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JMAR TECHNOLOGIES INC



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# Q & A

AN INTERVIEW WITH THE PRESIDENT & CEO



**JMAR** Technologies, Inc., has been recognized for many years as an innovative research and development center for high brightness, short pulse solid state lasers. The Company has leveraged this expertise to become a leading developer of laser produced plasma X-ray light source technology. Since the principal application for the source technology has been semiconductor lithography, JMAR has added the predominant manufacturer of X-ray lithography steppers and a skilled semiconductor fabrication support team to its corporate roster over the past few years.

Although the Company has traditionally focused on contract research for the Department of Defense and lithography systems and fabrication services for the semiconductor industry, opportunity is rising for JMAR in other industries as well. Nanotechnology, biotechnology and homeland security offer new applications for JMAR technology and operations and the pursuit is on.

As President and CEO, Ron Walrod has launched a strategy by which JMAR will broaden and accelerate its drive to commercialize its technology. In this interview, he talks frankly about how a new vision for growth now complements JMAR's traditional strategy.

**2003 was your first full year as CEO. Looking back on the year, what do you see as JMAR's major accomplishments?**

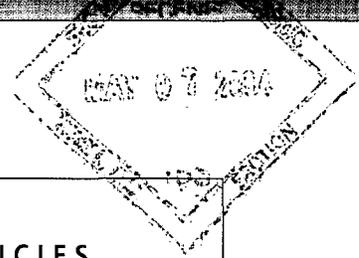
We had three main goals for 2003. First, I needed to be sure we had the right people in key positions. We were successful in augmenting JMAR's

strongest performers with the new professionals we need to move the Company forward. We continue to refine the team as the Company evolves.

The second major goal was to improve our financial condition. We acted to reduce an unacceptable cash

burn rate and set out to form solid relationships for financing in the short term and over the long haul. By reducing total head count and selling JMAR Precision Systems, Inc., we reduced the burn rate to a manageable level. Additionally, we formed a strong working relationship with Laurus Funds as our principal financial partner. By means of several Laurus financings in 2003 and 2004, JMAR achieved realistic liquidity and today is positioned with the cash needed for working capital and business expansion.

Finally, our most important operational goal was to integrate our Collimated Plasma Lithography (CPL) source with our X-ray stepper and carry out demonstrations to attract industry partners. Toward the end of 2003, we had not yet met our expectations for CPL performance because of engineering problems that simply took too long to resolve. We did recover in the first quarter of 2004, however, and ran successful CPL stepper system endurance trials at our Vermont facility.

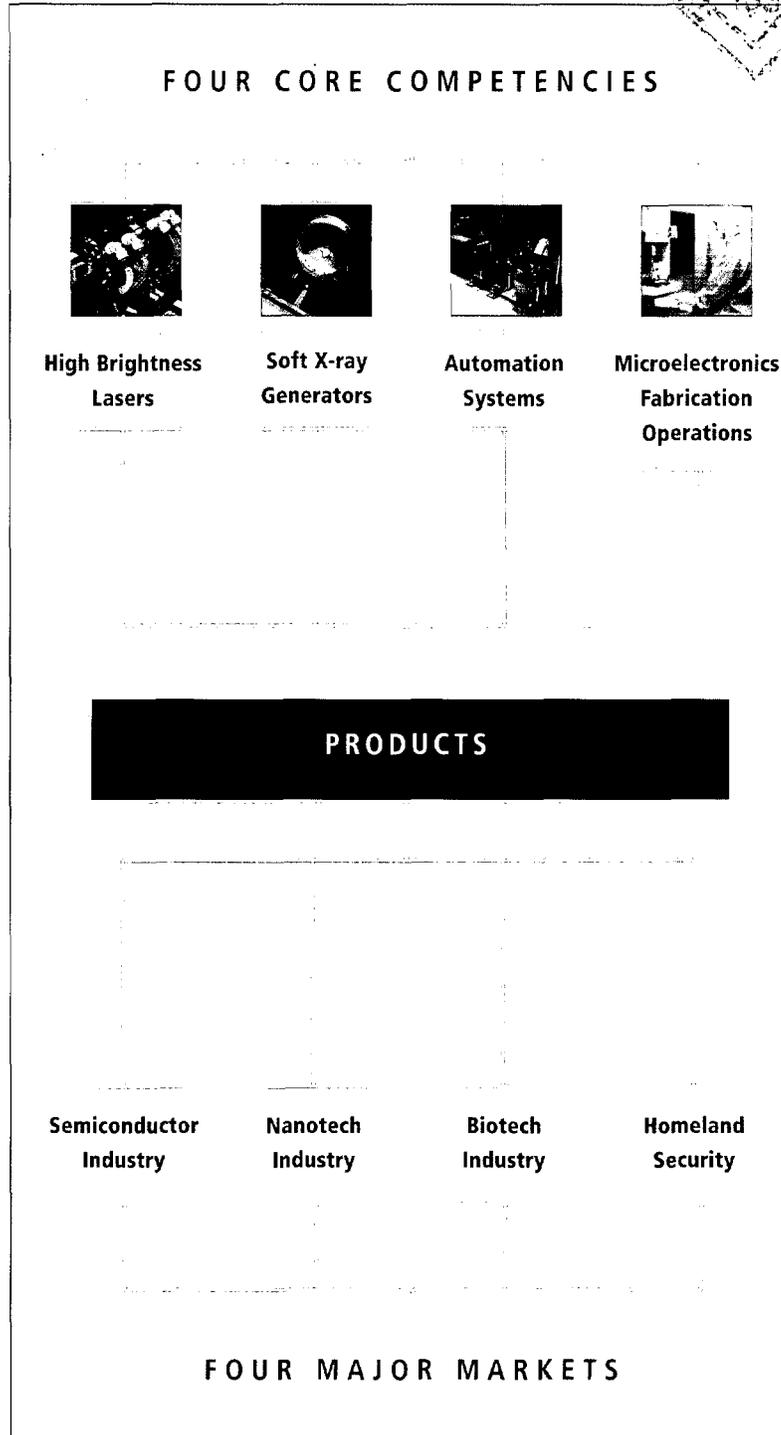


**What is the significance of the CPL lithography endurance trials you completed in March 2004?**

JMAR first attempted CPL endurance trials in September of 2003. We discovered that the CPL source still had engineering issues to be resolved. No single problem was a showstopper, but we experienced too many bugs to achieve satisfactory power stability or productivity. We formulated a plan to recover and did so in the March trials. The test results showed that CPL works better than ever, and so does JMAR.

**It sounds like 2003 was a period of internal strengthening. How would you characterize JMAR's objectives for 2004?**

In developing our business plan for 2004, we conducted an objective inventory of JMAR's core competencies and then identified the general markets within which these competencies, when translated into products, can create value for the end users and for JMAR's shareholders. Three exciting markets jumped out at us: nanotechnology, biotechnology, and homeland security. In each of these markets, JMAR can leverage its existing knowledge and skills to compete. 2004 will be the year JMAR begins to enter new, high growth markets beyond its traditional semiconductor and DoD research base.



**Let's talk about the markets you see JMAR participating in over the next few years. What is JMAR's position in the semiconductor industry?**

Our Microelectronics Division is focused 100% on support of the government's effort to manufacture chips for its operational platforms. This team provides assistance with equipment selection and installation, process development, and fabrication facility maintenance.

JMAR's microelectronics fabrication

support business is as predictable and steady as our Collimated Plasma Lithography (CPL) effort is unconventional and potentially transformative.

X-ray lithography offers both short, one-nanometer wavelength light, and large depth of field. Our CPL source has been developed as a relatively affordable and compact alternative to the synchrotron X-ray source. JMAR is making strides in its CPL source development and is continuing its admittedly challenging efforts toward industry acceptance.

**What are the benefits CPL offers to semiconductor fabricators?**

In the case of the compound semiconductor industry, CPL offers a 5X to 10X improvement in critical layer throughput at the same price as an e-beam writer. The problem is that today, the compound semiconductor industry has excess capacity. When more capacity is needed, JMAR intends to be ready with its CPL lithography system.

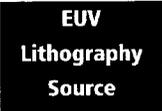
**What about silicon semiconductor fabrication?**

CPL has niche applications in contact holes, vias, and C-RAM, but let's face it, momentum is critical and right now the momentum is with 193 immersion and EUV. We will see what the cost of an EUV stepper system is when all the technology issues are resolved. Our view is that X-ray lithography may prove to be considerably less costly and may find use in silicon semiconductor fabrication in the future.

**Is JMAR's laser produced plasma technology relevant to EUV?**

At a 13.5 nanometer wavelength, EUV has been classified as soft X-ray and, as your question suggests, JMAR's laser produced plasma approach can be used to produce EUV light. In fact, JMAR has worked with the University of Central Florida to advance the use of low mass tin based targets for relatively high conversion efficiency. As a result of this cooperation, JMAR has exclusive access to an important EUV source technology portfolio.

**PRODUCTS**  
SEMICONDUCTOR INDUSTRY

			
<b>High Brightness Lasers</b>	<b>Soft X-ray Generators</b>	<b>Automation Systems</b>	<b>Microelectronics Fabrication Operations</b>
			
<b>EUV Lithography Source</b>	<b>CPL Lithography Source</b>	<b>Lithography Stepper</b>	<b>Fabrication Operations Support</b>
			
<b>Semiconductor Industry</b>	<b>Semiconductor Industry</b>	<b>Semiconductor Industry</b>	<b>Semiconductor Industry</b>

**Nanotechnology has generated considerable interest and speculation. How does JMAR fit into this emerging industry?**

First of all, our CPL stepper prints features at 70 nanometers and below, putting us in the nano-league already. But our nanometer wavelength light source has other exciting applications in both nanotechnology and biotechnology.

In fact, the nanotech and biotech applications of JMAR's X-ray source may be more amenable to speedy commercialization than is lithography. On the technology side, nanometer scale imaging and analytical instruments require only a fraction of the X-ray power demanded by lithography. The operational and reliability requirements are far less severe. Additionally, nanotech or biotech instruments do not depend on third party infrastructure to support commercialization.

**Are you talking about a family of instruments with some commonality between types?**

Yes, exactly. Across the entire family of instruments, the lasers are identical, the X-ray generators and optics are very similar, and only the stage and detectors are tailored to the specific product class. This equipment architecture enables JMAR to gain important production economies of scale for the lasers and generators, while customizing the stages and detectors for the specific application.

**PRODUCTS**  
 NANOTECH AND BIOTECH INDUSTRIES

 <p><b>High Brightness Lasers</b></p> <p>High brightness lasers are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's lasers are designed for high power and high stability.</p>	 <p><b>Soft X-ray Generators</b></p> <p>Soft X-ray generators are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's generators are designed for high power and high stability.</p>	 <p><b>Automation Systems</b></p> <p>Automation systems are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's systems are designed for high power and high stability.</p>	 <p><b>X-Ray Photoelectron Analyzer</b></p> <p>X-ray photoelectron analyzers are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's analyzers are designed for high power and high stability.</p>
 <p><b>X-Ray Photoelectron Analyzer</b></p> <p>X-ray photoelectron analyzers are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's analyzers are designed for high power and high stability.</p>	 <p><b>X-Ray Plasma Analyzer</b></p> <p>X-ray plasma analyzers are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's analyzers are designed for high power and high stability.</p>	 <p><b>X-Ray Microscope</b></p> <p>X-ray microscopes are used in a variety of applications including lithography, microscopy, and spectroscopy. JMAR's microscopes are designed for high power and high stability.</p>	
<p><b>Semiconductor Industry</b></p>	<p><b>Nanotech Industry</b></p>	<p><b>Biotech Industry</b></p>	

**Specifically, what kind of instruments are you talking about?**

We have identified several discrete imaging and analytical instruments for use at the nanoscale.

Our concept for a bench top X-ray microscope consists of a two to four nanometer wavelength generator and a CCD detector that enables biotech companies to obtain high-resolution images of one to ten micron cell specimens without traveling to a synchrotron site. This X-ray microscope may also be used by the chemicals industry to image polymers.

We have also developed concepts for two instruments that use one nanometer X-ray light to form a plasma on a test sample surface. One instrument uses a time of flight mass spectrometer detector and the other uses an optical spectrometer to analyze the chemical composition at the nanometer scale.

Another member of this family of X-ray based instruments uses a photoelectron spectrometer as the detector for surface analysis of chemical binding energies.

**How does Homeland Security fit into JMAR's business interests?**

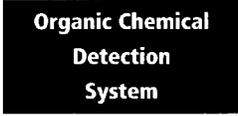
JMAR retains a multidisciplinary engineering and operations team capable of designing and building complex lithography stepper systems. The technical breadth of this team enables it to take on a wide range of challenges involving design, production, integration and test.

The threat to homeland security posed by biological and chemical agents has prompted considerable sensor research. For technologists developing advanced sensors, JMAR offers the skills and infrastructure needed to design these sensors into operational systems and get them built. As an example, we have formed an alliance with FemtoTrace (a company formed to commercialize technologies licensed from NASA's Jet Propulsion Laboratory) and are working with them as their exclusive contract design and manufacturing source. We are building alpha and beta models of a chemical sensor system to be used in New York City to detect PCBs. We are also working with FemtoTrace to apply this sensor technology to a variety of homeland security and defense applications requiring real time detection of explosives. We believe this alliance model will link JMAR to other sensor experts, supporting the needs of homeland security, and increasing our business base.

**What is JMAR's current financial condition?**

Management actions taken in 2003 and early 2004 have increased JMAR's

**PRODUCTS**  
HOMELAND SECURITY

 <b>High Brightness Lasers</b>	 <b>Automation Systems</b>	 <b>Sensor Alliance Partners</b>
 <b>Microorganism Monitoring System</b>		 <b>Organic Chemical Detection System</b>
 <b>Homeland Security</b>		

cash liquidity by a factor of five, moved working capital from deficit to strong positive territory, and more than doubled shareholders' equity. Our significantly improved financial condition enables us to fund internal product development and to seek out alliance or acquisition opportunities as we work to expand the business.

JMAR's stock price has improved substantially from its \$1.00 level at the start of 2003. Average trading volume has grown from tens of thousands of shares to hundreds of thousands of shares traded each day. I believe JMAR's management team is making progress toward our most fundamental objective – the creation of shareholder value.

**Where will this expanded vision of JMAR's future lead?**

None of us can predict, with certainty or precision, the results of these business expansion initiatives. The point is that JMAR has considerable technology that can be applied to several large and growing markets. We will systematically and opportunistically press into new markets and build our strength as we go.

In summary, 2003 was a year of preparation and 2004 is a year of exploration for, and exploitation of, rising opportunities.

The following is an excerpt from the Company's 2003 Form 10-K Annual Report filed by the Company with the Securities and Exchange Commission on March 30, 2004. It excludes the cover pages (page 1 and 2), certain parts of the Business Section (pages 7 to 16), quantitative and qualitative disclosures about market risk (page 31), Part III (page 32) and Part IV (page 33).

The Company's entire Form 10-K Annual Report (including the above pages) is available to shareholders at no charge and copies of any of the exhibits of the Form 10-K may be obtained at a charge of \$2.00 per exhibit to cover handling and mailing charges. Written requests should be sent to Investor Relations at the Company's Corporate office located at 5800 Armada Drive, Carlsbad, CA 92008.

JMAR Technologies, Inc. develops, manufactures, and supports advanced laser, automated alignment and positioning, and sensor systems for applications in the semiconductor, biotech, homeland security and nanotechnology markets. JMAR originated the collimated plasma lithography (CPL™) light source for advanced semiconductor chip manufacturing. JMAR's proprietary solid state laser development skills and its expertise in X-ray light generation by means of laser produced plasma, have enabled the Company to produce short wavelength (1 nanometer or nm) light for use with lithography steppers to pattern fine features on both compound semiconductor and silicon wafers. JMAR is also the leading producer of X-ray steppers for nanolithography. The U.S. Department of Defense is the principal source of funds for the Company's CPL™ light source, X-ray stepper systems, and X-ray mask research and development programs. JMAR also provides X-ray steppers and services to the University of Wisconsin's Center for Nanotechnology, to BAE Systems in New Hampshire, and to others.

JMAR plans to sell integrated CPL nanolithography systems to manufacturers of compound semiconductors used in high performance military electronics, radars, and high speed communications and to manufacturers of advanced LED and chalcogenide random access memory (C-RAM) integrated circuits (ICs). JMAR believes that its CPL light source technology is also well suited to pattern contact holes on silicon semiconductor wafers at the 90 nm through 25 nm features. With investment and support from strategic partners and other sources, the Company's ultimate goal is to achieve significant growth in revenue and earnings through the production and sale of CPL™ light sources for the multi-billion dollar silicon-based semiconductor manufacturing industry. The Company believes that CPL may prove a cost effective adjunct to more costly Next Generation Lithography technologies, such as extreme ultraviolet (EUV) lithography, at the 32 nm node and beyond.

In addition to the development of nanolithography tools, JMAR provides semiconductor fabrication process integration and maintenance support to the Department of Defense's Defense Microelectronics Activity in Sacramento, California. The Company also applies its automation systems expertise to design and produce advanced sensor systems. In alliance with FemtoTrace Inc. (a company formed with technology licensed from NASA's Jet Propulsion Laboratory (JPL)), JMAR is designing and manufacturing portable sensor systems capable of detecting, in real time, minute quantities of PCBs and PFTs for end use by utilities in the U.S. and Europe. These unique systems are believed to be significantly more sensitive than any other real-time detectors of pollutants. These systems may also have applications in detecting explosives, narcotics, and other organic molecules and, hence, show significant potential for homeland security applications.

JMAR is combining its extensive base of patents and intellectual property, an entrepreneurial management team, and \$8 million in new funding to diversify and expand its business base through business alliances and new product development.

