

GSE SYSTEMS INC

FORM 10-K (Annual Report)

Filed 03/31/03 for the Period Ending 12/31/02

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Conformed

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549
FORM 10-K

(Mark One)

**ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2002

OR

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

Commission File Number 0-26494

GSE Systems, Inc.

(Exact name of registrant as specified in its charter)

Delaware (State of incorporation) 52-1868008 (I.R.S. Employer Identification Number)

9189 Red Branch Road, Columbia, Maryland 21045
(Address of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (410) 772-3500

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of each class Name of each exchange on which registered

Common Stock, \$.01 par value American Stock Exchange

SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT: NONE

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

Indicate by check mark if disclosure of delinquent filers pursuant to

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

Indicate by check mark whether the registrant is an accelerated filer (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of Common Stock held by non-affiliates as of June 30, 2002 was \$15,964,055 based on closing price of such stock on that date of \$2.72.

Number of shares of Common Stock outstanding as of March 11, 2003: 5,869,138

DOCUMENTS INCORPORATED BY REFERENCE

Part III incorporates certain information by reference from the Registrant's definitive proxy statement to be filed for its 2003 Annual Meeting of

Shareholders.

GSE SYSTEMS, INC.
FORM 10-K
For the Year Ended December 31, 2002

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* to be incorporated by reference from the Proxy Statement for the registrant's 2003 Annual Meeting of Shareholders.

D/3(R), D/3 DCS(R), SABL(R), TotalVision(R), FlexBatch(R) and RETACT(R) are registered trademarks and GFLOW+(TM), GLOGIC+(TM), GCONTROL+(TM), GPower+(TM), SimSuite Power(TM), SimSuite Pro(TM), SimExec(TM), eXtreme I/S(TM), RACS(TM), PEGASUS Plant Surveillance and Diagnosis System(TM), SIMONTM, BRUS(TM), SensBase(TM), Vista PIN(TM), TotalWebVision(TM), Java Applications & Development Environment (JADE)(TM) and GAARDS(TM) are trademarks of GSE Systems, Inc. All other trademarks used in this document are the property of their respective owners.

Cautionary Statement Regarding Forward-Looking Statements.

This report contains certain forward-looking statements. Any statements contained herein that are not statements of historical facts may be deemed forward-looking statements. These statements are based on management's current beliefs and expectations and are subject to numerous risks and uncertainties and changes in circumstances. Actual results may differ materially from these forward-looking statements due to changes in global, economic, business, governmental, technical, competitive, market and regulatory factors.

PART I

ITEM 1. BUSINESS.

GSE Systems, Inc. ("GSE Systems", "GSE" or the "Company") is a world leader in real-time power plant simulation and process automation and control. The Company provides simulation solutions and services to the nuclear and fossil electric utility industry, as well as process industries such as the chemical and petrochemical industries. In addition, the Company provides plant monitoring, security access and control, and signal analysis monitoring and optimization software primarily to the power industry. The Company's process automation products optimize batch and hybrid plant control for the specialty chemical, food and beverage, and pharmaceutical industries. The Company operates through two business segments, Power Simulation and Process Automation.

In addition to these two core businesses, GSE has invested in the use of simulation and control technologies to reduce the product development cycle for the pharmaceutical and chemical industries through its participation in the Netherlands-based company Avantium International BV.

The Company's annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and all amendments to those reports will be made available free of charge through the Investor Relations section of the Company's Internet website (<http://www.gses.com>) as soon as practicable after such material is electronically filed with, or furnished to, the Securities and Exchange Commission.

Recent Developments.

Power Simulation Business

The Company's Power Simulation Business was significantly impacted in 2002 by the delay of several international multi-million dollar projects. For various reasons, the awarding of these contracts was delayed by the customers until late 2002 or 2003. The US upgrade market was much stronger in 2002 than in the prior year, however, the strength in this market was not sufficient to ensure the profitability of the business unit. In addition, Power began marketing its plant access control and intrusion detection system in 2002 to nuclear power plants; this technology had been acquired in a previous year but the Company had not committed resources to its development until 2002. Due to the lower revenues, the business unit reduced its on-going operating costs in 2002 by implementing two personnel reductions, one in April and one in September. Power's total employees decreased 13.1% to 119 at December 31, 2002.

The Company's Power Simulation Business Unit ("Power") is positioning itself to take advantage of emerging trends in the power industry. The operating licenses for numerous nuclear power plants will expire over the next several years. Ten plants have already received license extensions, and twenty more have applications pending. Many plants are also planning significant upgrades to the physical equipment and control room technology in conjunction with the license extensions. Both will result in the need to modify or replace the existing plant control room simulators. The Company, having the largest installed base of existing simulators, is well positioned to capture the majority of this business.

To address the varying levels of technology that exists across the Company's installed base, the Company has developed a Java-based graphical overlay technology called JADE (Java Application Development Environment). JADE provides a common look and feel to the Company's various simulation tools regardless of whether the underlying technology is UNIX, LINUX or Microsoft Windows XP. JADE also works with all of the Company's tools for building electrical, logic and control, and flow system models for plants.

The Company continues to focus on the fossil power segment of the power industry. Several fossil plant simulators were delivered in 2002 receiving broad acclaim from customers. The G-Suite tools developed in 2000 have enabled the Company to effectively compete in the fossil market segment. These tools have also been converted and are included in the JADE product line. The Company also entered into a licensing arrangement with the Russian Research Center "Kurchatov Institute", allowing the Company to utilize and market Kurchatov's SIMPORT technology. This robust, object-oriented technology gives the Company an additional technology offering for the fossil market to meet a variety of market demands.

While GSE simulators are primarily utilized for power plant operator training, the uses are expanding to include engineering, plant modification studies, and operation efficiency improvements for both nuclear and fossil utilities. During plant construction, simulators are used to test control strategies and ensure on-time start-up. After commissioning, the same tools can be used to increase plant availability and optimize plant performance for the life of the facility. In 2002, the Company developed a plant optimization scheme using its simulation technology in a new and unique way. The Company is actively seeking partners to help bring this new application to the marketplace.

In 2002, the Company continued to expand the sale of its plant optimization tools based on advanced signal analysis technology. The Company's Pegasus Plant Surveillance and Diagnosis System helps improve plant availability, safety and economy. Pegasus is a software package for semi-automatic plant surveillance and diagnostics and enables site engineers to perform detailed analysis for specified component faults, allowing the identification of degraded performance and replacement of components before they fail. SensBase provides comprehensive sensor test services, thus ensuring that changes in transmitters and other instruments do not jeopardize the function of the nuclear plant protection systems. BRUS, a noise analysis program package, is a collection of signal analysis tools which allow users to detect developing abnormalities in the plant. The Company's worldwide reputation for boiling water reactor stability training lead to an increase in sales of both stability training courses, and the Company's SIMON Stability Monitoring equipment. The Company has been very successful in selling this technology to European and Asian customers and is investigating its viability in the US market.

In 2001, the Company entered into a strategic marketing alliance with General Physics Corporation, which is expected to help expand the Power business. General Physics Corporation is the leading supplier of operator instructional training programs for the Power industry. Whereas GSE is the leading manufacturer of operating training simulators for the Power industry, the alliance with General Physics Corporation will allow a more encompassing solution to both companies' client base and strengthen their respective product lines. In addition to cooperating in marketing of individual products, the companies will combine some of General Physics' extensive training materials and programs with GSE's power plant simulation models to provide truly interactive and adaptive total training solutions. GSE will also help sell and distribute General Physics' GFE product to GSE's customer base. The companies are working towards a unique web-enabled training capability offering the Company's simulation technology.

In light of recent security concerns at nuclear plants and other sensitive locations, the Company began to aggressively market its access control and intrusion detection system to the nuclear and process industries, technology that the Company had acquired several years ago but had not committed resources to develop. In 2002, the Company hired technical and marketing staff to grow the security business. As a result, the Company secured a contract in 2002 with a major nuclear utility to upgrade the security system at one of its nuclear power plants with GAARDS (GSE Alarm, Access, Reporting and Detection System), and to provide licenses to extend the technology to each of the other nuclear

plants operated by the utility. GAARDS is targeted at highly regulated industries that require a very robust and feature rich security system. The system is a command and control center that integrates information card readers, retinal scanners, closed circuit TV and other field devices used for intrusion detection and personnel access control. The Company is also teaming with ManTech Security Technologies Company, a subsidiary of one of its principle shareholders, and other industry security experts to provide turnkey capabilities to the nuclear industry. Services include threat and vulnerability assessments, risk mitigation plans, cost/benefit analysis, security system design, implementation, testing and training.

In 2002, the chemical industry embarked on a self regulated program to assess vulnerability to physical and cyber security at chemical plants. Now that many of those assessments are complete, the Company believes that these plants will begin to upgrade their existing access control and intrusion detection systems in 2003 and beyond. Accordingly, the Company launched several marketing campaigns to promote GAARDS in anticipation of this emerging demand.

The Company also believes it is uniquely qualified to apply its plant design and operations knowledge as well as simulation technology to help customers analyze security threats and develop strategies to test plant recovery strategies in the event of an incident.

The Company entered into an agreement with RedStorm Scientific Inc. in 2002 for the use of GSE software in the drug discovery process. RedStorm is a privately held computational drug design company. Its technology (patents pending), known as Fyrestar, utilizes bio-informatics and computer-aided molecular design to create lead compounds that are developed into successful new drugs. It greatly reduces the significant cost associated with screening thousands of potential compounds common in the drug development process. Under the terms of the agreement, GSE will utilize its eSMART simulation software and graphical user interface to enable scientists to easily access and use the Fyrestar technology, graphically displaying results as the calculations take place. This will enable scientists to adjust their assumptions in real time, and further improve results.

Process Automation Business

The Process Automation Business was profitable in 2002, however, their revenues declined from 2001 mainly due to reduced spending from their largest customer, Westinghouse Savannah River Corporation. Many of Process' customers continue to delay capital expenditures due to the overall US economy and continue to postpone significant upgrades to their process control systems. After downsizing significantly in 2000 and limiting its marketing expenditures for the last several years, Process increased its marketing efforts significantly in 2002 to introduce new products, improve customer's awareness of the Company and its products, and revamp its marketing collateral.

To expand within its traditional customer base and gain new customers, Process embarked upon a program in 2002 to develop a lower-cost, next generation process controller using the latest microprocessor technology. This new controller was part of the third quarter 2002 D/3 product release that also included enhanced alarming and improved security features. This new version of the D/3 product will allow the Company to bridge the cost gap between programmable logic controllers (PLCs) and the distributed control systems while providing the increased performance of a full-function distributed control system. This more cost effective solution will enable existing customers to apply automation to areas of their plants that could not previously afford the benefits of a full-function distributed control system. The Company has initiated a program to expand its distribution channels for its new products, particularly in smaller, batch applications where previously the power of the D/3 could not be cost effectively applied. To this end the Company has partnered with six Manufacturer's Representative organizations and two Systems Integrator companies. This new Channel Partnership program has increased the number of salespeople selling the D/3 by over fifty. The Company intends to add additional partners as needed.

In support of the aggressive sales efforts, the Process business unit also initiated a number of marketing activities in 2002 in an effort to improve awareness of GSE Systems in the marketplace. Although the D/3 family of technology products is superior to other offerings, many potential new customers are not aware of the Company. Accordingly, Process created an integrated marketing program to reach new customers which included:

- * Designing and developing new corporate brochures, pamphlets and other marketing literature,
- * Developing a new web site that was released in August,
- * Launching two direct mail campaigns--one for existing customers and the other for prospects in the specialty chemical, pharmaceutical, and food and beverage industries,
- * Launching a public relations campaign in an effort to use the media for awareness,
- * Establishing a contract with ARC Advisory Group, a leading analyst firm in the process manufacturing industry, and
- * Launching a customer reference program in an effort to document successes with our loyal customer base.

In October 2002, GSE purchased the stock of ManTech Automation Systems (Beijing) Company Ltd, from ManTech International Corp. (ManTech is a principle shareholder of the Company). The Chinese company, which has seven employees, was renamed GSE Systems Engineering (Beijing) Company Ltd. This acquisition gave the Company a much needed base in China to pursue and implement automation and simulation projects in that emerging market. In order to compete in the world market, many large manufacturing companies have moved or intend to move some of their manufacturing plants to China to take advantage of low labor costs and to be positioned to participate in the large Chinese market. GSE has been informed of such plans by some of its existing customers; these customers have indicated that they intend to install GSE's D/3 control systems for their automation processes in these new facilities. In 2002, GSE received a contract in China for delivering a D/3 system and process simulation software; this project was implemented by our Chinese subsidiary successfully with minimum support from GSE headquarters. The Company believes that its new Chinese operation will be able to provide critical local services that will enable the Company to meet the needs of the Chinese market. Access to low cost engineering labor will also enable the Company to be more

competitive in its worldwide operations.

Research and Development

Throughout the year, GSE continued to invest in its core products of D/3 Distributed Control System and Power simulation technology. As mentioned above, the Company enhanced the capabilities of the D/3 through significant investment in a lower-cost, next generation process controller using the latest microprocessor technology. This new controller was part of the third quarter 2002 D/3 product release that also included enhanced alarming and improved security features. GSE also invested in the development of additional enhancements to its FlexBatch Recipe and Process Management software.

The Company also released several power plant simulation tools using Java Technology in 2002. The Graphic User Interfaces (GUI) for the Power GSuite and Topmeret tools were replaced with a Java-based GUI, thus providing platform independence and internet enabling. These tools include JElectric, JFlow, JDesigner, JLogic, JControl, JExec and JStation which are the software packages of the JADE suite of tools.

Background.

GSE Systems was formed on March 30, 1994 to consolidate the simulation and related businesses of S3 Technologies, General Physics International Engineering & Simulation and EuroSim, each separately owned and operated by ManTech International Corporation, GP Strategies Corporation and Vattenfall AB, respectively. On December 30, 1994, GSE Systems expanded into the process control automation and supply chain management consulting industry through its acquisition of the process systems division of Texas Instruments Incorporated, which the Company operates as GSE Process Solutions, Inc. ("Process Solutions").

In December 1997, the Company acquired 100% of the outstanding common stock of J.L. Ryan, Inc. ("Ryan"), a provider of engineering modifications and upgrade services to the power plant simulation market. The combination of the Company's pre-existing technology with the technical staff of the acquired Ryan business positioned the Company to be more competitive for modifications and upgrade service projects within the nuclear simulation market.

In April 1999, the Company acquired certain assets and employed the associates of BatchCAD Limited. The BatchCAD product was a key element in the Company's VirtualPlant business and marketing strategy.

In early 2000, while implementing the VirtualPlant strategy, the Company participated in the founding of Avantium International B.V. Avantium, a Netherlands-based high technology company, employs high-speed experimentation and simulation technologies in contract research and development in the area of new product development and process chemistry. In connection with Avantium's founding, the Company licensed certain of its simulation software and automation system products in exchange for Avantium preferred and common stock. GSE was subsequently hired by Avantium to provide software to automate and maximize Avantium's lab environment. Avantium also hired the Company to make certain improvements and enhancements to the software it licensed to Avantium.

In early 2000, GSE determined that outside investment was required to support its VirtualPlant business, however, the Company was unsuccessful in attracting the needed capital on acceptable terms. Accordingly, in March 2001, the Company sold its VirtualPlant assets and technology, including its BatchCAD product, to Avantium. GSE received 200,000 shares of Avantium preferred stock and 280,000 shares of Avantium common stock. At December 31, 2002 the Company owned 6.1% of Avantium.

During 2002, the Company invested in RedStorm Scientific Inc., an emerging biotechnology company utilizing a proprietary (patent pending) computational technology for protein analysis called Fyrestar. RedStorm Scientific Inc. needed a software development and operating environment to optimize the Fyrestar code. The Company customized its eSMART (engineering, Simulation, Management and Real-Time) product. In addition to the potential growth of RedStorm Scientific Inc., the Company proved that eSMART is a viable product to help companies, laboratories and educational institutions optimize their large, complex and often inefficient computer codes. At December 31, 2002 the Company owned 10.2% of RedStorm.

In October 2002, GSE purchased the stock of ManTech Automation Systems (Beijing) Company Ltd, from ManTech International Corp. The Chinese company, which has seven employees, was renamed GSE Systems Engineering (Beijing) Company Ltd. This acquisition gave the Company a much needed based in China to pursue and implement automation and simulation projects in that emerging market.

Power Simulation Business.

The Company's Power Simulation Business is comprised of three divisions: Power Simulation, Plant Security Systems, and Process Simulation.

