|----------------|-------------------------|---------------|---------------|
| | 2008 | 2007 | \$ |
| | ----- | ----- | ----- |
| Sales of goods | \$ 54,024,000 | \$ 24,723,000 | \$ 29,301,000 |

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| | | | |
|---|---------------|---------------|---------------|
| Contract research, service and license revenues | 14,628,000 | 12,345,000 | 2,283,000 |
| | ----- | ----- | ----- |
| Net sales and revenues | \$ 68,652,000 | \$ 37,068,000 | \$ 31,584,000 |
| | ===== | ===== | ===== |

The 119% increase in sales of goods for the year ended December 31, 2008 as compared to the year ended December 31, 2007 was primarily due to an increase in solar equipment revenues, partially offset by a 63% decrease in solar system sales and a 10% decrease in catheter products sales. Solar equipment sales increased 154% in 2008 as compared to 2007 primarily due to an overall increase in solar power industry activity.

The 18% increase in contract research, services and license revenues for the year ended December 31, 2008 as compared to the year ended December 31, 2007 is primarily attributable to an increase in royalties, optoelectronics, research and development activities and in orthopedics, partially offset by \$716,000 in additional service revenue associated with the sale of technology services delivered to Gloria Solar in the 2007. Revenue from royalties increased 388% in 2008 compared to 2007 as a result of an increase in royalties from Nisshinbo Industries, Inc. ("Nisshinbo") along with an acceleration of deferred royalty revenue related to the Development, Manufacturing, and Sales Consortium Agreement (the "Consortium Agreement") with Nisshinbo that terminated in November 2008, as a result of early termination by Nisshinbo (see Note 16 and Note 17 for more information on the Consortium Agreement). Revenue from our optoelectronics processing services (Spire Semiconductor) increased 21% in 2008 compared to 2007 as a result of an overall increase in optoelectronics activities attributable to a shift in product mix to larger scale commercial orders compared with smaller sized research and development projects. Revenues from our research and development activities increased 31% in 2008 as compared to 2007 primarily due to an increase in the number and value of contracts associated with funded research and development. Revenues from our orthopedic activities increased 9% in 2008 as compared to 2007.

Cost of Sales and Revenues

The following table categorizes our cost of sales and revenues for the periods presented, stated in dollars and as a

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percentage of related sales and revenues:

| | Years Ended December 31, | | | |
|---|--------------------------|-------|---------------|-------|
| | 2008 | % | 2007 | % |
| | ----- | ----- | ----- | ----- |
| Cost of goods sold | \$ 38,501,000 | 71% | \$ 20,826,000 | 84% |
| Cost of contract research, service and license revenues | 10,003,000 | 68% | 9,360,000 | 76% |
| | ----- | | ----- | |
| Net cost of sales and revenues | \$ 48,504,000 | 71% | \$ 30,186,000 | 81% |
| | ===== | | ===== | |

The \$17,675,000 (85%) increase in cost of goods sold for the year ended December 31, 2008 as compared to the year ended December 31, 2007 was primarily

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due to increased costs within our solar equipment product line corresponding to the 154% increase in solar equipment sales. As a percentage of sales, cost of goods sold was 71% of sales of goods in 2008 as compared to 84% of sales in 2007. This reduction in the percentage of sales in 2008 is due to a favorable product mix with improved margins along with better utilization of solar manufacturing overhead.

Cost of contract research, services and licenses increased 7% for the year ended December 31, 2008 as compared to the year ended December 31, 2007, primarily as a result of the 18% increase in related revenues and increased costs at our optoelectronics facility (Spire Semiconductor) along with increased costs of our contract research activities due to higher volumes. Cost of contract research, services and licenses as a percentage of revenue decreased to 68% of revenues in 2008 from 76% in 2007, primarily due to absorption of overhead costs improving margins in biomedical and optoelectronic services in 2008, partially offset by favorable margin related to \$716,000 in additional service revenue associated with the sale of technology services delivered to Gloria Solar in 2007.

Cost of sales and revenues also includes approximately \$180,000 and \$93,000 of stock-based compensation in 2008 and 2007, respectively.

OPERATING EXPENSES

The following table categorizes our operating expenses for the periods presented, stated in dollars and as a percentage of net sales and revenues:

| | Years Ended December 31, | | | |
|-------------------------------------|--------------------------|-----|---------------|-----|
| | 2008 | % | 2007 | % |
| Selling, general and administrative | \$ 19,612,000 | 29% | \$ 13,226,000 | 36% |
| Internal research and development | 803,000 | 1% | 313,000 | 1% |
| Operating expenses | \$ 20,415,000 | 30% | \$ 13,539,000 | 37% |

SELLING, GENERAL AND ADMINISTRATIVE EXPENSES

Selling, general and administrative expense increased 48% for the year ended December 31, 2008 as compared to the year ended December 31, 2007, primarily as a result of an increase in marketing activities, professional services, stock-based compensation, and higher head count and related employee costs to support our overall growth. In addition, commissions to our network of independent sales representatives related to sales of solar equipment were up due to increased sales and revenues. Selling, general and administrative expense decreased to 29% of sales and revenues in 2008 as compared to 36% in 2007. The reduction was primarily due to the absorption of selling, general and administrative overhead costs by the 85% increase in sales and revenues. Selling, general and administrative expense includes approximately \$574,000 of stock-based compensation in 2008 versus \$486,000 in 2007.

INTERNAL RESEARCH AND DEVELOPMENT EXPENSES

Internal research and development expense increased 157% for the year ended December 31, 2008 as compared to the year ended December 31, 2007, primarily as a result of our cost sharing contract with the NREL reducing 2007 costs. In addition, Spire Semiconductor had higher head count and related employee costs for 2008. As a percentage of sales and revenue, however, internal

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research and development expenses remained at 1% for both periods.

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GAIN ON SALE OF TRADEMARK

We sold Gloria Solar a PV module line operated by the our solar system business along with the transfer of technology and rights to mark the modules with our trademark to build, design and sell specialty BIPV and PV modules, in exchange for \$4,000,000 in cash. This transaction closed on September 4, 2007. We believe the sale of the trademark and the other goods and services meets the criteria of Emerging Issues Task Force ("EITF") 00-21, "ACCOUNTING FOR REVENUE ARRANGEMENTS WITH MULTIPLE ELEMENTS," paragraph 9(a), as each element has utility on a stand-alone basis. Further, Question 1 to SAB Topic 13A-3f was considered as guidance for determining if the trademark fee under the agreement should be recognized as a sale. As the trademark agreement has no term and is permanent in nature, the earnings process was complete; accordingly, we recognized a gain on the sale. We determined the fair value of the trademark sale, the PV module line and services based on a third party appraisal. As a result, a \$2,735,000 gain was recognized on the sale of the trademark for the year ended December 31, 2007. We also recognized \$715,000 in service revenue reflecting the delivery of PV technology designs to build PV modules. We have sold and will continue to sell this technology to other customers as part of our equipment business. As of December 31, 2007, the fair value of the undelivered goods and services was \$550,000, which was in advances on contracts in progress and was later recognized in sales of goods in 2008. Gloria Solar has further contracted with us in 2007 and 2008 to purchase additional PV module equipment lines at market prices. We also provide Gloria Solar general and administrative services and provide space in our facility on a pass through basis.

GAIN ON TERMINATION OF CONTRACT

On May 16, 2005, we entered into the global Consortium Agreement with Nisshinbo for the development, manufacturing, and sales of solar photovoltaic module manufacturing equipment. On September 1, 2008, Nisshinbo delivered a letter to us stating its intention to terminate the Consortium Agreement entered into between Nisshinbo and us on May 16, 2005. Pursuant to the Consortium Agreement, Nisshinbo provided its 180 day prior notice to terminate the Consortium Agreement, effective as of February 28, 2009. However, on November 28, 2008, we signed a Separation and Novation Agreement (the "Separation Agreement") with Nisshinbo that, among other things, accelerated the termination of the Consortium Agreement and the payment by Nisshinbo to us of an early termination penalty in the amount of \$6.8 million which was paid in December 2008. This penalty is recorded as a one-time gain on termination of contract for the year ended December 31, 2008. In addition, we received a final royalty payment of approximately \$659,000 from Nisshinbo for outstanding equipment being built by Nisshinbo for its customer base. Under the Separation Agreement, the termination of the Consortium Agreement was effective as of November 30, 2008 (see Note 16 and Note 17 for more information on the Consortium Agreement and the Separation Agreement).

OTHER INCOME (EXPENSE), NET

We earned \$21,000 and \$74,000 of interest income for the year ended December 31, 2008 and 2007, respectively. The decrease in earned interest relates to the decrease in interest rates during 2008 compared with 2007. We incurred interest expense of \$233,000 and \$225,000 for the year ended December 31, 2008 and 2007, respectively. The slight increase in interest expense is due to higher interest payments associated with the Equipment Credit Facility outstanding with Silicon Valley Bank in 2008 compared with 2007 interest expenses primarily associated with interest incurred on capital leases

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associated with the semiconductor foundry. The capital leases ended in May 2008.

We recorded losses of \$807,000 and \$24,000 on the equity investment in the joint venture with Gloria Solar for the years ended December 31, 2008 and 2007, respectively. The \$783,000 increase in loss on equity investment in joint venture for the year ended December 31, 2008 as compared to the year ended December 31, 2007 is attributable to reporting only two months of losses in 2007, due to the formation of the joint venture on July 31, 2007, compared to twelve months reported in 2008. We report the ongoing financial results of the joint venture one quarter in arrears. The joint venture has experienced significant losses in 2008 due to its inability to generate revenue commensurable with operating expenses.

We had currency exchange losses of approximately \$430,000 and \$14,000 during the years ended December 31, 2008 and 2007, respectively. The \$416,000 increase in currency exchange losses for the year ended December 31, 2008 as compared to the year ended December 31, 2007 is primarily attributable to unfavorable changes in the Japanese Yen effecting inventory purchases in 2008.

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INCOME TAXES

We recorded a provision for income taxes of \$270,000 for the year ended December 31, 2008. We recorded a benefit for income taxes of \$877,000 related to income from continuing operations for year ended December 31, 2007, representing the tax benefit of the continuing operation loss that is offset by the extraordinary gain. A full valuation allowance has been provided against the deferred tax assets due to uncertainty regarding the realization of the net operating loss in the future. A valuation allowance was provided against the deferred tax assets generated in 2007 due to uncertainty regarding the realization of the net operating loss in the future. At December 31, 2008, we had gross deferred tax assets of \$6,034,000, against which a valuation allowance of \$5,030,000 had been applied. The remaining deferred tax assets have been offset against deferred tax liabilities.

EXTRAORDINARY GAIN ON INVESTMENT IN JOINT VENTURE AND EQUITY INVESTMENT IN JOINT VENTURE

On July 31, 2007, we entered into contractual relationship with Gloria Solar pursuant to which (i) we sold Gloria Solar certain assets belonging to our solar systems business for \$4,000,000 and (ii) we and Gloria Solar formed a joint venture named Gloria Spire Solar, LLC, for the purpose of pursuing the solar photovoltaic systems market within the United States. The joint venture will design, market, sell and manage the installation of systems for the generation of electrical power by solar photovoltaic means in primarily commercial/industrial and utility segments of such market (the "JV Systems Business"). Gloria Solar owns 55% of the joint venture and we own 45% of the joint venture. In connection with the formation of the joint venture, (i) we contributed to the joint venture assets primarily relating to the JV Systems Business, including certain intellectual property and know-how, access to information technology assets and relationships, relationships with current and previous customers, contract backlog and project opportunities, certain registered trademarks, and employment relationships with staff members and (ii) Gloria Solar contributed \$5,000,000 in cash. This transaction closed on September 4, 2007. Our initial investment was recorded at \$2,288,000. As a result of applying the provisions of Accounting Principles Board ("APB") Opinion No. 18 "THE EQUITY METHOD OF ACCOUNTING FOR INVESTMENTS IN COMMON STOCK" to the differences between the fair value of the assets contributed and the cost basis on our books, we recorded an extraordinary gain of \$1,301,000, net of tax benefit of \$877,000 for the year ended December 31, 2007.

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We are accounting for our investment in the joint venture under the equity method, as we have significant influence over the investee; however, we lack significant control. We will be reporting the ongoing financial results of the joint venture one quarter in arrears. We recorded losses of \$807,000 and \$24,000 on the equity investment in joint venture for the years ended December 31, 2008 and 2007, respectively.

If the managing board of the joint venture determines that additional capital is required to support the operations of the joint venture, the joint venture shall make a call for additional funds. Within ten (10) days after the members have received written notice of the call, the members shall make additional capital contributions to the joint venture in proportion to each member's interest in the joint venture. If a member fails to fund its pro rata portion of any capital call, the non-defaulting member may purchase the defaulting member's shortfall; however, in no event may either member's interest in the joint venture be reduced to below 10%.

NET EARNINGS (LOSS)

We reported a net income for the year ended December 31, 2008 of \$4,775,000 and a net loss for the year ended December 31, 2007 of \$1,933,000. The net increase in income of approximately \$6,708,000 is primarily due to a one time termination fee of \$6,761,000 and by the increase in sales and revenues and the improvement in gross margins in 2008 partially offset by gains from the sale of assets to Gloria Solar, and the extraordinary gain on our equity investment in our joint venture with Gloria Solar in 2007.

LIQUIDITY AND CAPITAL RESOURCES

| | December 31, 2008 | December 31, 2007 | Increase (Decrease) \$ |
|---------------------------|----------------------|----------------------|---------------------------|
| | ----- | ----- | ----- |
| Cash and cash equivalents | \$ 5,971,000 | \$ 2,372,000 | \$ 3,599,000 |
| Working capital | \$ 6,835,000 | \$ 2,587,000 | \$ 4,248,000 |

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Cash and cash equivalents increased due to cash provided by operating activities, partially offset by cash used in investing and financing activities. The overall increase in working capital is due to an increase in current assets, primarily cash and restricted cash, partially offset by an increase in advances on contracts in progress. We have historically funded our operating cash requirements using operating cash flow, proceeds from the sale and licensing of technology and proceeds from the sale of equity securities.

There are no material commitments by us for capital expenditures. At December 31, 2008, our accumulated deficit was approximately \$6,914,000, compared to accumulated deficit of approximately \$11,689,000 as of December 31, 2007.

LOAN AGREEMENTS

We had a \$2,000,000 Loan Agreement with Citizens Bank of Massachusetts which expired on June 26, 2007. On May 25, 2007, we and our wholly-owned subsidiary, Spire Semiconductor, LLC, entered into a Loan and Security Agreement (the "Equipment Credit Facility") with Silicon Valley Bank (the "Bank"). Under

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the Equipment Credit Facility, for a one-year period, we and Spire Semiconductor could borrow up to \$3,500,000 in the aggregate to finance certain equipment purchases (including reimbursement of certain previously-made purchases). Advances made under the Equipment Credit Facility would bear interest at the Bank's prime rate, as determined, plus 0.5% and payable in thirty-six (36) consecutive monthly payments following the funding date of that advance.

On March 31, 2008, we entered into a second Loan and Security Agreement (the "Revolving Credit Facility") with the Bank. Under the terms of the Revolving Credit Facility, the Bank agreed to provide us with a credit line up to \$5,000,000. Our obligations under the Equipment Credit Facility are secured by substantially all of our assets and advances under the Revolving Credit Facility are limited to 80% of eligible receivables and the lesser of 25% of the value of our eligible inventory, as defined, or \$2,500,000 if the inventory is backed by a customer letter of credit. Interest on outstanding borrowings accrues at a rate per annum equal to the greater of Prime Rate plus one percent (1.0%) or seven percent (7%). In addition, we agreed to pay to the Bank a collateral monitoring fee of \$750 per month in the event we are in default of our covenants and agreed to the following additional terms: (i) \$50,000 commitment fee; (ii) an unused line fee in the amount of 0.75% per annum of the average unused portion of the revolving line; and (iii) an early termination fee of 0.5% of the total credit line if we terminate the Revolving Credit Facility prior to 12 months from the Revolving Credit Facility's effective date. The Revolving Credit Facility, if not sooner terminated in accordance with its terms, expires on March 30, 2009. In addition, on March 31, 2008 our existing Equipment Credit Facility was amended whereby the Bank granted a waiver for our defaults for not meeting our December 31, 2007 quarter liquidity and profit covenants and for not meeting our January and February 2008 liquidity covenants. Further, the covenants were amended to match the covenants as discussed below contained in the Revolving Credit Facility. Our interest rate under the Equipment Credit Facility was also modified from Bank Prime plus one half percent to the greater of Bank Prime plus one percent (1%) or seven percent (7%).

On May 13, 2008, the Bank amended the Equipment Credit Facility and the Revolving Credit Facility, modifying our net income profitability covenant requirements in exchange for a three quarters percent (0.75%) increase in our interest rate (7.75% at December 31, 2008) and waiver restructuring fee equal to one half percent (0.5%) of amounts outstanding under the Equipment Credit Facility and committed under the Revolving Credit Facility. Interest on outstanding borrowings accrues at a rate per annum equal to the greater of Prime Rate plus one percent (1.0%) or seven percent (7%). In addition, our term loan balance will be factored in when calculating our borrowing base under the Revolving Credit Facility.

Under the amended terms of both credit facilities, as long as any commitment remains outstanding under the facilities, we must comply with an adjusted quick ratio covenant and a minimum monthly net income covenant. In addition, until all amounts under the credit facilities with the Bank are repaid, covenants under the credit facilities impose restrictions on our ability to, among other things, incur additional indebtedness, create or permit liens on our assets, merge, consolidate or dispose of assets (other than in the ordinary course of business), make dividend and other restricted payments, make certain debt or equity investments, make certain acquisitions, engage in certain transactions with affiliates or change the business conducted by us and our subsidiaries. Any failure by us to comply with the covenants and obligations under the credit facilities could result in an event of default, in which case the Bank may be entitled to declare all amounts owed to be due and payable immediately. Our obligations under the credit facilities are secured by substantially all of our assets.

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On March 31, 2009, the Bank extended the expiration of the Revolving Credit Facility under the same terms for an additional sixty days, to expire on May 29, 2009. The purpose of the extension is to allow both parties the time to negotiate an expansion of the credit limit contingent upon our qualifying for an Export-Import Bank loan guarantee.

Our Equipment Credit Facility principal balance outstanding was \$1,750,000 and \$2,917,000 at December 31, 2008 and 2007, respectively. Our Revolving Credit Facility principal balance outstanding was \$1,500,000 at December 31, 2008. We were in compliance with our credit facility covenants as of December 31, 2008.

TERMINATION OF CONTRACTS

On August 29, 2008, we delivered to Principia Lightworks, Inc. ("Principia") a Notice of Breach and Pending Termination (the "Notice") of a certain Manufacturing Agreement, dated August 29, 2006, by and between Spire Semiconductor and Principia (the "Manufacturing Agreement"). Under the terms of the Manufacturing Agreement, Principia made an up-front payment for nonrecurring engineering and facility access costs and, in addition was required to make monthly facility availability payments throughout the term of the agreement. As a result of Principia's failure to make recent monthly facility availability payments, we have reserved \$225,000 against Principia's accounts receivable balance. We have entered into a mutual standstill agreement with Principia which expired on March 15, 2009. The purpose of the standstill was to give the parties additional time to negotiate a resolution.