## **Business Segments**

JMAR conducts its operations in the following three business segments:

Research Division (formerly JMAR Research) – Located in San Diego, California, this segment carries out contract research and development involving JMAR's patented high brightness (Britelight™) lasers and laser-produced plasma (LPP) technology. The results of this R&D are applied to the Company's CPL™ light source, EUV generators, and related laser products. Until recently, the principal focus of the Research Division's R&D efforts has been in advanced semiconductor lithography applications. In 2003, the Company embarked on an effort to identify additional applications for its laser and LPP technologies. Substantially all of the Research Division's R&D is funded by contracts from the Defense Advanced Research Projects Agency (DARPA) of the U.S. Department of Defense. During 2003, this segment accounted for approximately 36% of the Company's revenues.

The technologies developed at the Research Division are transitioned to JMAR's Systems Division for product engineering and future production.

Systems Division (formerly JMAR/SAL NanoLithography) – This segment develops and manufactures X-ray lithography steppers. Located in Vermont, this Division also serves as JMAR's product design and manufacturing arm, carrying out the engineering, production, and integration of JMAR's CPL light sources and CPL stepper systems. The Systems Division also applies its engineering and manufacturing expertise to the development of new products using a combination of JMAR and third party technology, as in the case of its design and manufacture of alpha and beta READ sensors for FemtoTrace, Inc. for environmental and homeland security applications. During 2003, this segment accounted for approximately 38% of the Company's revenues.

Microelectronics Division (formerly JMAR Semiconductor) – This segment provides process integration and maintenance support for the Defense Microelectronics Activity's semiconductor fabrication facility in Sacramento, California. It also designs and produces application specific integrated circuits (ASICs) for military and commercial markets. During 2003, this segment accounted for approximately 26% of the Company's revenues.

## **Products and Services**

JMAR's products and services evolve from one or more of its four core competencies: high brightness solid state lasers, laser produced plasma generators for soft X-ray and EUV light; automated precision positioning and alignment systems, and microelectronic fabrication operations. These competencies are the basis for JMAR's contract research and development, standard and custom products, and support services revenues.

### ***Britelight™ Lasers***

The Company's patented diode pumped solid state (DPSS) Britelight™ lasers feature high brightness, high beam quality and sub-nanosecond rise time. High brightness DPSS Nd:YAG lasers may be operated at their fundamental wavelength of 1064 nm or at harmonic multiples (532 nm, 355 nm, 266 nm) of the fundamental, depending on the application.

High brightness DPSS lasers are well suited to a wide variety of applications including plasma production, micromachining and welding, analytical instruments for biotechnology and chemistry, laser identification detection and ranging (LIDAR) systems, and missile defense. JMAR is evaluating the viability of several product offerings for these applications.

### ***Laser Produced Plasma Light Sources***

JMAR's Britelight™ laser is uniquely effective as an energy source for generation of short wavelength light. By focusing short laser pulses onto a copper target, the resultant plasma becomes a point source of 1 nm X-ray light. A tin target produces 13.5 nm (i.e., EUV) light, and a carbon target produces soft X-rays at a 3 nm wavelength. Each of these wavelengths of light has unique applications in science and industry. JMAR's 1 nm source is useful for X-ray lithography. JMAR's research toward an efficient 13.5 nm source applies to EUV lithography. JMAR is reviewing the feasibility of using 2-4 nm light for certain biological imaging applications.

### ***CPL X-ray Light Source***

The semiconductor industry currently uses deep ultraviolet (DUV) lithography in its chip manufacturing process. X-ray lithography has three important attributes that differentiate it from

DUV lithography: shorter wavelength (~1 nm vs. ~193 nm), larger depth of field (~2,000 nm vs. ~150 nm), and the ability to penetrate thick resist without high absorption. These attributes make X-ray lithography particularly well suited for printing fine features on wafers lacking smooth topology (e.g., GaAs wafers, MEMS, LEDs), and for printing very deep, high aspect features (e.g., contact holes, inter-metal vias, and C-RAM).

Historically, large, expensive synchrotrons have produced light for X-ray lithography development. JMAR has developed the prototype of a reasonably sized, affordable alternative to the synchrotron. JMAR's CPL™ X-ray source consists of multiple Britelight™ laser modules. These modules produce a succession of powerful, short light pulses with power density of many hundreds of trillions of watts per square centimeter. When focused onto a copper target, a plasma is created that emits 1 nm wavelength X-ray light. An X-ray collimator is positioned in close proximity to the point source to improve X-ray collection efficiency. JMAR has teamed with X-ray Optical Systems, Inc. (XOS) to produce the world's first full-field illumination collimators, achieving lithography exposure "gain" of 12 (i.e., the exposure of the wafer is 12 times faster than without the collimator), while the illuminated field is free from the distortions associated with an uncollimated point source. JMAR believes that its CPL source will achieve throughput performance that meets compound semiconductor and niche mainstream semiconductor industry needs by adding multiple laser modules to increase point source X-ray power and by taking advantage of gain from the X-ray collimator.

The Company's program to produce CPL sources for semiconductor lithography has evolved over the past decade from scientific research and development, to laboratory proof of concept, to the current beta stage. In 2003, JMAR successfully integrated its CPL source with its X-ray stepper and printed high quality patterns on wafers. The integrated CPL lithography system produced 100 nm dense lines and 70 nm isolated features on test wafers during 2003 tests. The tests also confirmed that JMAR's source prints sub-80 nm contact 2D arrays on a 200 nm pitch on the same exposure fields.

JMAR's initial operating experience with the beta CPL source taught us that fundamental engineering refinement is necessary to achieve the levels of power stability and operational reliability needed for sustained lithography operations. JMAR is working to increase source X-ray power to increase wafer throughput and improve system reliability as it upgrades the beta CPL source during 2004.

#### *EUV Light Source Research and Development*

Much of JMAR's know-how used to produce X-ray light at 1 nm can be applied to generate EUV light at 13.5 nm. JMAR has worked with the University of Central Florida (UCF) to develop LPP based EUV light source technology and, in 2001, was granted an exclusive license by the University of Central Florida Research Foundation (UCFRF) to make, use and sell products, processes or systems which incorporate patented and other proprietary technology developed by UCF to convert laser beams into extreme ultraviolet (EUV). JMAR has also developed proprietary technology in this field that is the subject of a pending patent. JMAR believes it is positioned to combine the licensed technology and its own technology with its patented high-power Britelight™ lasers to demonstrate the efficiency of its EUV technology to the semiconductor industry.

Although EUV is generally considered by the semiconductor industry to be the leading technology for the 32 nm lithography node, its high projected cost and difficult technical challenges are pushing its projected introduction date out to 2009 and beyond. JMAR is therefore looking for partners willing to invest in EUV source development over the long term to support its EUV research.

## ***NanoPulsar Steppers***

JMAR is unique in its ability to design, build and service proximity X-ray steppers for 75-200 mm wafer lithography. Since the mid-1980's, the predecessor of JMAR's Systems Division has sold sixteen X-ray steppers to research facilities for use with synchrotron sources for lithography and small-scale process work. The Company offers service and upgrades for that installed base and continues to market its NanoPulsar steppers for use with synchrotron sources.

## ***Integrated CPL Nanolithography Systems***

In addition to marketing its light sources to other stepper manufacturers and marketing its X-ray steppers to synchrotrons, JMAR has been seeking customers for its integrated nanolithography system that combines its CPL light source and its stepper. Gallium Arsenide (GaAs) and other compound semiconductor devices operating at ultra-high bandwidths use a transistor gate technology commonly referred to as "T-gate." Optical and EUV lithography systems cannot produce these "T-gates" but electron beam systems and X-ray lithography can. With planned increase in the power of JMAR's CPL source and improvements in platform mechanics, JMAR believes its integrated nanolithography system will be capable of reaching throughputs of 5-10 times the throughput of current direct write electron beam systems.

## ***Microelectronics Production***

### *Semiconductor Process Integration Services*

JMAR provides technology development and high-value technology services to a government semiconductor producer. This business is based on a contract originally awarded to the Company by General Dynamics Advanced Information Systems (GDAIS) in 1998. Work under this contract includes the development, construction, and operation of a semiconductor wafer fabrication facility at McClellan Air Force Base in Sacramento for the Defense Microelectronics Activity (DMEA).

Under this ongoing program, JMAR uses its in-depth semiconductor industry experience and relationships to define and acquire the technologies and semiconductor equipment needed to support its customer's mission. In a unique arrangement, JMAR maintains access to use DMEA facilities to support ASIC commercial design and wafer fabrication. In 2003, JMAR expanded its relationship with the DMEA by entering into a five-year cooperative research and development agreement (CRADA). This CRADA establishes a joint DMEA/JMAR research laboratory environment to strengthen and enhance DMEA's ability to use new processes, equipment, and designs to improve low volume foundry efficiency. By virtue of this CRADA, JMAR intends to use the versatile facilities and capabilities available at the Defense Microelectronic Activity's ARMS foundry to develop and produce commercial products for the government and commercial sectors.

During 2003, the Microelectronics Division received \$5 million in new contracts from GDAIS, a DMEA prime contractor, to enhance the performance of the semiconductor fabrication process at the DMEA installation. The Company received another approximately \$3.5 million in contracts early in 2004 to further this effort.

### *ASIC Production*

The product life cycle for commercial parts is typically 3 to 5 years, whereas military weapons systems have a life cycle of 20 to 30 years. When a weapons system using commercial parts needs replacement parts no longer manufactured by the original supplier and not available from an after market source, the military has two choices: either replace the entire circuit board (a

very expensive proposition) or replicate the part. JMAR acts as a fabless manufacturer of ASIC semiconductors for part replication. Actual fabrication is carried out either within the DMEA foundry or by a commercial foundry.

### **READ Sensor Systems**

Under an agreement with FemtoTrace, Inc. (a company formed with technology licensed from JPL), JMAR's Systems Division is engaged in the manufacture of alpha and beta sensor systems that will be used in certain environmental applications and have great potential to meet urgent homeland security needs. This sensor system uses a mass spectrometer-based technology named reversal electron attachment detection (READ) developed by FemtoTrace. JMAR's business alliance with FemtoTrace enables JMAR to design and produce a versatile, highly sensitive, real-time organic chemical detection system. JMAR believes that this sensor system has broad applications in commercial and defense markets including detection of environmental pollutants, explosives, narcotics, and antibiotics and that JMAR will play a continuing role in the production of these systems.

### **SECURITIES INFORMATION**

The Company's Common Stock is traded on the Nasdaq SmallCap Market under the symbol JMAR. The 2003 and 2002 high and low transaction prices for the common stock as reported by NASDAQ are set forth in the following table.

	<b>Common Stock Price</b>	
	<u>High</u>	<u>Low</u>
<b>2003</b>		
First Quarter.....	1.25	0.76
Second Quarter.....	1.49	0.82
Third Quarter.....	2.55	1.10
Fourth Quarter .....	2.51	1.31
<b>2002</b>		
First Quarter.....	3.53	2.00
Second Quarter.....	2.52	1.65
Third Quarter.....	2.20	1.27
Fourth Quarter .....	1.65	0.92

As of March 9, 2004, there were approximately 15,400 holders of JMAR's common stock.

The Company has never paid cash dividends on its common stock. The Company currently intends to retain earnings for use in the operation and expansion of its business and therefore does not anticipate paying any cash dividends in the foreseeable future. The payment of dividends in the future by the Company on its common stock will be dependent on its earnings and financial condition and such other factors considered relevant by the Company's Board of Directors.

In December 2003, the Company issued \$2 million of Series D Convertible Preferred Stock ("Series D Preferred") to Laurus Master Fund Ltd. ("Laurus"). The Series D Preferred has a fixed conversion price of \$1.56 per share. Also issued in this transaction were warrants to purchase 200,000 shares of common stock at a price of \$2.25 per share. These issuances were exempt under Section 4(2) of the Securities Act of 1933.

**FIVE YEAR SELECTED FINANCIAL DATA**  
**Consolidated Statements of Operations Data – For the Years Ended December 31,**

	<u>2003</u>	<u>2002</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>
Revenues .....	\$17,296,508	\$18,383,810	\$12,903,811	\$ 9,114,357	\$14,452,054
Gross profit .....	3,964,627	3,413,492	3,499,243	2,328,406	3,433,171
Operating expenses .....	5,383,251	6,523,346	4,989,402	3,222,903	3,714,334
Loss from operations	(1,418,624)	(3,109,854)	(1,490,159)	(894,497)	(281,163)
Realized gain on sale of marketable securities.....	-	1,349,721	1,189,273	2,184,476	-
Interest and other income.....	63,225	67,404	252,282	273,626	87,519
Interest and other expense.....	(731,315)	(284,174)	(107,950)	(106,466)	(192,905)
Income (loss) from continuing operations before income taxes ....	(2,086,714)	(1,976,903)	(156,554)	1,457,139	(386,549)
Income tax expense .....	-	(484,423)	-	-	-
Income (loss) from continuing operations.....	(2,086,714)	(2,461,326)	(156,554)	1,457,139	(386,549)
Loss from operations of discontinued operations.....	(1,396,749)	(5,839,367)	(14,544,980)	(2,681,904)	(1,862,445)
Gain (loss) on disposal of discontinued operations.....	205,000	(3,200,000)	-	-	-
Net loss.....	(3,278,463)	(11,500,693)	(14,701,534)	(1,224,765)	(2,248,994)
Preferred stock dividends .....	(942,903)	-	-	-	-
Loss applicable to common stock ....	(4,221,366)	(11,500,693)	(14,701,534)	(1,224,765)	(2,248,994)
Basic income (loss) per share:					
Income (loss) per share from continuing operations .....	(0.12)	(0.11)	(0.01)	0.06	(0.02)
Loss per share from discontinued operations.....	(0.04)	(0.38)	(0.64)	(0.12)	(0.10)
Loss per share applicable to common stock .....	(0.16)	(0.49)	(0.65)	(0.06)	(0.12)
Basic shares used in computation of income (loss) per share .....	25,618,296	23,618,169	22,484,905	21,468,763	18,045,914

**Consolidated Balance Sheet Data – December 31,**

	<u>2003</u>	<u>2002</u>	<u>2001</u>	<u>2000</u>	<u>1999</u>
Working capital (deficit).....	\$2,427,166	\$(780,117)	\$7,843,465	\$21,543,381	\$7,468,743
Total assets .....	13,493,183	15,121,660	26,618,625	34,191,574	20,673,768
Short-term debt .....	2,340,431	1,556,405	3,007,152	1,291,178	5,195,490
Long-term liabilities .....	449,873	1,708,804	1,419,632	339,908	642,913
Preferred stock.....	2,217,150	-	-	-	-
Stockholders' equity .....	5,277,800	3,677,994	14,299,655	28,444,669	10,909,461

## MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

### Overview

JMAR Technologies, Inc. develops, manufactures, and supports advanced laser, automated alignment and positioning, and sensor systems for applications in the semiconductor, biotech, homeland security and nanotechnology markets. The U.S. Department of Defense is the principal source of funds for the Company's collimated plasma lithography (CPL™) light source, X-ray stepper systems, and X-ray mask research and development programs. JMAR also provides X-ray steppers and services to the University of Wisconsin's Center for Nanotechnology, to BAE Systems in New Hampshire, and to others. In addition to the development of nanolithography tools, JMAR provides semiconductor fabrication process integration and maintenance support to the Department of Defense's Defense Microelectronics Activity in Sacramento, California.

As noted in "Sources of Revenues" below, over 95 percent of the Company's revenues are derived from government contracts or related subcontracts. These contracts generate intellectual property owned by the Company (with limited residual rights held by the government) in areas in which the Company believes there are significant commercial applications. In addition to commercial opportunities, reliance on these contracts has presented certain challenges and risks.

### Opportunities, Challenges and Risks

Our program to produce CPL light sources for semiconductor lithography has proven to be technologically challenging, evolving over the past decade from scientific research and development, to laboratory proof of concept, to the current beta stage. In 2003 we successfully integrated our CPL source with our Systems Division X-ray stepper and printed high quality patterns on wafers. Our initial operating experience with the beta CPL source taught us that fundamental engineering refinement is necessary to achieve the levels of power stability and operational reliability needed for sustained lithography operations. We made the management decision to start work on a second CPL source that will retain many of the design elements of the existing CPL source, but embodies new engineering solutions where necessary. This decision also involved proactive steps to complement Research Division's traditional excellence in laser science with a team of skilled mechanical, electrical and software engineers.

This new team of engineers is working to increase the X-ray power output and reliability of our CPL source to meet the needs of compound semiconductor chip manufacturing and other applications. We believe that this work will continue to be largely funded by our DARPA contract, but could require financing beyond the funding provided by the Company's government contracts. Failure to resolve these challenges within the timeframe demanded by potential customers may have an adverse impact on the success of our efforts to manufacture and sell our CPL systems. In addition, the Company's cost models contemplate that multiple suppliers will emerge and greater volume purchases of high cost components will result in reduced CPL source manufacturing costs and appropriate gross margins.

CPL offers dramatically increased throughput for compound semiconductor manufacturing compared to the use of direct-write e-beam lithography. The compound semiconductor market is not expanding at the fast pace predicted three years ago because of the unanticipated decline in the telecom industry, and so the expected increased demand for the increased throughput offered by the Company's CPL system has been delayed. Although the Company plans to enter this market when it recovers, we cannot estimate when we will receive our first CPL system order for the compound semiconductor market. However, JMAR's work to

upgrade its CPL source to achieve higher X-ray power with high reliability should position JMAR for the compound semiconductor market's recovery.

The Company believes that its CPL source technology is also a potential candidate to meet the semiconductor industry's need to produce better "contact holes" in semiconductor chips, but considerable challenges must be overcome. If 193 immersion lithography is successful down to the 45 nm node, the need for the Company's CPL system as a "mix-and-match" solution to the contact hole problem will be greatly diminished. Furthermore, the silicon contact hole market at the 65 nm feature will require production systems by 2008. For JMAR to enter the silicon contact hole market in 2008, an end-user (foundry or chip manufacturer) must commit to JMAR's XRL solution in 2005 thereby providing the lead time needed to develop appropriate stepper, mask and resist technology for this niche market. Finally, in order to meet the needs for the contact hole market, JMAR must improve CPL source reliability, increase its power output to 150 watts from the 20 watts produced today, and reduce projected manufacturing cost to create a viable commercial source.