Power Simulation.

Industry

The real-time simulation industry grew from the need to train people on complex and potentially dangerous operations, without placing life or

capital assets at risk. Real-time simulation has been used for the training of plant operators for the power industry, including both nuclear power plants and conventional fossil fuel power plants (i.e., coal, oil, and natural gas), since the early 1970s. Real-time simulation usage has traditionally centered on initial training of operators and follow-on training of operators in emergency conditions that can best be achieved through simulation replicating actual plant operations.

In the nuclear power industry, use of a simulator that accurately reflects the current actual plant design is mandated by the U.S. Nuclear Regulatory Commission. This mandate resulted from the investigation of the accident at the Three Mile Island nuclear plant in 1979, which was attributed, at least in part, to operator error. The NRC requires nuclear plant operators to earn their licenses through simulator testing. Each nuclear plant simulator must pass a certification program to ensure that the initial plant design and all subsequent changes made to the actual plant control room or plant operations are accurately reflected in the simulator. Plant operating licenses are tied to simulator certification.

Full scope power plant simulators are a physical representation of the entire plant control room. The control panels are connected to an input/output (I/O) system, which converts analog electrical signals to digital signals understood by the simulation computer. The simulation computer houses the mathematical models, which simulate the physical performance of the power plant's systems such as the reactor core, steam boiler, cooling water, steam turbine, electrical generator, plant system controls and electrical distribution systems. Partial scope simulators can be viewed as a subset of a full scope simulator. Instead of simulating the entire performance of the power plant, a partial scope simulator might represent one or two critical systems such as the steam turbine and/or electrical generator operation.

In the past, training simulators had to strike a delicate balance between providing an accurate engineering representation of the plant, while still operating in "real-time" in order to provide effective training. As computing power has increased, so too has the capacity of simulators to provide more accurate plant representations in real-time based upon simulation models developed from engineering design codes.

Simulation also is used to validate proposed plant equipment changes to confirm the results of such changes, prior to making the change in the plant, which can save time and money, as well as reduce the risk of unsafe designs, for the utility.

Demand for new simulators in the nuclear power industry shifted to the international market in the 1990s, as the domestic market was limited to upgrades and replacement of existing simulators. However, the Company believes that the new National Energy Policy's emphasis on the importance of nuclear power to the U.S. energy supply may result in the extension of the useful lives of U.S. nuclear power plants. Any service life extension of a nuclear power plant is likely to require major upgrades to the plant's equipment and technology, including its simulator.

Fossil fuel plant simulators are not required by law or regulation, but are justified as a cost-effective approach to train operators on new digital control systems being implemented at many fossil fuel power plants. The size, complexity and price of a fossil plant simulator are much lower than for simulators used for nuclear plants. Fossil plant simulators have traditionally used lower fidelity (less sophisticated) mathematical models to provide an approximate representation of plant performance. The demand for highly accurate models did not exist in the early market for fossil simulators since the main use of the simulator was to train operators on the functionality of distributed control systems for plant start-up activities.

The deregulation of the power industry has forced utilities to view their assets differently. Power plants must now be profit centers, and gaining the maximum efficiency from the plant to become, or remain, competitive is a paramount issue. The mindset of the operator has shifted, as plant operators now must perform within narrower and narrower performance margins while still maintaining safe operations. GSE believes its fossil fuel plant customers are now recognizing the benefits of high fidelity simulation models that provide highly accurate representations of plant operations to help plant operators and management determine optimal performance conditions.

Despite the recent down-turn in the domestic power plant development market, the Company sees two trends which may indicate the need for more simulation products and services. First, the license extension process in the nuclear industry may result in significant changes in plant equipment and control room technology. Based upon US Nuclear Regulatory Commission regulations, each training simulator is required to reflect all changes that are made in the actual plant, thus when changes in plant equipment and control room technology are made, the nuclear power plants must either upgrade existing simulators or purchase brand new simulators. Second, the aging of the nuclear and fossil plant operator workforce will result in the need for simulation to train the next generation of plant operators.

Therefore, the Company believes that these trends, if they come to fruition in whole or even in part, represent a market opportunity for its real-time simulation, plant optimization, asset management and condition monitoring products and services.

GSE's solution

The Company's Power Simulation business is a leader in the development, marketing and support of high fidelity, real-time, dynamic simulation software for the electric utility industry. The Company has built or modified about 65 of the approximately 75 full-scope simulators serving about 103 operating nuclear power plants in the United States. Outside the United States, GSE has built or modified about 73 of the approximately 167 full-scope simulators serving approximately 329 operating nuclear power plants.

In addition to operator training, the Company's simulation products and services permit plant owners and operators to simulate the effects of changes in plant configuration and performance conditions to optimize plant operation. These features allow the Company's customers to understand the cost implications of replacing a piece of equipment, installing new technology or holding out-of-service assets. GSE has also developed a suite of tools based on sophisticated signal analysis and simulation techniques to help its customers manage their assets by

determining equipment degradation before it severely impacts plant performance.

The Company has also focused on upgrading older technology used in power plants to new technology upgrades for plant process computers, safety parameter display systems, and plant access security systems. As nuclear plants in the U.S. continue to age, the Company will seek more business in this upgrade market.

GSE provides both turnkey solutions, including simulated hardware and proprietary software, to match a specific plant, and discrete simulation technology for specific uses throughout a plant. Its substantial investment in simulation technology has led to the development of proprietary software tools. These tools significantly reduce the cost and time to implement simulation solutions and support long-term maintenance. The Company's high fidelity, real-time simulation technology for power plant fluid, logic and control, electrical systems and associated real time support software, JADE, is available in UNIX, Linux, and Windows XP computer platforms. This technology is specifically designed to provide user friendly graphic interfaces to the Company's high fidelity simulator.

In addition to the simulator market, the Company offers products aimed at improving performance of existing plants by reducing the number of unplanned outages due to equipment failure. Using advanced signal analysis techniques, the Company's tools can predict when certain plant equipment needs to be replaced. Replacement of critical equipment prior to failure permits effective planning and efficient use of maintenance time during scheduled off-line periods. In the future, the Company will apply this technology to its process control systems to help customers better manage plant assets.

Other products of the Power Simulation business include:

- * Java Applications & Development Environment (JADE), a Java-based application that provides a window into the simulation instructor station and takes advantage of the web capabilities of Java, allowing customers to access the simulator and run simulation scenarios from anywhere they have access to the web. JADE includes the following software modeling tools:
 - * Jflow, a modeling tool that generates dynamic models for flow and pressure networks.
 - * Jcontrol, a modeling tool that generates control logic models from logic diagrams.
 - * Jlogic, a modeling tool that generates control logic models from schematic diagrams.
 - * Jelectric, a modeling tool that generates electric system models from schematic and one-line diagrams.
 - * Jtopmeret, a modeling tool that generates two phase network dynamic models.
 - * Jdesigner, a JADE based intuitive graphic editor for all JADE tools.
 - * Jstation, a JADE based web-enabled Instructor Station.

- * G_Suite, a suite of software modeling tools developed under the Microsoft Windows environment. It includes:
 - * Gflow, a modeling tool that generates dynamic models for flow and pressure networks.
 - * Gcontrol, a modeling tool that generates control logic models from logic diagrams.
 - * Glogic, a modeling tool that generates control logic models from schematic diagrams.
 - * Gelectric a modeling tool that generates electric system models from schematic and one-line diagrams.

- * SimExec, a Windows NT-based real-time simulation executive system that controls all real-time simulation activities and allows for an off-line software development environment in parallel with the training environment. It runs on Microsoft Windows, UNIX and LINUX operating systems.

- * SmartTutor, complementary software for instructor stations. It provides new capabilities to help improve training methodologies and productivity. Using Microsoft ActiveX controls, SmartTutor allows the control of the simulator software directly from Microsoft Office products. The user can run training scenarios directly from a Microsoft Word document, or he can plot and show transients live within a Microsoft PowerPoint slide.

- * eXtreme I/S, a Microsoft Windows based Instructor Station that allows the use of Microsoft Word and PowerPoint to control the real-time simulation environment. eXtreme I/S is a user-friendly tool for classroom training and electronic report generation. It provides real-time plant performance directly from the simulator during classroom training, which drastically increases learning efficiency.

- * Pegasus Surveillance and Diagnosis System, a software package for semi-automatic plant surveillance and diagnostics, incorporates sophisticated signal processing and simulation techniques to help operators evaluate the condition and performance of plant components. Pegasus permits plant management to identify degraded performance and replace components before they fail.

- * SIMON, a computer workstation system used for monitoring stability of boiling water reactor plants. SIMON assists the operator in determining potential instability events, enabling corrective action to be taken to prevent unnecessary plant shutdowns.

- * Vista PIN, a PC-based plant information system, provides unparalleled flexibility usefulness and ease of maintenance while decreasing the cost of ownership. Vista PIN provides real-time display of process parameters, trends, alarm status, and historical data archiving with on-line retrieval.

The Power Simulation business also provides consulting and engineering services to help users plan, design, implement, and manage/support simulation and control systems. Services include application engineering, project management, training, site services, maintenance contracts

and repair.

Strategy

The goal of the Power Simulation business is to expand its business on three fronts. First, it intends to continue serving its traditional customer base and to be prepared to meet increased demand if traditional simulation use grows in relation to increased electric capacity in the United States. Second, it intends to market its existing and upgraded simulation products and its newly developed signal analysis products as plant optimization, asset management and condition monitoring tools. And, third, it intends to leverage its existing engineering staff to provide additional services to domestic and international clients.

Traditional Simulation Market. Nuclear power currently accounts for about 20% of the electrical power grid capacity in the United States and this percentage will likely remain the same even as total capacity increases. Any new nuclear power plants will likely be of the advanced reactor designs created by Westinghouse, General Electric and Siemens. These new designs require new simulators and training programs, as they are different from the nuclear power plant designs currently in operation. In addition to new power plants existing nuclear power plants will likely be required to remain on-line for a longer period than originally expected. In order to stay in operation, many plants will require life extension modifications. Since all existing US nuclear power plants went on-line before 1979, their designs and technology can also benefit from the substantial advances in plant design and technology developed over the past 20 years. For example, several of the Company's U.S. utility customers are considering replacing their existing hard panel control rooms with modern distributed control systems (DCS) as are common in fossil fuel plants, and which have been implemented in Europe for several years. Significant changes to control room instrumentation and overall control strategy from hard panel to DCS generally require modification or replacement of the plant simulator. With the largest installed base of nuclear plant simulators in the world, the Company believes it is uniquely positioned to serve this market segment with new simulation products and services.

As plants extend their useful life, many plan to "up-rate" the existing capacity to increase electrical yield. By changing the capacity of certain equipment in a plant, the utility can gain upwards of a 10%-15% increase in output. Again, any such changes must be reflected in the control room simulator, and operators must be trained on the new equipment before implementation.

In addition to the United States markets, several emerging regions of the world are expanding their electrical capacity with both nuclear and fossil fuel power plants. The Company believes this expansion includes the need for integrated simulation and training programs and has developed products that will enable it to exploit the fossil fuel simulation marketplace. GSE is increasing its marketing efforts in this area

Simulation Beyond Training. In addition to operator training, the Company's simulation products can meet this increased need for efficiency by assisting plant operators in understanding the cost implications of replacing equipment, installing new technology and maintaining out-of-service assets. In order to exploit this potential, the Company has increased the fidelity of its simulation products and is marketing its services to increase the fidelity of simulators that are already in operation.

As computing power and networking technologies improve, several of the Company's customers have started to migrate simulation technology from the training organization to the engineering organization. The same full scope simulation software that drives the simulated control room panels in a simulator can be used with graphical representations of the panels so engineers can test design changes and see how the balance of the plant will react to such changes. GSE has developed a Java-based application to allow customers easier access to, and use of, the simulation capabilities across the organization through network communication.

Optimize Existing Engineering Resources. GSE's Power domestic service organization focuses on simulator upgrades and retrofits. This group employs over 20 engineers, and in addition, the Company employs over 60 engineers at the Columbia, Maryland headquarters capable of servicing the upgrade/retrofit and new simulator market. In addition to domestic resources, GSE has developed a network of trained engineers in Russia, Ukraine, Czech Republic, Bulgaria, India and China. These foreign resources provide low cost engineering and software development capabilities and are readily available to supplement the United States engineering staff as necessary.

In addition, the Power Simulation business has grown through acquisitions and will continue to pursue acquisitions and investment opportunities that will create value and enhance cash flow. The Company targets acquisitions and investments that provide:

- * Cost savings opportunities
- * Enhanced positioning in existing markets
- * Entry into new geographic and industry markets
- * Turnaround opportunities for under-performing businesses

Strategic Alliances

Power's strategic alliances have enabled the Company to penetrate regions outside the United States by combining the Company's technological expertise with the regional presence and knowledge of local market participants. These strategic alliances have also permitted the reduction of

research and development and marketing costs by sharing such costs with other companies.

In recent years, an increasing amount of the Company's international business has come from contracts in Eastern Europe, including the republics of the former Soviet Union, the Pacific Rim and India. In order to acquire and perform these contracts, the Company entered into strategic alliances or partnerships with various entities including Automation Systems Co. Inc., a subsidiary of Beijing Jihang Automation (China); All Russian Research Institute for Nuclear Power Plant Operation (Russia); Kurchatov Institute (Russia); Macmet Ltd. (India); PowerGen (England); Risk Engineering Ltd. (Bulgaria); Samsung Electronics (Korea); Toyo Engineering Corporation (Japan); and the Institute for Information Industry (Taiwan).

In addition to traditional partners, GSE has developed a marketing cooperation arrangement with the Power Technology group of PowerGen, the UK's largest power company. This relationship gives GSE access to the European fossil simulation market, as well as the tools necessary to simulate the Siemens Teleperm control system, one of the more popular control systems being offered to U.S. nuclear power plants.

Competition

The Power Simulation business encounters intense competition. In the nuclear simulation market, GSE competes directly with larger firms primarily from Canada and Germany, such as Canadian Aerospace & Electronics (CAE), and STN Atlas. The fossil simulation market is represented by smaller companies in the U.S. and overseas. Several of the Company's competitors have greater capital and other resources than it has, including, among other advantages, more personnel and greater marketing, financial, technical and research and development capabilities. Customer purchasing decisions are generally based upon price, the quality of the technology, experience in related projects, and the financial stability of the supplier.

Customers

The Power Simulation business has provided approximately 200 simulation systems to an installed base of over 75 customers worldwide. In 2002, approximately 57% of the Power Simulation revenue was generated from end users outside the United States. Customers include, among others, Ameren, Arizona Public Service, Carolina Power and Light Company, Commonwealth Edison Company, Eskom South Africa, Karnarft Sakerhet & Utbildning AB, Korean Electric Power Company, Nationalina Elektrischecka Kompania, Orgrez SC, Battelle's Pacific Northwest National Laboratory, Taiwan Power Company, and West Bengal Development Corp.

For the years ended December 31, 2002, 2001, and 2000 one Power Simulation customer (Battelle's Pacific Northwest National Laboratory) accounted for approximately 11%, 17%, and 22%, respectively, of GSE's consolidated revenues. The Pacific Northwest National Laboratory is the purchasing agent for the Department of Energy and the numerous projects GSE performs in Eastern and Central Europe.

Sales and Marketing

The Company markets its Power Simulation products and services through a network of direct sales staff, agents and representatives, systems integrators and strategic alliance partners. A direct sales force is employed in the continental United States. Market-oriented business and customer development teams define and implement specific campaigns to pursue opportunities in the power marketplace.

The Company's ability to support its multi-facility, international and/or multinational Power Simulation clients is facilitated by its network of offices and strategic partners in the U.S. and overseas. Power Simulation offices are maintained in Maryland and Georgia, and outside the U.S., in Sweden and Japan. In addition to the offices located overseas, the Company's ability to conduct international business is enhanced by its multilingual and multicultural work force. GSE has strategic relationships with systems integrators and agents representing its interests in:

| | |
|----------------|----------------------------|
| Russia | South Africa |
| Germany | Mexico |
| Bulgaria | Brazil |
| Spain | Taiwan |
| Czech Republic | South Korea |
| India | Japan |
| United Kingdom | People's Republic of China |
| Ukraine | |

Plant Security Systems

Industry

The access control market is a \$2 billion subset of the \$15 billion monitoring and identification security market according to Morgan-Keegan. Prior to the events of September 11, 2001, the nuclear power plant security industry was focused on upgrading existing security systems to new computing technology. Each plant has an access control and intrusion detection system in compliance with regulations promulgated by the Nuclear Regulatory Commission (NRC). The market was focused on upgrading existing control systems with newer computing hardware and more powerful database systems. The requirements included the ability to interface to new field sensing devices such as CCTV, microwave sensors, and more sophisticated biometric devices such as hand geometry and retinal scanners. The market is very diverse, serviced by a number of vendors without clear dominance.