On March 27, 2009, Spire Semiconductor and Principia mutually agreed to terminate the Manufacturing Agreement for convenience and entered into a separation and novation agreement (the "Novation Agreement"). Under the terms of the Novation Agreement, both parties agreed to terminate technology licenses that were granted to each other under the terms of the Manufacturing Agreement and Spire Semiconductor will be released from its production requirements to Principia. Principia is released from paying its future facility availability payments due under the Manufacturing Agreement but will be required to pay outstanding facility availability payments of \$300,000. Spire Semiconductor holds 67,500 shares of Principia stock as collateral against the outstanding facility availability payments. Additionally, in the first quarter of 2009 we will accelerate the amortization of deferred revenue and will recognize \$1.54 million in statement of operations related to the termination of the Manufacturing Agreement.

On September 1, 2008, Nisshinbo delivered a letter to us stating its intention to terminate the Consortium Agreement entered into between Nisshinbo and us on May 16, 2005. Pursuant to the Consortium Agreement, Nisshinbo provided its 180 day prior notice to terminate the Consortium Agreement, effective as of February 28, 2009. However, on November 28, 2008, we signed the Separation Agreement with Nisshinbo that, among other things, accelerated the termination of the Consortium Agreement and the payment by Nisshinbo to us of an early termination penalty in the amount of \$6.8 million which was paid in December 2008. In addition, we received a final royalty payment of approximately \$659,000 from Nisshinbo for outstanding equipment being built by Nisshinbo for its customer base. Under the Separation Agreement, the termination of the Consortium Agreement was effective as of November 30, 2008 (see Note 16 and Note 17 for more information on the Consortium Agreement and the Separation Agreement).

CASH GAIN (LOSS) FROM OPERATIONS

We have incurred operating losses before non-recurring gains in 2008 and 2007. Loss from operations, before gain on termination of contract, was \$267,000

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in 2008 and loss from operations, before gain on sales of trademarks, was \$6.7 million in 2007. Previous losses from operations have resulted in cash losses (loss from operations excluding gain on sales of trademark plus or minus non-cash adjustments) of approximately \$5.7 million in 2007. We have funded these cash losses from cash receipts of \$3.0 million from credit facility borrowings and \$4.0 million from the sale of a solar PV module line along with the transfer of technology and rights to mark the modules with our trademark to the joint venture in 2007. We have funded our working capital needs in 2007 from customer advances on contracts. For the year ended December 31, 2008, the cash gain (income from operations excluding gain on termination of contract plus or minus non-cash adjustments) was \$4.1 million. As of December 31, 2008, we had unrestricted cash and cash equivalents of \$6.0 million compared to unrestricted cash and cash equivalents of \$2.4 million as of December 31, 2007. We have numerous options on how to fund future operational losses or working capital needs, including but not limited to sales of equity, bank debt or the sale or license of assets and technology, as we have done in the past; however, there are no assurances that we will be able to sell equity, obtain bank debt, or sell or license assets or technology on a timely basis and at appropriate values. We have reduced our loss from operations substantially in 2008 and have funded our working capital needs from customer advances on contracts. We have developed several plans including cost containment efforts and outside financing to offset a decline in business due to a further deepening of the current global economic recession. As a result, we believe we have sufficient

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resources to continue as a going concern through at least December 31, 2009. The table below details our cash gain(loss) from operations which excludes changes in working capital during the respective periods.

| | Years Ended |
|--|--------------|
| | 2008 |
| Gain (loss) from operations | \$ 6,494,000 |
| Gain on termination of contract | (6,761,000) |
| Gain on sale of trademark | -- |
| Adjusted loss from operations | (267,000) |
| Depreciation and amortization | 1,939,000 |
| Loss on impairment of capital equipment | -- |
| Loss on equity investment in joint venture | 807,000 |
| Deferred tax benefit | -- |
| Deferred compensation | (487,000) |
| Deferred rent | 275,000 |
| Extraordinary gain in equity investment in joint venture, net of tax | -- |
| Stock-based compensation | 754,000 |
| Provision for inventory and accounts receivable reserves | 1,057,000 |
| Cash gain (loss) from operations | \$ 4,078,000 |

CONTRACTUAL OBLIGATIONS, COMMERCIAL COMMITMENTS AND OFF-BALANCE SHEET ARRANGEMENTS.

The following table summarizes our gross contractual obligations at December 31, 2008 and the maturity periods and the effect that such obligations

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are expected to have on its liquidity and cash flows in future periods:

| Contractual Obligations | Payments Due by Period | | | |
|----------------------------------|------------------------|---------------------|----------------|-------------|
| | Total | Less than 1 Year | 2 - 3 Years | 4 - Year |
| Equipment Credit Facility (SVB) | \$ 1,859,000 | \$ 1,262,000 | \$ 597,000 | |
| Revolving Credit Facility (SVB) | \$ 1,500,000 | \$ 1,500,000 | -- | |
| Purchase obligations | \$ 18,160,000 | \$ 18,068,000 | \$ 92,000 | |
| Operating leases: | | | | |
| Unrelated party operating leases | \$ 270,000 | \$ 136,000 | \$ 134,000 | |
| Related party operating leases | \$ 17,051,000 | \$ 3,067,000 | \$ 6,662,000 | \$ 4,81 |

Purchase obligations include all open purchase orders outstanding regardless of whether they are cancelable or not. Included in purchase obligations are raw material and equipment needed to fulfill customer orders.

Equipment Credit Facility obligations outlined above include both the principal and interest components of these contractual obligations.

Outstanding letters of credit totaled \$4,187,000 and \$261,000 at December 31, 2008 and 2007, respectively. The letters of credit secure performance obligations and purchase commitments, and allow holders to draw funds up to the face amount of the letter of credit if we do not perform as contractually required. These letters of credit expire through 2009 and are 100% secured by cash, short-term investments and the Revolving Credit Facility.

RECENT ACCOUNTING PRONOUNCEMENTS

In December 2007, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 141R ("FAS 141R"), BUSINESS COMBINATIONS, which revises FAS 141 and changes multiple aspects of the accounting for business combinations. Under the guidance in FAS 141R, the acquisition method must be used, which requires the acquirer to recognize most identifiable assets acquired, liabilities assumed, and non-controlling interests in the acquiree at their full fair value on the acquisition date. Goodwill is to be recognized as the excess of the consideration transferred plus the fair value of the non-controlling

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interest over the fair values of the identifiable net assets acquired. Subsequent changes in the fair value of contingent consideration classified as a liability are to be recognized in earnings, while contingent consideration classified as equity is not to be re-measured. Costs such as transaction costs are to be excluded from acquisition accounting, generally leading to recognizing expense, and, additionally, restructuring costs that do not meet certain criteria at acquisition date are to be subsequently recognized as post-acquisition costs. FAS 141R is effective for business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2008 and will change the accounting for business combinations on a prospective basis.

Effective January 1, 2008, we adopted SFAS No. 157, FAIR VALUE MEASUREMENTS ("FAS 157"). In February 2008, the FASB issued FASB Staff Position

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No. FAS 157-2, EFFECTIVE DATE OF FASB STATEMENT NO. 157, which provides a one year deferral of the effective date of FAS 157 for non-financial assets and non-financial liabilities, except those that are recognized or disclosed in the financial statements at fair value at least annually. Therefore, we have adopted the provisions of FAS 157 with respect to its financial assets and liabilities only. FAS 157 defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. The new standard provides a consistent definition of fair value which focuses on an exit price which is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The standard also prioritizes, within the measurement of fair value, the use of market-based information over entity specific information and establishes a three-level hierarchy for fair value measurements based on the nature of inputs used in the valuation of an asset or liability as of the measurement date. The application of FAS 157 in situations where the market for a financial asset is not active was clarified by the issuance of FASB Staff Position No. FAS 157-3, DETERMINING THE FAIR VALUE OF A FINANCIAL ASSET WHEN THE MARKET FOR THAT ASSET IS NOT ACTIVE, ("FAS 157-3") in October 2008. FAS 157-3 became effective immediately and did not significantly impact the methods by which we determine the fair values of our financial assets.

In December 2007, the FASB issued SFAS No. 160 ("FAS 160"), NON-CONTROLLING INTEREST IN CONSOLIDATED FINANCIAL STATEMENTS - AN AMENDMENT OF ARB NO. 151. FAS 160 requires that a non-controlling interest in a subsidiary (i.e. minority interest) be reported in the equity section of the balance sheet instead of being reported as a liability or in the mezzanine section between debt and equity. It also requires that the consolidated income statement include consolidated net income attributable to both the parent and non-controlling interest of a consolidated subsidiary. A disclosure must be made on the face of the consolidated income statement of the net income attributable to the parent and to the non-controlling interest. Also, regardless of whether the parent purchases additional ownership interest, sells a portion of its ownership interest in a subsidiary or the subsidiary participates in a transaction that changes the parent's ownership interest, as long as the parent retains controlling interest, the transaction is considered an equity transaction. FAS 160 is effective for annual periods beginning after December 15, 2008. We are currently evaluating the impact, if any, that this standard will have on its financial position and results of operations.

In March 2008, the FASB issued SFAS No. 161 ("FAS 161"), DISCLOSURES ABOUT DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES - AN AMENDMENT OF FASB STATEMENT NO. 133. FAS 161 requires enhanced disclosures about an entity's derivative and hedging activities. Entities are required to provide enhanced disclosures about (a) how and why an entity uses derivative instruments, (b) how derivative instruments and related hedged items are accounted for under Statement No. 133 and its related interpretations, and (c) how derivative instruments and related hedged items affect an entity's financial position, financial performance, and cash flows. FAS 161 is effective for financial statements issued for fiscal years and interim periods beginning after November 15, 2008, with early application encouraged. FAS 161 encourages, but does not require, comparative disclosures for earlier periods at initial adoption. We are currently evaluating the impact, if any, that this standard will have on its financial position and results of operations.

IMPACT OF INFLATION AND CHANGING PRICES

Historically, our business has not been materially impacted by inflation. Manufacturing equipment and solar systems are generally quoted, manufactured and shipped within a cycle of approximately nine months, allowing for orderly pricing adjustments to the cost of labor and purchased parts. We have not experienced any negative effects from the impact of inflation on long-term contracts. Our service business is not expected to be seriously

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affected by inflation because its procurement-production cycle typically ranges from two weeks to several months, and prices generally are not fixed for more than one year. Research and development contracts usually include cost escalation provisions.

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FOREIGN CURRENCY FLUCTUATION

We sell only in U.S. dollars, generally against an irrevocable confirmed letter of credit through a major United States bank. Accordingly, we are not directly affected by foreign exchange fluctuations on our current orders. However, fluctuations in foreign exchange rates do have an effect on our customers' access to U.S. dollars and on the pricing competition on certain pieces of equipment that we sell in selected markets. In addition, purchases made and royalties received under our Consortium Agreement with Nisshinbo are in Japanese yen. In addition, we received Japanese yen related to the termination of the Consortium Agreement in 2008. We have committed to purchase certain pieces of equipment from European vendors; these commitments are denominated in Euros. We bear the risk of any currency fluctuations that may be associated with these commitments. We attempt to hedge known transactions when possible to minimize foreign exchange risk. There were no hedged amounts at December 31, 2008 and 2007. Foreign exchange loss included in other income (expense) was \$430,000 and \$14,000 for the year ended December 31, 2008 and 2007, respectively.

RELATED PARTY TRANSACTIONS

We subleased 77,000 square-feet in a building leased by Mykrolis Corporation, who in turn leased the building from SPI-Trust, a Trust of which Roger Little, our Chairman of the Board, Chief Executive Officer and President, is the sole trustee and principal beneficiary for the ten year period ending November 2005. Effective December 1, 2005, we entered into a two-year Extension of Lease Agreement (the "Lease Extension") directly with SPI-Trust.

We assumed certain responsibilities of Mykrolis, the tenant under the former lease, as a result of the Lease Extension including payment of all building and real estate related expenses associated with the ongoing operations of the property. We allocated a portion of these expenses to SPI-Trust based on pre-established formulas utilizing square footage and actual usage where applicable. These allocated expenses were invoiced monthly and were paid utilizing a SPI-Trust escrow account of which we have sole withdrawal authority. SPI-Trust is required to maintain three (3) months of its anticipated operating costs within this escrow account. On December 1, 2006, we and SPI-Trust amended the Lease Extension to include the lease of an additional 15,000 square feet from SPI-Trust for a one-year term. The additional space was leased at a rate of \$8.06 per square foot on annual basis. The additional space was used to expand our solar operations.

On November 30, 2007, we entered into a new Lease Agreement (the "New Lease") with SPI-Trust, with respect to 144,230 square feet of space comprising the entire building in which we have occupied space since December 1, 1985. The term of the New Lease commenced on December 1, 2007 and continues for five (5) years until November 30, 2012. We have the right to extend the term of the New Lease for an additional five (5) year period. The annual rental rate for the first year of the Lease is \$12.50 per square foot on a triple net basis, whereby the tenant is responsible for operating expenses, taxes and maintenance of the building. The annual rental rate increases on each anniversary by \$0.75 per square foot. If we exercises our right to extend the term of the New Lease, the annual rental rate for the first year of the extended term will be the greater of (a) the rental rate in effect immediately preceding the commencement of the

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extended term or (b) the market rate at such time, and on each anniversary of the commencement of the extended term the rental rate will increase by \$0.75 per square foot. We believe that the terms of the New Lease are commercially reasonable. Rent expense under the New Lease and the Lease Extension, as amended, for the year ended December 31, 2008 and 2007 was \$2,019,000 and \$1,415,000, respectively.

In May 2003, Spire Semiconductor leased a building (90,000 square feet) in Hudson, New Hampshire from SPI-Trust whereby we agreed to pay \$4.1 million to SPI-Trust over an initial five-year term expiring in May 2008 with an option for us to extend for five years. In addition to the rent payments, the lease obligated us to keep on deposit with SPI-Trust the equivalent of three months rent. The lease agreement did not provide for a transfer of ownership at any point. Interest costs were assumed at 7%. This lease was classified as a related party capital lease and a summary of payments (including interest) follows:

| Year | Rate Per Square Foot | Annual Rent | Monthly Rent | Securit Deposi |
|-----------------------------|-------------------------|-------------------------------|--------------|-------------------|
| ----- | ----- | ----- | ----- | ----- |
| June 1, 2003 - May 31, 2004 | \$6.00 | \$ 540,000 | \$45,000 | \$135,000 |
| June 1, 2004 - May 31, 2005 | 7.50 | 675,000 | 56,250 | 168,750 |
| June 1, 2005 - May 31, 2006 | 8.50 | 765,000 | 63,750 | 191,250 |
| June 1, 2006 - May 31, 2007 | 10.50 | 945,000 | 78,750 | 236,250 |
| June 1, 2007 - May 31, 2008 | 13.50 | 1,215,000 | 101,250 | 303,750 |
| | | ----- \$4,140,000 ===== | | |

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Upon the expiration of the lease in May 2008, we did not exercise our option to extend the lease for an additional 5 years. On May 20, 2008, we agreed with SPI-Trust to continue the current lease, under the current terms and conditions on a month-to-month basis for a maximum of three (3) months beyond the current term.

On August 29, 2008, we entered into a new Lease Agreement (the "Hudson Lease") with SPI-Trust, with respect to 90,000 square feet of space comprising the entire building in which Spire Semiconductor has occupied space since June 1, 2003. The term of the Hudson Lease commenced on September 1, 2008, and continues for seven (7) years until August 31, 2015. We have the right to extend the term of the Hudson Lease for an additional five (5) year period. The annual rental rate for the first year of the Hudson Lease is \$12.50 per square foot on a triple-net basis, whereby the tenant is responsible for operating expenses, taxes and maintenance of the building. The annual rental rate increases on each anniversary by \$0.75 per square foot. If we exercise our right to extend the term of the Hudson Lease, the annual rental rate for the first year of the extended term will be the greater of: (a) the rental rate in effect immediately preceding the commencement of the extended term; or (b) the market rate at such time, and on each anniversary of the commencement of the extended term the rental rate will increase by \$0.75 per square foot. In addition, we are required to deposit with SPI-Trust \$300,000 as security for performance by us for our covenants and obligations under the Hudson Lease. SPI-Trust is responsible, at its sole expense, to make certain defined tenant improvements to the building. We believe that the terms of the Hudson Lease are commercially reasonable and reflective of market rates. The lease agreement does not provide for a transfer of ownership at any point. The Hudson Lease is classified as a related party

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operating lease. Rent expense under the Hudson Lease for the year ended December 31, 2008 was \$443,000.

CRITICAL ACCOUNTING POLICIES

The preparation of financial statements in accordance with accounting principles generally accepted in the United States requires us 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 revenues and expenses during the reporting period. Among the significant estimates affecting our consolidated financial statements are those relating to revenue recognition, reserves for doubtful accounts and sales returns and allowances, reserve for excess and obsolete inventory, impairment of long-lived assets, stock-based compensation, income taxes, and warranty reserves. We regularly evaluate our estimates and assumptions based upon historical experience and various other factors that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. To the extent actual results differ from those estimates, our future results of operations may be affected. We believe the following critical accounting policies affect our more significant judgments and estimates used in the preparation of our consolidated financial statements. Refer to Footnote 2 of our notes to consolidated financial statements for a description of our significant accounting policies.

REVENUE RECOGNITION

We derive our revenues from three primary sources: (1) commercial products including, but not limited to, solar energy manufacturing equipment, solar energy systems and hemodialysis catheters; (2) biomedical and semiconductor processing services; and (3) United States government funded research and development contracts.

We generally recognize product revenue upon shipment of products provided there are no uncertainties regarding customer acceptance, persuasive evidence of an arrangement exists, the sales price is fixed or determinable, and collectibility is reasonably assured. These criteria are generally met at the time of shipment when the risk of loss and title passes to the customer or distributor, unless a consignment arrangement exists. Revenue from consignment arrangements is recognized based on product usage indicating sales are complete.

We utilize a distributor network to market and sell its hemodialysis catheters domestically. We generally recognize revenue when the catheters are shipped to our distributors. Gross sales reflect reductions attributable to customer returns and various customer incentive programs including pricing discounts and rebates. Product returns are permitted in certain sales contracts and an allowance is recorded for returns based on our history of actual returns. Certain customer incentive programs require management to estimate the cost of those programs. The allowance for these programs is determined through an analysis of programs offered, historical trends, expectations regarding customer and consumer participation,

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sales and payment trends, and experience with payment patterns associated with similar programs that had been previously offered. An analysis of the sales return and rebate activity for the years ended December 31, 2008 and 2007, is as follows:

| Rebates | Returns | Total |
|---------|---------|-------|
|---------|---------|-------|

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| | | | |
|-----------------------------|------------|-----------|------------|
| Balance - December 31, 2006 | \$ 138,000 | \$ 17,000 | \$ 155,000 |
| Provision | 224,000 | 32,000 | 256,000 |
| Utilization | (285,000) | (39,000) | (324,000) |
| Balance - December 31, 2007 | 77,000 | 10,000 | 87,000 |
| Provision | 588,000 | 34,000 | 622,000 |
| Utilization | (513,000) | (34,000) | (547,000) |
| Balance - December 31, 2008 | \$ 152,000 | \$ 10,000 | \$ 162,000 |

- o Credits for rebates are recorded in the month of the actual sale.
- o Credits for returns are processed when the actual merchandise is received by us.
- o Substantially all rebates and returns are processed no later than three months after original shipment by us.