Once CPL is successful in the contact hole segment of the silicon market, the Company plans to position its sources more broadly to the mainstream silicon market as the most cost effective approach to lithography at the 32 nm node and below. Production systems for this market will not be required until 2010, with development systems being provided in the earlier years.

Since 2002, the Company has been working actively to establish strong alliances with the semiconductor industry to deliver CPL to the mainstream silicon market. JMAR is continuing these efforts, but does not yet have a commitment from an industry partner. However, the Company is optimistic that once the beta CPL stepper system is fully operational and reliable, the Company will make faster progress in forming an alliance that brings together the industry support needed to move CPL forward.

Achieving market acceptance for our new and proposed CPL products requires a significant effort to convince semiconductor manufacturers to adopt the Company's CPL technology over other alternative lithography technologies. This will require substantial technical, marketing and sales efforts and the expenditure of significant funds. Currently, the semiconductor industry is exploring several different technologies for its near-term and long-term lithography needs, some of which currently have greater acceptance than CPL.

In addition to its CPL efforts, the Company is pursuing other laser produced plasma (LPP) applications. JMAR has worked with the University of Central Florida over the past three years to develop LPP-based Extreme Ultraviolet (EUV) lithography light source technology. JMAR believes that the knowledge and IP resulting from this work positions JMAR to participate in EUV source development on a contract basis. JMAR is also investigating opportunities to use its LPP X-ray source technology in non-lithography applications such as the potential development of a "table top" X-ray microscope for the research and biotech communities.

JMAR's Systems Division is working to apply its automation systems expertise to design and produce advanced sensor systems. In alliance with FemtoTrace, Inc. (a company formed with technology licensed from JPL), JMAR is designing and manufacturing portable sensor systems capable of detecting, in real time, minute quantities of PCBs and PFTs for end use by utilities in the U.S. and Europe.

The Company's Systems Division is working to expand its relationship with FemtoTrace for the production of advanced sensor systems (READ) by marketing this ultra sensitive sensor technology for military and homeland security applications.

The Company's Microelectronics Division provides semiconductor process integration services under contracts that support the Department of Defense's mission to ensure a supply of semiconductor products for military systems. This Division is also in the custom application specific integrated circuit (ASIC) business. It seeks to increase its revenue base by expanding its ASIC business to include power management chip fabrication.

### **Sources of Revenue**

Currently, over 95 percent of the Company's revenues are derived as the prime contractor or subcontractor for government contracts. The most significant ongoing contract is the multi-year \$34.5 million contract issued to JMAR's Research Division by the U.S. Army Research Laboratory sponsored by DARPA for further development of the Company's CPL system. Through 2003, a total of \$16.6 million has been received under this contract and the Company expects to receive an additional \$7 million in funding in 2004. Although the \$7 million funding has been appropriated by Congress, DARPA controls the timing of the funding. The Company had expected to receive \$1.6 million of this \$7 million in funding by December 31, 2003. DARPA had not released these funds to JMAR by December 31, 2003. DARPA had indicated that they would release the \$1.6 million in funds upon the successful completion of a reliability and performance test, which was completed on March 21, 2004. On March 22, 2004, based on the preliminary results of the tests, DARPA released \$800,000 of these funds, with the remaining \$800,000 to be released upon satisfaction of further milestones. The release of the remaining \$5.4 million during 2004 is also subject to milestones related to the further improvement of the beta source. The Company believes that it will meet all of the milestones for release of all of the remaining \$6.2 million.

JMAR's next most significant contract is a \$10 million contract issued to JMAR's Systems Division by Naval Air Warfare Center AD to procure sub-100 nm X-ray masks used in the development and production of high performance GaAs MMICs ("Navair Contract"). Through 2003, a total of \$6.4 million has been received under this contract and the Company expects to receive \$2.4 million in funding in 2004. The funding for this contract has also been appropriated by Congress. In connection with the award of the Navair Contract, the Company entered into a subcontract with IBM to manufacture and deliver X-ray masks to JMAR. In October 2003, the Company was notified by IBM that effective December 31, 2003 it was discontinuing its Vermont X-ray lithography mask-making operations and terminating this subcontract. The Company believes it has sufficient masks for its planned lithography exposure tests until another mask supplier subcontract can be signed. The Company has had discussions with other mask suppliers and believes that it will enter into a subcontract with one or more of these suppliers in 2004 to continue to provide masks. The failure to redirect the Navair Contract funding to an alternative mask supplier or other project of interest to Navair, could result in a shortfall in recognizing the full \$2.4 million expected under the Navair Contract in 2004.

The third major ongoing revenue source involves the subcontract between JMAR's Microelectronics Division and GDAIS to enhance and maintain the semiconductor wafer fabrication processes installed at the McClellan Air Force Base in Sacramento for the DMEA. This work, which started in 1998, has resulted in a new subcontract each year out of funds available in the DMEA's budget as an element of the Department of Defense's Advanced Technology Support Program. The Company received \$5 million and \$3.5 million in contracts in 2003 and 2004, respectively, for this program.

Additionally, in 2004, the Company has submitted five Small Business Innovative Research proposals to the U.S. Government of approximately \$100,000 each in the areas of X-ray microscopy, laser communications, missile defense, oceanic mine detection and material processing.

Management believes that the work performed under the above contracts has commercial applications, particularly the work under the DARPA contract for the development of JMAR's CPL technology.

In February 2004, the Company received \$8 million in financing from Laurus Master Fund (Laurus). We intend to use these funds to initiate and advance new product research and development efforts and to acquire or license products, technologies or businesses to expand our revenue base and potential. While we believe these investments will lead to increased revenue in the future, the initial expenditure of these funds will increase the Company's research and development expenses and, correspondingly, its net loss in the near term.

## Results of Operations

### *Year Ended December 31, 2003 Compared to Year Ended December 31, 2002*

*Revenues.* Total revenues for the years ended December 31, 2003 and 2002 were \$17,296,508 and \$18,383,810, respectively, of which contract revenues accounted for \$16,740,905 and \$17,543,334, respectively. Revenues by segment for 2003 and 2002 were as follows:

	2003	2002
Research Division.....	\$6,206,123	\$6,951,114
Systems Division .....	6,561,372	7,602,336
Microelectronics Division .....	4,529,013	3,830,360
	<u>\$17,296,508</u>	<u>\$18,383,810</u>

The decrease in revenues for the year ended December 31, 2003 compared to the year ended December 31, 2002 was primarily attributable to a decrease in revenues of the Research and Systems Divisions related to the DARPA contract of \$2,477,779 due to lower funding received on that contract. This decrease was offset in part by an increase in contract revenues at the Microelectronics Division of \$751,732, related to the receipt of approximately \$5 million in contracts from GDAIS in February 2003. For the year ended December 31, 2003 compared to the year ended December 31, 2002, there was also an increase in the Navair Contract revenues of \$984,522 at the Systems Division.

*Losses.* The net loss for the years ended December 31, 2003 and 2002 was \$(3,278,463) and \$(11,500,693), respectively. The loss from continuing operations for those same periods was \$(2,086,714) and \$(2,461,326), respectively, while the loss from operations for those same periods was \$(1,418,624) and \$(3,109,854), respectively. Included in the net loss for the years ended December 31, 2003 and 2002 is a loss from operations of discontinued operations (see below) of \$(1,396,749) and \$(5,839,367), respectively, and a gain (loss) on disposal of discontinued operations for the years ending December 31, 2003 and 2002 of \$205,000 and \$(3,200,000), respectively. Included in the net loss and loss from operations for the year ended December 31, 2003 are asset writedowns of \$346,060. Included in the net loss and loss from operations for the year ended December 31, 2002 is a special item of \$1,074,324 for charges recorded related to the retirement benefits in August 2002 of the Company's Chairman and Chief Executive Officer. Also, included in the net loss and loss from continuing operations for the year ended December 31, 2002 is a gain on the sale of marketable securities of \$1,349,721. Included in the net loss and loss from continuing operations for the year ended December 31, 2002 is a deferred income tax expense of \$484,423 resulting from an increase in the valuation allowance against the Company's deferred tax assets.

*Gross Margins.* Gross margins for the fiscal years ended December 31, 2003 and 2002 were 22.9% and 18.6%, respectively. The Company's margins are low because the majority of its revenues are from government contracts or subcontracts, which inherently generate lower margins than product revenues. The increase in the gross margin in 2003 compared to the prior year was primarily due to higher gross margins on the DARPA contract (33.7% and 26.5% in 2003 and 2002, respectively) due in part to a higher utilization of direct labor, a \$245,000 reserve recorded in 2002 for a contract at the Systems Division related to estimated cost overruns on that contract and higher gross margins on the Microelectronics Division contract with GDAIS (19.9% and 17.1% in 2003 and 2002, respectively) due to lower material costs in 2003 offset in part by a contract cost overrun of \$70,000 in 2003. The majority of the Company's revenues in 2004 will be derived from government contracts or subcontracts, so gross margins are expected to continue at similar levels as they were in 2003.

*Selling, General and Administrative (SG&A).* SG&A expenses for the fiscal years ended December 31, 2003 and 2002 were \$4,508,152 and \$4,594,716, respectively. Decreases in SG&A expenses in 2003 at the Systems Division of \$260,284 primarily due to staff and other cost reductions were offset in part by higher ASIC marketing costs of approximately \$119,000 and ISO 9000 costs of approximately \$64,000 incurred by the Microelectronics Division.

*Research, Development and Engineering Program (RD&E).* The Company's RD&E consists of two types: customer-funded RD&E (U.S. government and other companies) and company-funded RD&E. Both types of RD&E costs are expensed when incurred. Customer-funded RD&E costs incurred, included in "Contract Costs of Sales", totaled \$9,606,745 and \$11,528,915 for the fiscal years ended December 31, 2003 and 2002, respectively. The decrease in customer-funded RD&E expenditures for 2003 is related to a decrease in contract costs of \$2,369,387 incurred related to the DARPA contract and decreases in two contracts at the Systems Division of \$399,972 offset in part by an increase in contract costs of \$847,189 related to the Navair Contract.

Company-funded RD&E costs are included in "Operating Expenses" and totaled \$529,039 and \$854,306 for the fiscal years ended December 31, 2003 and 2002, respectively. Hence, total RD&E expenditures for those two years were \$10,135,784 and \$12,383,221, respectively. Total RD&E expenditures as a percentage of sales were 58.6% and 67.4% for the years ended December 31, 2003 and 2002, respectively. These expenditures are primarily related to the continued development of CPL systems for the semiconductor industry and the continued development of a high efficiency EUV generation system for advanced semiconductor lithography. In February 2004, the Company received \$8 million in financing from Laurus. JMAR intends to use these funds to initiate and advance new product research and development efforts and to acquire or license products, technologies or businesses. Accordingly, the Company expects company-funded RD&E to increase significantly in 2004.

*Discontinued Operations.* The loss from operations of discontinued operations of \$1,396,749 for the year ended December 31, 2003 consists of \$457,413 related to the standard semiconductor products business and \$939,336 related to the precision equipment business. The loss from operations of discontinued operations of \$5,839,367 for the year ended December 31, 2002 consists of \$1,856,381 related to the standard semiconductor products business and \$3,982,986 related to the precision equipment business. In July 2003, the Company sold JMAR Precision Systems, Inc. ("JPSI") to several private investors. The results of operations of the precision equipment business for 2003 through the sale date are reported in discontinued operations in 2003. The decrease in the loss of operations of discontinued operations is primarily due to the shutdown of the operations of the semiconductor products business in 2002 and the sale of JPSI in July 2003. The gain (loss) on disposal of discontinued operations of \$205,000 and \$(3,200,000) for the years ended December 31, 2003 and 2002, respectively, relates to the sale of JPSI.

Prior to December 31, 2001, as the level of business expected from the standard semiconductor products business did not materialize, the Company decided to take action to sublease the Irvine facility and move the standard products business into a smaller facility and has recorded a reserve against the Irvine facility lease. The Company does not yet have a subtenant for this facility. The lease provides for rent and related expenses of approximately \$36,000 per month through August 2005.

*Gain on Sale of Marketable Securities.* The gain on sale of marketable securities of \$1,349,721 for 2002 is related to the sale of 545,500 shares of the Company's investment in Bede plc in January 2002.

*Interest and Other Expense.* Interest and other expense for the years ended December 31, 2003 and 2002 was \$731,315 and \$284,174, respectively. Interest and other expense are higher for 2003 versus 2002 primarily due to the financing transactions the Company entered into in 2003 (see "Consolidated Liquidity and Financial Condition" below). Included in interest expense for the year ended December 31, 2003 is \$289,063 related to the beneficial conversion feature associated with the securities issued in these financing transactions. Also, interest expense for the years ended December 31, 2003 and 2002 includes \$171,358 and \$48,159, respectively, related to the discounted liability for the retirement in August 2002 of the Company's former Chairman and Chief Executive Officer.

*Preferred Stock Dividends.* Included in the loss applicable to common stock in the Statement of Operations for the year ended December 31, 2003 are preferred stock dividends of \$942,903. This amount represents \$78,479 of preferred stock dividends paid or payable in cash and \$864,424 related to the discount representing the beneficial conversion feature of the redeemable convertible preferred stock and the fair value of warrants issued in connection with the preferred stock.

*Year Ended December 31, 2002 Compared to Year Ended December 31, 2001*

*Revenues.* Total revenues for the years ended December 31, 2002 and 2001 were \$18,383,810 and \$12,903,811, respectively, of which contract revenues accounted for \$17,543,334 and \$12,033,271, respectively. Revenues by segment for 2002 and 2001 were as follows:

	2002	2001
Research Division .....	\$6,951,114	\$7,701,840
Systems Division .....	7,602,336	2,151,154
Microelectronics Division .....	3,830,360	3,050,817
	<u>\$18,383,810</u>	<u>\$12,903,811</u>

The increase in revenues for the year ended December 31, 2002 compared to the prior year was primarily attributable to other contract revenues from the Systems Division of \$3,779,133 along with an increase in DARPA contract revenue of \$921,323. The Systems Division was acquired in August, 2001. In 2002, the Systems Division received the Navair Contract discussed above, which accounted for \$2,435,168 in revenues in 2002.

*Losses.* The net loss for the years ended December 31, 2002 and 2001 was \$(11,500,693) and \$(14,701,534), respectively. The loss from continuing operations for those same periods was \$(2,461,326) and \$(156,554), respectively, while the loss from operations for those same periods was \$(3,109,854) and \$(1,490,159), respectively. Included in the net loss for

the years ended December 31, 2002 and 2001 is a loss from operations of discontinued operations of \$(5,839,367) and \$(14,544,980), respectively, and a loss on disposal of discontinued operations for the year ending December 31, 2002 of \$(3,200,000). Included in the net loss and loss from operations for the year ended December 31, 2001 are asset writedowns of \$226,899. Included in the net loss and loss from operations for the year ended December 31, 2002 is a special item of \$1,074,324 for charges recorded related to the retirement benefits in August 2002 of the Company's Chairman and Chief Executive Officer. Also, included in the net loss and loss from continuing operations for the years ended December 31, 2002 and 2001 is a gain on the sale of marketable securities of \$1,349,721 and \$1,189,273, respectively. Included in the net loss and loss from continuing operations for the year ended December 31, 2002 is a deferred income tax expense of \$484,423 resulting from an increase in the valuation allowance against the Company's deferred tax assets.

*Gross Margins.* Gross margins for the fiscal years ended December 31, 2002 and 2001 were 18.6% and 27.1%, respectively. The decrease in the gross margin in 2002 compared to 2001 was primarily due to the \$245,000 reserve mentioned in the Gross Margin section above and due to the Navair Contract having lower margins due to its high subcontract component, and the Company's absorption of some of the costs incurred due to limited funding on that contract.

*Selling, General and Administrative (SG&A).* SG&A expenses for the fiscal years ended December 31, 2002 and 2001 were \$4,594,716 and \$4,159,523, respectively. The increase in SG&A expenses in 2002 compared to 2001 is primarily due to an increase of approximately \$1,090,693 related to the Systems Division, which the Company acquired in August 2001 offset by lower legal costs of approximately \$325,000 in 2002, a reduction of approximately \$138,000 at the Research Division primarily related to higher allocation of resources to research and development activities in 2002, and an overall reduction in SG&A costs at the Microelectronics Division of approximately \$129,000.

*Research, Development and Engineering Program (RD&E).* Customer-funded RD&E costs included in "Contract Costs of Sales," totaled \$11,528,915 and \$7,035,286 for the fiscal years ended December 31, 2002 and 2001, respectively. The increase in customer-funded RD&E expenditures for 2002 compared to 2001 is related to an increase of \$933,880 for the DARPA contract funding, and an increase in contract costs of \$3,559,749 incurred by the Systems Division (approximately \$2,346,000 of which is related to the Navair Contract) which was acquired in August 2001. Company-funded RD&E costs totaled \$854,306 and \$602,980 for the fiscal years ended December 31, 2002 and 2001, respectively. Hence, total RD&E expenditures for those two years were \$12,383,221 and \$7,638,266, respectively. Total RD&E expenditures as a percentage of sales were 67.4% and 59.2% for the years ended December 31, 2002 and 2001, respectively.

*Discontinued Operations.* The loss from operations of discontinued operations of \$5,839,367 for the year ended December 31, 2002 consists of \$1,856,381 related to the standard semiconductor products business and \$3,982,986 related to the precision equipment business. The loss from operations of discontinued operations of \$14,544,980 for the year ended December 31, 2001 consists of \$9,270,075 related to the standard semiconductor products business and \$5,274,905 related to the precision equipment business. The decrease in the loss of operations of discontinued operations is primarily due to the shutdown of the operations of the standard semiconductor product business in 2002. The loss on disposal of discontinued operations of \$3,200,000 for the year ended December 31, 2002 relates to the sale of JPSI.