After the events of September 11, 2001, concern over the vulnerability of nuclear plants to terrorist attacks has heightened. The NRC has issued new directives to increase plant security, and the industry is formulating its strategy and response. Of significance is the NRC and industry re-evaluation of the "design basis threat" for nuclear plants. New terrorist capabilities and strategies must now be factored into plant protection, addressing both external threats and potential internal threats.

In addition to nuclear power reactors, there are numerous research reactors and nuclear waste storage and processing facilities throughout the country. Concern also centers on reactors in Eastern Europe, and the Department of Energy is currently developing its strategy regarding nuclear plant security as it relates to US policy and national security. The Company plans to utilize the channels to market it has developed in the international nuclear market to pursue the international nuclear security segment.

In addition to nuclear power, the domestic chemical, pharmaceutical and food and beverage industries are evaluating their vulnerability to terrorist threats. The American Chemical Council is recommending that manufacturers of chemical products step up their role in protecting America's homeland. There are over 15,000 chemical plants in the U.S. that have large quantities of extremely toxic or volatile chemicals. Unlike the nuclear power industry, there are no common standards of security across plants in the chemical industry.

Cyber security, particularly regarding plant process control systems, is a growing concern, and is also being addressed by the American Chemical Council and other industry associations. A part of the vulnerability assessment methodology addresses internal and external access to process control equipment, especially in light of trends in the process control industry to make systems more open and integrated with other plant information systems.

GSE's Solution

The GSE Alarm Access Reporting and Detection System (GAARDS), provides access control and intrusion detection for large industrial applications such as nuclear power plants that require personnel tracking. This system is redundant, stable, and includes such standard features as: access control and intrusion detection, CCTV integration, biometrics and on-line personnel photos, dynamic map displays, advanced event processing, security communications, and systems integration. Using its rich engineering talent, the Company specializes in writing customer interfaces to third party field hardware such as door locks, card readers, CCTV, etc. This capability allows customers to utilize their legacy hardware, and thereby save considerable money when upgrading their security systems.

The Company has also launched a research and development program to utilize its GAARDS technology as an authentication/validation server for the Company's and third party process control systems. Securely integrating the physical site security system with process control cyber security will provide the Company with a unique offering to the process industries.

In addition to plant access control systems, the Company believes the plant design and operations knowledge it has gained through simulation gives it the expertise to help utilities uncover and assess plant vulnerabilities. The Company's simulation capability can be used to assist the industry in testing threat scenarios and response time frames. The Company continues to work with experts in vulnerability assessment methodologies to bring this unique application of simulation to the market.

Strategy

GAARDS is focused on highly regulated markets such as nuclear power, chemical processing, pharmaceutical development and food and beverage. These industries either already require, or may soon require, the robust features already designed into GAARDS. The Company will also focus on the upgrade market, leveraging its ability to interface with existing customer hardware and thereby providing an economic advantage to the Company's solution.

The Company will continue to differentiate itself through offering services beyond just the access control system implementation. The Company is teaming with ManTech Security Technologies Company to provide turnkey capabilities to the nuclear industry. Services range from threat and vulnerability assessments, risk mitigation plans, cost/benefit analysis, security system design to implementation, testing and training.

Competition and Competitive Advantage

The nuclear plant access control and intrusion detection system market is not dominated by any vendor. This market is best classified as an upgrade market, and the Company believes that it is in a strong position to compete due to its superior technology and ability to provide cost effective upgrade solutions. The Company's experience and reputation as a reliable supplier to the nuclear industry and as a systems integrator of complex real-time nuclear plant computer systems (Simulators, Security Systems, Plant Process and Control Computers) gives the Company unique access to the industry.

The chemical and pharmaceutical market segment is also served by a wide variety of relatively small sized companies. The Company believes that emerging security awareness in this segment will result in the demand for the more sophisticated security solutions offered by the GAARDS product. In addition, the use of GAARDS in combination with process control system security provides the Company a unique advantage.

Sales and Marketing

The Company will market its plant access control systems in the nuclear power and process markets through a combination of techniques including its existing direct sales channel, sales agents, strategic alliance partners and system integrators. The Company is building its Systems Integrator channel and investing in the necessary support infrastructure to make this channel successful.

Process Simulation.

Industry

Throughout the process industries there is continuing competitive pressure and a reduction of technical resources, which is forcing process manufacturers to turn to advanced technologies for real-time optimization, training, and advanced process control. Operational efficiency is vital for companies to remain competitive where many of the manufacturing industries operate on very thin margins. There are only one or two advanced technology companies that offer services fully across this spectrum, and GSE offers dynamic real-time simulation capabilities for operator training into this segment.

GSE's Solution

The SimSuite Pro product was developed by GSE specifically for operator training, and the GSE culture and expertise is one of customized project execution and delivery. This marketplace places a high value on experience, both company-wide and for the individuals on the project teams, so GSE promotes its long history in training simulators, while also seeking new applications. The SimSuite Pro package continues to be enhanced with features applicable not just to the execution of professional training techniques, but also to the recording and validating of process operator performance for potential certification.

Strategy

The core concepts of process simulation make the technology a basis for other potential process improvement activities, such as Advanced Process Control and Process Optimization, which is where some of the major GSE competition has more business focus than for operator training. GSE will continue to emphasize its operator training focus and strengths, as well as the application of the process simulator for change management, where changes in the process, control strategy, or operating procedures, can be evaluated in real time before they are applied to the actual process units. On-stream time is an important economic factor, and there is recognizable value in avoiding the risk of unplanned process disturbances from invalidated changes.

Competition and Competitive Advantage

GSE's competitors are a varied group. There are major corporations offering a wide range of products and services that include operator training simulators. There are also companies focused on Process Technology and manufacturing enhancement, such as ABB and Honeywell who are DCS distributors to the refining industry and provide operator simulation as part of their DCS offering. There is a collection of companies with specific industry niches that lets them sometimes compete in operator training simulation, such as Invensys and AspenTech. There are also the smaller training companies that compete at the lower cost levels of CBT (Computer Based Training) or simple simulations close to CBT.

The GSE company focus on training simulation is a business strength to project, and its vendor independence, with the ability to integrate to different vendor's process control systems, is also a value which is appreciated. GSE can be seen as a best-of-breed type of supplier because it is not tied to a major control system, nor is it providing simulation software for engineering and business management with high annual license fees.

Sales and Marketing

The Company will market its Process Simulation technologies through a combination of techniques including its existing direct sales channel, sales agents, and strategic alliance partners.

Process Automation Business.

Industry

Process control systems automate manufacturing and other processes, thereby reducing labor and other production costs and maximizing production efficiency. According to the Automation Research Council (ARC), the worldwide market for Automation Products and Services for Process Industries, over \$44 billion in 2001, is expected to grow at the Compounded Annual Growth Rate (CAGR) of just over 5 percent over the next five years, reaching close to \$57 billion in 2006. In addition, the ARC reports that roughly \$65 billion worth of installed process control systems that are rapidly approaching the end of their useful life. These systems simply cannot deliver the level of functional autonomy and coordination required to be competitive. In their quest for operational excellence, process manufacturers face further challenges and the need to maximize Return on Assets (ROA). Manufacturing assets represent 75% of capital assets for most process manufacturers and most of these assets are controlled by process automation.

The sales of process control systems have been driven by customer desires to improve production efficiency and reliability, and thereby maximizing Return on Assets. The capital-intensive and competitive nature of manufacturing requires companies to focus on designing, monitoring, and modifying the production processes in the most efficient and profitable manner. Process control systems consist of rugged microprocessor-based hardware, which is physically distributed throughout a plant and linked by digital communications to control centers. These systems allow users to monitor and control various functions. The graphic information and control displays utilized by these systems enhance the customer's strategic production and emergency decision-making capabilities.

Two parts of the industry, the batch and hybrid controls markets, are of particular interest to GSE. The batch controls market focuses on products made in batches versus a continuous process. The Company believes the need for traceability and increased government requirements (e.g., EPA, FDA) is fueling the growth of batch control systems in the United States. The hybrid controls market focuses on the integration of manufacturing automation and business systems. The Company believes that the growth in e-business and the need to optimize performance of supply chains are increasing the need for real-time plant and production information that can be met by hybrid control systems.

GSE's solution

The Process Automation business designs, develops and delivers process control, data acquisition, client/server and business software, systems and services. These products permit the Company's customers to maximize the use of plant assets by making real-time process information more easily available, thereby enabling faster and better informed operating decisions.

Process Automation products and services are targeted at the following industries in which the Company's personnel have substantial experience:

- * Specialty chemicals * Pharmaceutical
- * Food and beverage * Metals

The flagship product in the Process Automation business is the D/3 DCS, a distributed control system product that is highly flexible and designed to meet open standards. D/3 DCS is a real-time system, which uses multiple process control modules to monitor, measure, and automatically control variables in both continuous and complex batch processes. D/3 DCS also forms the platform for plant-wide information for operators, engineers and management.

Other products of the Process Automation business include the following:

- * D/3 Compact, a compact packaging of D/3 DCS with full functionality and the capability to be expanded to a regular D/3 system.
- * FlexBatch, a flexible batch manufacturing system used to facilitate the rapid creation of various batch production processes.
- * TotalVision, a graphical system that provides a client/server-based human-machine interface for real-time process and plant information.
- * TotalWebVision, a web-enabled version of the TotalVision package.
- * SABL, a sophisticated batch and sequential manufacturing software language that permits the scheduling and tracking of raw materials and finished products, data collection and emergency shutdown procedures.

The Process Automation offerings also include real-time dynamic simulation tools and products that are used to develop high fidelity simulations for chemical processing and other industrial plants. The most prominent set of simulation products and tools is called SimSuite Pro. SimSuite Pro facilitates design verification, process optimization and operator training in various types of manufacturing operations.

Strategy

The goal of the Process Automation business is to expand its leading position as a provider of process automation solutions and services to its target markets of batch and hybrid control for the specialty chemical, food and beverage, and pharmaceutical industries. GSE's strategy has the following key elements:

- * **Maintain Existing Customer Base.** The D/3 system (including its early releases) has been used for process automation by existing customers for more than 20 years. Throughout the advancement of new technology, the Company always provides an upgrade path for customers to utilize its investment in application software such that the maximum ROI (Return of Investment) will be achieved. Also, a customer-focused business approach is the Company's operation philosophy which distinguishes the Company from its large competitors.
- * **Improving technology.** The D/3 DCS distributed control system is designed as an open standard that can work with a customer's existing software. In 2000, the Company expanded its open system software to permit communication with third-party I/O and implemented additional Microsoft technology such as Windows 2000 and Microsoft's OLE for process control to permit layering of third-party applications on its system. In addition, the Company implemented graphical utilities to increase the ease of use of this powerful system. These new tools and interfaces allow customers to use their existing equipment when they wish to upgrade their process automation technology. In 2002, the

Company completed modifying its process control module (PCM) to increase its operating speed and reduce its manufacturing costs. The Company expects that this will allow it to bridge the cost gap between programmable logic controllers (PLCs) and the distributed control systems while providing the increased performance of a full-function distributed control system. The Company will continue to provide value-added differentiation through plant optimization and asset management technologies ported from the Company's power simulation market applications.

* Expand its expertise to new industries. GSE has experience in the specialty chemical, food and beverage, pharmaceutical, and metals industries. The Company will continue to focus its efforts on these industries, but will seek to apply the technical expertise that it has developed to other industries.

* Leverage its expertise through sale of engineering consulting services. The Process Automation group has developed a significant amount of expertise in manufacturing processes. In the past, it has provided field service to customers of its products pursuant to its warranty or an extended service plan. The Company is currently expanding these services to provide applications, hardware and systems engineering consulting services to its customers to improve the integration and performance of their process automation technology.

Competition

The process automation industry is a highly competitive environment that has undergone considerable consolidation over the past few years. The industry is populated with numerous large process control vendors, many of which have substantially greater financial, marketing and other resources than GSE has. Examples include such companies as Foxboro, Siemens, Honeywell and Emerson. The principal factors affecting competition include price, technology, ease of use, reliability, application experience and support programs, and the financial stability of the supplier. The Company competes by employing a "focus" strategy that ensures its new product development protects its customers' previous investments in applications software and process I/O, thereby maintaining or significantly increasing barriers to change.

Customers

The Company has provided over 300 process control systems to an installed base of over 125 customers worldwide. In 2002, approximately 9% of worldwide Process Automation revenue was generated from end users outside the United States. The Company's customers include, among others, Archer Daniels Midland Company, Aristech, Bethlehem Steel Corporation, Cargill Incorporated, Eastman Chemical Company, Formosa Plastics Company, GE Plastics, Merck & Co., Inc., Miller Brewing Company, and Westinghouse Savannah River Company. For the years ended December 31, 2002, 2001, and 2000 one Process Automation customer (Westinghouse Savannah River Company) accounted for approximately 24%, 24%, and 11%, respectively, of the Company's consolidated revenues.

Sales and Marketing

Process Automation markets its products and services through a network of direct sales staff, agents and representatives, systems integrators and strategic alliance partners. It employs a direct sales force in the continental United States that is regionally based, market focused and trained on its product and service offerings. Market-oriented business and customer development teams define and implement specific campaigns to pursue opportunities in the power, process and manufacturing marketplaces. This effort is supported by a regional support organization focused on the current customer installed base.

The Company's ability to support its multi-facility, international and/or multinational clients is facilitated by its network of offices in the U.S. and overseas. Process maintains U.S. offices in:

Louisiana
Maryland
North Carolina

Pennsylvania
South Carolina
Texas

Process Automation has strategic relationships with systems integrators and agents representing its interests in:

Virginia
California
Michigan
New Jersey
Minnesota
Texas
Illinois

Taiwan
People's Republic of China
Belgium
South Korea
The Netherlands

Competitive Advantages.

The Company believes that it is in a strong position to compete in both the Power Simulation and Process Automation markets based upon the following strengths:

* **Technical and Applications Expertise.** GSE is a leading innovator and developer of real-time software with more than 30 years of experience producing high fidelity real-time simulators and over 25 years in producing fully integrated computerized process control systems in more than 25 countries. As a result, the Company has acquired substantial applications expertise in the energy and industrial process industries. The Company employs a highly educated and experienced multinational workforce of more than 240 employees, including approximately 180 engineers and scientists. Approximately half of these engineers and scientists have advanced science and technical degrees in fields such as chemical, mechanical and electrical engineering, applied mathematics and computer sciences.

* **Proprietary Software Tools.** GSE has developed a library of proprietary software tools including auto-code generators and system models that substantially facilitate and expedite the design, production and integration, testing and modification of software and systems. These tools are used to automatically generate the computer code and systems models required for specific functions commonly used in simulation and process control applications, thereby enabling it or its customers to develop high fidelity real-time software quickly, accurately and at lower costs.

* **Open System Architecture.** GSE's software products and tools are executed on standard operating systems with third-party off-the-shelf hardware. The hardware and operating system independence of its software enhances the value of its products by permitting customers to acquire less expensive hardware and operating systems. The Company's products work in the increasingly popular Microsoft operating environment, allowing full utilization and integration of numerous off-the-shelf products for improved performance.

* **International Strengths.** Approximately 31% of the Company's 2002 revenue was derived from international sales of its products and services. GSE has a multinational sales force with offices located in Beijing, China, Nykoping, Sweden, and Tokyo, Japan and agents and representatives in 22 other countries. To capitalize on international opportunities and penetrate foreign markets, the Company has established strategic alliances and partnerships with several foreign entities.

Intellectual Property.

The Company depends upon its intellectual property rights in its proprietary technology and information. GSE maintains a portfolio of patents, trademarks (both registered and unregistered), copyrights (both registered and unregistered), and licenses. While such patents, trademarks, copyrights and licenses as a group are of material importance to the Company, it does not consider any one patent, trademark, copyright, or license to be of such importance that the loss or expiration thereof would materially effect any segment or the Company as a whole. The Company relies upon a combination of trade secrets, copyright, patent and trademark law, contractual arrangements and technical means to protect its intellectual property rights. GSE distributes its software products under software license agreements that grant customers nonexclusive licenses for the use of its products, which are nontransferable. Use of the licensed software is restricted to designated computers at specified sites, unless the customer obtains a site license of its use of the software. Software and hardware security measures are also employed to prevent unauthorized use of the Company's software, and the licensed software is subject to terms and conditions prohibiting unauthorized reproduction of the software.