The reserve percentage of inventory held by distributors over the past quarters has increased to approximately 17% at December 31, 2008, when compared to 8% at December 31, 2007. We perform various sensitivity analyses to determine the appropriate reserve percentage to use. To date, actual reserve utilization has approximated the amount provided. The total inventory held by distributors was approximately \$952,000 at December 31, 2008.

If sufficient history to make reasonable and reliable estimates of returns or rebates does not exist, revenue associated with such practices is deferred until the return period lapses or a reasonable estimate can be made. This deferred revenue will be recognized as revenue when the distributor reports to us that it has either shipped or disposed of the units (indicating that the possibility of return is remote).

Our OEM capital equipment solar energy business builds complex customized machines to order for specific customers. Most orders are sold on a FOB Bedford, Massachusetts (or EX-Works Factory) basis and other orders are sold on a CIP or on rare situations a DDU basis. It is our policy to recognize revenues for this equipment as title of the product has passed to the customer, as customer acceptance is obtained prior to shipment and the equipment is expected to operate the same in the customer's environment as it does in our environment. When an arrangement with the customer includes future obligations or customer acceptance, revenue is recognized when those obligations are met or customer acceptance has been achieved. For arrangements with multiple elements, we allocate fair value to each element in the contract and revenue is recognized upon delivery of each element. If we are not able to establish fair value of undelivered elements, all revenue is deferred.

We recognize revenues and estimated profits on long-term government contracts on the accrual basis where the circumstances are such that total profit can be estimated with reasonable accuracy and ultimate realization is reasonably assured. We accrue revenue and profit utilizing the percentage of completion method using a cost-to-cost methodology. A percentage of the contract revenues and estimated profits is determined utilizing the ratio of costs incurred to date to total estimated cost to complete on a contract by contract basis. Profit estimates are revised periodically based upon changes and facts, and any losses on contracts are recognized immediately. Some of the contracts include provisions to withhold a portion of the contract value as retainage until such time as the United States government performs an audit of the cost incurred under the contract. Our policy is to take into revenue the full value of the contract, including any retainage, as we perform against the contract because we have not experienced any substantial losses as a result of audits

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performed by the United States government.

ALLOWANCE FOR DOUBTFUL ACCOUNTS

We maintain allowances for doubtful accounts for estimated losses resulting from the inability of our customers to pay amounts due. We actively pursue collection of past due receivables as the circumstances warrant. Customers are contacted to determine the status of payment and senior accounting and operations management are included in these efforts as is deemed necessary. A specific reserve will be established for past due accounts when it is probable that a loss has been incurred and we can reasonably estimate the amount of the loss. We do not record an allowance for government receivables and invoices backed by letters of credit as realizability is reasonably assured. Bad debts are written off against the allowance when identified. There is no dollar threshold for account balance write-offs. While rare, a write-off is only

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recorded when all efforts to collect the receivable have been exhausted and only in consultation with the appropriate business line manager.

IMPAIRMENT OF LONG-LIVED ASSETS

Long-lived assets, including fixed assets and intangible assets, are continually monitored and are evaluated at least annually for impairment. The determination of recoverability is based on an estimate of undiscounted cash flows expected to result from the use of an asset and its eventual disposition. The estimate of cash flows is based upon, among other things, certain assumptions about expected future operating performance. Our estimates of undiscounted cash flows may differ from actual cash flows due to, among other things, technological changes, economic conditions, changes to our business model or changes in our operating performance. If the sum of the undiscounted cash flows (excluding interest) is less than the carrying value, we recognize an impairment loss, measured as the amount by which the carrying value exceeds the fair value of the asset.

STOCK-BASED COMPENSATION

We account for our stock-based compensation plans in accordance with the fair value recognition provisions of SFAS No. 123(R). SHARE-BASED PAYMENT ("Statement 123(R)"). We use the Black-Scholes option pricing model as our method for determining the fair value of stock option grants. Statement 123(R) requires the fair value of all share-based awards that are expected to vest to be recognized in the statements of operations over the service or vesting period of each award. We use the straight-line method of attributing the value of stock-based compensation expense for all stock option grants.

On November 10, 2005, the FASB issued FASB Staff Position SFAS 123R-3, TRANSITION ELECTION RELATED TO ACCOUNTING FOR TAX EFFECTS OF SHARE-BASED PAYMENT AWARDS. We have elected to adopt the alternative transition method provided by the FASB Staff Position for calculating the tax effects (if any) of stock-based compensation expense pursuant to Statement 123(R). The alternative transition method includes simplified methods to establish the beginning balance of the additional paid-in capital pool related to the tax effects of employee stock-based compensation, and to determine the subsequent impact to the additional paid-in capital pool and the consolidated statements of operations and cash flows of the tax effects of employee stock-based compensation awards that are outstanding upon adoption of Statement 123(R).

WARRANTY

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We provide warranties on certain products and services. Our warranty programs are described below:

Spire Solar Equipment warrants solar energy module manufacturing equipment sold for a total of 360 days, the first 90 days of which include the replacement of defective component parts and the labor to correct the defect and the next 270 days of which include only the cost of defective component parts.

Spire Biomedical warrants that any of its catheter products found to be defective will be replaced. No warranty is made that the failure of the product will not occur, and we disclaim any responsibility for any medical complications. Spire Biomedical warrants that its services only will meet the agreed upon specifications.

Spire Semiconductor warrants that its products will meet the agreed upon specifications.

We provide for the estimated cost of product warranties, determined primarily from historical information, at the time product revenue is recognized. Should actual product failure warranties differ from our estimates, revisions to the estimated warranty liability would be required.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Not required as we are a smaller reporting company.

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ITEM 8. FINANCIAL STATEMENTS

CONSOLIDATED FINANCIAL STATEMENTS

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders
of Spire Corporation:

We have audited the consolidated balance sheets of Spire Corporation and subsidiaries as of December 31, 2008 and 2007 and the related consolidated statements of operations, stockholders' equity and comprehensive loss, and cash flows for the years then ended. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States of America). 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. An audit includes 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 includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes 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 consolidated financial statements referred to above present fairly, in all material respects, the financial position of Spire Corporation and subsidiaries as of December 31, 2008 and 2007, and the results of their operations and their cash flows for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

VITALE, CATURANO & COMPANY, P.C.

March 31, 2009
Boston, Massachusetts

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| | December 31, 2008 | December 31, 2007 |
|---|----------------------|----------------------|
| | ----- | ----- |
| ASSETS | | |
| Current assets | | |
| ----- | | |
| Cash and cash equivalents | \$ 5,971,000 | \$ 2,372,000 |
| Restricted cash - current portion | 4,167,000 | 391,000 |
| | ----- | ----- |
| | 10,138,000 | 2,763,000 |
| Accounts receivable - trade, net | 8,873,000 | 11,865,000 |
| Inventories, net | 17,876,000 | 11,570,000 |
| Deferred cost of goods sold | 17,088,000 | 8,044,000 |
| Deposits on equipment for inventory | 3,433,000 | 2,475,000 |
| Prepaid expenses and other current assets | 468,000 | 542,000 |
| | ----- | ----- |
| Total current assets | 57,876,000 | 37,259,000 |
| Property and equipment, net | 6,089,000 | 6,209,000 |
| Intangible and other assets, net | 846,000 | 851,000 |
| Available-for-sale investments, at quoted market value (cost of \$1,859,000 and \$1,738,000 at December 31, 2008 and December 31, 2007, respectively) | 1,434,000 | 1,800,000 |
| Equity investment in joint venture | 1,473,000 | 2,264,000 |
| Deposit - related party | 300,000 | 304,000 |
| | ----- | ----- |
| Total other assets | 4,053,000 | 5,219,000 |
| | ----- | ----- |
| Total assets | \$ 68,018,000 | \$ 48,687,000 |
| | ===== | ===== |
| LIABILITIES AND STOCKHOLDERS' EQUITY | | |
| Current liabilities | | |
| ----- | | |
| Current portion of capital lease obligation - related party | \$ -- | \$ 486,000 |
| Current portion of equipment and revolving line of credit | 2,667,000 | 1,167,000 |
| Accounts payable | 5,161,000 | 2,909,000 |
| Accrued liabilities | 8,704,000 | 6,057,000 |
| Current portion of advances on contracts in progress | 34,509,000 | 24,053,000 |
| | ----- | ----- |
| Total current liabilities | 51,041,000 | 34,672,000 |
| Long-term portion of equipment line of credit | 583,000 | 1,750,000 |
| Long-term portion of advances on contracts in progress | 1,149,000 | 1,950,000 |
| Deferred compensation | 1,434,000 | 1,800,000 |
| Other long-term liabilities | 293,000 | 60,000 |
| | ----- | ----- |
| Total long-term liabilities | 3,459,000 | 5,560,000 |
| | ----- | ----- |
| Total liabilities | 54,500,000 | 40,232,000 |
| | ----- | ----- |
| Stockholders' equity | | |
| ----- | | |
| Common stock, \$0.01 par value; 20,000,000 shares authorized; 8,330,688 and 8,321,188 shares issued and outstanding on | | |

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| | | |
|---|---------------|---------------|
| December 31, 2008 and December 31, 2007, respectively | 83,000 | 83,000 |
| Additional paid-in capital | 20,774,000 | 19,999,000 |
| Accumulated deficit | (6,914,000) | (11,689,000) |
| Accumulated other comprehensive income (loss), net | (425,000) | 62,000 |
| | ----- | ----- |
| Total stockholders' equity | 13,518,000 | 8,455,000 |
| | ----- | ----- |
| Total liabilities and stockholders' equity | \$ 68,018,000 | \$ 48,687,000 |
| | ===== | ===== |

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

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SPIRE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS

| | Years Ended December 31, | |
|--|--------------------------|---------------|
| | 2008 | 2007 |
| | ----- | ----- |
| Net sales and revenues | | |
| ----- | | |
| Sales of goods | \$ 54,024,000 | \$ 24,723,000 |
| Contract research, service and license revenues | 14,628,000 | 12,345,000 |
| | ----- | ----- |
| Total net sales and revenues | 68,652,000 | 37,068,000 |
| Cost of sales and revenues | | |
| ----- | | |
| Cost of goods sold | 38,501,000 | 20,826,000 |
| Cost of contract research, services and licenses | 10,003,000 | 9,360,000 |
| | ----- | ----- |
| Total cost of sales and revenues | 48,504,000 | 30,186,000 |
| | ----- | ----- |
| Gross margin | 20,148,000 | 6,882,000 |
| Operating expenses | | |
| ----- | | |
| Selling, general and administrative expenses | 19,612,000 | 13,226,000 |
| Internal research and development expenses | 803,000 | 313,000 |
| | ----- | ----- |
| Total operating expenses | 20,415,000 | 13,539,000 |
| | ----- | ----- |
| Gain on sale of trademark | -- | 2,735,000 |
| Gain on termination of contract | 6,761,000 | -- |
| | ----- | ----- |
| Gain (loss) from operations | 6,494,000 | (3,922,000) |
| ----- | | |
| Interest income (expense), net | (212,000) | (151,000) |
| Loss on equity investment in joint venture | (807,000) | (24,000) |
| Other expense | (430,000) | (14,000) |
| | ----- | ----- |
| Total other income (expense), net | (1,449,000) | (189,000) |

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| | | |
|---|--------------|----------------|
| Income (loss) before income taxes and extraordinary gain | 5,045,000 | (4,111,000) |
| ----- | | |
| Income tax (provision) benefit | (270,000) | 877,000 |
| ----- | | |
| Net income (loss) before extraordinary gain | 4,775,000 | (3,234,000) |
| ----- | | |
| Extraordinary gain, net of taxes | -- | 1,301,000 |
| ----- | | |
| Net income (loss) | \$ 4,775,000 | \$ (1,933,000) |
| ===== | | |
| Basic income (loss) per share: | | |
| From continuing operations after income taxes | \$ 0.57 | \$ (0.39) |
| From extraordinary gain, net of tax | -- | 0.16 |
| ----- | | |
| Basic income (loss) per share | \$ 0.57 | \$ (0.23) |
| ===== | | |
| Diluted income (loss) per share: | | |
| From continuing operations after income taxes | \$ 0.56 | \$ (0.39) |
| From extraordinary gain, net of tax | -- | 0.16 |
| ----- | | |
| Diluted income (loss) per share | \$ 0.56 | \$ (0.23) |
| ===== | | |
| Weighted average number of common and common equivalent shares outstanding - basic | 8,328,592 | 8,272,123 |
| ===== | | |
| Weighted average number of common and common equivalent shares outstanding - diluted | 8,464,623 | 8,272,123 |
| ===== | | |

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

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SPIRE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY AND COMPREHENSIVE LOSS

| | Common Stock | | Additional Paid-in Capital | Accumulated Deficit |
|--|--------------|-----------|----------------------------------|------------------------|
| | Shares | Amount | | |
| | ----- | ----- | ----- | ----- |
| Balance, December 31, 2006 | 8,236,663 | \$ 82,000 | \$ 19,077,000 | \$ (9,756,000) |
| Exercise of stock options | 84,525 | 1,000 | 343,000 | -- |
| Stock-based compensation | -- | -- | 579,000 | -- |
| Net unrealized gain on available for sale marketable securities, net of tax | -- | -- | -- | -- |
| Net loss | -- | -- | -- | (1,933,000) |
| | ----- | ----- | ----- | ----- |
| Balance, December 31, 2007 | 8,321,188 | 83,000 | 19,999,000 | (11,689,000) |

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| | | | | |
|--|-----------|-----------|---------------|----------------|
| Exercise of stock options | 9,500 | -- | 21,000 | -- |
| Stock-based compensation | -- | -- | 754,000 | -- |
| Net unrealized loss on available for sale marketable securities, net of tax | -- | -- | -- | -- |
| Net income | -- | -- | -- | 4,775,000 |
| | ----- | ----- | ----- | ----- |
| Balance, December 31, 2008 | 8,330,688 | \$ 83,000 | \$ 20,774,000 | \$ (6,914,000) |
| | ===== | ===== | ===== | ===== |

Comprehensive income/(loss) is calculated as follows:

| |
|---|
| Net income (loss) |
| Other comprehensive gain (loss) on available for sale marketable securities |
| Comprehensive income (loss) |

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

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SPIRE CORPORATION AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

| | Years Ended D |
|---|------------------------|
| | ----- 2008 ----- |
| Cash flows from operating activities: | |
| ----- | |
| Net income (loss) | \$ 4,775,000 |
| Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities: | |
| Depreciation and amortization | 1,939,000 |
| Loss on impairment of capital equipment | -- |
| Loss on equity investment in joint venture | 807,000 |
| Gain on sale of trademark | -- |
| Gain on sale of asset | (60,000) |
| Deferred tax benefit | -- |
| Extraordinary gain in equity investment in joint venture, net of tax | -- |
| Deferred compensation | (487,000) |
| Stock-based compensation | 754,000 |
| Provision for rebates, returns and accounts receivable reserves | 929,000 |
| Provision for inventory reserve | 128,000 |
| Changes in assets and liabilities: | |
| Restricted cash | (3,776,000) |
| Accounts receivable | 2,063,000 |
| Inventories | (6,450,000) |
| Deferred cost of goods sold | (9,044,000) |

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| | |
|---|--------------|
| Deposits, prepaid expenses and other current assets | (884,000) |
| Accounts payable, accrued liabilities and other liabilities | 5,132,000 |
| Deposit - related party | 4,000 |
| Advances on contracts in progress | 9,655,000 |
| | ----- |
| Net cash provided by (used in) operating activities | 5,485,000 |
| | ----- |
| Cash flows from investing activities: | |
| ----- | |
| Proceeds from maturity of short-term investments | -- |
| Proceeds from sale of trademark | -- |
| Proceeds from sale of asset | 61,000 |
| Purchase of property and equipment | (1,710,000) |
| Increase in intangible and other assets | (105,000) |
| | ----- |
| Net cash (used in) provided by investing activities | (1,754,000) |
| | ----- |
| Cash flows from financing activities: | |
| ----- | |
| Principal payments on capital lease obligations - related parties | (486,000) |
| Principal (payments) borrowings on equipment line of credit, net | (1,167,000) |
| Borrowings from revolving line of credit | 1,500,000 |
| Proceeds from exercise of stock options | 21,000 |
| | ----- |
| Net cash (used in) provided by financing activities | (132,000) |
| | ----- |
| Net increase in cash and cash equivalents | 3,599,000 |
| Cash and cash equivalents, beginning of year | 2,372,000 |
| | ----- |
| Cash and cash equivalents, end of year | \$ 5,971,000 |
| | ===== |
| Supplemental disclosures of cash flow information: | |
| ----- | |
| Interest paid | \$ 224,000 |
| | ===== |
| Interest received | \$ 21,000 |
| | ===== |
| Interest paid - related party | \$ 9,000 |
| | ===== |
| Income taxes paid (refunded) | \$ (2,000) |
| | ===== |

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

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SPIRE CORPORATION AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2008 AND 2007

1. DESCRIPTION OF THE BUSINESS

Spire Corporation ("Spire" or the "Company") develops, manufactures and markets highly-engineered products and services in three principal business areas: (i) capital equipment for the PV solar industry, (ii) biomedical and

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(iii) optoelectronics, generally bringing to bear expertise in materials technologies, surface science and thin films across all three business areas, discussed below.

In the PV solar area, the Company develops, manufactures and markets specialized equipment for the production of terrestrial photovoltaic modules from solar cells. The Company's equipment has been installed in approximately 200 factories in 50 countries.

In the biomedical area, the Company provides value-added surface treatments to manufacturers of orthopedic and other medical devices that enhance the durability, antimicrobial characteristics or other material characteristics of their products; develops and markets coated and uncoated hemodialysis catheters and related devices for the treatment of chronic kidney disease; and performs sponsored research programs into practical applications of advanced biomedical and biophotonic technologies.

In the optoelectronics area, the Company provides custom compound semiconductor foundry and fabrication services on a merchant basis to customers involved in biomedical/biophotonic instruments, telecommunications and defense applications. Services include compound semiconductor wafer growth, other thin film processes and related device processing and fabrication services. The Company also provides materials testing services and performs services in support of sponsored research into practical applications of optoelectronic technologies.

Operating results will depend upon revenue growth and product mix, as well as the timing of shipments of higher priced products from the Company's solar equipment line and delivery of solar systems. Export sales, which amounted to 56% of net sales and revenues for 2008, continue to constitute a significant portion of the Company's net sales and revenues.