*Gain on Sale of Marketable Securities.* The gain on sale of marketable securities of \$1,349,721 and \$1,189,273 for 2002 and 2001, respectively, is related to the sale of 545,500 shares and 500,000 shares, respectively, of the Company's investment in Bede plc in January 2002 and April 2001, respectively.

*Interest and Other Expense.* Interest and other expense for the years ended December 31, 2002 and 2001 was \$284,174 and \$107,950, respectively. Interest and other expense is higher for 2002 versus 2001 due to interest on the \$1.2 million notes issued to the former shareholders of SAL and higher average borrowings in 2002 of the Company's working capital line with Comerica Bank. Also, interest expense for the year ended December 31, 2002 includes \$48,159 related to the discounted liability for the retirement in August 2002 of the Company's former Chairman and Chief Executive Officer.

### **Liquidity and Financial Condition**

Cash and cash equivalents at December 31, 2003 was \$4,171,179. The increase in unrestricted cash and cash equivalents from 2002 to 2003 of \$1,924,915 resulted primarily from proceeds from the issuance of preferred and common stock of \$6,441,232 and the conversion of \$1,550,000 of restricted cash to unrestricted cash (due to the termination of the line of credit with Comerica Bank in March 2003) offset by cash used in continuing operations of \$3,579,238 primarily related to operating losses and a reduction in liabilities and cash used in discontinued operations of \$2,016,481. At December 31, 2003, the Company had working capital of \$2,427,166.

JMAR's operations will continue to use cash in 2004 for, among other requirements, 1) product research and development efforts and to acquire or license products, technologies or businesses; 2) temporary funding delays related to government contracts; 3) corporate costs, primarily related to the cost of being a public company; 4) facility costs for discontinued businesses; 5) preferred stock redemptions and dividends; and 6) other working capital needs. As a result of the financing activity discussed below, management believes that the Company has adequate resources to fund operations and working capital requirements at least through December 31, 2004. However, the Company has determined that it will require additional financing to complete or accelerate the development of some of its high value emerging new products, including its patented CPL systems for the manufacture of high-performance semiconductors. Working capital (deficit) as of December 31, 2003 and 2002 was \$2,427,166 and \$(780,117), respectively. The increase in working capital is primarily due to proceeds from the issuance of preferred stock of \$5.5 million and the conversion into common stock of \$1,173,000 of the Company's line of credit, offset in part by the classification as a current liability as of December 31, 2003 of \$1.2 million in notes owed to the former SAL noteholders due in February 2004 and the Company's losses. In February 2004, the Company repaid the full amount of the notes to the former SAL noteholders, plus accrued interest, by retiring a total of \$364,239 in notes and \$3,034 in accrued interest with the issuance of 118,121 shares of common stock valued at \$3.11 per share and repaying the remaining amount of \$835,761 in notes and accrued interest of \$6,961 with cash.

In March 2003, the Company entered into a Revolving Fixed Price Convertible Note ("Working Capital Line") with Laurus. The Working Capital Line allows the Company to borrow from time-to-time up to 85% of eligible accounts receivable of the Company to a maximum of \$3 million. Advances in excess of this formula are allowed, however, with the consent of Laurus. Laurus can convert any portion of the principal outstanding to common stock at a fixed price per share ("Conversion Price") any time the market price of the Company's common stock is in excess of the Conversion Price. The Company can convert a portion of the principal outstanding to common stock at the Conversion Price if the market price of the Company's common stock averages 118% of the Conversion Price or higher for 22 consecutive trading days. The initial terms of the Working Capital Line provided that after \$2 million of conversions into equity, the Conversion Price would be increased. The Conversion Price initially was \$.92, but was increased to \$2.85 in January 2004 after \$2 million of the Working Capital Line had been converted.

The interest rate on the Working Capital Line is equal to the prime rate (4% at December 31, 2003) plus 0.75 percent, subject to a floor of 5.00 percent. Accrued interest is payable monthly. The Working Capital Line requires that the Company's quick ratio, as defined, be 0.90 or higher. The quick ratio is defined as the sum of cash and accounts receivable divided by the sum of current liabilities, exclusive of current liabilities of discontinued operations. The Company's quick ratio was 1.52 at December 31, 2003. As of December 31, 2003, approximately \$1.3 million was outstanding under the Working Capital Line. The term of the Working Capital Line runs until March, 2006. The available borrowings under the Working Capital Line were approximately \$2.3 million at December 31, 2003, based on the amount of eligible accounts receivable at that date, with approximately \$941,000 unused at December 31, 2003.

In 2003 and 2004, the Company sold the following series of Preferred Stock to Laurus for cash:

Issuance Date	Series	Amount	Dividend	Conversion Price	Converted in 2003		Converted in 2004	
					Amount	Shares Issued	Amount	Shares Issued
March, 2003	A	\$1,000,000	8%	\$0.88	\$1,000,000	1,136,363	-	-
March, 2003	B	\$1,000,000	3%	\$0.88	\$1,000,000	1,136,364	-	-
September, 2003	C	\$1,500,000	8%	\$2.08	-	-	\$1,500,000	721,154
December, 2003	D	\$2,000,000	8%	\$1.56	-	-	\$936,000	600,000
January, 2004	E	\$1,500,000	8%	\$2.85	-	-	-	-
February, 2004	F	\$2,000,000	2%	\$3.11	-	-	-	-
February, 2004	G	\$2,000,000	2%	\$3.28	-	-	-	-
February, 2004	H	\$4,000,000	2%	\$3.47	-	-	-	-

The Series D, E, F, G and H Preferred Stock are redeemable in cash (or common stock if the closing market price of the Company's common stock is 118% of the Conversion Price or higher for the 11 trading days prior to the redemption date) at various amounts and dates (see below under "Commitments"), if not previously converted. Conversions to equity are offset against the required repayments. Except for the conversion price, the conversion terms of the Series D through H Preferred Stock are the same as the conversion terms of the Working Capital Line.

In connection with all of the above financing transactions with Laurus, the Company issued warrants to Laurus to purchase a total of 1,390,000 shares of common stock at prices ranging from \$1.058 to \$5.15. In addition, Laurus was granted the right to receive a warrant to purchase one share of common stock at \$3.13 for every \$20 of principal of the Working Capital Line converted to equity in excess of the first \$2 million up to a total of 50,000 shares.

The shares of common stock issuable to Laurus under all of the preferred stock and warrants described above have been included in registration statements declared effective by the Securities and Exchange Commission.

In February, 2003, under a Shelf Registration Statement, the Company sold 100,000 shares of its common stock and a warrant for 20,000 shares, exercisable at \$1.25 per share, for gross proceeds of \$100,000.

The Company's stockholders' equity was \$5,277,800 as of December 31, 2003. In May, 2003, the Company transferred to the Nasdaq SmallCap Market, where it is required to maintain no less than \$2.5 million of stockholders' equity to retain its listing. Continued losses without increases in equity would cause the Company to fall below this NASDAQ requirement, which would require it to come into compliance or face delisting. The delisting of the Company's stock could adversely affect its ability to raise funds in the future. The Company believes that it has

available to it several potential sources of capital to meet NASDAQ listing standards, particularly the above-described financings.

In February 2004 the Company received approximately \$3.5 million in additional contracts from General Dynamics. In addition, JMAR expects to receive approximately \$7 million in additional CPL contract funding from DARPA and another \$2.4 million in funds from NAVAIR.

### Commitments

Future minimum annual commitments under bank and other debt agreements, non-cancellable operating leases (net of subleases) and post-employment benefits as of December 31, 2003 are as follows (unaudited):

	2004	2005	2006	2007	2008	Total
Debt .....	\$1,200,000	\$ -	\$ -	\$ -	\$ -	\$1,200,000
Operating leases .....	915,010	496,277	39,970	-	-	1,451,257
Post-employment benefits .....	211,172	211,172	211,172	211,172	138,074	982,762
	<u>\$2,326,182</u>	<u>\$707,449</u>	<u>\$251,142</u>	<u>\$211,172</u>	<u>\$138,074</u>	<u>\$3,634,019</u>

The Debt consisted of convertible notes ("SAL Notes") issued in 2001 to the former shareholders of SAL. The SAL Notes were repaid in February 2004, plus accrued interest, by retiring a total of \$364,239 in notes and \$3,034 in accrued interest with the issuance of 118,121 shares of common stock valued at \$3.11 per share and repaying the remaining amount of \$835,761 in notes and accrued interest of \$6,961 with cash. The operating leases are primarily for office facilities. The post-employment benefits are presented at the amount to be paid, while the liability has been discounted for financial reporting purposes and are retirement benefits for the Company's prior Chairman and Chief Executive Officer who retired in August 2002.

Excluded from the above table are redemption obligations under Series C, D, E, F, G and H Preferred Stock in the gross amount of \$13 million. The Series E, F, G, and H Preferred Stock was issued subsequent to December 31, 2003. Also excluded from the above table is the Company's \$3 million Working Capital Line. The gross amount of the Working Capital Line was approximately \$1.3 million at December 31, 2003. If not previously converted, the Series C through H Preferred Stock and Working Capital Line are redeemable or payable as follows:

Description	Amount	Converted in 2004	Scheduled Redemptions				Total
			2004	2005	2006	2007	
Series C Preferred	\$1.5M	\$1,500,000	\$ -	\$ -	\$ -	\$ -	\$ -
Series D Preferred	\$2.0M	\$936,000	-	1,064,000	-	-	1,064,000
Series E Preferred	\$1.5M	-	416,667	1,000,000	83,333	-	1,500,000
Series F Preferred	\$2.0M	-	-	450,000	450,000	1,100,000	2,000,000
Series G Preferred	\$2.0M	-	-	450,000	450,000	1,100,000	2,000,000
Series H Preferred	\$4.0M	-	-	900,000	900,000	2,200,000	4,000,000
Working Capital Line	\$1.3M	1,254,500	64,708	-	-	-	64,708
			<u>\$481,375</u>	<u>\$3,864,000</u>	<u>\$1,883,333</u>	<u>\$4,400,000</u>	<u>\$10,628,708</u>

Under the Merger Agreement entered into with the former shareholders and creditors of SAL, Inc. (now operating as the Company's Systems Division), those persons could earn up to three contingent earnout payments upon the satisfaction of three earnout conditions. For the first earnout, the SAL creditors were eligible to receive \$500,000 in convertible notes upon the satisfaction of a "stepper limited" throughput test (without the CPL light source) by June 30, 2002.

This requirement was not met by the June 30, 2002 deadline, and, therefore, the Company did not have to issue the \$500,000 in convertible notes. For the second earnout, the SAL shareholders can earn \$500,000 in convertible notes upon the satisfaction of a lithography demonstration milestone. This milestone must be met 90 days after the Company's CPL beta source is integrated with the stepper at the Systems Division in Vermont and has satisfied certain negotiated source performance criteria. In successful tests of the integrated system in March 2004, the source demonstrated improved reliability and performance; however, the specific source performance criteria specified in the Merger Agreement have not yet been met. If issued, the \$500,000 in Convertible Notes will be due 24 months after issuance and will have a conversion price equal to 120% of the average of the closing prices for the ten days prior to issuance.

The third earnout condition can result in payment of up to 354,736 JMAR shares and up to \$1.2 million in convertible notes upon receipt by the Company of a qualifying order for a CPL system from a commercial customer and delivery to the customer. Under the Merger Agreement, the deadline for receipt of this order is 180 days after the CPL source is integrated with the stepper at the Systems Division in Vermont and has satisfied the above mentioned source performance criteria. If earned, this earnout payment is payable 30 days after delivery and acceptance of the system by the customer.

At December 31, 2003, the Company had approximately \$57 million of Federal net operating loss carryforwards subject to certain annual limitations, which expire from 2004 through 2023. To the extent the Company has taxable income in the future, these carryforwards may be used by the Company to reduce its cash outlay for taxes.

### **Critical Accounting Policies and Estimates**

Management's Discussion and Analysis of Financial Condition and Results of Operations discusses JMAR's consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the 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.

On an ongoing basis, management evaluates its estimates and judgments, including those related to revenues, allowances for doubtful accounts, inventory reserves, goodwill and intangible assets, deferred taxes, litigation accrual, warranty reserve and stock based compensation. Management bases its estimates and judgments on historical experience and on various other factors that are believed 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. Actual results may differ from these estimates under different assumptions or conditions. Management believes the following critical accounting policies, among others, affect its more significant judgments and estimates used in the preparation of its consolidated financial statements.

### **Revenues**

Product revenues are recognized when the product is shipped FOB shipping point, all risks of ownership have passed to the customer and the Company has performed all obligations in accordance with Staff Accounting Bulletin No 101, "Revenue Recognition in Financial Statements" ("SAB No. 101").

Contract revenues are recognized based on the percentage of completion method wherein income is recognized pro-rata over the life of the contract based on the ratio of total incurred costs to anticipated total costs of the contract. The program manager prepares a statement of work, schedule and budget for each contract. At least monthly, actual costs are compared to budget and technical progress is compared to the planned schedule. The Company prepares an estimate of costs to complete for each contract at least quarterly. Estimated losses based on this review are fully charged to operations when identified. Actual costs could differ from these estimated costs.

### **Goodwill and Intangible Assets**

In accordance with SFAS No. 142, "Goodwill and Other Intangible Assets," effective January 1, 2002, the Company has established reporting units and applies a two-step fair value approach to evaluating goodwill impairment, using at least an annual assessment. The Company compares the fair value of the business unit with the carrying amount of the assets associated with the business unit. The fair value of each business unit is determined using a risk adjusted discount rate to compute a net present value of estimated future cash flows and a consideration of market capitalization of the Company. The second step measures the amount of the impairment, if any. Patent costs capitalized are amortized over ten years, and other intangible assets are amortized over not more than five years. Patent costs capitalized are reviewed quarterly for realizability.

### **Beneficial Conversion Feature**

In accordance with Financial Accounting Standards Board (FASB) Emerging Issues Task Force Issue (EITF) No. 98-5 and FASB EITF No. 00-27, the Company records a beneficial conversion feature (BCF) related to the issuance of convertible preferred stock and convertible debt that have conversion features at fixed rates that are in-the-money when issued and records the fair value of warrants issued with those instruments. The BCF for the convertible instruments and fair value of warrants is recognized and measured by allocating a portion of the proceeds to additional paid-in capital and as a discount to the convertible instrument equal to the intrinsic value of the conversion features. Such amount is calculated at the issuance date as the difference between the conversion price and the relative fair value of the common stock and warrants into which the security is convertible or exercisable.

For convertible preferred stock and related warrants, the recorded discount is recognized as a dividend from the date of issuance to the earlier of the redemption dates or the conversion dates using the effective yield method. For convertible debt and related warrants, the recorded discount is recognized as interest expense using the effective yield method based on the life of the debt, over the period from the issuance date to the conversion dates.

### **Deferred Taxes**

JMAR records a valuation allowance to reduce its deferred tax assets to the amount that management believes is more likely than not to be realized in the foreseeable future, based on estimates of foreseeable future taxable income and taking into consideration historical operating information. In the event management estimates that it will not be able to realize all or part of its net deferred tax assets in the foreseeable future, a valuation allowance is recorded through a charge to income in the period such determination is made. Likewise, should management estimate that it will be able to realize its deferred tax assets in the future in excess of its net recorded asset, an adjustment to reduce the valuation allowance would increase income in the period such determination is made.

## **Litigation Accrual**

Estimated amounts for litigation reserves that are probable and can be reasonably estimated are recorded as liabilities. Estimates are based upon the facts and circumstances of each case and, in part, on advice from legal counsel regarding probable outcomes, if determinable. Management reviews its estimates on a quarterly basis.

## **Stock-Based Compensation Plans**

The Company accounts for its stock option and warrant plans under APB Opinion No. 25, using the intrinsic value method, under which no compensation cost has been recognized for issuances to employees. Options and warrants issued to non-employees (other than directors) are accounted for based on the fair value of the equity instrument issued. The fair value is calculated based on the Black-Scholes pricing model. The resulting value is amortized over the service period.

## **Factors That May Affect Future Results**

Certain statements contained in this Form 10-K which are not related to historical results, including statements regarding JMAR's future sales or profit growth, competitive position or products, projects or processes currently under development, the ability of the Company to successfully introduce new products into the commercial marketplace or to apply those products, projects or processes to alternative applications are forward-looking statements. These forward-looking statements are based on certain assumptions and are subject to certain risks and uncertainties that could cause actual future performance and results to differ materially from those stated or implied in the forward-looking statements.

In addition to the several risks and uncertainties described in the Business Section and in this Management's Discussion and Analysis of Financial Condition and Results of Operations, additional risks and uncertainties include the following:

- the possible lack of funds to continue development and commercialization of our CPL products due to delays in funding or cancellation of government contracts;
- possible delays in securing, or inability to secure other financing, whether from the public or private debt or equity markets or from commercial lenders or otherwise;
- the possible inability to develop, manufacture and market, in a timely manner, innovative products that meet the needs of new customers and new industries, which will require the Company to increase its product engineering, manufacturing and sales and marketing infrastructure;
- the possible inability to achieve the levels of power and reliability in its CPL source required to enter the GaAs, contact hole and mainstream silicon markets, despite the expenditure of additional significant funds;
- the possible delay in the near-term recovery of the GaAs chip market resulting in further delays in the demand for the increased throughput offered by the Company's CPL system;
- despite substantial technical, marketing and sales efforts and the expenditure of significant funds by the Company, the failure to convince semiconductor manufacturers to adopt the Company's CPL technology over other existing and possible future alternative lithography technologies, including the use of electron beam systems for

GaAs chip manufacturing, 193 immersion lithography for silicon contact hole processing and EUV lithography for future mainstream silicon manufacturing;

- the possible failure of the Company's other new product development efforts, which can involve lengthy and capital intensive programs that are subject to many unforeseen risks, delays, problems and costs and uncertainties as to the market's demand for such new products;
- the possible failure to form alliances with stepper, mask and resist companies to develop the appropriate infrastructure to support the Company's CPL lithography technology;
- the possible lack of availability of critical components from third party suppliers, including laser diodes, x-ray collimators, x-ray masks and photo-resist, or the inability to obtain such components at acceptable costs;
- possible fluctuations in margins, or the failure to lower manufacturing costs sufficiently to achieve acceptable margins;
- the possible failure of pending patents to be issued and uncertainties as to the breadth or degree of protection of existing or future patents in the fields of x-ray lithography and EUV light sources; and
- other risks detailed in the Company's other filings with the Securities and Exchange Commission.