The Company has several U.S. patents that were issued in the 1996 time frame, none of which (individually or collectively) have a significant role in the Company's current business operations. In accordance with Title 35 U.S. Code Section 154, these patents have a duration of 20 years from the filing date of the application, subject to any statutory extension, provided they are properly maintained. The Company believes that all of the Company's trademarks (especially those that use the phrase "GSE Systems") are valid and will have an unlimited duration as long as they are adequately protected and sufficiently used. The Company's licenses are perpetual in nature and will have an unlimited duration as long as they are adequately protected and the parties adhere to the material terms and conditions.

GSE's registered U.S. trademarks include D/3, D/3 DCS, SABL, TotalVision, Flexbatch and RETACT. Registration is pending or is being

considered for other relevant trademarks, including JADE, SmartTutor, eSmart, D/3 Compact and GAARDS. Some of these trademarks have also been registered in foreign countries. The Company also claims trademark rights to SimSuite Power, SimSuite Pro, SimExec, eXtreme I/S, RACS, PEGASUS Plant Surveillance and Diagnosis System, SIMON, Vista PIN, TotalWebVision and Flexbatch.

In addition, the Company maintains federal statutory copyright protection with respect to its software programs and products, has registered copyrights for some of the documentation and manuals related to these programs, and maintains trade secret protection on its software products.

Despite these protections, the Company cannot be sure that it has protected or will be able to protect its intellectual property adequately, that the unauthorized disclosure or use of its intellectual property will be prevented, that others have not or will not develop similar technology independently, or, to the extent it owns patents, that others have not or will not be able to design around those patents. Furthermore, the laws of certain countries in which the Company's products are sold do not protect its products and intellectual property rights to the same extent as the laws of the United States.

Industries Served.

The following chart illustrates the approximate percentage of the Company's 2002, 2001, and 2000 revenues attributable to each of the Company's reporting segments:

| Industries served | 2002 | 2001 | 2000 |
|-------------------|------|------|------|
| Process | 53% | 50% | 45% |
| Power | 47% | 50% | 55% |
| Total | 100% | 100% | 100% |

Contract Backlog.

The Company does not reflect an order in backlog until it has received a contract that specifies the terms and milestone delivery dates. As of December 31, 2002, the Company's aggregate contract backlog totaled approximately \$29.9 million, with \$19.0 million in contract backlog for the Power Simulation business and \$10.9 million in contract backlog for the Process Automation business. Approximately \$20.1 million or 67% of the backlog is expected to be converted to revenue by December 31, 2003. As of December 31, 2001, the Company's aggregate contract backlog totaled approximately \$21.5 million, with \$10.8 million in contract backlog for the Power Simulation business and \$10.7 million in contract backlog for the Process Automation business.

Employees.

As of December 31, 2002, the Company had 241 employees, a 6% decrease from December 2001. The reductions were primarily associated with the downsizing of the U.S Power business offset partially by the acquisition of GSE Systems Engineering (Beijing) Company Ltd.

Segment Information.

See Note 19, Segment information, in the "Notes to Consolidated Financial Statements" for a discussion of the Company's business segments.

RISK FACTORS.

The Company's expense levels are based upon its expectations as to future revenues, so it may be unable to adjust spending to compensate for a revenue shortfall. Accordingly, any revenue shortfall would likely have a disproportionate effect on the Company's operating results.

The Company's operating results have fluctuated in the past and may fluctuate significantly in the future as a result of a variety of factors, including purchasing patterns, timing of new products and enhancements by the Company and its competitors, and fluctuating foreign economic conditions. Since the Company's expense levels are based in part on its expectations as to future revenues, the Company may be unable to adjust spending in a timely manner to compensate for any revenue shortfall and such revenue shortfalls would likely have a disproportionate adverse effect on operating results. The Company believes that these factors may cause the market price for its common stock to fluctuate, perhaps significantly. In addition, in recent years the stock market in general, and the shares of technology companies in particular, have experienced extreme price fluctuations. The Company's common stock has also experienced a relatively low trading volume, making it further susceptible to extreme price fluctuations.

Risk of International Sales and Operations.

Sales of products and the provision of services to end users outside the United States accounted for approximately 31% of the Company's

consolidated revenues in 2002. The Company anticipates that international sales and services will continue to account for a significant portion of its revenues in the foreseeable future. As a result, the Company may be subject to certain risks, including risks associated with the application and imposition of protective legislation and regulations relating to import or export (including export of high technology products) or otherwise resulting from trade or foreign policy and risks associated with exchange rate fluctuations. Additional risks include potentially adverse tax consequences, tariffs, quotas and other barriers, potential difficulties involving the Company's strategic alliances and managing foreign sales agents or representatives and potential difficulties in accounts receivable collection. The Company currently sells products and provides services to customers in emerging market economies such as Russia, Ukraine, Bulgaria, and the Czech Republic. Although end users in the Ukraine accounted for 10.7%, 17.6% and 7.8% of the Company's consolidated revenue in 2002, 2001 and 2000, respectively, GSE's customer for these projects was Battelle's Pacific Northwest National Laboratory, which is the purchasing agent for the U.S. Department of Energy. The DOE provides funding for various projects in Eastern and Central Europe. Accordingly, the Company is not subject to the political and financial risks that are normally faced when doing business in the Ukraine. The Company has taken steps designed to reduce the additional risks associated with doing business in these countries, but the Company believes that such risks may still exist and include, among others, general political and economic instability, lack of currency convertibility, as well as uncertainty with respect to the efficacy of applicable legal systems. There can be no assurance that these and other factors will not have a material adverse effect on the Company's business, financial condition or results of operations.

The Company relies on two customers for a substantial portion of its revenues. The loss of either of these customers would have a material adverse effect upon the Company's revenues and results of operations.

For the years ended December 31, 2002, 2001, and 2000, one Power Simulation customer (Battelle's Pacific Northwest National Laboratory) accounted for approximately 11%, 17%, and 22%, respectively, of the Company's consolidated revenues. The Pacific Northwest National Laboratory is the purchasing agent for the Department of Energy and the numerous projects the Company performs in Eastern and Central Europe. For the years ended December 31, 2002, 2001, and 2000, one Process Automation customer (Westinghouse Savannah River Company) accounted for approximately 24%, 24%, and 11%, respectively, of the Company's consolidated revenues. If the Company lost either of these customers, the Company's revenue and results of operations would be materially and adversely affected.

The Company's business is substantially dependent on sales to certain industries. Any disruption in these industries would have a material adverse effect upon the Company's revenues.

In 2002, 40% of GSE's revenue was from customers in the nuclear power industry. The Company will continue to derive a significant portion of its revenues from customers in the nuclear power industry for the foreseeable future. The Company's ability to supply nuclear power plant simulators and related products and services is dependent on the continued operation of nuclear power plants and, to a lesser extent, on the construction of new nuclear power plants. A wide range of factors affect the continued operation and construction of nuclear power plants, including the political and regulatory environment, the availability and cost of alternative means of power generation, the occurrence of future nuclear incidents, and general economic conditions.

In 2002, 35% and 10% of the Company's revenue were from customers in the chemicals industry and the food and beverage industry, respectively. Accordingly, the Company's future performance is dependent to a certain extent upon the demand for the Company's products by customers in those industries. The Company's revenues may be subject to period-to-period fluctuations as a consequence of industry cycles, as well as general domestic and foreign economic conditions and other factors affecting spending by companies in the Company's target process industries.

The Company's substantial indebtedness could adversely affect its financial condition.

The Company has substantial indebtedness. In addition, it may increase its indebtedness in the future. The following are important statistics about the Company and its indebtedness:

- * On December 31, 2002, the Company had total interest bearing debt of \$6.2 million, representing 43% of its total capitalization.
- * On December 31, 2002, the Company's available borrowing base was \$6.9 million, of which approximately \$5.4 million had been utilized.
- * On March 23, 2003, the Company's existing credit facility was extended until March 31, 2004. The agreement reduced the maximum commitment under the credit facility from \$10.0 million to \$6.5 million as of March 23, 2003, with an additional reduction to \$5.5 million on October 1, 2003; and a final reduction to \$5.0 million on January 1, 2004.
- * The Company has been informed by its bank that the Company should begin to search for a new financial institution to provide for its future financing requirements. To provide the Company with enough time to perform this search, the bank agreed to provide the Company with a one-year extension of its current credit facility. Accordingly, on March 23, 2003 the Company's credit facility was extended until March 31, 2004. By March 31, 2004, the Company believes that the Company will have transferred the credit facility to a new financial institution.

The Company's level of indebtedness could have important consequences to the stockholders. For example, it could:

- * Make the Company more vulnerable to economic downturns.

- * Potentially limit the Company's ability to withstand competitive pressures.

- * Impair the Company's ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions or general corporate purposes.

- * Make the Company more susceptible to the above risks because borrowings under the Company's credit facility will bear interest at fluctuating rates.

If GSE is unable to generate sufficient cash flows from operations in the future the Company may be unable to repay or refinance all or a portion of its then existing debt or to obtain additional financing. The Company cannot be sure that any such refinancing would be possible or that any additional financing could be obtained on acceptable terms.

The Company's debt agreements impose significant operating and financial restrictions, which may prevent it from capitalizing on business opportunities.

GSE's debt agreements impose significant operating and financial restrictions. These restrictions affect, and in certain cases limit, among other things, the Company's ability to:

- * incur additional indebtedness and liens;

- * make capital expenditures;

- * make investments and acquisitions and sell assets;

- * consolidate, merge or sell all or substantially all of its assets.

There can be no assurance that these restrictions will not adversely affect the Company's ability to finance its future operations or capital needs or to engage in other business activities that may be in the interest of stockholders.

The Company is dependent on product innovation and research and development, which costs are incurred prior to revenues for new products and improvements.

The Company believes that its success will depend in large part on its ability to maintain and enhance its current product line, develop new products, maintain technological competitiveness and meet an expanding range of customer needs. The Company's product development activities are aimed at the development and expansion of its library of software modeling tools, the improvement of its display systems and workstation technologies, and the advancement and upgrading of its simulation and process control technologies. The life cycles for software modeling tools, display system software, process control and simulation technologies are variable and largely determined by competitive pressures. Consequently, the Company will need to continue to make significant investments in research and development to enhance and expand its capabilities in these areas and to maintain its competitive advantage.

The Company relies upon its intellectual property rights for the success of its business; however, the steps it has taken to protect its intellectual property may be inadequate.

Although the Company believes that factors such as the technological and creative skills of its personnel, new product developments, frequent product enhancements and reliable product maintenance are important to establishing and maintaining a technological leadership position, the Company's business depends, in part, on its intellectual property rights in its proprietary technology and information. The Company relies upon a combination of trade secret, copyright, patent and trademark law, contractual arrangements and technical means to protect its intellectual property rights. The Company enters into confidentiality agreements with its employees, consultants, joint venture and alliance partners, customers and other third parties that are granted access to its proprietary information, and limits access to and distribution of its proprietary information. There can be no assurance, however, that the Company has protected or will be able to protect its proprietary technology and information adequately, that the unauthorized disclosure or use of the Company's proprietary information will be prevented, that others have not or will not develop similar technology or information independently, or, to the extent the Company owns patents, that others have not or will not be able to design around those patents. Furthermore, the laws of certain countries in which the Company's products are sold do not protect the Company's products and intellectual property rights to the same extent as the laws of the United States.

The industries in which GSE operates are highly competitive. This competition may prevent the Company from raising prices at the same pace as its costs increase.

The Company's businesses operate in highly competitive environments with both domestic and foreign competitors, many of whom have substantially greater financial, marketing and other resources than the Company. The principal factors affecting competition include price, technological proficiency, ease of system configuration, product reliability, applications expertise, engineering support, local presence and financial stability. The Company believes that competition in the simulation and process automation fields may further intensify in the future as a result of advances in technology, consolidations and/or strategic alliances among competitors, increased costs required to develop new

technology and the increasing importance of software content in systems and products. The Company believes that its technology leadership, experience, ability to provide a wide variety of solutions, product support and related services, open architecture and international alliances will allow it to compete effectively in these markets. As the Company's business has a significant international component, changes in the value of the dollar could adversely affect the Company's ability to compete internationally.

GSE will continue to pursue new acquisitions and joint ventures, and any of these transactions could adversely affect its operating results or result in increased costs or other problems.

The Company intends to continue to pursue new acquisitions and joint ventures, a pursuit which will consume substantial time and resources. Identifying appropriate acquisition candidates and negotiating and consummating acquisitions can be a lengthy and costly process. The Company may also encounter substantial unanticipated costs or other problems associated with the acquired businesses. The risks inherent in this strategy could have an adverse impact on the Company's results of operation or financial condition.

The chemicals and nuclear power industries, two of the Company's largest customer groups, are associated with a number of hazards which could create significant liabilities for the Company.

The Company's business could expose it to third party claims with respect to product, environmental and other similar liabilities. Although the Company has sought to protect itself from these potential liabilities through a variety of legal and contractual provisions as well as through liability insurance, the effectiveness of such protections has not been fully tested. The failure or malfunction of one of the Company's systems or devices could create potential liability for substantial monetary damages and environmental cleanup costs. Such damages or claims could exceed the applicable coverage of the Company's insurance. Although management has no knowledge of material liability claims against the Company to date, such potential future claims could have a material adverse effect on the business or financial condition of the Company. Certain of the Company's products and services are used by the nuclear power industry primarily in operator training. Although the Company's contracts for such products and services typically contain provisions designed to protect the Company from potential liabilities associated with such use, there can be no assurance that the Company would not be materially adversely affected by claims or actions which may potentially arise.

The Company is controlled by the Company's principal stockholders, whose interests may not be aligned with those of the Company's other stockholders.

As of March 11, 2003, ManTech, GP Strategies, the Company's directors and executive officers beneficially own approximately 44% of GSE's outstanding common stock. In addition ManTech owns 39,000 shares of Series A preferred stock, which convert into an aggregate of 1,474,480 shares of common stock. If fully converted by ManTech, ManTech will beneficially own approximately 36% of GSE's outstanding common stock, and GP Strategies will beneficially own approximately 18% of GSE's outstanding common stock. ManTech and GP Strategies disclaim beneficial ownership of all shares, including those subject to option, that are owned by affiliated individuals. ManTech has granted GP Strategies an option to acquire 19,500 shares of the Series A preferred stock from ManTech. If ManTech exercises its option to convert the Series A preferred stock to common stock, and GP Strategies exercises its option to acquire 50% of the Series A preferred stock held by ManTech and also converts those shares to common stock, ManTech will beneficially own approximately 25% and GP Strategies will beneficially own approximately 28%, of GSE's outstanding common stock. If these stockholders vote together as a group, they will be able to control the Company's business and affairs, including the election of individuals to the board of directors, and the outcome of actions that require stockholder approval including mergers, sales of assets, and to prevent, or to cause, a change of control of the Company.

ITEM 2. PROPERTIES.

The Company's Power Simulation business unit is headquartered in a facility in Columbia, Maryland (approximately 53,000 square feet) which also houses the Company's corporate headquarters offices and support functions. The Process Automation business unit is located in a 34,000 square foot facility in Baltimore, Maryland. The leases for both of these facilities expire in 2008.

The Company has entered into a sublease agreement with Alpharma USPD Inc. to sublease 29,000 square feet of its Baltimore, MD facility for a five year period commencing on May 1, 2003. The subtenant may terminate the lease at the end of the second or third year of the agreement provided a six month notice is given. The Company plans to move most of the Process personnel presently using this facility to its Columbia, Maryland facility in April 2003.

In addition, the Company leases office space domestically in Georgia, Louisiana, Texas, Pennsylvania, North and South Carolina, and internationally in China, Japan, and Sweden. The Company leases these facilities for terms ending between 2003 and 2007.

ITEM 3. LEGAL PROCEEDINGS.

The Company is from time to time involved in legal proceedings incidental to the conduct of its business. The Company currently is not a party to legal proceedings that, in the opinion of management, are likely to have a material adverse effect on the Company's business, financial condition or results of operations.

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

No matter was submitted to a vote of security holders during the quarter ended December 31, 2002.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY AND RELATED STOCKHOLDER MATTERS.