The Company has incurred operating losses before non-recurring gains in 2008 and 2007. Loss from operations, before gain on termination of contract, was \$267,000 in 2008 and loss from operations, before gain on sales of trademarks, was \$6.7 million in 2007. Previous losses from operations have resulted in cash losses (loss from operations excluding gain on sales of trademark plus or minus non-cash adjustments) of approximately \$5.7 million in 2007. The Company has funded these cash losses from cash receipts of \$3.0 million from credit facility borrowings and \$4.0 million from the sale of a solar PV module line along with the transfer of technology and rights to mark the modules with the Company's trademark to the joint venture in 2007. The Company has funded its working capital needs in 2007 from customer advances on contracts. For the year ended December 31, 2008, the cash gain (income from operations excluding gain on termination of contract plus or minus non-cash adjustments) was \$4.1 million. As of December 31, 2008, the Company had unrestricted cash and cash equivalents of \$6.0 million compared to unrestricted cash and cash equivalents of \$2.4 million as of December 31, 2007. The Company has numerous options on how to fund future operational losses or working capital needs, including but not limited to sales of equity, bank debt or the sale or license of assets and technology, as it has done in the past; however, there are no assurances that the Company will be able to sell equity, obtain bank debt, or sell or license assets or technology on a timely basis and at appropriate values. The Company has reduced its loss from operations substantially in 2008 and has funded its working capital needs from customer advances on contracts. The Company has developed several plans including cost containment efforts and outside financing to offset a decline in business due to a further deepening of the current global economic recession. As a result, the Company believes it has sufficient resources to continue as a going concern through at least December 31, 2009.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

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(a) PRINCIPLES OF CONSOLIDATION

The consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. The Company's joint venture with Gloria Solar is not consolidated but recognized using the equity method of accounting. All significant intercompany balances and transactions have been eliminated in consolidation.

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(b) REVENUE RECOGNITION

The Company derives its revenues from three primary sources: (1) commercial products including, but not limited to, solar energy manufacturing equipment, solar energy systems and hemodialysis catheters; (2) biomedical and semiconductor processing services; and (3) United States government funded research and development contracts

The Company generally recognizes product revenue upon shipment of products provided there are no uncertainties regarding customer acceptance, persuasive evidence of an arrangement exists, the sales price is fixed or determinable, and collectibility is reasonably assured. These criteria are generally met at the time of shipment when the risk of loss and title passes to the customer or distributor, unless a consignment arrangement exists. Revenue from consignment arrangements is recognized based on product usage indicating sales are complete.

The Company utilizes a distributor network to market and sell its hemodialysis catheters domestically. The Company generally recognizes revenue when the catheters are shipped to its distributors. Gross sales reflect reductions attributable to customer returns and various customer incentive programs including pricing discounts and rebates. Product returns are permitted in certain sales contracts and an allowance is recorded for returns based on the Company's history of actual returns. Certain customer incentive programs require management to estimate the cost of those programs. The allowance for these programs is determined through an analysis of programs offered, historical trends, expectations regarding customer and consumer participation, sales and payment trends, and experience with payment patterns associated with similar programs that had been previously offered. An analysis of the sales return and rebate activity for the years ended December 31, 2008 and 2007, is as follows:

| | Rebates | Returns | Total |
|-----------------------------|------------|-----------|------------|
| | ----- | ----- | ----- |
| Balance - December 31, 2006 | \$ 138,000 | \$ 17,000 | \$ 155,000 |
| Provision | 224,000 | 32,000 | 256,000 |
| Utilization | (285,000) | (39,000) | (324,000) |
| | ----- | ----- | ----- |
| Balance - December 31, 2007 | 77,000 | 10,000 | 87,000 |
| Provision | 588,000 | 34,000 | 622,000 |
| Utilization | (513,000) | (34,000) | (547,000) |
| | ----- | ----- | ----- |
| Balance - December 31, 2008 | \$ 152,000 | \$ 10,000 | \$ 162,000 |
| | ===== | ===== | ===== |

- o Credits for rebates are recorded in the month of the actual sale.
- o Credits for returns are processed when the actual merchandise is received by the Company.
- o Substantially all rebates and returns are processed no later than three months after original shipment by the Company.

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The Company perform various sensitivity analyses to determine the appropriate reserve percentage to use. To date, actual reserve utilization has approximated the amount provided.

The Company's OEM capital equipment solar energy business builds complex customized machines to order for specific customers. Most orders are sold on a FOB Bedford, Massachusetts (or EX-Works Factory) basis and other orders are sold on a CIP, or on rare situations, a DDU basis. It is the Company's policy to recognize revenues for this equipment as title of the product has passed to the customer, as customer acceptance is obtained prior to shipment and the equipment is expected to operate the same in the customer's environment as it does in the Company's environment. When an arrangement with the customer includes future obligations or customer acceptance, revenue is recognized when those obligations are met or customer acceptance has been achieved. For arrangements with multiple elements, the Company allocates total fees under contract to each element using the relative fair value method and revenue is recognized upon delivery of each element. If the Company is not able to establish fair value of undelivered elements, all revenue is deferred.

The Company recognizes revenues and estimated profits on long-term government contracts on the accrual basis where the circumstances are such that total profit can be estimated with reasonable accuracy and ultimate realization is reasonably assured. The Company accrues revenue and profit utilizing the percentage of completion method using a cost-to-cost methodology. A percentage of the contract revenues and estimated profits is determined utilizing the ratio of costs incurred to date to total estimated cost to complete on a contract by contract basis. Profit estimates are revised

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periodically based upon changes and facts, and any losses on contracts are recognized immediately. Some of the contracts include provisions to withhold a portion of the contract value as retainage until such time as the United States government performs an audit of the cost incurred under the contract. The Company's policy is to take into revenue the full value of the contract, including any retainage, as it performs against the contract since the Company has not experienced any substantial losses as a result of audits performed by the United States government.

(c) CASH AND CASH EQUIVALENTS

Cash and cash equivalents include cash, time deposits and all highly liquid debt instruments with original maturities of three months or less. These investments are carried at cost, which approximates market value. Cash and cash equivalents are deposited at various area banks, and at times may exceed federally insured limits.

(d) AVAILABLE-FOR-SALE INVESTMENTS

Available-for-sale securities consist of the following assets held as part of the Spire Corporation Non-Qualified Deferred Compensation Plan for the years ended December 31:

| | 2008 | 2007 |
|-----------------------------|-------------|-------------|
| Equity investments | \$1,170,000 | \$1,411,000 |
| Government bonds | 190,000 | 303,000 |
| Cash and money market funds | 74,000 | 86,000 |
| | ----- | ----- |
| | \$1,434,000 | \$1,800,000 |
| | ===== | ===== |

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These investments have been classified as available-for-sale investments and are reported at fair value, with unrealized gains and losses included in accumulated other comprehensive loss. As of December 31, 2008, the unrealized loss on these marketable securities was \$425,000 and as of December 31, 2007, the unrealized gain on these marketable securities was \$62,000.

Effective January 1, 2008, the Company adopted SFAS No. 157, FAIR VALUE MEASUREMENTS ("FAS 157"). In February 2008, the FASB issued FASB Staff Position No. FAS 157-2, EFFECTIVE DATE OF FASB STATEMENT NO. 157, which provides a one year deferral of the effective date of FAS 157 for non-financial assets and non-financial liabilities, except those that are recognized or disclosed in the financial statements at fair value at least annually. Therefore, the Company has adopted the provisions of FAS 157 with respect to its financial assets and liabilities only. FAS 157 defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. The new standard provides a consistent definition of fair value which focuses on an exit price which is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The standard also prioritizes, within the measurement of fair value, the use of market-based information over entity specific information and establishes a three-level hierarchy for fair value measurements based on the nature of inputs used in the valuation of an asset or liability as of the measurement date. The application of FAS 157 in situations where the market for a financial asset is not active was clarified by the issuance of FASB Staff Position No. FAS 157-3, DETERMINING THE FAIR VALUE OF A FINANCIAL ASSET WHEN THE MARKET FOR THAT ASSET IS NOT ACTIVE, ("FAS 157-3") in October 2008. FAS 157-3 became effective immediately and did not significantly impact the methods by which the Company determines the fair values of its financial assets.

The hierarchy established under FAS 157 gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). As required by FAS 157, the Company's available for sale investments are classified within the fair value hierarchy based on the lowest level of input that is significant to the fair value measurement. The three levels of the fair value hierarchy under FAS 157, and its applicability to the Company's available-for-sale investments, are described below:

Level 1 - Pricing inputs are quoted prices available in active markets for identical investments as of the reporting date. As required by FAS 157, the Company does not adjust the quoted price for these investments, even in situations where the Company holds a large position and a sale could reasonably impact the quoted price.

Level 2 - Pricing inputs are quoted prices for similar investments, or inputs that are observable, either directly or indirectly, for substantially the full term through corroboration with observable market data. Level 2 includes investments valued at quoted prices adjusted for legal or contractual restrictions specific to these investments.

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Level 3 - Pricing inputs are unobservable for the investment, that is, inputs that reflect the reporting entity's own assumptions about the assumptions market participants would use in pricing the asset or liability. Level 3 includes investments that are supported by little or no market activity.

The following table presents the financial instruments related to the Company's non-qualified deferred compensation plan carried at fair value as of December 31, 2008 by FAS 157 valuation hierarchy (as defined above).

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| | Level 1 | Level 2 | Level 3 | |
|--------------------------------------|------------|------------|---------|----|
| | | | | |
| Cash and short term investments | \$ 74,000 | \$ -- | \$ -- | \$ |
| Fixed income | -- | 231,000 | -- | |
| Equities | 721,000 | 408,000 | -- | |
| | | | | |
| Total available for-sale-investments | \$ 795,000 | \$ 639,000 | \$ -- | \$ |
| Percent of total | 55% | 45% | -- | |

(e) INVENTORIES

Inventories are stated at the lower of cost or market, cost being determined on a first-in, first-out (FIFO) basis. Judgments and estimates are used in determining the likelihood that goods on hand can be sold to customers. The Company expensed approximately \$77,000 in 2007, to cost of goods sold, for work in process inventory that was determined to be valued in excess of market value. Historical inventory usage and current revenue trends are considered in estimating both excess and obsolete inventory. If actual product demand and market conditions are less favorable than those projected by management, additional inventory write-downs may be required.

(f) PROPERTY AND EQUIPMENT

Property and equipment is stated at cost. Depreciation and amortization are provided using the straight-line method over the estimated useful lives of the respective assets, as follows:

| | |
|---|---------------------------------------|
| Building and equipment under capital lease | Lesser of 5 years or remaining life o |
| Machinery and equipment | 5 and 7 years |
| Furniture and fixtures and computer equipment | 3 - 5 years |
| Leasehold improvements | Lesser of 10 years or remaining life |

Maintenance and repairs are charged to expense as incurred. Major renewals and betterments are added to property and equipment accounts at cost.

(g) INTANGIBLE AND OTHER ASSETS

Patents amounted to \$154,000 and \$143,000, net of accumulated amortization of \$754,000 and \$687,000, at December 31, 2008 and 2007, respectively. Licenses amounted to \$66,000 and \$109,000, net of accumulated amortization of \$259,000 and \$216,000, at December 31, 2008 and 2007, respectively. Patent cost is primarily composed of cost associated with securing and registering patents that the Company has been awarded or that have been submitted to, and the Company believes will be approved by, the government. License cost is composed of the cost to acquire rights to the underlying technology or know-how. These costs are capitalized and amortized over their useful lives or terms, ordinarily five years, using the straight-line method. There are no expected residual values related to these patents. Amortization expense, relating to patents and licenses, was approximately \$110,000 and \$117,000, for the years ended December 31, 2008 and 2007, respectively.

For disclosure purposes, the table below includes future amortization expense for patents and licenses owned by the Company as well as estimated amortization expense related to patents that remain pending at December 31, 2008 of \$616,000. This estimated expense for patents pending assumes that the patents are issued immediately, and therefore are being amortized over five years on a straight-line basis. Estimated amortization expense for the periods ending December 31, is as follows:

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| Year | Amortization Expense |
|------|----------------------|
| 2009 | \$189,000 |
| 2010 | 182,000 |
| 2011 | 174,000 |
| 2012 | 154,000 |
| 2013 | 137,000 |
| | \$836,000 |

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Also included in other assets are approximately \$10,000 of refundable deposits made by the Company at December 31, 2008.

(h) LONG-LIVED ASSETS

The Company accounts for long-lived assets in accordance with the provisions of SFAS No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets". SFAS No. 144 requires that long-lived assets and certain identifiable intangibles be reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. The Company measures recoverability of assets to be held and used by a comparison of the carrying amount of an asset to future net cash flows expected to be generated by the asset. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the carrying amount of the assets exceed the fair value of the assets. The Company reports assets to be disposed of at the lower of the carrying amount or fair value less costs to sell.

(i) INCOME TAXES

In accordance with SFAS No. 109, "Accounting for Income Taxes", the Company recognizes deferred income taxes based on the expected future tax consequences of differences between the financial statement basis and the tax basis of assets and liabilities, calculated using enacted tax rates in effect for the year in which the differences are expected to be reflected in the tax return. Valuation allowances are provided if, based on the weight of available evidence, it is more likely than not that some or all of the deferred tax assets will not be realized.

In June 2006, the Financial Accounting Standards Board ("FASB") issued Interpretation No. 48, "Accounting for Uncertainty in Income Taxes, an interpretation of FASB Statement 109" ("FIN 48"). This statement clarifies the criteria that an individual tax position must satisfy for some or all of the benefits of that position to be recognized in a company's financial statements. FIN 48 prescribes a recognition threshold of more likely-than-not, and a measurement attribute for all tax positions taken or expected to be taken on a tax return, in order for those tax positions to be recognized in the financial statements. Effective January 1, 2007, the Company adopted the provisions of FIN 48. The Company has determined that no liability exists for interest and penalties related to uncertain tax positions as of January 1, 2007 and December 31, 2008. The Company accounts for interest and penalties related to uncertain tax positions as part of its provision for federal and state income taxes. The Company does not expect that the amounts of unrecognized tax benefits will change significantly within the next 12 months.

The Company is subject to audit by the Internal Revenue Service for the calendar years ended 2004, 2005, 2006, 2007 and 2008. The Company and its

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subsidiaries state income tax returns are subject to audit for the calendar years ended 2004, 2005, 2006, 2007 and 2008.

(j) WARRANTY

The Company provides warranties on certain of its products and services. The Company's warranty programs are described below:

Spire Solar Equipment warrants solar energy module manufacturing equipment sold for a total of 360 days, the first 90 days of which include the replacement of defective component parts and the labor to correct the defect and the next 270 days of which include only the cost of defective component parts.

Spire Biomedical warrants that any of its catheter products found to be defective will be replaced. No warranty is made that the failure of the product will not occur, and Spire disclaims any responsibility for any medical complications. Spire Biomedical warrants that its services only will meet the agreed upon specifications.

Spire Semiconductor warrants that its products will meet the agreed upon specifications.

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The Company provides for the estimated cost of product warranties, determined primarily from historical information, at the time product revenue is recognized. Should actual product failure warranties differ from the Company's estimates, revisions to the estimated warranty liability would be required. The changes in the product warranties for the years ended December 31, 2008 and 2007, are as follows:

| | |
|------------------------------|------------|
| Balance at December 31, 2006 | \$ 115,000 |
| Provision charged to income | 207,000 |
| Usage | (187,000) |
| | ----- |
| Balance at December 31, 2007 | \$ 135,000 |
| Provision charged to income | 842,000 |
| Usage | (482,000) |
| | ----- |
| Balance at December 31, 2008 | \$ 495,000 |
| | ===== |

(k) INTERNAL RESEARCH AND DEVELOPMENT COSTS

Internal research and development costs are charged to operations as incurred. During the years ended December 31, 2008 and 2007, Company funded research and development costs were approximately \$803,000 and \$313,000, respectively.

(l) EARNINGS (LOSS) PER SHARE

Basic earnings (loss) per share is computed by dividing income available to common stockholders by the weighted average number of common shares outstanding during the period. Diluted earnings (loss) per share gives effect to all potential dilutive common shares outstanding during the period. The computation of diluted earnings (loss) per share does not assume conversion, exercise or contingent exercise of securities that would have an anti-dilutive effect on earnings (loss) per share. The Company did not pay any dividends in 2008 and 2007.

(m) COMPREHENSIVE INCOME (LOSS)

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Comprehensive income (loss) is comprised of net income (loss) and other comprehensive income (loss). Other comprehensive income (loss) includes certain changes in equity that are excluded from net income (loss). Accumulated other comprehensive income was comprised of an unrealized gain (loss) of available-for-sale investments of approximately \$(425,000) and \$62,000, net of tax at December 31, 2008 and 2007, respectively.

(n) STOCK-BASED COMPENSATION

The Company accounts for its stock-based compensation plans in accordance with the fair value recognition provisions of Statement 123(R). The Company uses the Black-Scholes option pricing model as its method for determining the fair value of stock option grants. Statement 123(R) requires the fair value of all share-based awards that are expected to vest to be recognized in the statements of operations over the service or vesting period of each award. The Company uses the straight-line method of attributing the value of stock-based compensation expense for all stock option grants.

On November 10, 2005, the FASB issued FASB Staff Position SFAS 123R-3, TRANSITION ELECTION RELATED TO ACCOUNTING FOR TAX EFFECTS OF SHARE-BASED PAYMENT AWARDS. The Company has elected to adopt the alternative transition method provided by the FASB Staff Position for calculating the tax effects (if any) of stock-based compensation expense pursuant to Statement 123(R). The alternative transition method includes simplified methods to establish the beginning balance of the additional paid-in capital pool related to the tax effects of employee stock-based compensation, and to determine the subsequent impact to the additional paid-in capital pool and the consolidated statements of operations and cash flows of the tax effects of employee stock-based compensation awards that are outstanding upon adoption of Statement 123(R).

(o) USE OF ESTIMATES

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires 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 revenue and expenses during the reporting period. The significant estimates included in the consolidated financial statements are those relating to revenue recognition, reserves for doubtful accounts and sales returns and allowances, reserves for excess and obsolete inventory, impairment of long-lived assets, stock-based compensation, income taxes, and warranty reserves. Actual results could differ from those estimates. 40

(p) FINANCIAL INSTRUMENTS

Financial instruments of the Company consist of cash and cash equivalents, short-term investments, accounts receivable, available for sale marketable securities, accounts payable, equipment line of credit and capital leases. The carrying amounts of these financial instruments approximate their fair value.

(q) SHIPPING AND HANDLING COSTS

Shipping and handling costs are included in cost of goods sold.

(r) FOREIGN CURRENCY

The Company sells only in U.S. dollars, generally against an irrevocable confirmed letter of credit through a major United States bank. Accordingly, the Company is not directly affected by foreign exchange fluctuations on its current

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sales orders. However, fluctuations in foreign exchange rates have an effect on the Company's customers' access to U.S. dollars and on the pricing competition on certain pieces of equipment that the Company sells in selected markets. In addition, purchases made and royalties received under the Company's Consortium Agreement with Nisshinbo are in Japanese yen. In addition, the Company received Japanese yen related to the termination of the Consortium Agreement in 2008. The Company does purchase pieces of equipment from European vendors; these commitments are occasionally denominated in Euros. The Company bears the risk of any currency fluctuations that may be associated with these commitments. The Company attempts to hedge known transactions when possible to minimize foreign exchange risk. There were no hedged amounts at December 31, 2008 and 2007. Foreign exchange loss included in other income (expense) was \$430,000 and \$14,000 for the years ended December 31, 2008 and 2007, respectively.