## REPORT OF INDEPENDENT CERTIFIED PUBLIC ACCOUNTANTS

Board of Directors and Shareholders  
JMAR Technologies, Inc.:

We have audited the accompanying consolidated balance sheets of JMAR Technologies, Inc. (a Delaware corporation) as of December 31, 2003 and 2002, and the related consolidated statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2003. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the 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. 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 financial statements referred to above present fairly, in all material respects, the consolidated financial position of JMAR Technologies, Inc. as of December 31, 2003 and 2002, and the consolidated results of its operations and its consolidated cash flows for each of the three years in the period ended December 31, 2003, in conformity with accounting principles generally accepted in the United States of America.

GRANT THORNTON LLP

Irvine, California  
March 11, 2004

**JMAR TECHNOLOGIES, INC.**  
**CONSOLIDATED BALANCE SHEETS**  
**As of December 31, 2003 and 2002**

<u>ASSETS</u>	<u>2003</u>	<u>2002</u>
Current Assets:		
Cash and cash equivalents .....	\$4,171,179	\$2,246,264
Restricted cash .....	-	1,550,000
Accounts receivable, net .....	2,802,025	2,894,393
Inventories .....	307,152	389,467
Current assets held for sale .....	-	1,349,758
Prepaid expenses and other .....	695,170	524,863
Total current assets .....	<u>7,975,526</u>	<u>8,954,745</u>
Property and equipment, net .....	791,773	1,248,198
Intangible assets, net .....	684,041	930,056
Other assets .....	250,936	197,754
Goodwill, net .....	<u>3,790,907</u>	<u>3,790,907</u>
<b>TOTAL ASSETS .....</b>	<b><u>\$13,493,183</u></b>	<b><u>\$15,121,660</u></b>
<u>LIABILITIES AND STOCKHOLDERS' EQUITY</u>		
Current Liabilities:		
Accounts payable .....	\$1,102,873	\$1,864,405
Accrued liabilities .....	561,716	1,558,307
Accrued payroll and related costs .....	582,357	797,987
Customer deposits .....	-	832,607
Line of credit and notes payable, net of discount .....	2,340,431	1,556,405
Current liabilities of discontinued operations, including notes payable .....	960,983	3,125,151
Total current liabilities .....	<u>5,548,360</u>	<u>9,734,862</u>
Notes payable and other long-term liabilities, net of current portion .....	449,873	1,708,804
Redeemable convertible preferred stock, 350,000 shares issued and outstanding as of December 31, 2003 .....	2,217,150	-
Commitments and contingencies .....	-	-
Stockholders' equity:		
Preferred stock, \$.01 par value; 5,000,000 shares authorized; 350,000 issued and outstanding as of December 31, 2003 included in redeemable convertible preferred stock above, and none issued and outstanding as of December 31, 2002 .....	-	-
Common stock, \$.01 par value; 40,000,000 shares authorized; Issued and outstanding 27,654,845 shares as of December 31, 2003 and 23,852,024 shares as of December 31, 2002 .....	276,548	238,520
Additional paid-in capital .....	62,420,135	56,636,991
Accumulated deficit .....	(57,418,883)	(53,197,517)
Total stockholders' equity .....	<u>5,277,800</u>	<u>3,677,994</u>
<b>TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY .....</b>	<b><u>\$13,493,183</u></b>	<b><u>\$15,121,660</u></b>

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

**JMAR TECHNOLOGIES, INC.**  
**CONSOLIDATED STATEMENTS OF OPERATIONS**  
For the Years Ended December 31, 2003, 2002 and 2001

	2003	2002	2001
Contract sales.....	\$16,740,905	\$17,543,334	\$12,033,271
Product sales.....	555,603	840,476	870,540
Total revenues.....	<u>17,296,508</u>	<u>18,383,810</u>	<u>12,903,811</u>
Contract costs of sales.....	13,055,237	14,548,712	9,092,586
Product costs of sales.....	276,644	421,606	311,982
Total costs of sales.....	<u>13,331,881</u>	<u>14,970,318</u>	<u>9,404,568</u>
Gross profit.....	<u>3,964,627</u>	<u>3,413,492</u>	<u>3,499,243</u>
Operating expenses:			
Selling, general and administrative.....	4,508,152	4,594,716	4,159,523
Research and development.....	529,039	854,306	602,980
Asset writedowns and special item.....	346,060	1,074,324	226,899
Total operating expenses.....	<u>5,383,251</u>	<u>6,523,346</u>	<u>4,989,402</u>
Loss from operations.....	(1,418,624)	(3,109,854)	(1,490,159)
Realized gain on sale of marketable securities.....	-	1,349,721	1,189,273
Interest and other income.....	63,225	67,404	252,282
Interest and other expense.....	(731,315)	(284,174)	(107,950)
Loss from continuing operations before income taxes.....	(2,086,714)	(1,976,903)	(156,554)
Income tax expense.....	-	(484,423)	-
Loss from continuing operations.....	<u>(2,086,714)</u>	<u>(2,461,326)</u>	<u>(156,554)</u>
Discontinued operations:			
Loss from operations of discontinued operations.....	(1,396,749)	(5,839,367)	(14,544,980)
Gain (loss) on disposal of discontinued operations.....	205,000	(3,200,000)	-
Net loss.....	<u>(3,278,463)</u>	<u>(11,500,693)</u>	<u>(14,701,534)</u>
Deemed preferred stock dividends.....	(942,903)	-	-
Loss applicable to common stock.....	<u><u>\$(4,221,366)</u></u>	<u><u>\$(11,500,693)</u></u>	<u><u>\$(14,701,534)</u></u>
Basic and diluted loss per share:			
Loss per share from continuing operations.....	\$(0.12)	\$(0.11)	\$(0.01)
Loss per share from discontinued operations.....	(0.04)	(0.38)	(0.64)
Basic and diluted loss per share applicable to common stock.....	<u><u>\$(0.16)</u></u>	<u><u>\$(0.49)</u></u>	<u><u>\$(0.65)</u></u>
Shares used in computation of basic and diluted loss per share.....	<u>25,618,296</u>	<u>23,618,169</u>	<u>22,484,905</u>

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

**JMAR TECHNOLOGIES, INC.**  
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**  
**For the Years Ended December 31, 2003, 2002 and 2001**

	2003	2002	2001
Net loss.....	\$(3,278,463)	\$(11,500,693)	\$(14,701,534)
Other comprehensive income (loss):			
Holding gains (losses).....	-	(75,143)	24,797
Reclassification adjustment for gains included in net loss .....	-	(1,349,721)	(1,189,273)
Other comprehensive loss.....	-	(1,424,864)	(1,164,476)
Comprehensive loss.....	\$(3,278,463)	\$(12,925,557)	\$(15,866,010)

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

**JMAR TECHNOLOGIES, INC.**  
**CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY**  
**For the Years Ended December 31, 2003, 2002 and 2001**

	Common Stock		Preferred Stock		Additional Paid-in	Accumulated Other Comprehensive Income	Accumulated Deficit	Total Equity
	Shares	Amount	Shares	Amount				
Balance, December 31, 2000 .....	22,224,650	\$222,247	-	\$ -	\$52,628,372	\$2,589,340	\$(26,995,290)	\$28,444,669
Stock issued upon exercise of warrants and options.....	26,013	260	-	-	44,652	-	-	44,912
Issuance of stock for services.....	1,571	16	-	-	4,884	-	-	4,900
Issuance of stock related to acquisition of Continuum Engineering.....	807	8	-	-	3,808	-	-	3,816
Repurchase of stock .....	(18,700)	(187)	-	-	(55,456)	-	-	(55,643)
Change in unrealized gain on marketable securities .....	-	-	-	-	-	(1,164,476)	-	(1,164,476)
Issuance of stock related to legal settlement.....	3,000	30	-	-	10,316	-	-	10,346
Issuance of stock related to acquisition of SAL .....	603,051	6,030	-	-	1,706,635	-	-	1,712,665
Net loss .....	-	-	-	-	-	-	(14,701,534)	(14,701,534)
Balance, December 31, 2001 .....	22,840,392	228,404	-	-	54,343,211	1,424,864	(41,696,824)	14,299,655
Issuance of stock for services.....	11,632	116	-	-	11,053	-	-	11,169
Change in unrealized gain on marketable securities .....	-	-	-	-	-	(1,424,864)	-	(1,424,864)
Issuance of common stock and warrants .....	1,000,000	10,000	-	-	1,769,920	-	-	1,779,920
Modification to existing option and warrant terms .....	-	-	-	-	512,807	-	-	512,807
Net loss .....	-	-	-	-	-	-	(11,500,693)	(11,500,693)
Balance, December 31, 2002 .....	23,852,024	238,520	-	-	56,636,991	-	(53,197,517)	3,677,994
Issuance of stock and warrants for services.....	11,026	110	-	-	42,512	-	-	42,622
Issuance of common stock from preferred stock conversions (net of costs of \$46,267) .....	2,272,727	22,727	-	-	1,931,006	-	-	1,953,733
Issuance of common stock from working capital line conversions .....	1,275,000	12,750	-	-	1,160,250	-	-	1,173,000
Beneficial conversion feature of preferred stock and working capital line, and fair value of warrants .....	-	-	-	-	2,262,240	-	-	2,262,240
Issuance of common stock and warrants for cash.....	100,000	1,000	-	-	99,000	-	-	100,000
Stock issued upon exercise of warrant .....	144,068	1,441	-	-	288,136	-	-	289,577
Preferred stock dividends .....	-	-	-	-	-	-	(942,903)	(942,903)
Net loss .....	-	-	-	-	-	-	(3,278,463)	(3,278,463)
Balance, December 31, 2003 .....	<u>27,654,845</u>	<u>\$ 276,548</u>	<u>-</u>	<u>\$ -</u>	<u>\$62,420,135</u>	<u>\$ -</u>	<u>\$(57,418,883)</u>	<u>\$5,277,800</u>

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

**JMAR TECHNOLOGIES, INC.**  
**CONSOLIDATED STATEMENTS OF CASH FLOWS**  
**For the Years Ended December 31, 2003, 2002 and 2001**

	2003	2002	2001
Cash flows from operating activities:			
Loss from continuing operations .....	\$(2,086,714)	\$(2,461,326)	\$(156,554)
Adjustments to reconcile loss from continuing operations to net cash provided by (used in) continuing operating activities:			
Depreciation, amortization and debt discount .....	938,718	777,317	478,042
Services received in exchange for common stock or warrants .....	42,622	11,169	15,246
Gain on sale of marketable securities .....	-	(1,349,721)	(1,189,273)
Asset writedowns and special item .....	346,060	512,807	226,899
Change in assets and liabilities:			
Accounts receivable, net .....	92,368	1,307,241	(425,747)
Inventories .....	82,315	(94,983)	(9,908)
Prepaid expenses and other .....	(80,051)	(93,534)	(44,970)
Other assets .....	(53,182)	484,423	(86,450)
Customer deposits .....	(832,607)	(647,779)	1,480,386
Accounts payable and accrued liabilities .....	(2,028,767)	1,078,871	344,091
Net cash provided by (used in) continuing operations operating activities .....	(3,579,238)	(475,515)	631,762
Loss from discontinued operations .....	(1,191,749)	(9,039,367)	(14,544,980)
Changes in net assets and liabilities of discontinued operations .....	(824,732)	5,143,770	10,474,627
Net cash used in discontinued operations .....	(2,016,481)	(3,895,597)	(4,070,353)
Net cash used in operating activities .....	(5,595,719)	(4,371,112)	(3,438,591)
Cash flows from investing activities:			
Proceeds from sale of marketable securities .....	-	1,399,746	1,207,923
Capital expenditures .....	(123,393)	(393,564)	(394,255)
Intangible assets, other assets and goodwill .....	(272,304)	(204,157)	(128,872)
Payments received on notes receivable .....	-	-	7,738
Payment for purchase of JSAL, net of cash acquired .....	-	-	(1,112,309)
Net cash provided by (used in) investing activities .....	(395,697)	802,025	(419,775)
Cash flows from financing activities:			
Net proceeds from the issuance of preferred and common stock .....	6,441,232	1,779,920	-
Net borrowings (payments) under line of credit .....	(285,999)	(1,450,000)	1,900,000
(Increase) decrease in restricted cash .....	1,550,000	1,450,000	(3,000,000)
Cash payments of preferred stock dividends .....	(78,479)	-	-
Payments of notes payable and other long-term liabilities .....	-	(41,463)	(1,386)
Increase in notes payable and other long-term liabilities .....	-	-	35,000
Repurchases of stock .....	-	-	(55,643)
Net proceeds from the exercise of options and warrants .....	289,577	-	44,912
Net cash provided by (used in) financing activities .....	7,916,331	1,738,457	(1,077,117)
Net increase (decrease) in cash and cash equivalents .....	1,924,915	(1,830,630)	(4,935,483)
Cash and cash equivalents, beginning of period .....	2,246,264	4,076,894	9,012,377
Cash and cash equivalents, end of period .....	\$4,171,179	\$2,246,264	\$4,076,894
Cash paid for interest .....	\$314,218	\$183,466	\$106,176

**SUPPLEMENTAL DISCLOSURE OF NON-CASH ACTIVITY:** On December 7, 1998, the Company acquired 100% of the outstanding common stock of Continuum Engineering, Inc. As consideration for the acquisition, the Company issued an aggregate of 92,160 shares of its common stock and an additional 807 (\$3,816) earn-out shares were issued in 2001 (see Note 3). During the year ended December 31, 2003, the holder of Series A and B Convertible Preferred Stock converted \$2 million of the preferred stock into 2,272,727 shares of common stock of the Company (see Note 11). In addition, during the year ended December 31, 2003, \$1,173,000 of the Company's working capital line of credit was converted into 1,275,000 shares of common stock of the Company (see Note 8). In 2003, the Company recorded \$864,424 related to the discount representing the beneficial conversion feature of the redeemable convertible preferred stock and the fair value of warrants issued in connection with the preferred stock (see Note 11).

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

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**December 31, 2003 and 2002**

**1. Description of the Company**

The accompanying consolidated financial statements include the accounts of JMAR Technologies, Inc. (the "Company" or "JMAR") and its subsidiaries. All significant intercompany balances and transactions have been eliminated in consolidation.

JMAR Technologies, Inc. develops, manufactures, and supports advanced laser, automated alignment and positioning, and sensor systems for applications in semiconductor, biotech, and homeland security and nanotechnology markets. The U.S. Department of Defense is the principal source of funds for the Company's Collimated Plasma Lithography (CPL) light source, X-ray stepper systems, and X-ray mask research and development programs. JMAR also provides X-ray steppers and services to the University of Wisconsin's Center for Nanotechnology, to BAE Systems in New Hampshire, and to others. In addition to the development of nanolithography tools, JMAR provides semiconductor fabrication process integration and maintenance support to the Department of Defense's Defense Microelectronics Activity in Sacramento, California.

In the first quarter of 2002, the Company decided to discontinue the standard semiconductor products business and shift more of its resources to accelerate the market entry of its CPL products. Also, in furtherance of its efforts to focus its resources on its CPL business, during the later half of 2002, the Company concluded that its precision equipment business did not fit with the strategic direction of the Company's CPL business area and that the markets for that business' products would continue to be slow in the near term. Therefore, in December, 2002, the Company decided to initiate the process of selling the precision equipment business and, in July 2003, the Company completed the sale of that business.

The standard semiconductor products business and the precision equipment business have been accounted for in the accompanying consolidated financial statements as discontinued operations (see Note 9).

**2. Summary of Significant Accounting Policies**

*a. Cash and Cash Equivalents*

The Company defines cash and cash equivalents to include cash on hand and cash invested in short-term securities that have original maturities of less than 90 days. Restricted cash at December 31, 2002 includes \$1,550,000 as compensating balance for the Company's line of credit with Comerica Bank which was terminated in March 2003 (see Note 8).

*b. Fair Value of Financial Instruments*

The carrying value of certain of the Company's financial instruments, including accounts receivable, accounts payable and accrued expenses, approximates fair value due to their short maturities. Based on borrowing rates currently available to the Company for loans with similar terms, the carrying value of its notes payable, capital lease obligations and borrowings under the Company's line of credit approximates fair value.

*c. Pervasiveness of Estimates*

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

*d. Inventories*

Inventories are carried at the lower of cost, on the first-in, first-out basis, or market and are comprised of materials, direct labor and applicable manufacturing overhead. Quarterly, any known excess and/or obsolete inventory, based on changes in the business or other factors, are evaluated and the reserve adjusted accordingly.

*e. Income Taxes*

The Company accounts for income taxes in accordance with Statement of Financial Accounting Standards (SFAS) No. 109. Under the asset and liability method of SFAS No. 109, deferred tax assets and liabilities are recognized for the future tax consequences attributable to temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases.

Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. Under SFAS No. 109, the effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. Valuation allowances are established for net deferred tax assets when it is uncertain that such tax assets will be realized.

*f. Property and Equipment*

Property and equipment are recorded at cost. Depreciation and amortization are provided over the asset's estimated useful life of three to ten years, using the straight-line method. Maintenance and repairs are expensed as incurred. Costs capitalized for self-constructed assets include direct material, labor and applicable overhead. Leasehold improvements are amortized over the shorter of the asset's estimated useful life or the life of the related lease.