The following table sets forth, for the periods indicated, the high and low sale prices for the Company's common stock reported by the American Stock Exchange:

| 2002 | | |
|---------|----------|----------|
| Quarter | High | Low |
| First | \$ 4 | \$ 3 |
| Second | \$ 4 | \$ 2 5/7 |
| Third | \$ 3 1/2 | \$ 2 1/9 |
| Fourth | \$ 2 1/4 | \$6/7 |
| 2001 | | |
| Quarter | High | Low |
| First | \$ 1 4/5 | \$ 1 1/5 |
| Second | \$ 2 5/9 | \$ 1 |
| Third | \$ 2 5/9 | \$ 1 3/5 |
| Fourth | \$ 3 1/9 | \$ 1 5/8 |

The following table sets forth the equity compensation plan information for the year ended December 31, 2002:

| Plan category | Number of securities to be issued upon exercise of outstanding options, warrants and rights | Weighted average exercise price of outstanding options, warrants and rights | Number of securities remaining available for future issuance under equity compensation plans |
|---|---|---|--|
| Equity compensation plan approved by security holders | 1,691,976 | \$4.15 | 808,024 |
| Equity compensation plan not approved by security holders | -- | -- | -- |
| Total | 1,691,976 | \$4.15 | 808,024 |

The Company's common stock is listed on the American Stock Exchange, where it trades under the symbol "GVP".

There were approximately 33 holders of record of the common stock as of March 11, 2003. Based upon information available to it, the Company believes there are approximately 700 beneficial holders of the common stock. The Company has never declared or paid a cash dividend on its common stock. The Company currently intends to retain future earnings to finance the growth and development of its business and, therefore, does not anticipate paying any cash dividends in the foreseeable future on its common stock. The Company has issued 39,000 shares of convertible preferred stock which accrue dividends at an annual rate of 6% payable quarterly. The amendment to the Company's credit facility that was effective March 23, 2003 restricts the Company from paying any dividends on the preferred stock.

The Company believes factors such as quarterly fluctuations in results of operations and announcements of new products by the Company or by its competitors may cause the market price of the common stock to fluctuate, perhaps significantly. In addition, in recent years the stock market in general, and the shares of technology companies in particular, have experienced extreme price fluctuations. The Company's common stock has also experienced a relatively low trading volume, making it further susceptible to extreme price fluctuations. These factors may adversely affect the market price of the Company's common stock.

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

In 2002, the Company incurred a significant operating loss attributable in large part to the performance of the Company's Power business unit. The Power business unit's revenue and profitability were significantly impacted by the completion of several large, multi-year projects in late 2001 and early 2002 coupled with the delay of several very large full-scope international simulator orders. In addition to the operating loss, the Company wrote down its investment in Avantium International B.V., recording a non-cash charge of \$2.8 million and recorded an income tax provision of \$1.4 million resulting mainly from an increase in the Company's valuation allowance to fully reserve the Company's net deferred tax assets.

The Company has a \$10.0 million credit facility with a bank which matured on March 23, 2003. The Company has been informed by its bank that the Company should begin to search for a new financial institution to provide for its future financing requirements. To provide the Company with enough time to perform this search, the bank agreed to provide the Company with a one-year extension of its current credit facility. Accordingly, on March 23, 2003 the Company's credit facility was extended until March 31, 2004. At the time of the extension, the maximum commitment under the credit facility was reduced from \$10.0 million to \$6.5 million as of March 23, 2003; with an additional reduction to \$5.5 million on October 1, 2003; and a final reduction to \$5.0 million on January 1, 2004. Based upon the Company's current forecasts of its cash flow in 2003, the reductions in the maximum commitment will not have an impact on the Company's operations or liquidity. Management believes in order to help improve the Company's liquidity and operating results, management has undertaken actions to reduce its operating expenses, including the reduction in US Power employees by 15 in 2002 and the sublease of 29,000 square feet of its 34,000 square foot Rutherford, Baltimore, Maryland facility effective May 1, 2003.

However, the Company's 2003 profitability and liquidity projections depend on several large full-scope simulator contracts in its Power business unit, several that have been quoted and verbally accepted, but have not yet formally been awarded by the customer. In the event that the Company does not receive these contracts, or is unable to find replacements for these contracts, it may need to seek additional debt or equity financing in 2003. There can be no assurance that such debt or equity financing will be available when needed.

Results of Operations.

The following table sets forth the results of operations for the periods presented expressed in thousands of dollars and as a percentage of revenues.

| | Years ended December 31, | | | | | |
|--|--------------------------|---------|----------|---------|------------|---------|
| | 2002 | % | 2001 | % | 2000 | % |
| Contract revenue | \$ 43,116 | 100.0 % | \$50,331 | 100.0 % | \$ 55,715 | 100.0 % |
| Cost of revenue | 31,801 | 73.7 % | 36,381 | 72.3 % | 40,822 | 73.3 % |
| Gross profit | 11,315 | 26.3 % | 13,950 | 27.7 % | 14,893 | 26.7 % |
| Operating expenses: | | | | | | |
| Selling, general and administrative | 12,303 | 28.5 % | 10,857 | 21.6 % | 17,853 | 32.1 % |
| Depreciation and amortization | 540 | 1.3 % | 1,375 | 2.7 % | 1,695 | 3.0 % |
| Total operating expenses | 12,843 | 29.8 % | 12,232 | 24.3 % | 19,548 | 35.1 % |
| Operating income (loss) | (1,528) | (3.5)% | 1,718 | 3.4 % | (4,655) | (8.4)% |
| Gain (loss) on sales of assets | - | 0.0 % | 3,273 | 6.5 % | (990) | (1.8)% |
| Write-down of investment in Avantium International B.V. | (2,783) | (6.5)% | (4,605) | (9.1)% | - | 0.0 % |
| Interest expense, net | (277) | (0.6)% | (886) | (1.8)% | (687) | (1.2)% |
| Other income, net | 34 | 0.1 % | 406 | 0.8 % | 55 | 0.1 % |
| Income (loss) before income taxes | (4,554) | (10.6)% | (94) | (0.2)% | (6,277) | (11.3)% |
| Provision for (benefit from) income taxes | 1,389 | 3.2 % | (353) | (0.7)% | 2,537 | 4.5 % |
| Net income (loss) | \$ (5,943) | (13.8)% | \$ 259 | 0.5 % | \$ (8,814) | (15.8)% |

Critical Accounting Policies and Estimates.

As further discussed in Note 2 to the consolidated financial statements, in preparing the Company's financial statements, management makes several estimates and assumptions that affect the Company's reported amounts of assets, liabilities, revenues and expenses. Those accounting estimates that have the most significant impact on the Company's operating results and place the most significant demands on management's judgment are discussed below. For all of these policies, management cautions that future events rarely develop exactly as forecast, and the best estimates may require adjustment.

Revenue Recognition on Long-Term Contracts. The Company uses the percentage-of-completion revenue recognition methodology to record revenue under its long-term fixed-price contracts in accordance with the AICPA Statement of Position 81-1, "Accounting for Performance of Construction-Type and Certain Production-Type Contracts". This methodology recognizes income as work progresses on the contract and is based on an estimate of the income earned to date, less income recognized in earlier periods. The Company bases its estimate of the degree of completion of the contract by reviewing the relationship of costs incurred to date to the expected total costs that will be incurred on the project. The Company's project managers are responsible for estimating the costs to be incurred at the beginning of each project and are responsible for updating the estimate as the project progresses. Management reviews the status of each project periodically with the project managers and determines whether the cost estimates are reasonable. If changes in the estimated costs to complete the projects are required, the cumulative impact on the percentage of completion revenue calculation is recognized in the period identified. Whenever evidence indicates that the estimated total cost of a contract will exceed its total contract value, the Company's operating results are charged for the full amount of the estimated losses immediately. Uncertainties inherent in the performance of contracts include labor availability and productivity, material costs, change order scope and pricing, software modification issues and customer acceptance issues. The reliability of these cost estimates is critical to the Company's revenue recognition as a significant change in the estimates can cause the Company's revenue and related margins to change significantly from the amounts estimated in the early stages of the project.

Capitalization of Computer Software Development Costs. In accordance with Statement of Financial Accounting Standards (SFAS) No. 86 "Accounting for the Costs of Computer Software to Be Sold, Leased, or Otherwise Marketed," the Company capitalizes computer software development costs incurred after technological feasibility has been established, but prior to the release of the software product for sale to customers. Once the product is available to be sold, the Company begins to amortize the costs over the estimated useful life of the product, which normally ranges from three to five years. At December 31, 2002, the Company has net capitalized software development costs of \$4.4 million. On an annual basis, the Company assesses the recovery of the unamortized software computer costs by estimating the net undiscounted cash flows expected to be generated by the sale of the product. If the undiscounted cash flows are not sufficient to recover the unamortized software costs the Company will write-down the investment to its estimated fair value based on future discounted cash flows. The excess of any unamortized computer software costs over the related net realizable value is written down and charged to income. Significant changes in the sales projections could result in an impairment with respect to the capitalized software that is reported on the Company's consolidated balance sheet.

Deferred Income Tax Valuation Allowance. Deferred income taxes arise from temporary differences between the tax bases of assets and liabilities and their reported amounts in the financial statements. As required by SFAS No. 109 "Accounting for Income Taxes", management makes an annual assessment of the realizability of the Company's deferred tax assets. In making this assessment, management considers whether it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities and projected future taxable income of the Company in making this assessment. A valuation allowance is recorded to reduce the total deferred income tax assets to its net realizable value. At December 31, 2002, the Company's deferred tax assets related primarily to a U.S. net operating loss carryforward of \$15.1 million which can be utilized over the next twenty years. The recovery of the remaining net deferred tax asset could not be substantiated by currently available objective evidence and, accordingly, the Company has established a full valuation allowance for the balance of its deferred tax assets of \$7.8 million. If the Company is able to realize taxable income in the future the valuation allowance will be reduced.

Comparison of 2002 to 2001.

Contract Revenue. Total contract revenue was \$43.1 million and \$50.3 million for the years ended December 31, 2002 and 2001, respectively.

The Process business unit's revenue was \$22.9 million in 2002 compared with \$25.0 million in 2001. Included in the 2001 revenue was \$507,000 related to Process' VirtualPlant business, which was sold to Avantium International B.V. in March 2001. The decrease in Process' continuing business revenue is mainly attributable to a reduction in revenue from Process' largest customer, Westinghouse Savannah River Corporation. In 2002, revenues generated from work performed for Westinghouse Savannah River Corporation totaled 45% of total Process revenue, versus 48% in 2001.

The Power business unit revenue decreased 20.2% in 2002, from \$25.3 million in 2001 to \$20.2 million in 2002. Although there was increased activity in the U.S. upgrade market in 2002 as compared to the prior year, international revenue decreased due to the completion of several large, multi-year projects. In addition, there were several very large full scope international simulator orders that were delayed throughout 2002 which negatively impacted the Company's 2002 revenue. One of these orders, a \$9.1 million simulator for Unit 3 of the Zaporizhya Nuclear Power Station in eastern Ukraine, was received by the Company in late December 2002. The contract was awarded to GSE through Battelle's Pacific Northwest National Laboratory and is part of the Department of Energy's International Nuclear Safety Program.

Gross Profit. Gross profit totaled \$11.3 million (26.3% of revenue) for the year ended December 31, 2002, as compared with \$14.0 million (27.7% of revenue) for the year ended December 31, 2001. During 2002, the Power business reduced operations personnel by 14 employees. Despite this reduction in the Company's overhead costs, gross profit as a percentage of revenue decreased as the overhead costs incurred were spread over a lower revenue base.

Selling, General and Administrative Expenses. Selling, general and administrative ("SG&A") expenses totaled \$12.3 million in 2002 (28.5% of revenue), a 12.8% increase from the \$10.9 million (21.6% of revenue) for 2001. In the first quarter 2002, the Process business unit hired a new marketing manager who was charged with developing the business unit's marketing strategy, revitalizing the Company's marketing collateral, planning the Company's annual user's conference, and the product introductions for the D/3 Version 11.0 and the new D/3 Compact which occurred in October 2002. The Power business has incurred higher bidding and proposal costs in the pursuit of new orders and from the addition of two marketing personnel hired for its security business in the beginning of 2002. In 2002 the Power business unit implemented two staff reductions; SG&A expense reflects \$291,000 of accrued severance, of which \$51,000 had not been paid at December 31, 2002. In addition, the Company increased its net research and product development expenditures ("R&D"), as discussed below.

Gross R&D, including software development costs, totaled \$3.5 million in 2002 versus \$1.6 million in 2001; capitalized software development costs totaled \$2.5 million in 2002 versus \$809,000 million in 2001; and net R&D, expensed and included in SG&A, was \$1.0 million in 2002 versus \$827,000 million in 2001.

The increase in the Company's capitalized software development expenditures was related to:

* The development of Version 11.0 of its D/3 Process Automation System. The major enhancements to the system include improved alarm handling and advanced system diagnostics. In addition, the Company introduced two new more cost effective process controllers based on the use of modern PCI back plane technology with greater performance speed and flexibility. The project was completed for commercial release as of October 1, 2002.

* The development of the Process D/3Compact, a smaller, redesigned version of the D/3 distributed control system which is aimed at smaller automation applications. This entry-level offering will combine the low cost found in Programmable Logic Controllers (PLC) solutions with the high functionality of a distributed control system. The project was completed for commercial release as of October 1, 2002.

* The replacement of the Graphic User Interfaces (GUI) for our Power GSuite and Topmeret tools with a Java based GUI, which will provide platform independence and internet enabling. Version 1.0 of the new GUI, called JADE, is expected to be completed and ready for commercial release by March 31, 2003.

In 2003, the Company expects to reduce its gross R&D spending to approximately \$2.4 million. The major focus of this R&D spending will be:

* Greater security capabilities in the D/3 control system that will address changes in regulatory agency requirements for the pharmaceutical industry and provide all customers the flexibility to select portions of the increased security that will fit their business needs.

* Improvements to the D/3 control system's Ethernet I/O functionality and Foundation Fieldbus offerings.

* Additional enhancements to JADE Version 1.0 including connectivity to plant information databases and new applications on primary side modeling and executive system.

Depreciation and Amortization. Depreciation expense amounted to \$540,000 and \$706,000 during the years ended December 31, 2002 and 2001, respectively. The decrease in depreciation in 2002 as compared to 2001 is due to certain assets becoming fully depreciated.

Due to the Company's adoption of SFAS No. 142 "Goodwill and Other Intangible Assets" on January 1, 2002, goodwill is no longer amortized, but is subject to an annual test of impairment. Thus, the company recognized \$669,000 of goodwill amortization in 2001 versus none in 2002. See Footnote 9, "Goodwill" in the Notes to Consolidated Financial Statements.

Operating (Loss) Income. The Company had an operating loss of \$1.5 million (3.5% of revenue) for the year ended December 31, 2002 as compared with operating income of \$1.7 million (3.4% of revenue) for the year ended December 31, 2001.

Write-down of Investment in Avantium International B.V. On February 7, 2002, Avantium completed a private placement round of financing which resulted in 20 million Euros in new capital and the conversion of 11 million Euros of convertible debt. The equity issuance and debt conversion diluted GSE's ownership in Avantium to 6.1%. The estimated fair market value of Avantium following the financing was \$47.4 million. Accordingly the Company concluded that this transaction was evidence of "an other than temporary decline" in the fair value of its investment in Avantium. Thus, in the fourth quarter 2001, the Company wrote down its investment in Avantium to \$2.9 million and recognized a \$4.6 million pre-tax charge.

In the first quarter, 2003, Avantium indicated that it was pursuing another private placement round of financing. Based upon the Company's discussions with Avantium, GSE believes that its ownership in Avantium will be diluted to less than 1%. Accordingly the Company concluded that this pending transaction was evidence of "an other than temporary decline" in the fair value of its investment in Avantium. Thus, in the fourth quarter 2002, the Company wrote down its investment in Avantium to \$115,000 and recognized a \$2.8 million pre-tax charge.

While the Company believes that the carrying amount of its investment in Avantium stock will be recovered in the future based upon Avantium's current business plan, the Company will continue to evaluate the recovery of the investment as the result of any dilution in the Company's ownership resulting from Avantium's additional capital requirements.

Interest Expense, Net. Net interest expense decreased 68.7% from \$886,000 for the year ended December 31, 2001 to \$277,000 in 2002. This decrease is due to lower interest rates in 2002 versus 2001 (5.4% average and 7.4% average, respectively), a reduction in the average bank debt outstanding (\$4.3 million for the year ended December 31, 2002 versus \$5.8 million average for the prior year), and a reduction in the average balance outstanding on the Company's subordinated debt to ManTech (\$691,000 average for the year ended December 31, 2002 versus \$3.6 million average for the prior year).