(s) EQUITY INVESTMENT IN JOINT VENTURE

The Company accounts for its unconsolidated investment in joint venture, Gloria Spire Solar, LLC, in accordance with the provisions of APB Opinion No. 18, THE EQUITY METHOD OF ACCOUNTING FOR INVESTMENTS IN COMMON STOCK. The results of the joint venture are reported one quarter in arrears, given there are no significant transactions recorded by the joint venture during the most recent unreported quarter.

(t) SEGMENT INFORMATION

SFAS No 131, DISCLOSURES ABOUT SEGMENTS OF AN ENTERPRISE AND RELATED INFORMATION ("FAS 131"), requires public entities to report certain information about operating segments. Based on the guidance provided in FAS 131, the Company has determined that its business is conducted in four reportable segments, solar equipment, biomedical, optoelectronics and corporate.

(u) NEW ACCOUNTING STANDARDS

In December 2007, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 141R ("FAS 141R"), BUSINESS COMBINATIONS, which revises FAS 141 and changes multiple aspects of the accounting for business combinations. Under the guidance in FAS 141R, the acquisition method must be used, which requires the acquirer to recognize most identifiable assets acquired, liabilities assumed, and non-controlling interests in the acquiree at their full fair value on the acquisition date. Goodwill is to be recognized as the excess of the consideration transferred plus the fair value of the non-controlling interest over the fair values of the identifiable net assets acquired. Subsequent changes in the fair value of contingent consideration classified as a liability are to be recognized in earnings, while contingent consideration classified as equity is not to be re-measured. Costs such as transaction costs are to be excluded from acquisition accounting, generally leading to recognizing expense, and, additionally, restructuring costs that do not meet certain criteria at acquisition date are to be subsequently recognized as post-acquisition costs. FAS 141R is effective for business combinations for which the acquisition date is on or after the beginning of the first annual reporting period beginning on or after December 15, 2008 and will change the accounting for business combinations on a prospective basis.

Effective January 1, 2008, the Company adopted SFAS No. 157, FAIR VALUE MEASUREMENTS ("FAS 157"). In February 2008, the FASB issued FASB Staff Position No. FAS 157-2, EFFECTIVE DATE OF FASB STATEMENT NO. 157, which provides a one year deferral of the effective date of FAS 157 for non-financial assets and non-financial liabilities, except those that are recognized or disclosed in the financial statements at fair value at least annually. Therefore, the Company has

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adopted the provisions of FAS 157 with respect to its financial assets and liabilities only. FAS 157 defines fair value, establishes a framework for measuring fair value, and expands disclosures about fair value measurements. The new standard provides a consistent definition of fair value which focuses on an exit price which is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The standard also prioritizes, within the measurement of fair value, the use of market-based information over entity specific information and establishes a three-level hierarchy for fair value measurements based on the nature of inputs used in the valuation of an asset or liability as of the measurement date. The application of FAS 157 in situations where the market for a financial asset is not active was clarified by the issuance of FASB Staff Position No. FAS 157-3, DETERMINING THE FAIR VALUE OF A FINANCIAL ASSET WHEN THE MARKET FOR THAT ASSET IS NOT ACTIVE, ("FAS 157-3") in October 2008. FAS 157-3 became effective immediately and did not significantly impact the methods by which the Company determines the fair values of its financial assets.

In December 2007, the FASB issued SFAS No. 160 ("FAS 160"), NON-CONTROLLING INTEREST IN CONSOLIDATED FINANCIAL STATEMENTS - AN AMENDMENT OF ARB NO. 151. FAS 160 requires that a non-controlling interest in a subsidiary (i.e. minority interest) be reported in the equity section of the balance sheet instead of being reported as a liability or in the mezzanine section between debt and equity. It also requires that the consolidated income statement include consolidated net income attributable to both the parent and non-controlling interest of a consolidated subsidiary. A disclosure must be made on the face of the consolidated income statement of the net income attributable to the parent and to the non-controlling interest. Also, regardless of whether the parent purchases additional ownership interest, sells a portion of its ownership interest in a subsidiary or the subsidiary participates in a transaction that changes the parent's ownership interest, as long as the parent retains controlling interest, the transaction is considered an equity transaction. FAS 160 is effective for annual periods beginning after December 15, 2008. The Company is currently evaluating the impact, if any, that this standard will have on its financial position and results of operations.

In March 2008, the FASB issued SFAS No. 161 ("FAS 161"), DISCLOSURES ABOUT DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES--AN AMENDMENT OF FASB STATEMENT NO. 133. FAS 161 requires enhanced disclosures about an entity's derivative and hedging activities. Entities are required to provide enhanced disclosures about (a) how and why an entity uses derivative instruments, (b) how derivative instruments and related hedged items are accounted for under Statement No. 133 and its related interpretations, and (c) how derivative instruments and related hedged items affect an entity's financial position, financial performance, and cash flows. FAS 161 is effective for financial statements issued for fiscal years and interim periods beginning after November 15, 2008, with early application encouraged. FAS 161 encourages, but does not require, comparative disclosures for earlier periods at initial adoption. The Company does not believe the adoption of this standard will have a material impact on its financial position and results of operations.

3. ACCOUNTS RECEIVABLE/ADVANCES ON CONTRACTS IN PROGRESS

Net accounts receivable, trade consists of the following at December 31:

| | 2008 | 2007 |
|-----------------|--------------|---------------|
| Amounts billed | \$ 7,671,000 | \$ 11,142,000 |
| Retainage | -- | 8,000 |
| Accrued revenue | 1,790,000 | 945,000 |
| | 9,461,000 | 12,095,000 |

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| | | |
|---|-------------------|-------------------|
| Less: Allowance for sales returns and doubtful accounts | (588,000) | (230,000) |
| | ----- | ----- |
| Net accounts receivable - trade | \$ 8,873,000 | \$ 11,865,000 |
| | ===== | ===== |
| Advances on contracts in progress | \$ 35,658,000 | \$ 26,003,000 |
| | ===== | ===== |

Accrued revenue represents revenues recognized on contracts for which billings have not been presented to customers as of the balance sheet date. These amounts are billed and generally collected within one year.

Retainage represents revenues on certain United States government sponsored research and development contracts. These amounts, which usually represent 15% of the Company's research fee on each applicable contract, are not

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collectible until a final cost review has been performed by government auditors. The government's most recent audit was as of December 31, 2006, with no adverse impact.

The Company maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers to pay amounts due. The Company actively pursues collection of past due receivables as the circumstances warrant. Customers are contacted to determine the status of payment and senior accounting and operations management are included in these efforts as is deemed necessary. A specific reserve will be established for past due accounts when it is probable that a loss has been incurred and the Company can reasonably estimate the amount of the loss. The Company does not record an allowance for government receivables and invoices backed by letters of credit as realizeability is reasonably assured. Bad debts are written off against the allowance when identified. There is no dollar threshold for account balance write-offs. While rare, a write-off is only recorded when all efforts to collect the receivable have been exhausted and only in consultation with the appropriate business line manager. The Company has increased its allowances for doubtful accounts reserve in 2008, primarily as a result of a customer's failure to make timely facility availability payments of \$225,000 related to a Spire Semiconductor manufacturing agreement (see note 18).

In addition, the Company maintains an allowance for potential future product returns and rebates related to current period revenues. The Company analyzes the rate of historical returns when evaluating the adequacy of the allowance for sales returns and allowances. Returns and rebates are charged against the allowance when incurred.

Advances on contracts in progress represent contracts for which billings have been presented to the customer, either as deposits or progress payments against future shipments, but revenue has not been recognized.

4. INVENTORIES AND DEFERRED COST OF GOODS SOLD

Inventories, net of \$214,000 and \$354,000 of reserves at December 31, 2008 and 2007, respectively, and deferred cost of goods sold consist of the following at December 31:

| | 2008 | 2007 |
|-----------------|--------------|--------------|
| | ----- | ----- |
| Raw materials | \$ 4,048,000 | \$ 4,989,000 |
| Work in process | 7,385,000 | 4,663,000 |
| Finished goods | 6,443,000 | 1,918,000 |

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| | | |
|-----------------------------|---------------|---------------|
| Net inventory | \$ 17,876,000 | \$ 11,570,000 |
| Deferred cost of goods sold | \$ 17,088,000 | \$ 8,044,000 |

The Company wrote-off \$268,000 and \$140,000 of excess and obsolete inventory for the years ended December 31, 2008 and 2007, respectively.

Deferred cost of goods sold represents costs on equipment that has shipped to the customer and title has passed. The Company defers these costs until the related revenue is recognized.

5. PROPERTY AND EQUIPMENT

Property and equipment consists of the following at December 31:

| | 2008 | 2007 |
|---|--------------|--------------|
| Building under capital lease | \$ -- | \$ 3,390,000 |
| Machinery and equipment | 17,985,000 | 17,508,000 |
| Furniture fixtures and computer equipment | 4,506,000 | 4,060,000 |
| Leasehold improvements | 3,299,000 | 2,167,000 |
| Construction in progress | 338,000 | 830,000 |
| | 26,128,000 | 27,955,000 |
| Accumulated depreciation and amortization | (20,039,000) | (21,746,000) |
| | \$ 6,089,000 | \$ 6,209,000 |

Depreciation and amortization expense relating to property and equipment was approximately \$1,829,000 and \$2,096,000 for the years ended December 31, 2008 and 2007, respectively. The capital lease for the building in Hudson, NH expired during 2008 and the Company entered into a new lease which is classified as an operating lease, based on the

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terms of the lease agreement. Accordingly, the asset and accumulated depreciation were removed from the balance sheet as of December 31, 2008. (See Note 11)

6. ACCRUED LIABILITIES

Accrued liabilities include the following at December 31:

| | 2008 | 2007 |
|-----------------------------------|--------------|--------------|
| Accrued payroll and payroll taxes | \$ 1,689,000 | \$ 972,000 |
| Accrued legal and audit fees | 789,000 | 319,000 |
| Accrued accounts payable | 4,191,000 | 3,398,000 |
| Accrued other | 2,035,000 | 1,368,000 |
| | \$ 8,704,000 | \$ 6,057,000 |

7. NOTES PAYABLE AND CREDIT ARRANGEMENTS

The Company had a \$2,000,000 Loan Agreement with Citizens Bank of Massachusetts which expired on June 26, 2007. On May 25, 2007, the Company and its wholly-owned subsidiary, Spire Semiconductor, LLC, entered into a Loan and

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Security Agreement (the "Equipment Credit Facility") with Silicon Valley Bank (the "Bank"). Under the Equipment Credit Facility, for a one-year period, the Company and Spire Semiconductor could borrow up to \$3,500,000 in the aggregate to finance certain equipment purchases (including reimbursement of certain previously-made purchases). Advances made under the Equipment Credit Facility would bear interest at the Bank's prime rate, as determined, plus 0.5% and payable in thirty-six (36) consecutive monthly payments following the funding date of that advance. The Equipment Credit Facility, if not sooner terminated in accordance with its terms, expires on June 1, 2010.

On March 31, 2008, the Company entered into a second Loan and Security Agreement (the "Revolving Credit Facility") with the Bank. Under the terms of the Revolving Credit Facility, the Bank agreed to provide the Company with a credit line up to \$5,000,000. The Company's obligations under the Equipment Credit Facility are secured by substantially all of its assets and advances under the Revolving Credit Facility are limited to 80% of eligible receivables and the lesser of 25% of the value of its eligible inventory, as defined, or \$2,500,000 if the inventory is backed by a customer letter of credit. Interest on outstanding borrowings accrues at a rate per annum equal to the greater of Prime Rate plus one percent (1.0%) or seven percent (7%). In addition, the Company agreed to pay to the Bank a collateral monitoring fee of \$750 per month in the event the Company is in default of its covenants and agreed to the following additional terms: (i) \$50,000 commitment fee; (ii) an unused line fee in the amount of 0.75% per annum of the average unused portion of the revolving line; and (iii) an early termination fee of 0.5% of the total credit line if the Company terminates the Revolving Credit Facility prior to 12 months from the Revolving Credit Facility's effective date. The Revolving Credit Facility, if not sooner terminated in accordance with its terms, expires on March 30, 2009. In addition, on March 31, 2008 the Company's existing Equipment Credit Facility was amended whereby the Bank granted a waiver for the Company's defaults for not meeting its December 31, 2007 quarter liquidity and profit covenants and for not meeting its January and February 2008 liquidity covenants. Further, the covenants were amended to match the covenants as discussed below contained in the Revolving Credit Facility. The Company's interest rate under the Equipment Credit Facility was also modified from Bank Prime plus one half percent to the greater of Bank Prime plus one percent (1%) or seven percent (7%).

On May 13, 2008, the Bank amended the Equipment Credit Facility and the Revolving Credit Facility, modifying the Company's net income profitability covenant requirements in exchange for a three quarters percent (0.75%) increase in the Company's interest rate (7.75% at December 31, 2008) and waiver restructuring fee equal to one half percent (0.5%) of amounts outstanding under the Equipment Credit Facility and committed under the Revolving Credit Facility. In addition, the Company's term loan balance will be factored in when calculating the Company's borrowing base under the Revolving Credit Facility.

Under the amended terms of both credit facilities, as long as any commitment remains outstanding under the facilities, the Company must comply with an adjusted quick ratio covenant and a minimum monthly net income covenant. In addition, until all amounts under the credit facilities with the Bank are repaid, covenants under the credit facilities impose restrictions on the Company's ability to, among other things, incur additional indebtedness, create or permit liens on the Company's assets, merge, consolidate or dispose of assets (other than in the ordinary course of business), make dividend and other restricted payments, make certain debt or equity investments, make certain acquisitions, engage in certain

transactions with affiliates or change the business conducted by the Company and its subsidiaries. Any failure by the Company to comply with the covenants and obligations under the credit facilities could result in an event of default, in

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which case the Bank may be entitled to declare all amounts owed to be due and payable immediately. The Company's obligations under the credit facilities are secured by substantially all of its assets.

On March 31, 2009, the Bank extended the expiration of the Revolving Credit Facility under the same terms for an additional sixty days, to expire on May 29, 2009. The purpose of the extension is to allow both parties the time to negotiate an expansion of the credit limit contingent upon our qualifying for an Export-Import Bank loan guarantee.

The Equipment Credit Facility principal balance outstanding was \$1,750,000 and \$2,917,000 at December 31, 2008 and 2007, respectively. The Revolving Credit Facility principal balance outstanding was \$1,500,000 at December 31, 2008. The Company was in compliance with its credit facility covenants as of December 31, 2008.

Annual maturities of the Equipment Credit Facility and the Revolving Credit Facility as of December 31, 2008 are as follows:

| Year Ending December 31, | |
|--|--------------|
| 2009 | \$ 2,667,000 |
| 2010 | 583,000 |
| | ----- |
| Total equipment and revolving line of credit | \$ 3,250,000 |
| | ===== |

8. STOCK-BASED COMPENSATION

At December 31, 2008, the Company had outstanding options under two stock option plans: the 1996 Equity Incentive Plan (the "1996 Plan") and the 2007 Stock Equity Plan (the "2007 Plan"). Both plans were approved by stockholders and provided that the Board of Directors may grant options to purchase the Company's common stock to key employees and directors of the Company. Incentive and non-qualified options must be granted at least at the fair market value of the common stock or, in the case of certain optionees, at 110% of such fair market value at the time of grant. The options may be exercised, subject to certain vesting requirements, for periods up to ten years from the date of issue. The 1996 Plan expired with respect to the issuance of new grants as of December 10, 2006. Accordingly, future grants may be made only under the 2007 Plan.

At December 31, 2008, the Company has outstanding under its 1996 Plan and 2007 Plan, an aggregate 123,746 non-qualified stock options held by the unaffiliated directors of the Company for the purchase of common stock at an average exercise price of \$9.23 per share.

A summary of the activity of this plan follows:

| | Number of Shares | Weighted Average Exercise Price |
|--|---------------------|---------------------------------------|
| | ----- | ----- |
| Options Outstanding at December 31, 2007 | 495,177 | \$ 7.10 |
| Granted | 135,000 | \$ 8.91 |
| Exercised | (9,500) | \$ 2.22 |
| Forfeited | (14,500) | \$ 9.49 |
| | ----- | ----- |
| Options Outstanding at December 31, 2008 | 606,177 | \$ 7.52 |
| | ===== | ===== |
| Options Exercisable at December 31, 2008 | 346,662 | \$ 6.72 |

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| | | |
|---------------------------------------|---------|-------|
| Options Available for Future Grant at | ===== | |
| December 31, 2008 | 703,800 | ===== |

In accordance with Statement 123(R), the Company has recognized stock-based compensation expense of approximately \$754,000 and \$579,000 for the years ended December 31, 2008 and 2007, respectively. Approximately \$574,000 and \$486,000 of stock-based compensation expense was charged to selling, general and administrative expenses for the years ended December 31, 2008 and 2007, respectively and approximately \$180,000 and \$93,000 of stock-based compensation expense was charged to cost of sales for the years ended December 31, 2008 and 2007, respectively. No stock-based compensation expense was capitalized during 2008 and 2007. Compensation expense related to stock options to be charged in future periods amount to approximately \$1,237,000 at December 31, 2008 and will be recognized over a weighted-average period of 2.70 years as follows:

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| For the years ended December 31, ----- | Expected Compensation Expense ----- |
|--|---|
| 2009 | \$ 508,000 |
| 2010 | 429,000 |
| 2011 | 228,000 |
| 2012 | 72,000 |
| | ----- |
| | \$1,237,000 |
| | ===== |

Statement 123(R) requires forfeitures to be estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates in order to derive the Company's best estimate of awards ultimately expected to vest. Forfeitures represent only the unvested portion of a surrendered option and are typically estimated based on historical experience.

The options outstanding and exercisable at December 31, 2008 were in the following exercise price ranges:

| Range of Exercise Price ----- | Options Outstanding ----- | | | Options Exe ----- | | |
|-------------------------------------|---|--|--|--|---|--|
| | Number of Shares Outstanding ----- | Weighted Average Remaining Contractual Life (Years) ----- | Weighted- Average Exercise Price ----- | Aggregate Intrinsic Value ----- | Number of Shares Exercisable ----- | Average Remaining Contractual Life (Years) ----- |
| \$1.78 to \$ 3.90 | 87,911 | 3.16 | \$ 3.75 | \$122,000 | 87,911 | 3.16 |
| \$3.91 to \$ 4.90 | 108,819 | 5.42 | \$ 4.32 | 89,000 | 94,009 | 5.27 |
| \$4.91 to \$ 8.40 | 172,122 | 8.47 | \$ 6.98 | -- | 67,877 | 7.83 |
| \$8.41 to \$ 9.60 | 136,700 | 8.49 | \$ 9.39 | -- | 49,175 | 8.49 |
| \$9.61 to \$15.73 | 100,625 | 9.15 | \$12.68 | -- | 47,690 | 9.03 |
| | ----- | | | ----- | ----- | |
| | 606,177 | 7.27 | \$ 7.52 | \$211,000 | 346,662 | 6.21 |
| | ===== | | | ===== | ===== | |

The aggregate intrinsic value in the table above represents the total intrinsic value, based on the Company's closing stock price of \$5.14 as of December 31, 2008, which would have been received by the option holders had all

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option holders exercised their options as of that date. The total intrinsic value of options exercised was approximately \$111,000 and \$854,000 for the years ended December 31, 2008 and 2007, respectively.