*g. Goodwill and Other Intangible Assets*

In accordance with SFAS 142, the Company has established reporting units and applies a two-step fair value approach to evaluating goodwill impairment, using at least an annual assessment. The Company compares the fair value of the business unit with the carrying amount of the assets associated with the business unit. The fair value of each business unit is determined using a risk adjusted discount rate to compute a net present value of estimated future cash flows and a consideration of market capitalization of the Company. The second step measures the amount of the impairment, if any.

*h. Intangible Assets*

Patent costs are amortized over ten years, and other intangible assets are amortized over not more than five years. Accumulated amortization of intangible assets was \$784,083 and \$604,771 at December 31, 2003 and 2002, respectively. Patent costs capitalized are reviewed quarterly for realizability.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

*i. Long-Lived Assets*

The Company periodically evaluates the carrying value of its long-lived assets and applies the provisions of SFAS No. 144, "Accounting for the Impairment or Disposal of Long-Lived Assets." Under SFAS No. 144, long-lived assets and certain identifiable assets to be held and used in operations are reviewed for impairment whenever events or circumstances indicate that the carrying amount of an asset may not be fully recoverable. An impairment loss is recognized if the sum of the expected long-term, undiscounted cash flows is less than the carrying amount of the long-lived assets being evaluated. Management believes the carrying value of its long-lived assets does not exceed their estimated net realizable value.

The net assets and liabilities of a disposal group classified as held for sale is presented separately in the asset and liability sections of the consolidated balance sheet. The major classes of assets and liabilities classified as held for sale are separately disclosed in the notes to financial statements. In accordance with SFAS No. 144, the Company classifies assets held for sale when management commits to a plan of disposal, the disposal group is available for immediate sale and an active plan to locate a buyer has been initiated.

*j. Marketable Securities*

Marketable securities are accounted for in accordance with SFAS No. 115, "Accounting for Certain Investments in Debt and Equity Securities," which requires that the Company determine the appropriate classification of marketable securities at the time of purchase based on management's intent. Available for sale marketable securities are stated at fair value, with net unrealized gains or losses, if any, net of tax, reported as a separate component of stockholders' equity. Realized gains or losses from the sale of marketable securities are included in the accompanying Statements of Operations while unrealized gains (losses) are presented in the Consolidated Statement of Comprehensive Loss.

*k. Revenues*

Product revenues are recognized when the product is shipped FOB shipping point, all risks of ownership have passed to the customer and the Company has performed all obligations in accordance with Staff Accounting Bulletin No. 101, "Revenue Recognition in Financial Statements ("SAB No. 101"). The majority of the Company's revenues are contract revenues, which are recognized based on the percentage of completion method wherein income is recognized pro-rata over the life of the contract based on the ratio of total incurred costs to anticipated total costs of the contract. Actual costs could differ from these estimated costs. Reimbursable or recoverable general and administrative (G&A) costs are charged to G&A expense as incurred. Estimated losses are fully charged to operations when identified.

*l. Beneficial Conversion Feature*

In accordance with Financial Accounting Standards Board (FASB) Emerging Issues Task Force Issue (EITF) No. 98-5 and EITF No. 00-27, the Company records a beneficial conversion feature (BCF) related to the issuance of convertible preferred stock and convertible debt that have conversion features at fixed rates that are in-the-money when issued and records the fair value of warrants issued with those instruments. The BCF for the convertible instruments and fair value of warrants is recognized and measured by allocating a portion of the proceeds to additional paid-in capital and as a discount to the convertible instrument equal to the intrinsic value of the conversion features. Such amount is calculated at the issuance date as the difference between the conversion price and the relative fair value of the common stock and warrants into which the security is convertible or exercisable.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

For convertible preferred stock and related warrants, the recorded discount is recognized as a dividend from the date of issuance to the earlier of the redemption dates or the conversion dates using the effective yield method. For convertible debt and related warrants, the recorded discount is recognized as interest expense using the effective yield method based on the life of the debt, over the period from the issuance date to the conversion dates.

*m. Earnings Per Share*

The Company accounts for earnings per share in accordance with SFAS No. 128, "Earnings per Share". Basic earnings per common share were computed by dividing loss applicable to common stock by the weighted average number of shares of common stock outstanding during the year. For the years ended December 31, 2003, 2002 and 2001, the denominator in the diluted loss per share computation was the same as the denominator for basic loss per share due to antidilutive effects of the Company's warrants, stock options, convertible debt and convertible preferred stock. As of December 31, 2003, 2002 and 2001, the Company had shares issuable under outstanding warrants, stock options, convertible debt and convertible preferred stock of 8,124,184, 4,647,075 and 4,013,976, respectively, all of which are antidilutive and were excluded from the computation of diluted loss per share.

*n. Stock Options*

The Company accounts for employee stock options in accordance with APB No. 25 using the intrinsic value method. The Company has adopted the disclosure only requirements of SFAS No. 123, "Accounting for Stock-Based Compensation". Options issued to non-employees (other than directors) are accounted for based on the fair value of the equity instrument issued. The fair value is computed using the Black-Scholes pricing model. The resulting value is amortized over the service period.

The Company accounts for these plans under APB Opinion No. 25 using the intrinsic value method, under which no compensation cost has been recognized. Had compensation cost for these plans been determined using the fair value method under SFAS No. 123, the Company's loss applicable to common stock and loss per share would have been the following pro forma amounts (unaudited):

		<u>2003</u>	<u>2002</u>	<u>2001</u>
Loss applicable to common stock:	As Reported	\$(4,221,366)	\$(11,500,693)	\$(14,701,534)
	Pro Forma	(5,249,506)	(13,441,692)	(16,415,610)
Basic and diluted loss per share:	As Reported	(0.16)	(0.49)	(0.65)
	Pro Forma	(0.20)	(0.57)	(0.73)

The fair value of each option and warrant grant is estimated on the date of grant using the Black-Scholes option pricing model with the following weighted-average assumptions used for grants in 2001, 2002 and 2003: risk-free interest rate of approximately 2.74 percent in 2003, 4 percent in 2002 and 6 percent in 2001; expected dividend yields of 0 percent and expected lives of 6 years. For grants in 2003, 2002 and 2001, the expected volatility used was 275 percent, 142 percent, 191 percent, respectively.

*o. Comprehensive Income (Loss)*

SFAS No. 130, "Reporting Comprehensive Income," establishes standards for reporting and display of comprehensive income and its components (revenues, expenses, gains and

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

losses). This statement requires that an enterprise: (a) classify the items of other comprehensive income by their nature in a financial statement; and (b) display the accumulated balance of other comprehensive income separately from stockholders' equity in the equity section of the balance sheet. The unrealized gain (loss) for the years ended December 31, 2002 and 2001 results from changes in the value of the Company's investment in Bede plc.

*p. Reclassifications*

Certain reclassifications have been made to the prior year financial statements to conform with the 2003 presentation.

*q. Recent Accounting Pronouncements*

In September 2001, FASB issued SFAS No. 143, "Accounting for Asset Retirement Obligations" ("SFAS No. 143"). This statement addresses financial accounting and reporting for obligations associated with the retirement of tangible long-lived assets and the associated asset retirement costs. It applies to (a) all entities and (b) legal obligations associated with the retirement of long-lived assets that result from the acquisition, construction, development and/or normal operation of long-lived assets, except for certain obligations of lessees. This statement amends FASB Statement No. 19, "Financial Accounting and Reporting by Oil and Gas Producing Companies," and is effective for financial statements issued for fiscal years beginning after September 15, 2002. The Company has implemented SFAS No. 143 effective January 1, 2003. The impact of such adoption did not have a material effect on the Company's financial statements.

Statement of Financial Accounting Standards No. 146 ("SFAS 146"), "Accounting for Costs Associated with Exit or Disposal Activities." SFAS 146 addresses accounting and reporting costs associated with exit or disposal activities and nullifies Emerging Issues Task Force (EITF) Issue 94-3, "Liability Recognition for Certain Employee Termination Benefits and Other Costs to Exit an Activity." This statement requires that a liability for a cost associated with an exit or disposal activity shall be recognized and measured initially at its fair value in the period which the liability is incurred. This statement is effective for exit or disposal activities that are initiated after December 31, 2002. The Company has implemented SFAS No. 146 effective January 1, 2003. The impact of such adoption did not have a material effect on the Company's financial statements.

In December 2002, the FASB issued SFAS No. 148, "Accounting for Stock-Based Compensation – Transition and Disclosure – an amendment of SFAS No. 123." This statement provides alternative methods of transition for a voluntary change to the fair value based method of accounting for stock-based employee compensation. This statement also amends the disclosure requirements of SFAS No. 123 and APB Opinion No. 28, "Interim Financial Reporting," to require prominent disclosures in both annual and interim financial statements about the method of accounting for stock-based employee compensation and the effect of the method used on reported results. The Company has implemented SFAS No. 148 effective January 1, 2003 regarding disclosure requirements for condensed financial statements for interim periods.

The FASB has issued Interpretation No. 45, "Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others," – an interpretation of FASB Nos. 5, 57 and 107 and rescission of FASB Interpretation No. 34. This Interpretation elaborates on the disclosures to be made by a guarantor in its interim and annual financial statements about its obligations under certain guarantees that it has issued. It also clarifies that a guarantor is required to recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. The initial recognition and

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

measurement provisions of this Interpretation are applicable on a prospective basis to guarantees issued or modified after December 31, 2002. Implementation of these provisions of the Interpretation is not expected to have a material impact on the Company's consolidated financial statements. The disclosure requirements of the Interpretation are effective for financial statements of interim or annual periods ended after December 15, 2002, and have been adopted in the accompanying consolidated financial statements as of December 31, 2002, with no additional disclosure required.

The FASB has issued Interpretation No. 46, "Consolidation of Variable Interest Entities" – an interpretation of Accounting Research Bulletin ("ARB") No. 51. This Interpretation defines a variable interest entity and provides that if a business enterprise has a controlling financial interest in a variable interest entity, the assets, liabilities, and results of the activities of the variable interest entity should be included in consolidated financial statements with those of the business enterprise. Furthermore, the Board indicates that the voting interest approach of ARB No. 51 is not effective in identifying controlling financial interests in entities that are not controllable through voting interest or in which the equity investors do not bear the residual economic risk. This Interpretation applies immediately to variable interest entities created after January 31, 2003, and to variable interest entities in which an enterprise obtains an interest after that date. It applies in the first fiscal year or interim period beginning after September 15, 2003, to variable interest entities in which an enterprise holds a variable interest that it acquired before February 1, 2003. The implementation of this Interpretation did not have a material effect on the Company's financial statements.

In November 2002, the EITF reached a consensus on Issue 00-21, titled "Accounting for Revenue Arrangements with Multiple Deliverables," which addresses how to account for arrangements that involve the delivery or performance of multiple products, services, and/or rights to use assets. Revenue arrangements with multiple deliverables are divided into separate units of accounting if the deliverables in the arrangement meet the following criteria: (1) the delivered item has value to the customer on a standalone basis; (2) there is objective and reliable evidence of the fair value of undelivered items; and (3) delivery of any undelivered item is probable. Arrangement consideration should be allocated among the separate units of accounting based on their relative fair values, with the amount allocated to the delivered item being limited to the amount that is not contingent on the delivery of additional items or meeting other specified performance conditions. The new standard is required to be adopted for all new applicable revenue arrangements no later than the third quarter of 2003. The implementation of EITF 00-21 did not have a material effect on the Company's financial statements.

In May 2003 FASB issued SFAS No. 150, "Accounting for Certain Financial Instruments with Characteristics of both Liabilities and Equity", which requires that certain financial instruments previously presented as equity or temporary equity be presented as liabilities. Such instruments include mandatory redeemable preferred and common stock, and certain options and warrants. SFAS 150 is effective for financial instruments issued, entered into or modified after May 31, 2003 and is generally effective at the beginning of the first interim period beginning after September 15, 2003. The adoption of SFAS 150 did not have a material effect on the Company's financial statements.

In December 2003 the Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin (SAB) No. 104 (SAB No. 104), "Revenue Recognition" to update SAB No. 101, "Revenue Recognition in Financial Statements". SAB No. 104 revises or rescinds portions of the interpretive guidance included in SAB No. 101 in order to make SAB No. 101 consistent with current authoritative accounting and auditing guidance and SEC rules and regulations. The principal revisions relate to the rescission of material no longer necessary because of private sector developments in U.S. generally accepted accounting principles. SAB No. 104 also

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

rescinds the Revenue Recognition in Financial Statements Frequently Asked Questions and Answer document issued in conjunction with SAB No. 101 and incorporates related portions of that document into SAB No. 104. The adoption of SAB No. 104 did not have a material effect on the Company's financial statements.

**3. Acquisitions**

Semiconductor Advanced Lithography, Inc.

On August 7, 2001, the Company's wholly owned subsidiary, JMAR/SAL NanoLithography, Inc. ("Subsidiary") acquired ("Acquisition") all of the outstanding equity of Semiconductor Advanced Lithography, Inc. (SAL), in a merger of SAL with and into Subsidiary ("Merger"). SAL (subsequently renamed JMAR/SAL NanoLithography, Inc. or "JSAL") is a provider of XRL stepper systems and the leading developer of CPL systems. Consideration for the Merger consisted of an aggregate of 603,051 shares of the Company's common stock valued at \$1.7 million, \$1.2 million in cash and \$1.2 million in notes ("SAL Notes"). The SAL Notes were repaid in February 2004, plus accrued interest, by retiring a total of \$364,239 in notes and \$3,034 in accrued interest with the issuance of 118,121 shares of common stock valued at \$3.11 per share and repaying the remaining amount of \$835,761 in notes and accrued interest of \$6,961 with cash. All stock options and warrants issued by SAL which were outstanding immediately prior to the Acquisition were either exercised pursuant to their terms or were terminated. There were no settlements of options or warrants and there was no increase to JMAR's purchase price as a result of the issuance of additional SAL shares upon exercise of the outstanding options and warrants.

The Company accounted for the Acquisition as a purchase and, accordingly, results of operations of JSAL have been included in the consolidated financial statements since August 7, 2001. The allocation of the purchase price of \$4,297,414 (including transaction costs) is as follows:

Goodwill.....	\$ 3,790,907
Identifiable intangibles .....	785,000
Fair value of tangible assets acquired .....	671,593
Liabilities assumed .....	(950,086)
	\$ 4,297,414

Under the Merger Agreement, SAL's former shareholders and creditors could earn up to three contingent earnout payments upon the satisfaction of three earnout conditions. For the first earnout, the SAL creditors were eligible to receive \$500,000 in convertible notes upon the satisfaction of a "stepper limited" throughput test (without the CPL light source) by June 30, 2002. This requirement was not met by the June 30, 2002 deadline, and, therefore, the Company did not have to issue the \$500,000 in convertible notes. For the second earnout, the SAL shareholders can earn \$500,000 in convertible notes upon the satisfaction of a lithography demonstration milestone. This milestone must be met 90 days after the CPL light source is integrated with the stepper at the Systems Division in Vermont and has satisfied certain negotiated source performance criteria. In successful tests of the integrated system in March 2004, the source demonstrated improved reliability and performance; however, the specific source performance criteria specified in the Merger Agreement have not yet been met. If issued, the \$500,000 in Convertible Notes will be due 24 months after issuance and will have a conversion price equal to 120% of the average of the closing prices for the ten days prior to issuance.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

The third earnout condition can result in payment of up to 354,736 JMAR shares and up to \$1.2 million in convertible notes upon receipt by the Company of a qualifying order for a CPL system from a commercial customer and delivery to the customer. Under the Merger Agreement, the deadline for receipt of this order is 180 days after the CPL source is integrated with the stepper at the Systems Division in Vermont and has satisfied the above mentioned source performance criteria. If earned, this earnout payment is payable 30 days after delivery and acceptance of the system by the customer. The earnout consideration will increase goodwill when and if it is paid.

The following unaudited proforma information gives effect to the acquisition of SAL as if the acquisition occurred on January 1, 2001. In connection with the Acquisition, SAL entered into agreements with several of its creditors which reduced the related liabilities due those creditors by approximately \$8,000,000 through a combination of debt forgiveness and by payment of the \$1.2 million cash purchase price by the Company. Such debt reductions are not reflected in the statement of operations of the Company. The proforma loss from continuing operations excludes any impact, other than interest expense, from the debt settlements of SAL directly attributable to the Acquisition. The identifiable intangibles acquired in the Acquisition are being amortized over three years using the straight-line method. Identifiable assets include patents and unpatented technology. Patents were valued based on a discounted cash flow model and unpatented technology was valued based on replacement cost of underlying documentation. These statements do not purport to be indicative of the results of operations which actually would have occurred had the acquisition of SAL occurred on January 1, 2001 or which may be expected to occur in the future.

	Year Ended December 31, 2001
	(Unaudited)
Total revenues.....	\$ 13,622,000
Loss from continuing operations.....	\$ (1,490,000)
Loss per share.....	\$ (.06)

Continuum Engineering, Inc.

On December 7, 1998, the Company acquired 100 percent of the outstanding common stock of Continuum Engineering, Inc. (CEI). As consideration, the Company issued 92,160 shares of its common stock to the sole shareholder of CEI. The purchase price was negotiated at arm's length, and the acquisition was accounted for as a purchase effective December 1, 1998. In 2001, the Company issued 807 earn-out shares of common stock to the sole shareholder of CEI, accounted for as additional purchase price. The earn-out ceased on December 31, 2001.