Other Income (Expense), Net. For the year ended December 31, 2002, the Company incurred \$34,000 of foreign currency gains.

For the year ended December 31, 2001, other income (expense), net includes the receipt of a \$147,000 equity distribution from the Company's liquidated Joint Venture in China (this investment was written off in a prior year) and foreign currency gains.

Provision for Income Taxes. The Company recorded an income tax provision of \$1.4 million in 2002. This provision is mainly the result of an increase in the valuation allowance for the Company's deferred income tax assets. The Company established a full valuation allowance since recovery of the deferred tax asset could not be substantiated by currently available objective evidence. The difference between the statutory U.S. tax rate and the Company's effective rate for 2002 was primarily due to the change in the deferred tax asset valuation reserve and foreign taxes.

The Company recorded an income tax benefit of \$353,000 in 2001. This benefit was mainly the result of a decrease in the valuation allowance for the Company's deferred income tax assets. The allowance was decreased to adjust the net deferred tax asset to an amount that management believed was more likely than not be realized. The difference between the statutory U.S. tax rate and the Company's effective rate for 2001 was primarily due to the change in the deferred tax asset valuation reserve and foreign taxes.

Comparison of 2001 to 2000.

Contract Revenue. Total contract revenue was \$50.3 million and \$55.7 million for the years ended December 31, 2001 and 2000, respectively.

The Process business unit's revenue was \$25.0 million in 2001 compared with \$25.2 million in 2000. Although the decrease was only .8%, the overall composition of the revenues changed significantly. The Company sold its unprofitable Belgian subsidiary, GSE Process Solutions N.V., on November 30, 2000 to Newton Beheer B.V. of the Netherlands, and sold its VirtualPlant technology and assets on March 6, 2001 to

Avantium International B.V. ("Avantium"). For the years ended December 31, 2001 and 2000, Process revenues included \$507,000 and \$7.6 million, respectively, for these two divested businesses. Included in the 2000 Process revenue was \$2.9 million from the sale of licenses for five of GSE's software products to Avantium in February, including the object and source codes, in exchange for an equity interest in Avantium. In addition, the Company recorded revenue of \$1.3 million for time and material work completed for Avantium. Excluding the revenue for these divested businesses, the Process business unit's revenue increased \$6.9 million, or 39%, in 2001 as compared to 2000. The increase in Process' continuing business revenue is mainly attributable to several significant orders received from Westinghouse Savannah River Corporation. In 2001, revenues generated from work performed for Westinghouse Savannah River Corporation totaled 48% of total Process revenues, versus 25% in 2000.

The Power business unit revenue decreased 17.0% in 2001, from \$30.5 million in 2000 to \$25.3 million in 2001. The decrease in revenue is attributable to the completion of several large international projects in 2001 and fewer upgrades for simulators in the United States in 2001 as compared to 2000.

Gross Profit. Gross profit totaled \$14.0 million (27.7% of revenue) for the year ended December 31, 2001, as compared with \$14.9 million (26.7% of revenue) for the year ended December 31, 2000. The gross profit and gross profit margins for 2000 reflect the software licenses sold to Avantium in the first quarter 2000. Excluding the gross profit from the sale of software licenses to Avantium, the gross profit margin for 2000 was 22.7%. This increase in gross profit margin in 2001 was due to the following:

- * The restructuring of the Process business unit in 2000 and 2001, including the sale of the Company's Belgian subsidiary in late 2000 and the VirtualPlant assets and technology in the first quarter 2001,
- * The outsourcing of the Process manufacturing/assembly operation, and Personnel reductions.

In December 2000, a \$710,000 provision was recorded for certain Process inventory to adjust its carrying value to net realizable value.

Selling, General and Administrative Expenses. Selling, general and administrative ("SG&A") expenses totaled \$10.9 million in 2001 (21.6% of revenue), a 39.1% decrease from the \$17.9 million (32.1% of revenue) for 2000. The decrease in SG&A reflects reduced sales, marketing and corporate administration headcount, and lower net research and product development expenditures ("R&D"), as discussed below.

Gross R&D, including software development costs, totaled \$1.6 million in 2001 versus \$3.5 million in 2000; capitalized software development costs totaled \$809,000 in 2001 versus \$1.9 million in 2000; and net R&D, expensed and included in SG&A, was \$827,000 in 2001 versus \$1.7 million in 2000. The Company's R&D expenditures were reduced significantly in 2001 due to the sale of the VirtualPlant business in March 2001 (\$1.0 million was spent on VirtualPlant R&D in 2000) and the completion of three major development projects: VPbatch, the Windows NT version of its FlexBatch Recipe and Process Management software; initiatives to improve product ease of use of SimSuite Pro its process simulation product; and the release of version 10.2 of the D/3 Distributed Control System in December 2000. R&D expenditures in 2001 were mainly related to improvements in the process control module for the Process D/3 system and the development of a high availability server system.

Depreciation and Amortization. Depreciation expense amounted to \$706,000 and \$1.2 million during the years ended December 31, 2001 and 2000, respectively. The decrease in depreciation in 2001 is primarily due to disposals of fixed assets as the Company restructured its operations and divested certain businesses.

Amortization of goodwill was \$669,000 and \$528,000 during the years ended December 31, 2001 and 2000, respectively. The increase in amortization in 2001 reflects the increase in goodwill due to payments made for contingent consideration for prior year acquisitions.

Operating Income (Loss). The Company had operating income of \$1.7 million (3.4% of revenue) for the year ended December 31, 2001, as compared with an operating loss of \$4.7 million (8.4% of revenue) for the year ended December 31, 2000.

Excluding the operating results of the divested businesses, the Company's operating income for the year ended December 31, 2001 was \$2.2 million compared with a loss of \$988,000 for the year ended December 31, 2000. The Company attributes its business restructuring initiatives for the improvement in operating income of its remaining businesses.

Gain (loss) on Sales of Assets. On March 6, 2001, the Company sold its VirtualPlant business technology and assets to Avantium. GSE received 8% of Avantium's stock, thus increasing its holdings in Avantium to approximately 19%, and recognized a gain on the sale of \$3.3 million, before income taxes. This gain was determined based on the estimated fair market value of the Avantium stock received, based on an independent appraisal, less the book value of the assets sold, approximately \$700,000 in severance costs payable to certain former employees of VirtualPlant that were not hired by Avantium, and other transaction expenses.

The loss on sale of assets in 2000 reflects the net pre-tax loss realized on the disposition of GSE Process Solutions NV, the Company's Belgian subsidiary. This sale and related loss is described more fully under Note 18, Acquisitions and dispositions, in the "Notes to Consolidated Financial Statements".

Write-down of Investment in Avantium International B.V. On February 7, 2002, Avantium completed a private placement round of financing which resulted in 20 million Euros in new capital and the conversion of 11 million Euros of convertible debt. The equity issuance and debt conversion diluted GSE's ownership in Avantium to 6.1%. The estimated fair market value of Avantium following the financing was \$47.4

million. Accordingly the Company concluded that this transaction was evidence of "an other than temporary decline" in the fair value of its investment in Avantium. Thus, in the fourth quarter 2001, the Company wrote down its investment in Avantium to \$2.9 million and recognized a \$4.6 million pre-tax charge.

Interest Expense, Net. Net interest expense increased to \$886,000 for the year ended December 31, 2001, from \$687,000 in 2000. A reduction in the Company's bank debt interest expense due to the reduction in interest rates in 2001 (the Company's interest rate was 9.5% in December 2000 versus 5.5% in December 2001) and a reduction in the average bank debt outstanding (\$7.3 million average for the twelve months ended December 31, 2000 versus \$5.3 million average for the twelve months ended December 30, 2001) was more than offset by an increase in the interest expense incurred on the Company's subordinated debt due to ManTech. The average subordinated debt outstanding increased from \$250,000 in 2000 to \$3.5 million in 2001. In addition, interest income earned by the Company's Swedish subsidiary decreased from \$219,000 in 2000 to \$78,000 in 2001.

Other Income (Expense), Net. For the year ended December 31, 2001, other income (expense), net includes the receipt of a \$147,000 equity distribution from the Company's liquidated Joint Venture in China (this investment was written off in a prior year) and foreign currency gains of \$253,000.

For the year ended December 31, 2000, the Company incurred \$55,000 of foreign currency gains.

Provision for Income Taxes. The Company recorded an income tax benefit of \$353,000 in 2001. This benefit is mainly the result of a decrease in the valuation allowance for the Company's deferred income tax assets. The allowance was decreased to adjust the net deferred tax asset to an amount that management believed was more likely than not to be realized. The difference between the statutory U.S. tax rate and the Company's effective rate for 2001 was primarily due to the change in the deferred tax asset valuation reserve and foreign taxes.

The Company recorded a tax provision of \$2.5 million in 2000. This provision is mainly the result of an increase in the valuation allowance for the Company's deferred income tax assets. The allowance was increased to reduce the total deferred tax asset to an amount that management believed was more likely than not to be realized. The difference between the statutory U.S. tax rate and the Company's effective rate for 2000 was primarily due to the change in the deferred tax asset valuation reserve and foreign taxes.

Liquidity and Capital Resources.

As of December 31, 2002, GSE had cash and cash equivalents of \$1.6 million versus \$2.0 million in 2001.

Cash from operating activities. Net cash used in operating activities was \$1.2 million for the year ended December 31, 2002. In 2002, the \$2.8 million pre-tax loss on the write-down of the Company's investment in Avantium was a non-cash transaction. Significant changes in the assets and liabilities of the Company in 2002 included:

- * an \$846,000 reduction in contracts receivable offset by the assignment of \$2.6 million of sales-type lease receivables.

- * a \$602,000 decrease in billings in excess of revenues earned. The decrease is mainly related to the Power business unit and reflects the completion of work in 2002 on the full scope simulator at the Gorskotom Rivne 2 unit in the Ukraine.

Net cash provided by operating activities was \$1.9 million for the year ended December 31, 2001. In 2001, the \$4.6 million pre-tax loss on the write-down of the Company's investment in Avantium was a non-monetary transaction as was the \$3.3 million gain on the sale of VirtualPlant technology and assets. Significant changes in the assets and liabilities of the Company in 2001 included:

- * A \$3.3 million increase in billings in excess of revenues earned. The increase reflects significant orders received from two Process customers in the third quarter 2001 that allowed GSE to invoice the customer in full prior to the work being completed.

- * A \$5.1 million reduction in accounts payable, accrued compensation and accrued expenses. Due to the Company's improved operating cash flow in 2001 and additional subordinated borrowings from ManTech, the Company was able to reduce its outstanding payables and was current with its vendors at December 31, 2001.

Net cash used in operating activities for the year ended December 31, 2000 was \$4.5 million. The \$2.9 million revenue from the licensing of software to Avantium in the first quarter 2000 in exchange for an equity stake in Avantium was a non-monetary transaction. Significant changes in the Company's assets and liabilities in 2000 included:

- * A \$1.9 million reduction in contract receivables which was mainly related to the decline in overall revenues.

- * A \$1.6 million reduction in inventories. In 1999, the Process stockroom inventory increased approximately \$650,000 principally due to purchases of large supplies of various PC boards. In 2000, this inventory decreased approximately \$800,000 as the Company made a concerted effort to reduce on-hand inventory. The balance of the decrease is due to a \$710,000 provision for excess and slow moving inventory.

- * A \$1.6 million reduction in billings in excess of revenues earned due to the lower business volume in 2000.

Cash used in investing activities. Net cash used in investing activities for the year ended December 31, 2002 was \$3.0 million, including \$45,000 in cash payments for an acquired business, \$457,000 of capital expenditures, and \$2.5 million of capitalized software development costs.

For 2001, net cash used in investing activities was \$2.4 million, including \$1.1 million in cash payments for acquired businesses (\$599,000 of contingent consideration for a prior year acquisition and \$491,000 for notes payable related to two prior year acquisitions), \$477,000 of capital expenditures, and \$809,000 of capitalized software development costs.

For 2000, net cash used in investing activities was \$3.3 million, including \$658,000 in cash payments for acquired businesses (\$598,000 of contingent considerations for prior year acquisitions, and \$60,000 for notes payable related to a prior year acquisition), \$472,000 of capital expenditures, \$1.9 million of capitalized software development costs, and \$261,000 in connection with the disposition of the Company's Belgium subsidiary.

Cash provided by financing activities. For the year ended December 31, 2002, the Company generated \$3.8 million net cash through financing activities. The Company received \$1.3 million from its escrow agent in January 2002 from a fixed-price rights offering which was completed on December 21, 2001 and received \$263,000 for the exercise of employee stock options. The Company increased its borrowings under its bank line of credit by \$443,000 to a total of \$5.4 million, and decreased its borrowings from ManTech International Corporation by \$350,000 to a total of \$650,000. The Company entered into two contracts with a customer for the lease of certain hardware and software under 36-month leases and assigned the payments due under these sales-type leases to a third party financing company, receiving proceeds of \$2.6 million. The Company issued three cash-collateralized stand-by letters of credit totaling \$243,000. Standby letters of credit are issued by the Company in the ordinary course of business through banks as required by certain contracts and proposal requirements.

Cash provided by financing activities was \$1.1 million for the year ended December 31, 2001. GSE reduced its borrowings under its bank line of credit in 2001 by \$4.3 million to a total of \$5.0 million. However, in 2001 the Company amended its \$1.8 million subordinated promissory note to ManTech to increase the amount to \$3.9 million, and issued a second subordinated promissory note to ManTech for \$1.0 million. Accordingly, the Company increased its subordinated borrowings from ManTech by \$3.4 million in 2001 to a total of \$4.9 million. In December 2001 ManTech elected to convert the \$3.9 million subordinated promissory note into Series A preferred stock, as permitted by the note. In 2001, the Company entered into three contracts with a customer for the lease of certain hardware and software under 36-month leases and assigned the payments due under these sales-type leases to a third party financing company, receiving proceeds of \$2.2 million. The Company also generated \$33,000 from the conversion of employee stock options. In 2001, \$29,000 of cash collateralized letters of credit expired, and the cash collateral was released.

Cash provided by financing activities was \$6.6 million in the year ended December 31, 2000. The Company increased its borrowings under its bank line of credit in 2000 by \$3.0 million to a total of \$9.3 million. In addition, the Company issued a subordinated promissory note to ManTech that allowed it to borrow up to \$1.8 million at an interest rate of prime plus one percent; at December 31, 2000 the Company had borrowed \$1.6 million. The Company entered into two contracts with a customer for the lease of certain hardware and software under 36-month leases; the Company received \$1.1 million upon assignment of the payments to a third party financing company. The Company also generated \$500,000 from the sale of stock to ManTech and an additional \$42,000 from the exercise of employee stock options. In 2000, \$202,000 of cash collateralized letters of credit expired and the cash collateral was released.

Credit Facilities.

The Company has a \$10.0 million credit facility with a bank which matured on March 23, 2003. The Company has been informed by its bank that the Company should begin to search for a new financial institution to provide for its future financing requirements. To provide the Company with enough time to perform this search, the bank agreed to provide the Company with a one-year extension of its current credit facility. Accordingly, on March 23, 2003 the Company's credit facility was extended until March 31, 2004. The credit facility provides for borrowings up to a total of \$10.0 million to support working capital needs and foreign letters of credit. At December 31, 2002, the Company's available borrowing base was \$6.9 million, of which approximately \$5.4 million had been utilized. The credit facility requires the Company to comply with certain financial ratios and precludes the Company from paying dividends and making acquisitions beyond certain limits without the bank's consent. As of December 31, 2002, the Company was not in compliance with its financial ratio covenants, however, the Company has received a written waiver from the bank for noncompliance.

The following amendments to the agreement were made at the time of the extension:

- * the maximum commitment under the credit facility was reduced from \$10.0 million to \$6.5 million as of March 23, 2003; with an additional reduction to \$5.5 million on October 1, 2003; and a final reduction to \$5.0 million on January 1, 2004. Based upon the Company's current forecasts of its cash flow in 2003, management believes the reductions in the maximum commitment will not have an impact on the Company's operations. The average debt outstanding in 2002 was \$4.6 million, with the highest debt balance of the year totaling \$5.4 million at December 31, 2002.

- * the interest rate charged was increased from the bank's prime rate plus .75% to the bank's prime rate plus 1.00%.

- * payment of all dividends is prohibited, including dividends due to ManTech on its outstanding preferred stock.

* certain covenant modifications were made to position the Company for future compliance

* GP Strategies extended their \$1.8 million limited guarantee of the Company's bank facility through March 31, 2004. In consideration for the extension of the guarantee, the Company will issue 150,000 shares of its common stock to GP Strategies. The number of shares was calculated based upon a 10% fee divided by the closing price of GSE's common stock on March 21, 2003.