The per-share weighted-average fair value of stock options granted was \$5.19 and \$6.09 for the years ended December 31, 2008 and 2007, respectively, on the date of grant using the Black-Scholes option-pricing model with the following weighted-average assumptions:

| Year | Expected Dividend Yield | Risk-Free Interest Rate | Expected Option Life | Expected Volatility Factor |
|------|-------------------------|-------------------------|----------------------|----------------------------|
| 2007 | -- | 4.39% | 4.5 years | 72.3% |
| 2008 | -- | 2.11% | 4.5 years | 73.7% |

The risk free interest rate reflects treasury yields rates over a term that approximates the expected option life. The expected option life is calculated based on historical lives of all options issued under the plan. The expected volatility factor is determined by measuring the actual stock price volatility over a term equal to the expected useful life of the options granted.

9. NASDAQ LISTING

On December 1, 2008, the Company received a letter from The Nasdaq Stock Market ("Nasdaq") advising that for the prior ten (10) consecutive trading days, the Company's market value of listed securities was below the minimum \$50,000,000 requirement for continued inclusion on The Nasdaq Global Market under Marketplace Rule 4450(b)(1)(A) ("the Rule"). Nasdaq also noted that at that time the Company did not comply with Marketplace Rule 4450(b)(1)(B), which

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alternatively requires total assets and total revenue of at least \$50,000,000 each for the most recently completed fiscal year or two of the three most recently completed fiscal years.

On March 3, 2009, the Company received a Staff Determination Letter from Nasdaq indicating that the Company has not regained compliance with the Rule as the market value of the Company's common stock has remained below the minimum \$50,000,000 required for continued inclusion on The Nasdaq Global Market. Accordingly, its common stock is subject to delisting from the Nasdaq Global Market.

The Company has requested a hearing before a Nasdaq Listing Qualifications Panel to review the Staff Determination. The request for a hearing will stay the Staff Determination and, as a result, the Company's common stock will remain listed on The Nasdaq Global Market until the Panel issues its decision after the hearing. There can be no assurance the Panel will grant the Company's request for continued listing.

The Company expects to regain compliance with alternative continued listing requirements upon the filing of this Annual Report on Form 10-K, as the Company believes it now meets both (i) Marketplace Rule 4450(b)(1)(B), which alternatively requires total assets and total revenue of at least \$50,000,000 each for the most recently completed fiscal year or two of the three most recently completed fiscal years and (ii) Marketplace Rule 4450(a)(3), which alternatively requires stockholders' equity of at least \$10,000,000.

10. INCOME TAXES

There was an income tax provision of \$270,000 for the year ended December 31, 2008 and an income tax benefit of \$877,000 for the year ended

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December 31, 2007.

The reconciliation between the amount computed by applying the United States federal statutory tax rate of 34% to pretax income (loss) and the actual provision for income taxes follows:

| | 2008 | 2007 |
|---|--------------|--------------|
| Income tax expense (benefit) at statutory rate | \$ 1,745,000 | \$ (664,000) |
| Increase (decrease) in valuation allowance related to income tax expense | (1,833,000) | 483,000 |
| State income taxes | 46,000 | |
| Permanent differences | 312,000 | 181,000 |
| | ----- | ----- |
| Total | \$ 270,000 | \$ -- |
| | ----- | ----- |

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

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| | 2008 | 2007 |
|--|------------|-----------|
| Deferred tax assets: | | |
| Accounts receivable | \$ 215,000 | \$ 93,000 |
| Accruals | 3,716,000 | 1,504,000 |
| Inventories | 177,000 | 1,002,000 |
| Net operating loss carryforwards | 1,375,000 | 4,327,000 |
| General business credit carryforwards | 26,000 | 26,000 |
| Alternative minimum tax credit carryforwards | 468,000 | 268,000 |
| Foreign tax credit | 57,000 | 38,000 |
| | ----- | ----- |
| Total gross deferred tax assets | 6,034,000 | 7,258,000 |
| Equity investment in joint venture | 476,000 | 476,000 |
| Depreciation | 528,000 | 98,000 |
| | ----- | ----- |
| Total gross deferred tax liabilities | 1,004,000 | 574,000 |
| | ----- | ----- |
| Valuation allowance | 5,030,000 | 6,684,000 |
| | ----- | ----- |
| Net deferred tax assets | \$ -- | \$ -- |
| | ----- | ----- |

The net change in the total valuation allowance for the period ended December 31, 2008 was a decrease of \$1,654,000. Gross federal net operating loss carryforwards were approximately \$4.4 million as of December 31, 2008. Included in this amount was approximately \$3.5 million attributable to equity based compensation transactions. Approximately \$1 million of the valuation allowance will be relieved through equity if these deductions for equity based transactions are realized.

11. COMMITMENTS

Letters of Credit

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Outstanding letters of credit totaled \$4,187,000 and \$261,000 at December 31, 2008 and 2007, respectively. The letters of credit principally secure performance obligations, and allow holders to draw funds up to the face amount of the letter of credit if the Company does not perform as contractually required. These letters of credit expire through 2009 and are 100% secured by cash, restricted cash and the Revolving Credit Facility.

Property Under Capital Leases and Lease Commitments

At December 31, 2008 and 2007, the Company had operating leases for office space and other miscellaneous items. The Company also had a capital lease in effect for a building at December 31, 2007.

At December 31, 2008, future minimum lease payments for the period ended are as follows:

| | Unrelated Party Operating Leases | Related Party Operating Leases |
|------------------------------|-------------------------------------|-----------------------------------|
| | ----- | ----- |
| 2009 | \$ 136,000 | \$ 3,068,000 |
| 2010 | 114,000 | 3,243,000 |
| 2011 | 20,000 | 3,419,000 |
| 2012 | | 3,399,000 |
| 2013 | | 2,902,000 |
| 5 years and thereafter | | 1,020,000 |
| | ----- | ----- |
| Total minimum lease payments | \$ 270,000 | \$ 17,051,000 |
| | ===== | ===== |

The components of capitalized costs and carrying value of the property under capital leases were as follows at December 31, 2007:

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| | 2007 |
|--------------------------------|--------------|
| | ----- |
| Related party capital lease: | |
| Hudson, New Hampshire building | \$ 3,390,000 |
| Less: Accumulated depreciation | (3,108,000) |
| | ----- |
| | \$ 282,000 |
| | ===== |

The Related Party Capital Lease and three month extension with SPI-Trust expired in August 2008. On August 29, 2008, the Company and SPI-Trust entered in a new seven-year lease that the Company determined qualifies as a related party operating lease based on the terms of the lease agreement. Accordingly, the asset and accumulated depreciation were removed from the balance sheet. See "Related Party Operating Lease" below.

Related Party Capital Lease

In May 2003, Spire Semiconductor leased a building (90,000 square feet) in Hudson, New Hampshire from SPI-Trust whereby Spire Semiconductor agreed to pay \$4.1 million to SPI-Trust over an initial five-year term expiring in May 2008 with a Company option to extend for five years. In addition to the rent payments, the lease obligated the Company to keep on deposit with SPI-Trust the equivalent of three months rent (\$304,000 as of December 31, 2007.) The lease

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agreement did not provide for a transfer of ownership at any point. Interest costs were assumed at 7%. Interest expense was approximately \$8,000 and \$76,000 for the years ended December 31, 2008 and 2007, respectively. This lease was classified as a related party capital lease and a summary of payments (including interest) follows:

| Year | Rate Per Square Foot | Annual Rent | Monthly Rent | Security Deposit |
|-----------------------------|-------------------------|--------------------------------|--------------|---------------------|
| June 1, 2003 - May 31, 2004 | \$ 6.00 | \$ 540,000 | \$ 45,000 | \$ 135,000 |
| June 1, 2004 - May 31, 2005 | 7.50 | 675,000 | 56,250 | 168,750 |
| June 1, 2005 - May 31, 2006 | 8.50 | 765,000 | 63,750 | 191,250 |
| June 1, 2006 - May 31, 2007 | 10.50 | 945,000 | 78,750 | 236,250 |
| June 1, 2007 - May 31, 2008 | 13.50 | 1,215,000 | 101,250 | 303,750 |
| | | ----- \$ 4,140,000 ===== | | |

At December 31, 2007, \$486,000 reflected the current portion of capital lease obligation - related party, with no long-term portion, in the consolidated balance sheet.

Upon the expiration of the lease in May 2008, The Company did not exercise its option to extend the lease for an additional 5 years. On May 20, 2008, the Company agreed with SPI-Trust to continue the current lease, under the current terms and conditions on a month-to-month basis for a maximum of three (3) months beyond the current term which ended on August 31, 2008. On August 29, 2008, the Company and SPI-Trust entered in a new seven-year lease that the Company determined qualifies as a related party operating lease. See "Related Party Operating Lease" below.

Unrelated Party Operating Leases

Unrelated party operating leases primarily consist of leases for copiers and the telephone system.

Related Party Operating Lease

The Company subleased 77,000 square-feet in a building leased by Mykrolis Corporation, who in turn leased the building from SPI-Trust, a Trust of which Roger Little, Chairman of the Board, Chief Executive Officer and President of the Company, is the sole trustee and principal beneficiary for the year period ending November 2005. Effective December 1, 2005, the Company entered into a two-year Extension of Lease Agreement (the "Lease Extension") directly with SPI-Trust.

The Company assumed certain responsibilities of Mykrolis, the tenant under the former lease, as a result of the Lease Extension including payment of all building and real estate related expenses associated with the ongoing operations of the property. The Company will allocate a portion of these expenses to SPI-Trust based on pre-established formulas utilizing square footage and actual usage where applicable. These allocated expenses will be invoiced monthly and be paid utilizing a SPI-Trust escrow account of which the Company has sole withdrawal authority. SPI-Trust is required to maintain three (3) months of its anticipated operating costs within this escrow account. On December 1, 2006, the Company and SPI-Trust amended the Lease Extension to include the lease of an additional 15,000 square feet from SPI-Trust for a

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one-year term.

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The additional space was leased at a rate of \$8.06 per square foot on annual basis. The additional space was used to expand the Company's solar operations.

On November 30, 2007, the Company entered into a new Lease Agreement (the "New Lease") with SPI-Trust, with respect to 144,230 square feet of space comprising the entire building in which the Company has occupied space since December 1, 1985. The term of the New Lease commenced on December 1, 2007 and continues for five (5) years until November 30, 2012. The Company has the right to extend the term of the New Lease for an additional five (5) year period. The annual rental rate for the first year of the Lease is \$12.50 per square foot on a triple net basis, whereby the tenant is responsible for operating expenses, taxes and maintenance of the building. The annual rental rate increases on each anniversary by \$0.75 per square foot. If the Company exercises its right to extend the term of the New Lease, the annual rental rate for the first year of the extended term will be the greater of (a) the rental rate in effect immediately preceding the commencement of the extended term or (b) the market rate at such time, and on each anniversary of the commencement of the extended term the rental rate will increase by \$0.75 per square foot. The Company believes that the terms of the New Lease are commercially reasonable. Rent expense under the New Lease and the Lease Extension, as amended, for the year ended December 31, 2008 and 2007 was \$2,019,000 and \$1,415,000, respectively.

On August 29, 2008, the Company entered into a new Lease Agreement (the "Hudson Lease") with SPI-Trust, with respect to 90,000 square feet of space comprising the entire building in which Spire Semiconductor has occupied space since June 1, 2003. The term of the Hudson Lease commenced on September 1, 2008, and continues for seven (7) years until August 31, 2015. The Company has the right to extend the term of the Hudson Lease for an additional five (5) year period. The annual rental rate for the first year of the Hudson Lease is \$12.50 per square foot on a triple-net basis, whereby the tenant is responsible for operating expenses, taxes and maintenance of the building. The annual rental rate increases on each anniversary by \$0.75 per square foot. If the Company exercises its right to extend the term of the Hudson Lease, the annual rental rate for the first year of the extended term will be the greater of: (a) the rental rate in effect immediately preceding the commencement of the extended term; or (b) the market rate at such time, and on each anniversary of the commencement of the extended term the rental rate will increase by \$0.75 per square foot. In addition, the Company is required to deposit with SPI-Trust \$300,000 as security for performance by the Company for its covenants and obligations under the Hudson Lease. SPI-Trust is responsible, at its sole expense, to make certain defined tenant improvements to the building. The Company believes that the terms of the Hudson Lease are commercially reasonable and reflective of market rates. The lease agreement does not provide for a transfer of ownership at any point. The Hudson Lease is classified as a related party operating lease. Rent expense under the Hudson Lease for the year ended December 31, 2008 was \$443,000.

12. EMPLOYEE BENEFIT PLANS

Profit Sharing Plan

In 1985, the Company adopted a profit sharing plan under Section 401(k) of the Internal Revenue Code. This plan allows employees to defer up to 17.5% of their income up to certain dollar limits on a pretax basis through contributions to the plan. No discretionary matching contributions have been made to the plan for the year ended December 31, 2007. The Company began discretionary matching

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contributions starting September 2008. The Company's matching contributions were approximately \$60,000 for the year ended December 31, 2008.

Deferred Compensation Plan

Effective January 1, 2002, the Company adopted the Spire Corporation Non-Qualified Deferred Compensation Plan (the "Plan") for Roger Little, Chairman of the Board, Chief Executive Officer and President of the Company (the "Participant"). Under this Plan, the Company makes equal monthly contributions to the Spire Corporation Non-Qualified Deferred Compensation Trust (the "Trust") up to the annually required amount of \$250,000. The Company records these contributions as selling, general and administrative expense when made. The Trustee makes all investment decisions for the Trust on behalf of the Participant. The Company has not guaranteed a return on investment for the Participant, however, all earnings and losses on the Plan assets are borne by the Participant. All contributions and earnings are fully vested to the Participant when made but are subject to the Company's creditors in the event of bankruptcy. As a result, the assets held in the Plan have been recorded as available-for-sale investments in the consolidated balance sheet with a corresponding liability being recorded as deferred compensation. Unrealized gains and losses on the available-for-sale investments are recorded as accumulated other comprehensive income within the equity section of the consolidated balance sheet. A corresponding entry to deferred compensation is made to increase (decrease) the amounts due the Participant resulting from

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the changes in the asset value with an offsetting charge or credit to selling, general and administrative expense. Compensation expense was approximately \$250,000 in each of the years ended December 31, 2008 and 2007.

13. EARNINGS (LOSS) PER SHARE

The following table provides a reconciliation of the denominators of the Company's reported basic and diluted earnings (loss) per share computations for the years ended December 31:

| | 2008 | 2007 |
|--|-----------|-----------|
| | ----- | ----- |
| Weighted average number of common and common equivalent shares outstanding - basic | 8,328,592 | 8,272,123 |
| Add: Net additional common shares upon assumed exercise of common stock options | 136,031 | -- |
| | ----- | ----- |
| Weighted average number of common and common equivalent shares outstanding - diluted | 8,464,623 | 8,272,123 |
| | ===== | ===== |

For the years ended December 31, 2008 and 2007, 206,825 and 495,177 shares of common stock, respectively, issuable relative to stock options were excluded from the calculation of diluted shares since their inclusion would have been anti-dilutive.

14. LEGAL MATTERS

From time to time, the Company is subject to legal proceedings and claims arising from the conduct of its business operations.

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During the second quarter of 2005 a suit was filed by Arrow International, Inc. against Spire Biomedical, Inc., a wholly owned subsidiary of the Company, alleging patent infringement by the Company. The complaint claimed one of the Company's catheter products induced and contributed to infringement when medical professionals inserted it. The Company responded to the complaint denying all allegations and filed certain counterclaims. The Company also filed a motion for summary judgment, asserting patent invalidity resulting from plaintiff's failure to follow the administrative procedures of the U.S. Patent and Trademark Office ("USPTO"). On August 4, 2006, the Court granted the Company's motion and dismissed this lawsuit without prejudice. Plaintiffs applied to revive the applicable patent, which application was granted by the USPTO later in August 2006. Plaintiffs refiled their lawsuit against the Company on August 31, 2006. The Company has filed its answer and resumed its defense. The Company has filed summary judgment motions with the Court and a hearing was held on November 12, 2008. Following this hearing, the Judge ordered discovery reopened on the issue of possible inequitable conduct by the plaintiff, Arrow International, Inc. Based on information presently available to the Company, it believes it has meritorious legal defenses with respect to this action. If the Company is unsuccessful in its defenses, a portion of the Company's product line may be enjoined or the Company may need to redesign certain products to avoid future infringement. However, if the plaintiff's patent is found valid and infringed, the parties have already agreed to a stipulated calculation of damages based on a pre-specified nominal non-punitive royalty rate.

The Company is not aware of any other current or pending legal proceedings to which it is or may be a party that it believes could materially adversely affect its results of operations or financial condition or cash flows.

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15. OPERATING SEGMENTS AND RELATED INFORMATION

The following table presents certain operating division information in accordance with the provisions of SFAS No. 131, "Disclosure about Segments of an Enterprise and Related Information".

| | Spire Solar ----- | Spire Biomedical ----- | Optoelectronics ----- | Corporate ----- | |
|---------------------------------|-------------------------|------------------------------|--------------------------|--------------------|------------|
| December 31, 2008 ----- | | | | | |
| Net sales and revenues | \$ 51,901,000 | \$ 11,643,000 | \$ 5,108,000 | \$ -- | \$ -- |
| Earnings (loss) from operations | 10,353,000 | (1,075,000) | (2,784,000) | -- | -- |
| Identifiable assets | 45,209,000 | 4,440,000 | 3,962,000 | 14,407,000 | 14,407,000 |
| Capital expenditures | 689,000 | 49,000 | 183,000 | 789,000 | 789,000 |
| Depreciation and amortization | 268,000 | 289,000 | 1,198,000 | 184,000 | 184,000 |
| Stock-based compensation | 193,000 | 98,000 | 95,000 | 368,000 | 368,000 |
| | Spire Solar ----- | Spire Biomedical ----- | Optoelectronics ----- | Corporate ----- | |
| December 31, 2007 ----- | | | | | |
| Net sales and revenues | \$ 21,748,000 | \$ 11,106,000 | \$ 4,214,000 | \$ -- | \$ -- |
| Earnings (loss) from operations | 515,000 | (1,506,000) | (2,931,000) | -- | -- |
| Identifiable assets | 30,983,000 | 4,932,000 | 5,630,000 | 7,142,000 | 7,142,000 |
| Capital expenditures | 977,000 | 198,000 | 265,000 | 290,000 | 290,000 |
| Depreciation and amortization | 107,000 | 299,000 | 1,641,000 | 166,000 | 166,000 |

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| | | | | |
|--------------------------|---------|--------|--------|---------|
| Stock-based compensation | 115,000 | 84,000 | 87,000 | 293,000 |
|--------------------------|---------|--------|--------|---------|

The following table shows net sales and revenues by geographic area (based on customer location) for the years ended December 31:

| | 2008 | % | 2007 | % |
|-------------------|---------------|-------|---------------|-------|
| | ----- | ----- | ----- | ----- |
| United States | \$ 30,377,000 | 44% | \$ 19,714,000 | 53% |
| Europe/N. Africa | 14,665,000 | 22% | 9,129,000 | 25% |
| Asia | 22,782,000 | 33% | 7,643,000 | 21% |
| Rest of the world | 828,000 | 1% | 582,000 | 1% |
| | ----- | ----- | ----- | ----- |
| | \$ 68,652,000 | 100% | \$ 37,068,000 | 100% |
| | ===== | ===== | ===== | ===== |

The Company's operations are focused on three primary business areas: Spire Solar (comprised of solar equipment and solar systems), Spire Biomedical (comprised of biomedical and biophotonics research) and optoelectronics (comprised primarily of Spire Semiconductor). Spire Solar and Spire Biomedical operate out of the Company's facility in Bedford, Massachusetts. Spire Semiconductor operates out of the Company's facility in Hudson, New Hampshire. Each business area is independently managed and has separate financial results that are reviewed by the Board of Directors and Chief Executive Officer and the chief executive officers of each operating division.