**4. Inventories**

At December 31, 2003 and 2002, inventories consisted of the following:

	2003	2002
Raw materials, components and sub-assemblies .....	\$214,694	\$222,077
Work-in-process.....	87,981	125,315
Finished goods.....	4,477	42,075
	\$307,152	\$389,467

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**5. Accounts Receivable**

At December 31, 2003 and 2002, accounts receivable consisted of the following:

	<u>2003</u>	<u>2002</u>
Trade.....	\$546,505	\$1,384,112
Trade – unbilled .....	108,800	920
U.S. Government – billed .....	522,123	1,056,321
U.S. Government – unbilled .....	1,624,597	453,040
	<u>\$2,802,025</u>	<u>\$2,894,393</u>

All unbilled receivables at December 31, 2003 are expected to be billed and collected within one year except for withheld contract fees of \$403,581 which will be billed and collected at the completion of the applicable contract. Payment to the Company for performance on certain U.S. Government contracts is subject to progress payment audits by the Defense Contract Audit Agency and are recorded at the amounts expected to be realized. Included in the unbilled amount is \$747,825 related to the Company's contract with DARPA (see Note 16). Of the remaining balance of unbilled receivables, \$359,948 is related to withheld fees for prior contracts to be billed pending DCAA audit, \$113,243 is billable upon the achievement of milestones specified in the applicable contract, and \$108,800 is related to the normal billing cycle.

**6. Property and Equipment**

At December 31, 2003 and 2002, property and equipment consisted of the following:

	<u>2003</u>	<u>2002</u>
Equipment and machinery .....	\$2,774,470	\$2,983,443
Furniture and fixtures .....	435,043	420,188
Leasehold improvements .....	280,283	280,283
	3,489,796	3,683,914
Less-Accumulated depreciation .....	(2,698,023)	(2,435,716)
	<u>\$791,773</u>	<u>\$1,248,198</u>

During 2003, the Company wrote-off an asset recorded at \$200,056 that will not be used by the Company in the future.

**7. Commitments and Contingencies**

*a. Leases*

The Company leases its office facilities under various operating leases expiring through April 30, 2006. Minimum future rental payments for non-cancelable leases as of December 31, 2003, are as follows:

<u>Year Ending December 31,</u>	
2004 .....	\$915,010
2005 .....	496,277
2006 .....	39,970
	<u>\$1,451,257</u>

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

Related rent expense was \$1,193,998, \$1,185,303 and \$981,794 for the years ended December 31, 2003, 2002 and 2001, respectively.

*b. Litigation*

Among the remaining liabilities of JMAR Semiconductor, Inc. (JSI) included on the Company's Consolidated Balance Sheet at December 31, 2003 (see Note 9) is a debt owing to Macrotech, Inc., a former supplier of chip manufacturing services to JSI. This debt arose out of several purchase orders for FIFO chip manufacturing issued by JSI to Macrotech between 2000 and 2002. JSI claimed that these purchase orders were cancelable as to amounts that had not yet been confirmed for production and that JSI timely canceled all but approximately \$200,000 of the remaining obligations under those purchase orders. In October, 2003, Macrotech filed a Complaint against JSI alleging breach of contract and other related claims and seeking payment of approximately \$680,000, as well as punitive damages in an unspecified amount. Macrotech also alleged that JMAR was the "alter ego" of JSI and should be held responsible for JSI's debts. In February 2004, the Company and Macrotech executed a settlement agreement whereby the Company agreed to pay Macrotech \$137,500 in full satisfaction of all amounts owed to Macrotech. The lawsuit was dismissed with prejudice in February, 2004.

*c. Post-Employment Benefits*

Pursuant to an Employment Agreement dated September, 2001 with Dr. Martinez, the Company's former Chairman and Chief Executive Officer, if the Company delivered notice of its intention not to renew or discontinued his status of Chairman or CEO, or both, other than for cause, then Dr. Martinez's employment was to continue for three years at the highest total compensation rate (including bonuses, director fees and similar payments) he had received in any previous 12 month period. This amount was approximately \$375,000 per annum. In such event, the Company also agreed to maintain comparable medical insurance benefits for such three year period.

In May, 2002, Dr. Martinez informed the Board of Directors of his desire to retire. The Board and Dr. Martinez engaged in discussions regarding Dr. Martinez's future role with the Company. In order to set a definite date for the transition to a new CEO, in July, 2002, the Board of Directors exercised the Company's rights under the Employment Agreement to discontinue Dr. Martinez's status as CEO effective August 16, 2002. Following negotiations between Dr. Martinez and the Board, an agreement was reached to restructure this payment obligation to spread the payments over six years to reduce the impact of the original agreement on the Company's cash flow. In consideration for this modification, the Company will provide comparable medical insurance benefits for six years, and modified 942,242 of the outstanding options and warrants held by Dr. Martinez to (1) vest all unvested options and warrants (141,269 options), (2) provide that, for those options that have an expiration date within the next six years, the early termination provision that would otherwise have resulted in the termination of the options and warrants 60 days after termination of his employment was waived, and (3) provide that all remaining options and warrants will expire on the later of August 15, 2008 or 60 days after Dr. Martinez ceases to be a director. The Company recorded a charge in 2002 in the amount of \$1,074,324 resulting from this event. The charge includes \$561,517 for the discounted post-employment payments over six years, using a discount rate of 30 percent, and \$512,807 for the intrinsic value of Dr. Martinez's options and warrants resulting from the modification of those options and warrants. The Company recorded interest expense of \$171,358 and \$48,159 in 2003 and 2002, respectively, for the amortization of the discount.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

**8. Line of Credit and Notes Payable**

Line of credit and notes payable as of December 31, 2003 and 2002, were as follows:

	<u>2003</u>	<u>2002</u>
Working capital line with Laurus in the amount of \$3,000,000. Advances bear interest at the prime rate (4% at December 31, 2003) plus .75%, but not less than 5%. Interest on the line is payable monthly. Advances are secured by all assets of the Company. Borrowings may be converted to common stock .....	\$1,140,431	\$ -
Convertible notes payable issued to former shareholders and creditors of SAL, Inc. bearing interest at 8% interest due quarterly, principal paid in February 2004 .....	1,200,000	1,200,000
Working capital line of credit ("Comerica Line") with Comerica Bank – California ("Comerica"). At December 31, 2002, the line was secured by a \$1.5 million compensating cash balance. The Comerica Line was paid off and terminated in March 2003.....	-	1,500,000
Post-employment benefits (see Note 7).....	449,873	504,887
Other notes payable .....	-	60,322
	2,790,304	3,265,209
Less: Current portion.....	(2,340,431)	(1,556,405)
	\$449,873	\$1,708,804

In March 2003, the Company entered into a Revolving Fixed Price Convertible Note ("Working Capital Line") with Laurus Master Fund ("Laurus"). The Working Capital Line allows the Company to borrow from time-to-time up to 85% of eligible accounts receivable of the Company to a maximum of \$3 million. Advances in excess of this formula are allowed, however, with the consent of Laurus. Laurus can convert any portion of the principal outstanding to common stock at a fixed price per share ("Conversion Price") any time the market price of the Company's common stock is in excess of the Conversion Price. The Company can convert a portion of the principal outstanding to common stock at the Conversion Price if the market price of the Company's common stock averages 118% of the Conversion Price or higher for 22 consecutive trading days. The initial terms of the Working Capital Line provided that after \$2 million of conversions into equity, the Conversion Price would be increased. The Conversion Price initially was \$.92, but was increased to \$2.85 in January 2004 after \$2 million of the Working Capital Line had been converted. As of December 31, 2003, \$1,173,000 of the Working Capital Line had been converted (see Note 11).

The interest rate on the Working Capital Line is equal to the prime rate (4% at December 31, 2003) plus 0.75 percent, subject to a floor of 5.00 percent. Accrued interest is payable monthly. The Working Capital Line requires that the Company's quick ratio, as defined, be 0.90 or higher. The quick ratio is defined as the sum of cash and accounts receivable divided by the sum of current liabilities, exclusive of current liabilities of discontinued operations. The Company's quick ratio was 1.52 at December 31, 2003. As of December 31, 2003, approximately \$1.3 million less discount of approximately \$175,000 was outstanding under the Working Capital Line. The term of the Working Capital Line runs until March, 2006. The available borrowings under the Working Capital Line were approximately \$2.3 million at December 31, 2003, based on

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

the amount of eligible accounts receivable at that date, with approximately \$941,000 unused at December 31, 2003.

In March 2003, in connection with the Working Capital Line, the Company issued warrants to Laurus to purchase 400,000 shares of common stock at prices ranging from \$1.06 to \$3.13 and paid fees of \$74,400. In connection with the Working Capital Line, the Company recorded a discount of \$412,633 representing the intrinsic value of the beneficial conversion feature and fair value of warrants. The discount is amortized over 3 years or upon conversion, resulting in \$289,063 of interest expense in 2003.

The weighted average interest rate on the Laurus Line was 5% for 2003. The maximum amount outstanding was \$2,485,255 for 2003, and the average amount outstanding was approximately \$1,263,000 during 2003. The weighted average interest rate on the Comerica Line was 4.69% for 2002. The maximum amount outstanding was \$3,000,000 for 2002, and the average amount outstanding was \$1,393,151 during 2002.

The convertible notes ("SAL Notes") were issued to the former shareholders of SAL. The SAL Notes were repaid in February 2004, plus accrued interest, by retiring a total of \$364,239 in notes and \$3,034 in accrued interest with the issuance of 118,121 shares of common stock valued at \$3.11 per share and repaying the remaining amount of \$835,761 in notes and accrued interest of \$6,961 with cash.

Interest paid for the years ended December 31, 2003, 2002 and 2001 was \$314,218, \$183,466 and \$106,176, respectively.

**9. Discontinued Operations/Assets Held for Sale**

The loss from operations of discontinued operations of \$1,396,749 for the year ended December 31, 2003 consists of \$457,413 related to the standard semiconductor products business and \$939,336 related to the precision equipment business. The loss from operations of discontinued operations of \$5,839,367 for the year ended December 31, 2002 consists of \$1,856,381 related to the standard semiconductor products business and \$3,982,986 related to the precision equipment business. In July 2003, the Company sold JMAR Precision Systems, Inc. (JPSI) to several private investors. Under the terms of the sale, JMAR received \$500,000 in a combination of cash and promissory notes, and the buyer assumed 14 of the remaining 25 months of JPSI's facility lease. The notes are secured by the assets of JPSI and the lease obligation is secured by personal property of the buyers. In addition, all JPSI receivables as of the closing were assigned to JMAR and JMAR agreed to pay all trade and employee related liabilities existing as of the closing and unknown liabilities, if any. The buyers have assumed all other ongoing commitments of JPSI. The results of operations of the precision equipment business for 2003 through the sale date are reported in discontinued operations in 2003. The decrease in the loss from operations of discontinued operations is primarily due to the shutdown of the operations of JMAR Semiconductor, Inc. (JSI) in 2002 and the sale of JPSI in July 2003. The gain (loss) on disposal of discontinued operations of \$205,000 and \$(3,200,000) for the years ended December 31, 2003 and 2002, respectively, relates to the sale of JPSI.

Prior to December 31, 2001, as the level of business expected from the standard semiconductor products business did not materialize, the Company decided to take action to sublease the Irvine facility and move the standard semiconductor products business into a smaller facility and recorded a reserve against the Irvine facility lease. The Company does not yet have a subtenant for this facility. The lease provides for rent and related expenses of approximately \$36,000 per month through August 2005.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

At December 31, 2003 and December 31, 2002, net assets and liabilities of assets discontinued and held for sale consisted of the following:

	December 31,	
	2003	2002
<b>Current Assets:</b>		
Cash.....	\$ -	\$ 101,238
Accounts receivable.....	-	454,557
Inventories .....	-	727,983
Prepaid expenses and other.....	-	65,980
	\$ -	\$1,349,758
<b>Current Liabilities:</b>		
Payable to distributor .....	\$ -	\$ 692,314
Facility lease accrual.....	598,466	548,374
Accounts payable.....	230,978	1,154,463
Employee related contractual commitments.....	10,384	555,000
Note payable.....	121,155	175,000
	\$960,983	\$3,125,151

**10. Income Taxes**

The tax effects of temporary differences that give rise to significant deferred tax assets and liabilities at December 31, 2003 and 2002 are presented below:

	2003	2002
<b>Deferred tax assets:</b>		
Net operating loss carryforwards .....	\$19,409,000	\$15,022,000
Asset writedowns .....	-	2,523,000
Losses on discontinued operations.....	-	1,312,000
Other .....	575,000	1,688,000
	19,984,000	20,545,000
Total gross deferred tax assets.....	19,984,000	20,545,000
Less valuation reserve .....	(19,984,000)	(20,545,000)
Net deferred tax asset.....	\$ -	\$ -

The valuation reserve as of December 31, 2003 and 2002 represents deferred tax assets which management believes, based on the Company's history of operating losses, may not be realized in future periods. The valuation allowance was decreased by \$561,000 in 2003 and increased by \$4,460,000 in 2002, including \$484,000 charged to expense for the net carrying value of remaining deferred tax assets.

The effective income tax rate for the years ended December 31, 2003, 2002 and 2001 varied from the statutory federal income tax rate as follows:

	2003	2002	2001
Statutory federal income tax rate.....	(34)%	(34)%	(34)%
State income tax .....	(6)	(6)	(6)
Valuation allowance.....	-	25	-
Benefit recorded due to net operating loss carryforward position .....	40	40	40
	-	25%	-

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

At December 31, 2003, the Company had Federal net operating loss carryforwards expiring as follows:

<u>Expires</u>	
2004 .....	\$164,000
2005 .....	2,840,000
2006 .....	961,000
2007 .....	4,546,000
2008 .....	6,932,000
2009 .....	6,860,000
2010 .....	2,265,000
2011 .....	585,000
2019 .....	1,102,000
2020 .....	3,740,000
2021 .....	3,247,000
2022 .....	15,201,000
2023 .....	8,642,000
Total .....	<u>\$57,085,000</u>

The Company has approximately \$1,692,000 of temporary differences that will offset future taxable income subject to the change in ownership limitations discussed below.

Realization of future tax benefits from utilization of the net operating loss carryforwards for income tax purposes is limited by the change in ownership (as defined for Federal Income Tax Reporting Purposes) as a result of the Company's initial public offering in May 1990. As a result of additional financings in 1992 and 1993, additional ownership changes have occurred which restrict the Company's ability to utilize its net operating loss carryforwards and any "built in losses." In addition, the net operating losses of acquired companies are also subject to separate change of ownership limitations. Of the above net operating loss carryforwards, annual limitations of approximately \$695,000 apply to approximately \$4,294,000 of Company and acquired company loss carryforwards. Approximately \$52,791,000 of the net operating loss carryforwards are not subject to annual limitations.

**11. Stockholders' Equity**

During 2003, \$1,173,000 of the Working Capital Line (see Note 8) was converted into 1,275,000 shares of common stock of the Company and subsequent to December 31, 2003, another \$827,000 was converted into 898,913 shares of common stock.

In March 2003, the Company sold for cash \$1 million in 8 percent Series A Convertible Preferred Stock ("Series A Preferred") to Laurus at a fixed conversion price of \$.88 per share. The proceeds received under the Series A Preferred were initially restricted, however, the funds were released as the Preferred Stock was converted to common stock. The Company also issued \$1 million in shares of 3 percent Series B Convertible Preferred Stock ("Series B Preferred") to Laurus at a fixed conversion price of \$.88 per share. All of the Series A Preferred and Series B Preferred was converted into 2,272,727 shares of common stock by December 31, 2003.

In September 2003, the Company sold for cash \$1.5 million of 8 percent Series C Convertible Preferred Stock ("Series C Preferred") to Laurus at a fixed conversion price of \$2.08

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**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

per share. All of the Series C Preferred was converted to common stock subsequent to December 31, 2003.

In December 2003, the Company sold for cash \$2 million of 8 percent Series D Convertible Preferred Stock ("Series D Preferred") to Laurus at a fixed conversion price of \$1.56 per share. The Series D Preferred is redeemable in cash (or common stock if the closing market price of the Company's common stock is 118% of the Conversion Price or higher for the 11 trading days prior to the redemption date) in eighteen equal monthly installments starting in November 2004, if not previously converted. Conversions to equity are offset against the required repayments. Except for the conversion price, the conversion terms of the Series D Preferred are the same as the conversion terms of the Working Capital Line. Subsequent to December 31, 2003, \$936,000 of the Series D Preferred was converted into 600,000 shares of common stock of the Company.

In connection with all of the above preferred stock financing transactions with Laurus, the Company issued warrants to Laurus to purchase 650,000 shares of common stock at prices ranging from \$1.10 to \$2.60 and paid fees of \$274,250. The Company valued these warrants using the Black-Scholes pricing model. The following table summarizes the above preferred stock financings.

Series	Gross Amount	BCF and Fair Value of Warrants	Fees and Costs	2003 Amortization	2003 Conversions	Net Balance at December 31, 2003
A	\$1,000,000	\$310,640	\$63,900	\$374,540	\$1,000,000	\$ -
B	1,000,000	310,641	68,517	379,158	1,000,000	-
C	1,500,000	637,251	72,000	84,474	-	875,223
D	2,000,000	591,075	93,250	26,252	-	1,341,927
	<u>\$5,500,000</u>	<u>\$1,849,607</u>	<u>\$297,667</u>	<u>\$864,424</u>	<u>\$2,000,000</u>	<u>\$2,217,150</u>

All of the preferred stock, warrants and the Working Capital Line (the "Securities") held by Laurus contain provisions that restrict the right of Laurus to convert or exercise its JMAR securities in order to limit its percentage beneficial ownership. If Laurus were to waive these beneficial ownership limitations the Securities would be convertible for or exercisable into more than 4.99% of the outstanding shares of the Company's common stock. However, Laurus has not requested such a waiver. Laurus has also agreed that none of the Securities shall be converted or exercised to the extent that conversion or exercise of the Securities would result in Laurus beneficially owning more than 19.9% of the Company's outstanding number of shares of common stock unless and until the Company obtains stockholder approval in accordance with NASDAQ corporate governance rules, or an exemption from the applicable provision of NASDAQ corporate governance rules.

All of the preferred stock issuances require redemption payments, if not previously converted. As of March 24, 2004, all of the preferred stock discussed above was converted except for Series D Preferred in the amount of \$1,064,000, which is redeemable in 2005, if not previously converted.

In February, 2003, under the Company's Shelf Registration Statement, the Company sold 100,000 shares of its common stock and a warrant for 20,000 shares, exercisable at \$1.25 per share, for gross proceeds of \$100,000. The sale of the Series A and B Convertible Preferred Stock, 300,000 of the Warrants described above and the underlying common shares were also registered under the Shelf Registration Statement.