See Note 10, Long-term debt, in the "Notes to Consolidated Financial Statements" for additional details about the Company's line of credit.

In 2000, the Company issued a demand promissory note to ManTech that allowed the Company to borrow up to \$1.8 million at an interest rate of prime plus one percent. In addition, ManTech provided \$1.8 million in standby letters of credit to the Company's bank as additional collateral for the Company's credit facility. In April 2001, ManTech agreed to allow the Company's bank to draw upon ManTech's \$1.8 million letter of credit which supported the Company's credit facility, thus paying down a portion of the Company's bank debt in exchange for additional subordinated debt in the Company. Accordingly, the Company's promissory note to ManTech was amended to increase the amount to \$3.9 million. The amended note permitted ManTech to convert the principal amount of the note into GSE Series A convertible preferred stock at a conversion rate of \$100 per share. The Company determined that the conversion of this debt did not constitute a beneficial conversion.

ManTech elected to convert its subordinated debt on December 5, 2001. The Series A convertible preferred stock has no voting rights and bears dividends at the rate of 6% per annum payable quarterly. Dividends will accumulate if not paid quarterly and compounded interest will accrue on any unpaid dividends. ManTech at its discretion has the right to convert each share of Series A convertible preferred stock into GSE common stock at a purchase price of \$2.645 per share at any time after a one-year holding period from the date of issuance. At the end of the third year from the date of issuance, the Series A convertible preferred stock automatically converts into GSE common stock. Prior to ManTech's conversion of the Series A convertible stock to common stock, GP Strategies has the option to acquire 50% of the Series A convertible preferred stock for \$1,950,000 from ManTech.

At a special shareholder's meeting on August 2, 2001, the Company's shareholders approved an amendment to the Certificate of Incorporation increasing GSE's authorized common stock by 10 million shares to a total of 18 million shares. With this new authorization of common stock, the Company intends to reserve 1,474,480 shares for the conversion of the ManTech convertible preferred stock discussed above. In addition, the Company issued 522,611 shares on December 21, 2001 in conjunction with a fixed price rights offering described below.

On June 25, 2001, the Company issued an additional unsecured promissory note to ManTech that allowed the Company to borrow up to \$1.0 million at an interest rate of prime plus one percent. The Company used the loan proceeds for working capital purposes. The note is subordinated to the Company's credit facility. In 2002, the Company repaid ManTech \$350,000, plus \$247,000 of interest.

On October 25, 2001, the Company filed a final registration statement with the SEC for a fixed price rights offering which became effective on October 29, 2001. In early November, the Company distributed to non-affiliated holders of its common stock, based on an October 26, 2001 record date, subscription rights to purchase additional shares of common stock at a subscription price of \$2.53 per share. Each non-affiliated holder of its common stock received .711 subscription right for each share held as of the record date. Shareholders had until the expiration date of December 21, 2001 to subscribe to the offering. Of the total 2,219,701 shares available, 522,611 shares were subscribed. The proceeds to GSE totaled \$1.3 million prior to fees and expenses related to the offering of approximately \$139,000. The Company received the cash proceeds from its escrow agent in January 2002. The proceeds were used for a partial repayment of the \$1 million loan from ManTech discussed above and working capital requirements.

Other. The following summarizes the Company's contractual cash obligations at December 31, 2002, and the effect these obligations are expected to have on its liquidity and cash flow in future periods:

| Payments Due by Period (in thousands) | | | | | |
|--|-----------|---------------------|-----------|-----------|---------------|
| Contractual Cash Obligations | Total | Less than 1 year | 1-3 Years | 4-5 Years | After 5 Years |
| Long Term Debt (1) | \$ 5,431 | - | \$ 5,431 | - | - |
| Purchase Commitments | \$ 5,254 | \$ 3,309 | \$ 1,945 | - | - |
| Related Party Debt | \$ 723 | \$ 30 | \$ 693 | - | - |
| Operating Leases (2) | \$ 7,727 | \$ 1,740 | \$ 3,208 | \$ 2,493 | \$ 286 |
| Total Contractual Cash Obligations (2) | \$ 19,135 | \$ 5,079 | \$ 11,277 | \$ 2,493 | \$ 286 |

(1) The Company's credit facility expires on March 23, 2003. However, as the Company has signed an amendment to the loan and security agreement that extends the facility until March 31, 2004, the debt outstanding at December 31, 2002 has been classified in the 1-3 Years category in the above table, and is presented as long-term debt on the December 31, 2002 balance sheet.

(2) Amounts exclude obligations under financing-type leases. See Note 10 to the Consolidated Financial Statements.

The Company has entered into a sublease agreement with Alpharma USPD Inc. to sublease 29,000 square feet of its Baltimore, MD facility for a five- year period commencing on May 1, 2003. The subtenant may terminate the lease at the end of the second or third year of the agreement provided a six month notice is given. The Company plans to move most of the Process personnel presently using this facility to its Columbia, Maryland facility in April 2003.

As of December 31, 2002, the Company was contingently liable for seven letters of credit totaling \$747,000. All of these letters of credit represent payment bonds on contracts and have been cash collateralized.

Due to the Company's cash situation at the end of 2000, GSE experienced some difficulties in procuring supplies from its vendors for business operations. In January 2001, the Company entered into a purchasing arrangement with ManTech whereby ManTech dealt directly with some of the Company's vendors, ordered the supplies needed and had the products shipped per the Company's instructions. Purchases under this agreement totaled \$843,000 for the year ended December 31, 2001. This purchasing arrangement terminated in June 2001, and the Company has no outstanding obligations to ManTech, in connection with this purchasing arrangement as of December 31, 2002.

The Company's cash flow has continued to be extremely tight in 2002, but has been sufficient to meet the Company's operating needs. The Company's cash flow is expected to improve during 2003 as the Power business unit returns to profitability. However, the Company's liquidity can be affected by any of the following significant risk factors:

* The Company's business is substantially dependent on sales to the nuclear power industry (40% of revenue in 2002) and the chemicals industry (35% of revenue in 2002). Spending by companies in these targeted industries is subject to period-to-period fluctuations as a consequence of industry cycles, economic conditions, political and regulatory environments and other factors.

* The Company relies on two customers, Battelle's Pacific Northwest National Laboratory (11% of revenue in 2002) and Westinghouse Savannah River Company (24% of revenue in 2002), for a substantial portion of its revenues. The loss of either of these customers would have a material adverse effect upon the Company' liquidity.

* Sales of products and the provision of services to end users outside the United States accounted for approximately 31% of the Company's revenue in 2002. Thus, the Company is subject to risks associated with the application and imposition of protective legislation and regulations relating to import or export or otherwise resulting from trade or foreign policy.

Foreign Exchange.

A portion of the Company's international sales revenue has been and may be received in a currency other than the currency in which the expenses relating to such revenue are paid. When necessary, the Company enters into forward exchange contracts, options and swap agreements as hedges against certain foreign currency commitments to hedge its foreign currency risk.

New Accounting Standards.

In June 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 143, Accounting for Asset Retirement Obligations. SFAS No. 143 requires the Company to record the fair value of an asset retirement obligation as a liability in the period in which it incurs a legal obligation associated with the retirement of tangible long-lived assets that result from the

acquisition, construction, development, and/or normal use of the assets. The Company also records a corresponding asset that is depreciated over the life of the asset. Subsequent to the initial measurement of the asset retirement obligation, the obligation will be adjusted at the end of each period to reflect the passage of time and changes in the estimated future cash flows underlying the obligation. The Company is required to adopt SFAS No. 143 on January 1, 2003. The adoption of SFAS No. 143 is not expected to have a material effect on the Company's financial position or results of operations.

In April 2002, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards (SFAS) No. 145, Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections. SFAS No. 145 provides for the rescission of several previously issued accounting standards, new accounting guidance for the accounting for certain lease modifications and various technical corrections that are not substantive in nature to existing pronouncements. The Company will adopt SFAS No. 145 as of January 1, 2003, except for the provisions relating to the amendment of SFAS No. 13, which were adopted for transactions occurring subsequent to May 15, 2002. Adoption of SFAS No. 145 is not expected to have a material impact on the consolidated financial statements.

In June 2002, the FASB issued SFAS No. 146, Accounting for Costs Associated with Exit or Disposal Activities. SFAS No. 146 requires that a liability for a cost associated with the exit or disposal activity be recognized when incurred at fair value. SFAS No. 146 eliminates the definition and requirements of EITF Issue 94-3. SFAS No. 146 is effective for exit or disposal activities that are initiated after December 31, 2002 and may have an effect on the timing of future restructuring charges taken, if and when they occur.

In November 2002, the FASB issued FASB Interpretation No. 45 (FIN 45), Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others. FIN 45 addresses the disclosure requirements of a guarantor in its interim and annual financial statements about its obligations under certain guarantees that it has issued. FIN 45 also requires a guarantor to recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. The liability recognition requirements of FIN 45 will be applicable prospectively to all guarantees issued or modified after December 31, 2002. The Company is currently evaluating the impact FIN 45 will have on its consolidated financial statements.

In December 2002, the FASB issued SFAS No. 148, Accounting for Stock-Based Compensation - Transition and Disclosure, an amendment of FASB Statement No. 123. This Statement amends FASB Statement No. 123, Accounting for Stock-Based Compensation, to provide alternative methods of transition for an entity that voluntarily changes to the fair value based method of accounting for stock-based employee compensation. It also amends the disclosure provisions of that Statement to require prominent disclosure about the effects on reported net income of an entity's accounting policy decisions with respect to stock-based employee compensation. Finally, this Statement amends APB Opinion No. 28, "Interim Financial Reporting", to require disclosure about those effects in interim financial information. The transition provisions of this statement are effective for financial statements for 2002. The disclosure provisions of this statement will be effective for financial reports containing condensed financial statements for interim periods beginning in 2003. The Company plans to retain the intrinsic method to value stock options and accordingly, SFAS 148 will only impact the Company's future disclosure requirements.

In October 2002, the Emerging Issues Task Force of the FASB reached a consensus on the accounting for revenues in transactions that involve multiple deliverables. The guidance governs how to identify whether goods or services or both, that are to be delivered separately in a bundled sales arrangement, should be accounted for separately. This guidance will be effective July 1, 2003. The Company has not yet determined the impact this consensus will have on its consolidated financial statements.

In January 2003, the FASB issued Interpretation No. 46, Consolidation of Variable Interest Entities, which requires the consolidation of certain types of entities. The Interpretation applies immediately to variable interest entities created or acquired after January 31, 2003. The Interpretation is effective for interim periods beginning after June 15, 2003 for an enterprise that has variable interest entities acquired prior to February 1, 2003. The Company will adopt the new Interpretation, as required, but does not expect adoption will have a material effect on its financial statements.

Other Matters.

To date, management believes inflation has not had a material impact on the Company's operations.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

The Company's market risk is principally confined to changes in foreign currency exchange rates. During the year ended December 31, 2002, 2% and 1% of the Company's revenues were from contracts which permitted payments in a currency other than U.S. Dollars, principally Swedish Krona and Japanese Yen, respectively. In addition, during the year ended December 31, 2002, 5% of the Company's expenses were incurred in Swedish Krona. The Company's exposure to foreign exchange rate fluctuations arises in part from inter-company accounts in which costs incurred in one entity are charged to other entities in different foreign jurisdictions. The Company is also exposed to foreign exchange rate fluctuations as the financial results of all foreign subsidiaries are translated into U.S. dollars in consolidation. As exchange rates vary, those results when translated may vary from expectations and adversely impact overall expected profitability.

The Company is also subject to market risk related to the interest rates on its existing line of credit. As of March 23, 2003, such interest rates are based on the prime rate plus 100 basis-points.

As of December 31, 2002, \$6.1 million of the Company's debt was subject to variable interest rates. A 100 basis-point change in such rates during the year ended December 31, 2002 would have increased the Company's annual interest expense by approximately \$51,000.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

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Independent Auditors' Report

The Board of Directors and Stockholders
GSE Systems, Inc.:

We have audited the accompanying consolidated balance sheets of GSE Systems, Inc. and subsidiaries as of December 31, 2002 and 2001, and the related consolidated statements of operations, comprehensive loss, changes in stockholders' equity and cash flows for each of the years in the three-year period ended December 31, 2002. These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audit.

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 consolidated financial statements referred to above present fairly, in all material respects, the financial position of GSE Systems, Inc. and subsidiaries as of December 31, 2002 and 2001, and the results of their operations and their cash flows for each of the years in the three-year period ended December 31, 2002, in conformity with accounting principles generally accepted in the United States of America.

The Company adopted the provisions of SFAS No. 142, Goodwill and Other Intangible Assets, on January 1, 2002.

/s/KPMG LLP

*Baltimore, Maryland
March 21, 2003*

PART I - FINANCIAL INFORMATION
Item 1. Financial Statements

GSE SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(in thousands, except share data)

| | | December 31, | |
|--|--|--------------|-----------|
| | | 2002 | 2001 |
| ASSETS | | | |
| Current assets: | | | |
| Cash and cash equivalents | | \$ 1,617 | \$ 2,040 |
| Restricted cash | | 608 | 164 |
| Contract receivables | | 10,761 | 11,608 |
| Proceeds of rights offering held by escrow agent | | - | 1,322 |
| Inventories | | 1,560 | 1,566 |
| Prepaid expenses and other current assets | | 2,656 | 2,922 |
| | Total current assets | 17,202 | 19,622 |
| Investment in Avantium International B.V. | | 115 | 2,898 |
| Property and equipment, net | | 1,697 | 1,762 |
| Software development costs, net | | 4,401 | 3,806 |
| Goodwill, net | | 2,901 | 2,386 |
| Restricted cash | | 139 | 340 |
| Other assets | | 2,439 | 2,860 |
| | Total assets | \$ 28,894 | \$ 33,674 |
| LIABILITIES AND STOCKHOLDERS' EQUITY | | | |
| Current liabilities: | | | |
| Current portion of long-term debt | | \$ 1,905 | \$ 2,284 |
| Accounts payable | | 2,521 | 2,163 |
| Accrued expenses | | 1,727 | 1,217 |
| Accrued compensation and payroll taxes | | 1,401 | 1,676 |
| Billings in excess of revenue earned | | 3,059 | 4,659 |
| Accrued warranty reserves | | 491 | 415 |
| Other current liabilities | | 62 | 145 |
| | Total current liabilities | 11,166 | 12,559 |
| Long-term debt | | 8,033 | 6,690 |
| Billings in excess of revenue earned | | 998 | 45 |
| Accrued warranty reserves | | 586 | 528 |
| | Total liabilities | 20,783 | 19,822 |
| Commitments and contingencies | | | |
| Stockholders' equity: | | | |
| Series A convertible preferred stock \$.01 par value, 2,000,000 shares authorized, shares issued and outstanding 39,000 in 2002 and 2001 | | - | - |
| Common stock \$.01 par value, 18,000,000 shares authorized, shares issued and outstanding 5,869,138 and 5,741,138 in 2002 and 2001, respectively | | 59 | 57 |
| Additional paid-in capital | | 27,841 | 27,535 |
| Accumulated deficit - at formation | | (5,112) | (5,112) |
| Accumulated deficit - since formation | | (13,490) | (7,313) |
| Accumulated other comprehensive loss- foreign currency translation | | (1,187) | (1,315) |
| | Total stockholders' equity | 8,111 | 13,852 |
| | Total liabilities and stockholders' equity | \$ 28,894 | \$ 33,674 |

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

GSE SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share data)

| | Years ended December 31, | | |
|--|--------------------------|-----------|------------|
| | 2002 | 2001 | 2000 |
| Contract revenue | \$ 43,116 | \$ 50,331 | \$ 55,715 |
| Cost of revenue | 31,801 | 36,381 | 40,822 |
| Gross profit | 11,315 | 13,950 | 14,893 |
| Operating expenses | | | |
| Selling, general and administrative | 12,303 | 10,857 | 17,853 |
| Depreciation and amortization | 540 | 1,375 | 1,695 |
| Total operating expenses | 12,843 | 12,232 | 19,548 |
| Operating income (loss) | (1,528) | 1,718 | (4,655) |
| Gain (loss) on sales of assets | - | 3,273 | (990) |
| Write-down of investment in Avantium International B.V. | (2,783) | (4,605) | - |
| Interest expense, net | (277) | (886) | (687) |
| Other income, net | 34 | 406 | 55 |
| Loss before income taxes | (4,554) | (94) | (6,277) |
| Provision for (benefit from) income taxes | 1,389 | (353) | 2,537 |
| Net income (loss) | (5,943) | 259 | (8,814) |
| Preferred stock dividends | (234) | (17) | - |
| Net income (loss) attributed to common stockholders | \$ (6,177) | \$ 242 | \$ (8,814) |
| Basic earnings (loss) per common share | \$ (1.05) | \$ 0.05 | \$ (1.70) |
| Diluted earnings (loss) per common share | \$ (1.05) | \$ 0.05 | \$ (1.70) |