Earnings (loss) from operations is net sales less cost of sales, selling, general and administrative expenses, gain on sales of licenses and gain on termination of contract, but is not affected either by non-operating income or by income taxes. In calculating earnings from operations for individual business units, substantial administrative expenses incurred at the operating level that are common to more than one segment are allocated on a net sales basis. Certain corporate expenses of an operational nature are also allocated to the divisions based on factors including occupancy, employment, and purchasing volume. All intercompany transactions have been eliminated.

Revenues from contracts with United States government agencies for 2008 and 2007 were approximately \$1,709,000 and \$1,303,000, or 2% and 4% of consolidated net sales and revenues, respectively.

The Company did not have any customers that accounted for more than 10% of consolidated net sales and revenues in 2008. One customer accounted for approximately 15% of consolidated net sales and revenues during 2007. Two customers represented approximately 13% and 11% of net accounts receivable, trade at December 31, 2008 and two customers represented approximately 34% and 16% of net accounts receivable, trade at December 31, 2007.

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Spain and India were the only foreign countries that accounted for more than 10% of sales in 2008 and Spain and Taiwan were the only foreign countries that accounted for more than 10% of sales in 2007. Net sales to customers in Spain and India accounted for \$9,205,000 and \$8,622,000, respectively, in 2008 and net sales to customers in Spain and Taiwan accounted for \$7,331,000 and \$5,208,000, respectively, in 2007.

16. SALE OF LICENSES

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On May 16, 2005, the Company entered into the global Consortium Agreement with Nisshinbo for the development, manufacturing, and sales of solar photovoltaic module manufacturing equipment. Nisshinbo's prior relationship with Spire was as a sub-licensee of Marubeni Corporation with whom the Company had a license arrangement that was originally signed in 1997, extended in 2003, and terminated in May 2005. Nisshinbo's role as sub-licensee was to manufacture equipment for Marubeni to sell to the Japanese market based upon the Company's proprietary technology. Under the terms of the Consortium Agreement, Nisshinbo purchased a license to manufacture and sell the Company's module manufacturing equipment on a semi-exclusive basis for an upfront fee plus additional royalties based on ongoing equipment sales over a ten-year period. In addition, the Company and Nisshinbo agreed, but were not obligated, to pursue joint research and development, product improvement activities and sales and marketing efforts. The companies could share market costs such as product collateral and trade show expenses. Each company could also collaborate on sales leads and have the other company manufacture and service its equipment in the field. Both companies had reciprocal rights to participate in the other company's R&D efforts on a going-forward basis. Nisshinbo could request the Company to further develop a technology but Nisshinbo had to (a) share in the costs of these development efforts equally with the Company (and thereafter have joint ownership); otherwise the Company would own the technology under a partial contribute or no participation by Nisshinbo with the Company receiving a royalty from Nisshinbo if it utilizes the technology. At the end of the license all non-jointly owned technology developed under the Consortium Agreement would revert back to the owner, with the other party being required to purchase a new license based upon the fair market value of that technology in order to continue to utilize the technology.

On June 27, 2005, the Company received JPY 400,000,000 from the sale of this permanent license. The Company determined that the Consortium Agreement contained multiple elements consisting of (1) the granting of a license to utilize the Company's technology and (2) the semi-exclusive right to utilize the technology for a period of 10 years. The Company believes the granting of the license meets the criteria of Emerging Issues Task Force ("EITF") 00-21, "Accounting for Revenue Arrangements with Multiple Elements", paragraph 9(a), as the license to utilize the technology has value to Nisshinbo on a stand-alone basis. Further, Question 1 to Securities and Exchange Commission ("SEC") Staff Accounting Bulletin Topic 13A-3f "Nonrefundable Up-Front Fees", was directly considered as guidance for determining if the upfront fee under the Consortium Agreement should be recognized upon the signing of contract or recognized over the term of the license. It is the Company's belief that a separate earnings process was complete as Nisshinbo was purchasing access to utilize technology it already had in its possession; therefore, recognition of the gain on the sale was appropriate. The Company has determined the fair value of the license and royalty based on an appraisal. As a result, a \$3,320,000 gain was recognized as a gain on sale of license in the consolidated statements of operations for the year ended December 31, 2005. The balance of \$350,000 was determined to represent an advanced royalty payment and was recorded as an advance on contracts in progress. This amount was being credited as royalty income over the ten-year license period on a straight-line basis. Due to the termination of the Consortium Agreement on November 30, 2008 (see Note 17), the Company accelerated the recognition of the remaining royalty income balance in the fourth quarter of 2008. The Company recognized \$263,000 and \$35,000 of royalty income associated with this license in 2008 and 2007, respectively.

17. GAIN ON TERMINATION OF CONTRACT

On September 1, 2008, Nisshinbo delivered a letter to the Company stating its intention to terminate the Consortium Agreement entered into between Nisshinbo and the Company on May 16, 2005 (see Note 16 for more on the Consortium Agreement). Pursuant to the Consortium Agreement, Nisshinbo provided its 180 day prior notice to terminate the Consortium Agreement effective as of

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February 28, 2009. However, on November 28, 2008, the Company signed the Separation Agreement with Nisshinbo that, among other things, accelerated the termination of the Consortium Agreement and the payment by Nisshinbo to the Company of an early termination penalty. Under the Separation Agreement, the termination of the Consortium Agreement was effective as of November 30, 2008.

Under the terms of the Consortium Agreement and the Separation Agreement, as a result of early termination by

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Nisshinbo for convenience, the Company received a termination penalty payment of \$6.8 million in December 2008. In addition, the Company received a final royalty payment of approximately \$659,000 from Nisshinbo for outstanding equipment being built by Nisshinbo for its customer base. The Company granted Nisshinbo a perpetual, royalty-free, non-exclusive, non-sub-licensable (for four (4) years) license to the Company's existing solar photovoltaic module manufacturing equipment methods of engineering, designing, manufacturing and other related methods that were in effect when the Company entered into the Consortium Agreement in 2005. Both parties declined technology licenses for technology developed by the other party during the term of the Consortium Agreement. Nisshinbo will continue to manufacture certain products for the Company on a non-exclusive basis.

18. MANUFACTURING AGREEMENTS

On August 29, 2006, the Company's wholly owned subsidiary, Spire Semiconductor, entered into a five-year manufacturing agreement in which it would be the exclusive supplier to Principia Lightworks, Inc. ("Principia"), of semiconductor wafers, enabling Principia, a Woodland Hills, California firm, to begin high volume production of its patented device, an electron beam pumped vertical cavity surface emitting laser ("eVCSEL") as a light source for production display applications, including rear-projection consumer televisions. Spire Semiconductor would manufacture epitaxial wafers which will be further processed by Principia to produce red, blue, and green colored lasers.

Under the terms of this agreement, Spire Semiconductor would be producing III/V and II/VI wafers for Principia with full production expected to start in mid 2008. Spire Semiconductor would have begun the scale-up of its existing metalorganic chemical vapor deposition ("MOCVD") and related processing facilities to satisfy Principia's requirements. Principia made an up-front payment for nonrecurring engineering and facility access costs and, in addition, was required to make monthly facility availability payments throughout the term of the agreement. The first eighteen months of the facility availability payments were secured by a pledge of Principia common equity which was to be returned after eighteen months upon receipt of the monthly payments. The Company reviewed FASB Statement No. 140, "Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Debt", and determined that the Company should not recognize the pledged shares and only would recognize if Principia defaulted under the terms of the agreement. Principia has no right of repayment with respect to these payments. Spire Semiconductor had an obligation to purchase and qualify MOCVD equipment to manufacture the wafers and make available the facility for Principia's manufacturing needs for a period of 5 years. Upon qualification, Principia had an obligation to purchase a minimum quantity of wafers for the first two years of the Agreement. A fixed price had been established for each wafer produced with some discounting contingent upon Principia committing to certain volume commitments. During the fourth quarter of 2007, the two companies modified their agreement such that it was agreed that Spire Semiconductor had qualified the new equipment. The Company began revenue recognition of the advance payments related to the facility preparation and availability on a straight line basis. This amounted to \$526,000 and \$357,000 in

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revenue in 2008 and 2007, respectively. Spire Semiconductor had full ownership of the equipment and could utilize any excess capacity for other customers. In September 2006, the Company entered into a purchase order with a manufacturer of MOCVD equipment. Although the Company committed resources to complete the scale-up, it anticipated this up-front payment plus the monthly payments would be sufficient to meet its capital requirements under the agreement. Providing the parties met their respective obligations over the term of the agreement, no net outlay of capital would be needed.

On August 29, 2008, the Company delivered to Principia a Notice of Breach and Pending Termination of the manufacturing agreement. Under the terms of the manufacturing agreement, Principia made an up-front payment for nonrecurring engineering and facility access costs and, in addition was required to make monthly facility availability payments throughout the term of the agreement. As a result of Principia's failure to make certain monthly facility availability payments, the Company has reserved \$225,000 against Principia's accounts receivable balance at December 31, 2008. The Company entered into a mutual standstill agreement with Principia which expired on March 15, 2009. The purpose of the standstill was to give the parties additional time to negotiate a resolution.

On March 27, 2009, Spire Semiconductor and Principia mutually agreed to terminate the Manufacturing Agreement for convenience and entered into a separation and novation agreement (the "Novation Agreement"). Under the terms of the Novation Agreement, both parties agreed to terminate technology licenses that were granted to each other under the terms of the Manufacturing Agreement and Spire Semiconductor will be released from its production requirements to Principia. Principia is released from paying its future facility availability payments due under the Manufacturing Agreement but will be required to pay outstanding facility availability payments of \$300,000. Spire Semiconductor holds 67,500 shares of Principia stock as collateral against the outstanding facility availability payments. Additionally, in the first quarter of 2009

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the Company will accelerate the amortization of deferred revenue and will recognize \$1.54 million in statement of operations related to the termination of the Manufacturing Agreement.

On March 16, 2006, the Company entered into a Turn-Key Project Agreement to provide a privately owned solar firm located in Europe (the "Purchaser"), a commercially sized multi-megawatt turn-key Photovoltaic Cell Manufacturing Line (the "Cell Line") for \$6.75 million (to be paid over the course of two years upon the achievement of certain milestones). The agreement was subsequently amended to include automation equipment bringing the total value of the contract to \$9 million. The Cell Line has been shipped to the customer and the Company began installation in 2008. The Company is subject to certain penalty provisions if the Cell Line does not meet agreed-upon performance criteria within a set period of time. Under this agreement, the Company also agreed to supply the Purchaser up to 1,500,000 mono-crystalline wafers or multi-crystalline wafers (meeting certain electrical capacity and efficiency standards) prior to the starting date of production of cells by the Cell Line or within 60 days after shipment of the Cell Line. The actual amount of wafers ordered and the price of such wafers is subject to the mutual agreement of the parties, and the Purchaser may cancel this non-exclusive arrangement at any time. The price for such wafer supply is in addition to the purchase price for the Cell Line. At December 31, 2008, the criteria for revenue recognition under Staff Accounting Bulletin No. 104, "Revenue Recognition in Financial Statements", have not been met therefore no revenue has been recognized.

19. EXTRAORDINARY GAIN ON INVESTMENT IN JOINT VENTURE

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On July 31, 2007, the Company entered into contractual relationship with Gloria Solar pursuant to which (i) the Company sold Gloria Solar certain assets belonging to its solar systems business for \$4,000,000 and (ii) the Company and Gloria Solar formed a joint venture named Gloria Spire Solar, LLC, for the purpose of pursuing the solar photovoltaic systems market within the United States. The joint venture will design, market, sell and manage the installation of systems for the generation of electrical power by solar photovoltaic means in primarily commercial/industrial and utility segments of such market (the "JV Systems Business"). Gloria Solar owns 55% of the joint venture and the Company owns 45% of the joint venture. In connection with the formation of the joint venture, (i) the Company contributed to the joint venture assets primarily relating to the JV Systems Business, including certain intellectual property and know-how, access to information technology assets and relationships, relationships with current and previous customers, contract backlog and project opportunities, certain registered trademarks, and employment relationships with staff members and (ii) Gloria Solar contributed \$5,000,000 in cash. This transaction closed on September 4, 2007. The Company's initial investment was recorded at \$2,288,000. As a result of applying the provisions of Accounting Principles Board ("APB") Opinion No. 18 "THE EQUITY METHOD OF ACCOUNTING FOR INVESTMENTS IN COMMON STOCK" to the differences between the fair value of the assets contributed and the cost basis on our books, the Company recorded an extraordinary gain of \$1,301,000, net of tax provision of \$877,000 for the year ended December 31, 2007. Additional recognition of the deferral will be recorded over time to offset the Company's ownership percentage of the amortization of the contributed intangibles assets as recorded on the joint venture's books.

20. SUBSEQUENT EVENTS

On March 3, 2009, the Company received a Staff Determination Letter from Nasdaq indicating that the Company has not regained compliance with the Rule as the market value of the Company's common stock has remained below the minimum \$50,000,000 required for continued inclusion on The Nasdaq Global Market. Accordingly, its common stock is subject to delisting from the Nasdaq Global Market.

The Company has requested a hearing before a Nasdaq Listing Qualifications Panel to review the Staff Determination. The request for a hearing will stay the Staff Determination and, as a result, the Company's common stock will remain listed on The Nasdaq Global Market until the Panel issues its decision after the hearing. There can be no assurance the Panel will grant the Company's request for continued listing.

The Company expects to regain compliance with alternative continued listing requirements upon the filing of this Annual Report on Form 10-K, as the Company believes it now meets both (i) Marketplace Rule 4450(b)(1)(B), which alternatively requires total assets and total revenue of at least \$50,000,000 each for the most recently completed fiscal year or two of the three most recently completed fiscal years and (ii) Marketplace Rule 4450(a)(3), which alternatively requires stockholders' equity of at least \$10 million.

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On March 31, 2009, the Bank extended the expiration of the Revolving Credit Facility under the same terms for an additional sixty days, to expire on May 29, 2009. The purpose of the extension is to allow both parties the time to negotiate an expansion of the credit limit contingent upon our qualifying for an Export-Import Bank loan guarantee.

On March 27, 2009, Spire Semiconductor and Principia mutually agreed to

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terminate the Manufacturing Agreement for convenience and entered into a separation and novation agreement (the "Novation Agreement"). Under the terms of the Novation Agreement, both parties agreed to terminate technology licenses that were granted to each other under the terms of the Manufacturing Agreement and Spire Semiconductor will be released from its production requirements to Principia. Principia is released from paying its future facility availability payments due under the Manufacturing Agreement but will be required to pay outstanding facility availability payments of \$300,000. Spire Semiconductor holds 67,500 shares of Principia stock as collateral against the outstanding facility availability payments. Additionally, in the first quarter of 2009 the Company will accelerate the amortization of deferred revenue and will recognize \$1.54 million in statement of operations related to the termination of the Manufacturing Agreement.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND ----- FINANCIAL DISCLOSURE -----

None.

ITEM 9A (T). CONTROLS AND PROCEDURES -----

Restatement of Consolidated Financial Statements -----

In November 2008, we detected a side arrangement of which its existence was not taken into account when we recognized revenue on a multi-element contract. The identified contract was partially recognized in the fourth quarter of 2007 and partially in the first quarter of 2008 under multi-element arrangement accounting rules. As we could not establish the fair value of the undelivered elements given under the side arrangement, we incorrectly recognized the revenue rather than deferring all revenue until all elements were delivered.

Under the direction of the Audit Committee and with the assistance of the Chief Operating Officer, the Company's Chief Financial Officer conducted a review of the solar equipment contracting process and order management activity, including a review of contract modifications. Sales personnel and key managers in the solar equipment department who are involved with the execution of contracts were interviewed with respect to the knowledge of internal procedures on customer requests for concessions as well as their knowledge of any previously granted customer concessions or modifications. Additionally, the Company contacted a large sample of external customers to confirm the completeness of deliverables as called for by the written contract or any other means of communications. The review revealed that, except for the one contract in question, all customer concessions and modifications were conveyed on a timely basis and revenue was appropriately recorded in all other cases during the period under review.

The error that caused the improper recognition of revenue was not timely identified by our procedures and controls in place and \$1.735 million was incorrectly recognized as goods revenue, resulting in a material overstatement of goods revenue for the fourth quarter of fiscal year 2007 and the first quarter of 2008. On November 18, 2008, the Audit Committee of the Board of Directors, in consultation with and upon recommendation of management, concluded that due to the error in accounting for goods revenue, our previously issued financial statements for the fourth quarter and fiscal 2007 included in the Annual Report on Form 10-K for the fiscal year ended December 31, 2007 and our previously issued financial statements included in the Quarterly Reports on Form 10-Q for the fiscal quarters ended March 31, 2008 and June 30, 2008 should no

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longer be relied upon and should be restated. Each of these reports was subsequently amended to include restated financial statements.

Evaluation of Disclosure Controls and Procedures

Our management, under the supervision of and with the participation of the Chief Executive Officer and Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) under the Securities Exchange Act of 1934 (the "Exchange Act")) as of the end of the period covered by this report, December 31, 2008.

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A material weakness is defined in Public Company Accounting Oversight Board Auditing Standard No. 5 as a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. In connection with our overall assessment of internal control over financial reporting, as discussed below, we have evaluated the effectiveness of our internal control over financial reporting as of December 31, 2008 and have concluded that we have several material weaknesses. Accordingly, our Chief Executive Officer and Chief Financial Officer concluded that due to the material weaknesses in our internal control over financial reporting described below, our disclosure controls and procedures were not effective as of December 31, 2008.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of our consolidated financial statements for external purposes in accordance with United States Generally Accepted Accounting Principles ("US GAAP"). Under the supervision of, and with the participation of our Chief Executive Officer and Chief Financial Officer, management assessed the effectiveness of our internal control over financial reporting as of December 31, 2008. Management based its assessment on criteria established in "Internal Control Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

Management's report was not subject to attestation by our registered public accounting firm pursuant to the temporary rules of the Security and Exchange Commission that permit us to provide only management's report in this annual report.