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

In March 2002, under the Shelf Registration Statement, the Company sold 1 million shares of its common stock for gross proceeds of \$2 million less offering costs of approximately \$220,000. In connection with this transaction, the Company issued to the purchasers warrants to purchase 150,000 shares of its common stock at an exercise price of \$2.50 per share, expiring in four years. Also, the Company paid a placement agent a fee of 6% of the gross proceeds, a \$25,000 non-accountable expense allowance and issued warrants to purchase 20,000 shares of the Company's common stock at an exercise price of \$2.40 per share. Out of the gross proceeds of \$2 million, the warrants to purchase 170,000 shares of the Company's common stock have been valued based on the Black-Scholes pricing model at approximately \$305,000 in the accompanying consolidated financial statements as paid-in-capital with a corresponding reduction in the amount assigned to the common stock issued.

During the years ended December 31, 2003 and 2001, the Company received net proceeds of approximately \$289,577 and \$44,040, respectively, from the exercise of warrants and options into approximately 144,068 and 26,013 shares of common stock, respectively.

During 2003, 2002 and 2001, the Company issued 11,026, 11,632 and 1,571 shares of common stock for services and other obligations. These issuances were valued based upon the fair market value of the Company's common stock at the date of issue.

## **12. Stock-Based Compensation Plans**

The Company has six stock option or warrant plans, the 1991 Stock Option Plan ("1991 Plan"), the 1999 Stock Option Plan ("1999 Plan"), the Management Anti-Dilution Plan (the "Anti-Dilution Plan"), an incentive plan which provided for the issuance of warrants to JPSI employees (the "JPSI Plan") and two incentive plans which provide for the issuance of options and warrants to Research Division employees ("Research Division Plans"). The Company may also from time-to-time enter into equity compensation agreements with individuals that are not covered by a plan and currently is a party to non-plan option and warrant agreements with several individuals.

The Company was authorized to grant options or warrants to its employees (including directors) and consultants for up to 1,480,000 shares under the 1991 Plan, 1,900,000 shares under the 1999 Plan, 806,637 shares under the Anti-Dilution Plan, 450,000 shares under the JPSI Plan and 350,000 shares under the Research Division Plans ("Plans"). As of December 31, 2003, the Company has granted 1,252,392 options under the 1991 Plan, 1,033,172 options under the 1999 Plan, 306,920 warrants under the Anti-Dilution Plan, 53,000 warrants under the JPSI Plan and 199,000 options and warrants under the Research Division Plans. In addition, 613,000 non-qualified options have been granted to five employees outside of the above plans. Under all Plans, the option or warrant exercise price is equal to or more than the stock's market price on date of grant. Options usually have a term of ten years and vest one-third per year after date of grant. As of December 31, 2003, 866,828 shares are available for grant pursuant to the Plans.

A summary of the status of the total number of stock options or warrants pursuant to all of the above plans as of December 31, 2003, 2002 and 2001 and changes during the years then ended is presented in the tables below:

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

	2003		2002		2001	
	Shares	Wtd Avg Ex Price	Shares	Wtd Avg Ex Price	Shares	Wtd Avg Ex Price
Outstanding at beg. of year	3,214,834	\$2.93	2,436,802	\$3.53	2,185,933	\$1.34
Granted	489,500	1.05	898,800	1.48	496,686	2.47
Exercised	-	-	-	-	(32,983)	3.11
Forfeited	(676,087)	3.50	(120,768)	4.04	(212,834)	6.74
Outstanding at end of year	<u>3,028,247</u>	2.43	<u>3,214,834</u>	2.93	<u>2,436,802</u>	3.53
Exercisable at end of year	<u>1,945,969</u>		<u>1,977,859</u>		<u>1,586,912</u>	
Weighted average fair value of options or warrants granted	0.92		1.38		3.42	

A summary of the options outstanding as of December 31, 2003, the range of exercise prices, the weighted-average exercise price, the weighted-average remaining contractual life, the amount of options currently exercisable and the weighted-average exercise price of options currently exercisable is as follows:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Number Outstanding at 12/31/03	Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Price	Number Exercisable at 12/31/03	Weighted-Average Exercise Price
\$ .53 to \$1.79	1,329,239	6.1 years	\$0.95	423,071	\$1.34
2.00 to 2.99	691,888	4.5	2.48	611,989	2.47
3.00	391,920	4.3	3.00	391,920	3.00
3.13 to 4.56	483,270	6.2	3.68	387,059	3.73
5.56 to 9.50	131,930	2.4	8.02	131,930	8.02
\$ .53 to \$9.50	<u>3,028,247</u>			<u>1,945,969</u>	

### 13. Segment Information

In the first quarter of 2002, the Company decided to discontinue and sell its standard semiconductor products business and shift more of its resources to accelerate the market entry of its CPL products.

Also, in furtherance of its efforts to focus its resources on its CPL business, during the later half of 2002, the Company concluded that the precision equipment business did not fit with the strategic direction of the Company's CPL business area and that the markets for that business' products would continue to be slow in the near term. Therefore, in December, 2002, the Company decided to initiate the process of selling that business and, in July 2003, the Company completed the sale of that business.

As a result of these decisions, and to streamline the Company's operations and better support the commercialization of its emerging CPL semiconductor manufacturing systems and related technologies, the Company now operates in three business segments, as follows:

Research Division (formerly JMAR Research) – Located in San Diego, California, this segment carries out contract research and development involving JMAR's patented high brightness (Britelight) lasers and laser-produced plasma (LPP) technology. The results of this R&D are applied to the Company's CPL light source, EUV generators, and related laser products. Until recently, the principal focus of the Research Division's R&D efforts has been in advanced semiconductor lithography applications. In 2003, the Company embarked on an effort to identify additional applications for its laser and LPP technologies. Substantially all of the Research Division's R&D is funded by contracts from the Defense Advanced Research Projects Agency

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(DARPA) of the U.S. Department of Defense. During 2003, this segment accounted for approximately 36% of the Company's revenues.

The technologies developed at the Research Division are transitioned to JMAR's Systems Division for product engineering and future production.

Systems Division (formerly JMAR/SAL NanoLithography) – This segment develops and manufactures X-ray lithography steppers. Located in Vermont, this Division also serves as JMAR's product design and manufacturing arm, carrying out the engineering, production, and integration of JMAR's CPL light sources and CPL stepper systems. The Systems Division also applies its engineering and manufacturing expertise to the development of new products using a combination of JMAR and third party technology, as in the case of its design and manufacture of alpha and beta READ sensors for FemtoTrace, Inc. for environmental and homeland security applications. During 2003, this segment accounted for approximately 38% of JMAR's revenues.

Microelectronics Division (formerly JMAR Semiconductor) – This segment provides process integration and maintenance support for the Defense Microelectronics Activity's semiconductor fabrication facility in Sacramento, California. It also designs and produces application specific integrated circuits (ASICs) for military and commercial markets. During 2003, this segment accounted for approximately 26% of the Company's revenues.

The accounting policies of the reportable segments are the same as those described in Note 2. The Company evaluates the performance of its operating segments primarily based on revenues and operating income. Corporate costs are generally allocated to the segments.

Segment information for the years ended December 31, 2003, 2002 and 2001 (excluding discontinued operations) is as follows:

	<u>Research Division</u>	<u>Systems Division</u>	<u>Microelectronics Division</u>	<u>Corporate</u>	<u>Total</u>
2003:					
Revenues	\$6,206,123	\$6,561,372	\$4,529,013	\$ -	\$17,296,508
Asset writedowns	(346,060)	-	-	-	(346,060)
Operating income (loss)	152,738	(1,455,035)	151,242	(267,569)	(1,418,624)
Total assets	3,119,115	4,626,299	1,708,504	4,039,265	13,493,183
Goodwill	-	3,790,907	-	-	3,790,907
Capital expenditures	38,349	13,449	61,767	9,828	123,393
Depreciation and amortization	226,995	311,857	24,427	375,439	938,718
2002:					
Revenues	6,951,114	7,602,336	3,830,360	-	18,383,810
Special item	-	-	-	(1,074,324)	(1,074,324)
Operating income (loss)	228,963	(1,498,007)	268,018	(2,108,828)	(3,109,854)
Total assets	2,775,418	5,897,912	1,694,927	3,403,645	13,771,902
Goodwill	-	3,790,907	-	-	3,790,907
Capital expenditures	311,890	52,144	28,021	1,509	393,564
Depreciation and amortization	369,940	307,614	14,837	84,926	777,317
2001:					
Revenues	7,701,840	2,151,154	3,050,817	-	12,903,811
Asset writedowns	(226,899)	-	-	-	(226,899)
Operating income (loss)	228,329	(158,197)	(133,003)	(1,427,288)	(1,490,159)
Total assets	4,725,225	6,879,809	1,321,850	7,383,228	20,310,112
Goodwill	-	3,777,998	-	-	3,777,998
Capital expenditures	248,805	5,210	3,521	136,719	394,255
Depreciation and amort.	254,347	135,957	12,352	75,386	478,042

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The asset writedowns for 2003 of \$346,060 relates to an asset held by the Research Division that will not be used by the Company in the future and patent costs. The special item for 2002 of \$1,074,324 relates to the retirement benefits in August 2002 of the Company's former Chairman and Chief Executive Officer. The asset writedowns for 2001 related to discontinued projects.

**Significant Customers**

Sales to the United States Government aggregated \$11,868,974, \$12,484,601 and \$9,128,110 in 2003, 2002 and 2001, respectively. Accounts receivable from the United States Government at December 31, 2003 and 2002 was \$2,146,720 and \$1,509,361, respectively. In addition, sales to General Dynamics Advanced Information Systems (GDAIS) were \$2,712,770, \$4,306,801 and \$3,555,069 in 2003, 2002 and 2001, respectively. Accounts receivable from GDAIS at December 31, 2003 and 2002 was \$471,506 and \$1,256,971, respectively.

**Export Sales**

For the years ended December 31, 2003, 2002 and 2001, all revenues were generated from the United States and all assets of the Company are located in the United States.

**14. Quarterly Financial Information (Unaudited)**

The following is a summary of unaudited quarterly results for the years ended December 31, 2003 and 2002.

Year Ended December 31, 2003	Revenues	Gross Profit	Gain (Loss) from Discontinued Operations	Loss Applicable to Common Stock	Loss Per Share		Weighted Average Shares Outstanding
					Continuing Operations	Discontinued Operations	
December 31	\$3,570,210	\$1,098,602	\$8,741	\$(684,621)	\$(0.03)	\$ -	26,992,354
September 30	3,964,930	983,222	(53,673)	(1,063,451)	(0.04)	-	25,500,260
June 30	5,027,654	971,819	(686,830)	(1,561,214)	(0.03)	(0.03)	24,236,140
March 31	4,733,714	910,984	(459,987)	(912,080)	(0.02)	(0.02)	23,886,503
	<u>\$17,296,508</u>	<u>\$3,964,627</u>	<u>\$(1,191,749)</u>	<u>\$(4,221,366)</u>	(0.12)	(0.04)	25,618,296

Year Ended December 31, 2002	Revenues	Gross Profit	Loss from Discontinued Operations	Loss Applicable to Common Stock	Income (Loss) Per Share		Weighted Average Shares Outstanding
					Continuing Operations	Discontinued Operations	
December 31	\$3,726,900	\$(251,210)	\$(5,418,415)	\$(6,914,251)	\$(0.06)	\$(0.23)	23,849,904
September 30	6,462,633	1,149,804	(1,321,299)	(2,836,656)	(0.06)	(0.06)	23,844,685
June 30	4,585,622	1,467,807	(489,436)	(1,002,165)	(0.02)	(0.02)	23,841,609
March 31	3,608,655	1,047,091	(1,810,217)	(747,621)	0.05	(0.08)	22,879,711
	<u>\$18,383,810</u>	<u>\$3,413,492</u>	<u>\$(9,039,367)</u>	<u>\$(11,500,693)</u>	(0.11)	(0.38)	23,618,169

**15. Intangible Assets**

The Company adopted SFAS No. 142 "Goodwill and Other Intangible Assets" (SFAS 142) effective January 1, 2002. In accordance with SFAS 142, the Company does not amortize goodwill. The Company's goodwill of \$3,790,907 at December 31, 2003 and 2002 is related to

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the Systems Division, acquired in August, 2001. As of December 31, 2003, the Company had the following amounts related to other intangible assets:

	Gross Carrying Amount	Accumulated Amortization	Net Intangible Assets
Patents .....	\$ 953,124	\$421,583	\$531,541
Unpatented Technology .....	450,000	362,500	87,500
License .....	65,000	-	65,000
			<u>\$684,041</u>

Aggregate amortization expense of the intangible assets with determinable lives was \$282,055, \$379,205 and \$163,187 for the years ended December 31, 2003, 2002 and 2001, respectively. The unamortized balance of intangible assets is estimated to be amortized as follows:

For the Year Ending December 31,	Estimated Amortization Expense
2004	\$194,693
2005	66,267
2006	66,267
2007	44,601
2008	49,723
Beyond	262,490
	<u>\$684,041</u>

The following table summarizes the loss applicable to common stock and loss per share applicable to common stock for the years ended December 31, 2003, 2002 and 2001 adjusted to exclude goodwill amortization expense:

	Year Ended December 31,		
	2003	2002	2001
Loss applicable to common stock:			
Reported loss .....	\$(4,221,366)	\$(11,500,693)	\$(14,701,534)
Goodwill amortization .....	-	-	67,501
Adjusted loss .....	<u>\$(4,221,366)</u>	<u>\$(11,500,693)</u>	<u>\$(14,634,033)</u>
Basic and diluted loss per share:			
Reported basic and diluted loss per share .....	\$(0.16)	\$(0.49)	\$(0.65)
Goodwill amortization .....	-	-	-
Adjusted basic and diluted loss per share .....	<u>\$(0.16)</u>	<u>\$(0.49)</u>	<u>\$(0.65)</u>

**16. Subsequent Events**

In January 2004, the Company sold for cash \$1.5 million of 8 percent Series E Convertible Preferred Stock ("Series E Preferred") to Laurus at a fixed conversion price of \$2.85 per share. The Series E Preferred is redeemable in cash or stock (if the closing market price of the Company's common stock is 118% of the Conversion Price or higher for the 11 trading days prior to the redemption date) in eighteen equal monthly installments starting in August 2004, if not

**JMAR TECHNOLOGIES, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (Continued)**

previously converted. Conversions to equity are offset against the required repayments. Except for the conversion price, the conversion terms of the Series E Preferred are the same as the conversion terms of the Working Capital Line (see Note 8).

In February 2004, the Company sold for cash \$8 million of 2 percent Convertible Preferred Stock ("2% Preferred") to Laurus at a fixed conversion price range of \$3.11 to \$3.47 per share, with an average fixed price of \$3.34 per share. The 2% Preferred is redeemable in cash or stock (if the closing market price of the Company's common stock is 118% of the Conversion Price or higher for the eleven trading days prior to the redemption date) in twenty-five equal monthly installments of \$150,000 starting in January 2005 with the balance redeemable in February 2007, if not previously converted. Conversions to equity are offset against the required repayments. Except for the conversion price, the conversion terms of the 2% Preferred are the same as the conversion terms of the Working Capital Line (see Note 8).

The initial terms of the Working Capital Line (see Note 8) provided that after \$2 million of conversions into equity, the Conversion Price would be increased. The Conversion Price initially was \$0.92, but was increased to \$2.85 in January 2004 after \$2 million of the Working Capital Line had been converted.

As of March 19, 2004 all of the preferred stock, warrants and Working Capital Line held by Laurus is convertible or exercisable into approximately 5.1 million shares.

In connection with the above financing transactions with Laurus, the Company issued to Laurus warrants to purchase 290,000 shares of common stock at prices ranging from \$3.42 to \$5.00. In addition, in connection with the adjustment to the conversion price on the Working Capital Line, the Company issued to Laurus warrants to purchase 100,000 shares of common stock at an exercise price of \$5.15.

As a result of the convertible securities and warrants issued, the Company estimates it will record a discount representing the beneficial conversion feature and the fair value of the warrants issued of approximately \$1.9 million. The beneficial conversion feature will be recognized during the first quarter of fiscal year 2004 as a reduction of preferred stock or debt and amortized to loss applicable to common stock over the earlier of the redemption or payment period or the conversion dates (see Note 2).

In March 2004, DARPA released \$800,000 in funds related to the Company's CPL contract after the successful completion of the demonstration of planned improvements to the beta source power output and reliability.

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General Chairman of the Board

**Annual Meeting of Shareholders**

Senior Chief Executive Officer,

Friday, June 25, 2004 10:00 AM

IMAR Technologies, Inc.

San Diego Marriott Del Mar

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**Barry Ressler**

Director and Chief Executive Officer,

Immar Phasidic Technologies, Inc.

**Ronald A. Walrod**

Chief Executive Officer and President,  
IMAR Technologies, Inc.

designs, manufactures, and supports

laser, automated alignment and positioning, and sensor systems

applications in the semiconductor, biotech, homeland security and

microtechnology markets. JMAR originated the Collimated Plasma Lithography

(CPL) light source for advanced semiconductor chip manufacturing. JMAR's

operations include its laser and laser-produced plasma Research Division in San

Jose, California; its Systems Division in Burlington, Vermont, which serves as

its product design and manufacturing arm, carrying out the engineering,

construction, and integration of JMAR's CPL light sources and CPL stepper systems;

its Microelectronics Division, based in Sacramento, California, where JMAR

provides process integration and maintenance support for the U.S. Government's

Large Microelectronics Activity semiconductor fabrication facility.

JMAR is traded on the NASDAQ SmallCap Market under the symbol JMAR.



above and above: fluorescence  
image and histogram of pump  
laser light deposited into  
Nd:YAG rod

below: 3D plot of the fluores-  
cence image showing even  
energy deposition