Based on this evaluation, management concluded that the following material weaknesses in internal control over financial reporting existed as of December 31, 2008:

We had an ineffective control environment. This has been previously disclosed in prior filings. Management has designed and implemented some effective controls, however, these controls are not sufficient and are not operating effectively. Efforts to remediate deficiencies were impeded by an evolving control environment brought on by the rapid expansion in our business. We did not maintain an effective financial reporting process, ensure timely and accurate completion of financial statements and we did not maintain effective monitoring controls including reconciliations and analysis of key accounts. We did not have

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a sufficient level of staffing with the necessary knowledge, experience and training to ensure the completeness and accuracy of our financial statements. In addition, certain finance positions were staffed with individuals who did not possess the level of accounting knowledge, experience and training in the application of US GAAP commensurate with our financial reporting requirements. Specifically, the financial reporting organization structure was not adequate to support the size, complexity or activities of our Company.

This affected our ability to maintain effective monitoring controls and related segregation of duties over automated and manual transactions processes. Specifically, inadequate segregation of duties led to untimely identification and resolution of accounting and disclosure matters and failure to perform timely and effective supervision and reviews.

We did not maintain effective controls over our IT environment. Specifically, we did not perform a timely review of restricted user access in our application software system and we did not consistently follow our defined back up policies and procedures.

The material weaknesses noted above contributed to the existence of the following control deficiencies, each of which resulted in audit adjustments and is considered to be a material weakness.

We did not maintain effective controls over our financial closing process to ensure the complete, accurate and timely preparation and review of our consolidated financial statements. Accounts were not properly reconciled and account analysis was not performed. Inventory, prepaid expenses, deposits, other assets, accrued expenses, deferred/unbilled revenue and deferred rent were not properly reconciled. Formal review and approval of reconciliations is not working effectively.

We did not maintain effective controls to ensure proper valuation of inventory and project cost variance review and analysis. We did not properly mark payables denominated in foreign currency to market at December 31, 2008.

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Due to the limited number of people working in the accounting group that have significant tax experience, the deferred tax analysis and the related disclosures were not prepared timely at year end. Failure to do so could result in misstatement of the financial statements or the required disclosures.

We did not maintain effective controls to ensure existence and valuation of revenue. Specifically, we lacked formal policies and procedures to monitor revenue contracts for side agreements.

In addition to the material weaknesses previously discussed, we did not maintain effective controls to identify and monitor the existence of side agreements. In November 2008, we became aware of a preexisting undocumented side agreement made in connection with a multiple element arrangement. Timely notification of the existence of the oral agreement was not communicated to the Finance Department, and therefore the impact of such agreement was not considered in the evaluation of revenue recognition on the contract. As a result, our recognition of revenue was materially misstated with respect to the fourth quarter of 2007 and the first quarter of 2008 which required restatement of previously issued financial statements.

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Each one of these control deficiencies, until corrected, could result in a misstatement to our interim or annual consolidated financial statements that would not be prevented or detected. As a result of these material weaknesses, audit adjustments were noted by our auditors. Additional analysis was performed and correcting entries were recorded to ensure the accuracy and completeness of our December 31, 2008 consolidated financial results. These items were addressed prior to the finalization of the consolidated financial statements.

As a result of the foregoing, management has concluded that our internal control over financial reporting was not effective as of December 31, 2008.

Our management has undertaken the following actions to remediate the material weakness identified.

Management is actively addressing operational and internal control remediation efforts. New policies and procedures have been created and existing policies and procedures have been reviewed and modified as part of our documentation of internal control over financial reporting. Management believes these new controls, policies and procedures, training of key personnel, testing of these key controls will be effective in remediating these material weaknesses. Management reports quarterly to our Audit Committee on the status of the remediation effort.

Management has partially addressed the need for additional experienced staff with the addition of a Director of Financial Reporting (February 2008) who has the primary responsibility for the financial close and reporting process and monitoring environment related to financial reporting. We also hired a Senior Financial Analyst, CPA (July 2008) who is actively involved in the financial close and reporting process and assisting us in our remediation efforts. These positions will help us address the identified weakness in the knowledge and experience required for completeness and accuracy of our financial statements and also helps improve our overall financial close and reporting process. Further, we have continued our relationship with an outside consulting firm and expanded their scope to assist us in our Sarbanes-Oxley control rationalization, testing and remediation efforts.

In connection with the findings of our review related to the restatement, management and the Audit Committee reviewed the additional internal control procedures and processes that have been implemented since the original date of the error and have identified additional remediation steps to address the material weakness of untimely reporting of customer contract changes. We will be implementing new internal controls and enhanced accounting policies, as well as improved sales policies and procedures relating to customer contract management and order fulfillment.

Changes in Internal Control Over Financial Reporting

There have been no changes during our fiscal quarter ended December 31, 2008 in our internal control over financial reporting that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

On November 28, 2008, we entered into a Solicitation/Contract/Order For Commercial Items (the "Cell Materials Contract") to provide Federal Prison Industries, Inc., otherwise known as UNICOR ("UNICOR"), a twenty two (22) month supply of multicrystalline solar cells for \$53.94 million in the aggregate.

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Delivery commences in the first quarter of 2009 with approximately 30% of the contract value being delivered in 2009 and 70% being delivered in 2010. The contract allows UNICOR to exercise, at its option, three separate one-year extensions. The three, one year extensions are worth up to \$266.63 million in the aggregate. Under the terms of the Cell Materials Contract, UNICOR can terminate the contract for convenience at any time.

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PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information concerning our directors, executive officers and corporate governance is set forth in the Proxy Statement for the Special Meeting in Lieu of 2009 Annual Meeting of Stockholders ("Proxy Statement") and is incorporated herein by reference. Information concerning compliance with Section 16(a) of the Exchange Act is set forth under "Compliance with Section 16(a) of the Securities Exchange Act of 1934" in the Proxy Statement and is incorporated herein by reference.

We have adopted a Code of Business Conduct and Ethics (the "Code") that applies to our principal executive officer, principal financial officer and principal accounting officer or controller, as well as to directors, officers and employees generally. The Code sets forth written standards that are reasonably designed to deter wrongdoing and to promote (1) honest and ethical conduct, (2) full, fair, accurate, timely and understandable disclosure in reports and documents that we file with the SEC and in other public communications made by us, (3) compliance with applicable governmental laws, rules and regulations, (4) the prompt internal reporting of violations of the Code to an appropriate person or persons identified in the Code and (5) accountability for adherence to the Code. We will provide to any person without charge, upon request, a copy of the Code. Any person wishing a copy should write to Michael W. O'Dougherty, Clerk, Spire Corporation, One Patriots Park, Bedford, Massachusetts 01730-2396.

A copy of the Code is incorporated by reference as Exhibit 21 to our Form 10-KSB for the fiscal year ended December 31, 2003.

ITEM 11. EXECUTIVE COMPENSATION

Information concerning executive compensation is set forth in the Proxy Statement and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information concerning security ownership of certain beneficial owners and management, and related stockholder matters, is set forth in the Proxy Statement and is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

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Information concerning certain relationships and related transactions, and director independence, is set forth in the Proxy Statement and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information concerning principal accounting fees and services is set forth in the Proxy Statement and incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS

The following Exhibits are either filed herewith or are incorporated by reference as may be indicated.

- 2.1 Asset Purchase Agreement, dated as of July 31, 2007, by and between the Company and Gloria Solar Co., Ltd., incorporated by reference to Exhibit 2.1 to the Company's Form 8-K filed with the Securities and Exchange Commission (the "SEC") on September 10, 2007 *+
 - 2.2 Contribution Agreement, dated as of July 31, 2007, by and among the Company, Gloria Solar Co., Ltd. and Gloria Solar (Delaware) Company, Ltd., incorporated by reference to Exhibit 2.2 to the Company's Form 8-K filed with the SEC on September 10, 2007 *+
 - 3(a) Articles of Organization as amended, incorporated by reference to Exhibit 3(a) to the Company's
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- Form 10-QSB for the quarter ended June 30, 1997
- 3(b) By-Laws, as amended, incorporated by reference to Exhibit 3(b) to the Company's Form 10-K for the year ended December 31, 1989
 - 10(a) Sublease Agreement with Millipore Corporation as landlord for facility at Bedford, Massachusetts dated November 25, 1985, incorporated by reference to Exhibit 10(a) to the Company's Form 10-K for the year ended December 31, 1985
 - 10(b) Amendment to Sublease Agreement with Millipore Corporation as landlord for facility at Bedford, Massachusetts dated December 30, 1999, incorporated by reference to Exhibit 10(b) to the Company's Form 10-KSB for the year ended December 31, 1999 ("1999 10-KSB")
 - 10(c) Sublease Agreement with Methode Electronics, Inc. as tenant for a portion of the facility at Bedford, Massachusetts dated December 29, 1999, incorporated by reference to Exhibit 10(c) to the 1999 10-KSB
 - 10(d) Asset Purchase Agreement dated as of November 18, 1999 with Methode Electronics, Inc. and Methode Massachusetts, Inc., incorporated by reference to Exhibit 1 to the Company's Form

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8-K dated December 29, 1999

- 10 (e) Employment Agreement with Roger G. Little dated as of January 1, 2002, incorporated by reference to Exhibit 10(e) to the Company's Form 10-KSB for the year ended December 31, 2001 ("2001 10-KSB")
- 10 (f) Deferred Compensation Plan with Roger G. Little dated as of January 1, 2002, incorporated by reference to Exhibit 10(f) to 2001 10-KSB
- 10 (g) Spire Corporation 1985 Incentive Stock Option Plan, incorporated by reference to Exhibit 10(d) to the Company's Form 10-K for the year ended December 31, 1984
- 10 (h) Spire Corporation 401(k) Profit Sharing Plan, incorporated by reference to Exhibit 10(h) to the Company's Form 10-KSB for the year ended December 31, 2003 ("2003 10-KSB")
- 10 (i) Spire Corporation 1996 Equity Incentive Plan, incorporated by reference to Appendix A to the Company's Proxy Statement dated April 15, 2004
- 10 (j) Purchase Agreement dated May 23, 2003 with Stratos Lightwave and Bandwidth Semiconductor, LLC, incorporated by reference to Exhibit 10(h) to the Company's Form 10-QSB for the quarter ended June 30, 2003
- 10 (k) Lease Agreement dated May 23, 2003 by and between Roger G. Little, Trustee of SPI-Trust as Landlord and Spire Corporation as Tenant, incorporated by reference to Exhibit 10(i) to the Company's Form 10-QSB for the quarter ended June 30, 2003
- 10 (l) Trust Agreement dated April 1, 2004 between the Company and Riggs Bank N.A. as Trustee of the Company's 401(k) Profit Sharing Plan, incorporated by reference to Exhibit 10(1) to the Company's Form 10-KSB for the year ended December 31, 2004 ("2004 10-KSB")
- 10 (m) Amendment No. One dated November 18, 2004 to Employment Agreement for Roger G. Little, incorporated by reference to Exhibit 10(m) to the Company's 2004 Form 10-KSB
- 10 (n) Development, Manufacturing, and Sales Consortium Agreement between Nisshinbo Industries, Inc. and Spire Corporation, with an effective date of 16 May 2005, incorporated by reference to Exhibit 10(n) to the Company's Form 10-QSB for the quarter ended June 30, 2005*
- 10 (o) Extension of Lease Agreement dated November 11, 2005 between Roger G. Little, Trustee of SPI-Trust and Spire Corporation (lease of premises, 77,037 sq. ft.), incorporated by reference to Exhibit 10(o) to the Company's 2005 Form 10-KSB
- 10 (p) Amendment Number Four to the Spire Corporation 401(k) Profit Sharing Plan dated November 21, 2005,

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incorporated by reference to Exhibit 10(p) to the Company's 2005 Form 10-KSB

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- 10(q) Turn-Key Project Agreement, dated March 16, 2006, incorporated by reference to Exhibit 10(s) to the Company's 2006 10-QSB for the quarter ended March 31, 2006 *
- 10(r) Wafer Supply Agreement, dated March 16, 2006, incorporated by reference to Exhibit 10(r) to the Company's 2006 Form 10-QSB for the quarter ended March 31, 2006 *
- 10(s) Manufacturing Agreement, dated August 29, 2006, by and between Bandwidth Semiconductor, LLC, a wholly owned subsidiary of Spire and Principia Lightworks, Inc., incorporated by reference to Exhibit 10(s) to the Company's 2006 Form 10-QSB for the quarter ended September 30, 2006 *
- 10(t) First Amendment to Extension of Lease Agreement dated December 1, 2006 between Roger G. Little, Trustee of SPI-Trust and Spire Corporation (lease of premises, approximately 91,701 sq. ft.), incorporated by reference to Exhibit 10(t) to the Company's 2006 Form 10-KSB
- 10(u) Amendment Number Five to the Spire Corporation 401(k) Profit Sharing Plan dated December 22, 2006, incorporated by reference to Exhibit 10(u) to the Company's 2006 Form 10-KSB
- 10(v) Spire Corporation 2007 Stock Equity Plan, incorporated by reference to Exhibit 4.1 to the Company's Form S-8 filed with the Securities and Exchange Commission on June 5, 2007
- 10(w) Loan and Security Agreement, dated May 25, 2007, among Spire Corporation, Bandwidth Semiconductor, LLC and Silicon Valley Bank, incorporated by reference to Exhibit 10(w) to the Company's 2007 Form 10-Q for the quarter ended June 30, 2007
- 10(x) Operating Agreement of Gloria Spire Solar, LLC, dated July 31, 2007, by and among the Company, Gloria Solar (Delaware) Company, Ltd. and Gloria Spire Solar, LLC, incorporated by reference to Exhibit 10(x) to the Company's Form 8-K filed with the SEC on September 10, 2007 *
- 10(y) Lease Agreement, dated November 30, 2007, between Roger G. Little, Trustee of SPI-Trust, and Spire Corporation (lease of premises, approximately 144,230 sq. ft.), incorporated by reference to Exhibit 10(y) to the Company's Form 8-K filed with the SEC on December 6, 2007
- 10(z) Amended and Restated Deferred Compensation Plan with Roger G. Little dated as of January 1, 2005, incorporated by reference to Exhibit 10(z) to the Company's 2008 Form 10-Q for the quarter ended March 31, 2008.
- 10(aa) First Loan Modification Agreement, dated March 31, 2008, to the Loan and Security Agreement, dated May 25, 2007, among Spire Corporation, Bandwidth Semiconductor, LLC and Silicon Valley Bank, incorporated by reference to Exhibit 10(aa) to the Company's 2008 Form 10-Q for the quarter ended March 31, 2008.
- 10(ab) Loan and Security Agreement, dated March 31, 2008, among Spire Corporation, Spire Solar, Inc., Spire Biomedical, Inc., Spire Semiconductor, LLC and Silicon Valley Bank, incorporated by reference to Exhibit 10(ab) to the Company's 2008 Form 10-Q for the quarter ended March 31, 2008.

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10(ac) Second Loan Modification Agreement, dated May 13, 2008, to the Loan and Security Agreement, dated May 25, 2007, among Spire Corporation, Bandwidth Semiconductor, LLC and Silicon Valley Bank, incorporated by reference to Exhibit 10(ac) to the Company's 2008 Form 10-Q for the quarter ended June 30, 2008.

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10(ad) Waiver and First Loan Modification Agreement, dated May 13, 2008, to Loan and Security Agreement, dated March 31, 2008, among Spire Corporation, Spire Solar, Inc., Spire Biomedical, Inc., Spire Semiconductor, LLC and Silicon Valley Bank, incorporated by reference to Exhibit 10(ad) to the Company's 2008 Form 10-Q for the quarter ended June 30, 2008.

10(ae) Lease Agreement, dated September 1, 2008, between Roger G. Little, Trustee of SPI-Trust, and Spire Corporation, incorporated by reference to Exhibit 10(ae) to the Company's Form 8-K filed with the SEC on August 29, 2008.

10(ap) Solicitation/Contract/Order for Commercial Items, dated November 28, 2008, by and between Spire Corporation and Federal Prison Industries, UNICOR. *

10(aq) Amendment of Solicitation/Modification of Contract MOD01 to Solicitation/Contract/Order for Commercial Items, dated April 20, 2009, by and between Spire Corporation and Federal Prison Industries, UNICOR. *

10(ar) Amendment of Solicitation/Modification of Contract MOD02 to Solicitation/Contract/Order for Commercial Items, dated June 8, 2009, by and between Spire Corporation and Federal Prison Industries, UNICOR. *

10(as) Amendment of Solicitation/Modification of Contract MOD03 to Solicitation/Contract/Order for Commercial Items, dated September 8, 2009, by and between Spire Corporation and Federal Prison Industries, UNICOR. *

14 Code of Business Conduct and Ethics incorporated by reference to Exhibit 14 to the 2003 10-KSB

21 Subsidiaries of the Registrant, incorporated by reference to Exhibit 21 to the 2003 10-KSB

23 Consent of Independent Registered Public Accounting Firm (filed herewith)

31.1 Certification of the Chairman of the Board, Chief Executive Officer and President pursuant to ss.302 of the Sarbanes-Oxley Act of 2002 (filed herewith)

31.2 Certification of the Chief Financial Officer pursuant to ss.302 of the Sarbanes-Oxley Act of 2002 (filed herewith)

32.1 Certification of the Chairman of the Board, Chief Executive Officer and President pursuant to 18 U.S.C. ss.1350, as adopted pursuant to ss.906 of the Sarbanes-Oxley Act of 2002 (filed herewith)

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32.2 Certification of the Chief Financial Officer pursuant to 18 U.S.C. ss.1350, as adopted pursuant to ss.906 of the Sarbanes-Oxley Act of 2002 (filed herewith)

* Portions of this Exhibit have been omitted pursuant to a request for confidential treatment.

+ We agree to furnish supplementally to the SEC a copy of any omitted schedule or exhibit to this agreement upon request by the SEC.

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SIGNATURES

In accordance with Section 13 or 15(d) of the Exchange Act, the registrant caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

SPIRE CORPORATION

By: /s/ Roger G. Little November 20, 2009

Roger G. Little
Chairman of the Board, Chief
Executive Officer, and President
(Principal Executive Officer)

In accordance with the Exchange Act, 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/ Roger G. Little ----- Roger G. Little | Chairman of the Board, Chief Executive Officer and President (Principal Executive Officer) | November 20, 2009 |
| /s/ Christian Dufresne ----- Christian Dufresne | Chief Financial Officer and Treasurer (Principal Financial Officer and Principal Accounting Officer) | November 20, 2009 |
| /s/ Udo Henseler ----- Udo Henseler | Director | November 20, 2009 |
| /s/ David R. Lipinski ----- David R. Lipinski | Director | November 20, 2009 |
| /s/ Mark C. Little ----- Mark C. Little | Chief Executive Officer, Spire Biomedical and Director | November 20, 2009 |
| /s/ Michael J. Magliochetti ----- | Director | November 20, 2009 |