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

GSE SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(in thousands)

| | Years ended December 31, | | |
|---|--------------------------|----------|------------|
| | 2002 | 2001 | 2000 |
| Net income (loss) | \$ (5,943) | \$ 259 | \$ (8,814) |
| Foreign currency translation adjustment | 128 | (413) | (184) |
| Comprehensive loss | \$ (5,815) | \$ (154) | \$ (8,998) |

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

GSE SYSTEMS, INC, AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
YEARS ENDED DECEMBER 31, 2002, 2001 and 2000
(in thousands)

| | Common | | Preferred | | Additional Paid-in Capital | Accumulated Deficit | | Accumulated Other | Total |
|---|-----------------|--------|-----------------|--------|----------------------------------|------------------------|--------------------|-----------------------|----------|
| | Stock Shares | Amount | Stock Shares | Amount | | At Formation | Since Formation | Comprehensive Loss | |
| Balance, January 1, 2000 | 5,066 | \$ 50 | - | \$ - | \$ 21,691 | \$(5,112) | \$ 1,259 | \$(718) | \$17,170 |
| Common stock issued for options exercised | 11 | - | - | - | 40 | - | - | - | 40 |
| Common stock issued to ManTech Intl. Corp. | 117 | 2 | - | - | 499 | - | - | - | 501 |
| Foreign currency translation adjustment | - | - | - | - | - | - | - | (184) | (184) |
| Net loss | - | - | - | - | - | - | (8,814) | - | (8,814) |
| Balance, December 31, 2000 | 5,194 | 52 | - | - | 22,230 | 5,112 | (7,555) | (902) | 8,713 |
| Fair value of options/warrants issued to non-employees | - | - | - | - | 194 | - | - | - | 194 |
| Common stock issued for options exercised | 25 | - | - | - | 33 | - | - | - | 33 |
| Conversion of subordinated debt to preferred stock | - | - | 39 | - | 3,900 | - | - | - | 3,900 |
| Rights offering | 523 | 5 | - | - | 1,178 | - | - | - | 1,183 |
| Preferred stock dividends declared and payable | - | - | - | - | - | - | (17) | - | (17) |
| Foreign currency translation adjustment | - | - | - | - | - | - | - | (413) | (413) |
| Net income | - | - | - | - | - | - | 259 | - | 259 |
| Balance, December 31, 2001 | 5,742 | 57 | 39 | - | 27,535 | (5,112) | (7,313) | (1,315) | 13,852 |
| Common stock issued for options exercised | 128 | 2 | - | - | 261 | - | - | - | 263 |
| Stock option compensation | - | - | - | - | 45 | - | - | - | 45 |
| Preferred stock dividends declared and payable | - | - | - | - | - | - | (234) | - | (234) |
| Foreign currency translation adjustment | - | - | - | - | - | - | - | 128 | 128 |
| Net loss | - | - | - | - | - | - | (5,943) | - | (5,943) |
| Balance, December 31, 2002 | 5,870 | \$59 | 39 | \$ - | \$27,841 | \$(5,112) | \$(13,490) | \$(1,187) | \$8,111 |

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

GSE SYSTEMS, INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

| | Years ended December 31, | | |
|--|--------------------------|----------|------------|
| | 2002 | 2001 | 2000 |
| Cash flows from operating activities: | | | |
| Net income (loss) | \$ (5,943) | \$ 259 | \$ (8,814) |
| Adjustments to reconcile net income (loss) to net cash provided by (used in) operating activities: | | | |
| Depreciation and amortization | 2,424 | 3,394 | 3,882 |
| Foreign currency transaction gain | (34) | (253) | (255) |
| Stock option compensation | 45 | - | - |
| (Gain) loss on sales of assets | - | (3,273) | 990 |
| Write-down of investment in Avantium International B.V. | 2,783 | 4,605 | - |
| Non-monetary consideration received for software licensed to Avantium International B.V. | - | - | (2,895) |
| Deferred income taxes | 1,600 | (476) | 2,273 |
| Changes in assets and liabilities: | | | |
| Contract receivables | (1,743) | 683 | 1,939 |
| Inventories | 6 | 21 | 1,554 |
| Prepaid expenses and other assets | 275 | (363) | (164) |
| Accounts payable, accrued compensation and accrued expenses | (22) | (5,154) | (690) |
| Billings in excess of revenues earned | (602) | 3,293 | (1,599) |
| Accrued warranty reserves | 134 | (69) | (288) |
| Other liabilities | (61) | (689) | (561) |
| Income taxes payable | (67) | (68) | 141 |
| Net cash provided by (used in) operating activities | (1,205) | 1,910 | (4,487) |
| Cash flows from investing activities: | | | |
| Cash paid for acquisition of businesses | (45) | (1,090) | (658) |
| Cash sold in disposition of business | - | - | (261) |
| Capital expenditures | (457) | (477) | (472) |
| Capitalized software development costs | (2,478) | (809) | (1,868) |
| Net cash used in investing activities | (2,980) | (2,376) | (3,259) |
| Cash flows from financing activities: | | | |
| Proceeds from issuance of common stock | 1,583 | 33 | 542 |
| Proceeds from issuance of notes payable to related party | - | 3,350 | 1,550 |
| Proceeds from issuance of notes payable | - | - | 458 |
| Repayment on notes payable to related party | (350) | - | - |
| (Restrictions) releases of cash as collateral under letters of credit, net | (243) | 29 | 202 |
| Increase (decrease) in borrowings under lines of credit | 443 | (4,289) | 3,044 |
| Proceeds from assignments of sales-type leases | 2,589 | 2,198 | 1,141 |
| Other financing repayments | (269) | (269) | (346) |
| Net cash provided by financing activities | 3,753 | 1,052 | 6,591 |
| Effect of exchange rate changes on cash | 9 | (11) | (75) |
| Net increase (decrease) in cash and cash equivalents | (423) | 575 | (1,230) |
| Cash and cash equivalents at beginning of year | 2,040 | 1,465 | 2,695 |
| Cash and cash equivalents at end of year | \$ 1,617 | \$ 2,040 | \$ 1,465 |

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

GSE SYSTEMS, INC. AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS December 31, 2002, 2001, and 2000

1. Business and liquidity

GSE Systems, Inc. ("GSE Systems", "GSE" or the "Company") develops and delivers business and technology solutions by applying process control, simulation software, systems and services to the energy, process and manufacturing industries worldwide. The Company's solutions and services assist customers in improving quality, safety and throughput; reducing operating expenses; and enhancing overall productivity.

The Company's operations are subject to certain risks and uncertainties including, among others, rapid technological changes, success of the Company's product development, marketing and distribution strategies, the need to manage growth, the need to retain key personnel and protect intellectual property, and the availability of additional financing on terms acceptable to the Company.

In 2002, the Company incurred a significant operating loss attributable in large part to the performance of the Company's Power business unit. The Power business unit's revenue and profitability were significantly impacted by the completion of several large, multi-year projects in late 2001 and early 2002 coupled with the delay of several very large full-scope international simulator orders. In addition to the operating loss, the Company wrote down its investment in Avantium International B.V., recording a non-cash charge of \$2.8 million and recorded an income tax provision of \$1.4 million resulting mainly from an increase in the Company's valuation allowance to fully reserve the Company's net deferred tax assets.

The Company has a \$10.0 million credit facility with a bank which matured on March 23, 2003. The Company has been informed by its bank that the Company should begin to search for a new financial institution to provide for its future financing requirements. To provide the Company with enough time to perform this search, the bank agreed to provide the Company with a one-year extension of its current credit facility. Accordingly, on March 23, 2003 the Company's credit facility was extended until March 31, 2004. At the time of the extension, the maximum commitment under the credit facility was reduced from \$10.0 million to \$6.5 million as of March 23, 2003; with an additional reduction to \$5.5 million on October 1, 2003; and a final reduction to \$5.0 million on January 1, 2004. Based upon the Company's current forecasts of its cash flow in 2003, management believes the reductions in the maximum commitment will not have an impact on the Company's operations or liquidity. In order to help improve the Company's liquidity and operating results, management has undertaken actions to reduce its operating expenses, including the reduction of US Power employees by 15 in 2002 and the sublease of 29,000 square feet of its 34,000 square foot Rutherford, Baltimore, Maryland facility effective May 1, 2003.

However, the Company's 2003 profitability and liquidity projections depend on several large full-scope simulator contracts in its Power business unit, several that have been quoted and verbally accepted, but have not yet formally been awarded by the customer. In the event that the Company does not receive these contracts, or is unable to find replacements for these contracts, it may need to seek additional debt or equity financing in 2003. There can be no assurance that such debt or equity financing will be available when needed.

2. Summary of significant accounting policies

Principles of consolidation

The accompanying consolidated financial statements include the accounts of the Company and its wholly-owned subsidiaries. All intercompany balances and transactions have been eliminated.

Accounting estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Revenue recognition

The majority of the Company's revenue is derived through the sale of uniquely designed systems containing hardware, software and other materials under fixed-price contracts. In accordance with Statement of Position 81-1 "Accounting for Performance of Construction-Type and Certain Production-Type Contracts", the revenue under these fixed-price contracts is accounted for on the percentage-of-completion method, based on contract costs incurred to date and estimated costs to complete. Estimated contract earnings are reviewed and revised periodically as the work progresses, and the cumulative effect of any change is recognized in the period in which the change is identified. Estimated losses are charged against earnings in the period such losses are identified.

As the Company recognizes revenue under the percentage-of-completion method, it provides an accrual for estimated future warranty costs based on historical and projected claims experience. The Company's longer-term contracts generally provide for a one-year warranty on parts, labor and any bug fixes as it relates to software embedded in the systems.

The Company's system design contracts do not provide for "post customer support service" (PCS) in terms of software upgrades, software enhancements or telephone support. In order to obtain PCS, the customers must purchase a separate contract at the date of system installation. Such PCS arrangements are generally for a one-year period renewable annually and include customer support, unspecified software upgrades, maintenance releases, hardware support and spare parts. The Company recognizes revenue from these contracts ratably over the life of the agreements in accordance with Statement of Position 97-2 "Software Revenue Recognition".

Revenues from certain consulting or training contracts are recognized on a time-and-material basis. For time-and-material type contracts, revenue is recognized based on hours incurred at a contracted labor rate plus expenses.

Cash and cash equivalents

Cash and cash equivalents consist of cash on hand and highly liquid investments with maturities of three months or less at the date of purchase.

Inventories

Inventories are stated at the lower of cost, as determined by the average cost method, or market. Slow moving inventory is reflected at its estimated net realizable value. Inventory costs include raw materials and purchased parts.

Property and equipment

Property and equipment are recorded at cost and depreciated using the straight-line method with estimated useful lives ranging from three to ten years. Leasehold improvements are amortized over the life of the lease or the estimated useful life, whichever is shorter, using the straight-line method. Upon sale or retirement, the cost and related amortization are eliminated from the respective accounts and any resulting gain or loss is included in operations. Maintenance and repairs are charged to expense as incurred.

Software development costs

Certain computer software development costs are capitalized in the accompanying consolidated balance sheets. Capitalization of computer software development costs begins upon the establishment of technological feasibility. Capitalization ceases and amortization of capitalized costs begins when the software product is commercially available for general release to customers. Amortization of capitalized computer software development costs is included in cost of revenue and is provided using the straight-line method over the remaining estimated economic life of the product, not to exceed five years.

Research and development

Development expenditures incurred to meet customer specifications under contracts are charged to contract costs. Company sponsored research and development expenditures are charged to operations as incurred and are included in selling, general and administrative expenses. The amounts incurred for Company sponsored research and development activities relating to the development of new products and services or the improvement of existing products and services were approximately \$1,038,000, \$827,000, and \$1,679,000, for the years ended December 31, 2002, 2001 and 2000, respectively.

Asset impairment

The Company periodically evaluates the recoverability of its long-lived assets by comparing the carrying value of the asset to management's best estimate of the expected future cash flows to be generated by the asset, undiscounted and without interest costs. Impairments are recognized in operating results to the extent that the carrying value exceeds fair value. No impairment losses were recognized in 2002, 2001 or 2000.

Goodwill

On January 1, 2002, the Company adopted Statement of Financial Accounting Standards (SFAS) No. 142, Goodwill and Other Intangible Assets, which requires that goodwill and intangible assets with indefinite useful lives no longer be amortized, but instead tested for impairment at least annually. As of the date of adoption of SFAS No. 142, the Company had unamortized goodwill in the amount of \$2.4 million which was subject to the transition provisions of SFAS No. 142. During 2002, the Company completed its analysis pursuant to the transitional provisions of SFAS No. 142 and determined that no impairment charge was necessary. On December 31, 2002, the Company completed a further analysis of goodwill and determined no impairment charge was necessary.

Net income and net income per share for the years ended December 31, 2001 and 2000, adjusted to eliminate historical amortization of goodwill and related tax effects, are as follows:

| (in thousands, except for per share amounts) | December 31, | |
|--|--------------|------------|
| | 2001 | 2000 |
| Net income (loss) attributed to common stockholders; as reported | \$ 242 | \$ (8,814) |
| Add: goodwill amortization, net of tax | 527 | 317 |
| Net income (loss), as adjusted | \$ 769 | \$ (8,497) |
| Net income (loss) per share, as reported: | | |
| Basic | \$ 0.05 | \$ (1.70) |
| Diluted | \$ 0.05 | \$ (1.70) |
| Net income (loss) per share, as adjusted: | | |
| Basic | \$ 0.15 | \$ (1.64) |
| Diluted | \$ 0.15 | \$ (1.64) |

Prior to the adoption of SFAS No. 142, goodwill was being amortized over periods from three to fifteen years on a straight-line basis. At each reporting date, the Company assessed the recoverability of goodwill by determining whether the amortization of goodwill over its remaining useful life could be recovered through undiscounted operating cash flows of the acquired operations. The amount of goodwill impairment, if any, was measured based on projected discounted future operating cash flows using a discount rate reflecting the Company's average costs of funds.

Foreign currency translation

Balance sheet accounts for foreign operations are translated at the exchange rate at the balance sheet date, and income statement accounts are translated at the average exchange rate for the period. The resulting translation adjustments are included in accumulated other comprehensive loss in stockholders' equity. Transaction gains and losses, resulting from changes in exchange rates, are included in other income (expense) in the Consolidated Statements of Operations in the period in which they occur. For the years ended December 31, 2002, 2001, and 2000, foreign currency transaction gains were approximately \$34,000, \$253,000, and \$255,000, respectively.

Warranties

As the Company recognizes revenue under the percentage-of-completion method, it provides an accrual for estimated future warranty costs based on historical experience and projected claims. The activity in the warranty accounts is as follows:

| (in thousands) | Years ended December 31, | | |
|------------------------|-----------------------------|----------|----------|
| | 2002 | 2001 | 2000 |
| Beginning balance | \$ 943 | \$ 1,012 | \$ 1,300 |
| Current year provision | 1,251 | 604 | 462 |
| Current year claims | (1,117) | (673) | (750) |
| Ending balance | \$ 1,077 | \$ 943 | \$ 1,012 |

Income taxes

Deferred income taxes are provided under the asset and liability method. Under this method, deferred income taxes are determined based on the differences between the financial statement and tax bases of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Valuation allowances are established when necessary to reduce deferred tax assets to the amounts expected to be realized. Provision is made for the Company's current liability for federal, state and foreign income taxes and the change in the Company's deferred income tax assets and liabilities. No provision has been made for the undistributed earnings of the Company's foreign subsidiaries as they are considered permanently invested. Amounts of undistributed earnings are not material to the overall consolidated financial statements.

Stock Compensation

The Company applies the intrinsic-value-based method of accounting prescribe by Accounting Principles Board (APB) Opinion No. 25, Accounting for stock issued to Employees, and related interpretations including FASB Interpretation No. 44, Accounting for Certain Transactions Involving Stock Compensation, and interpretation of APB Opinion No. 25, issued in March 2000, to account for its fixed-plan stock options. Under this method, compensation expense is recorded on the date of grant only if the current market price of the underlying stock exceeds the exercise price. SFAS No. 123, Accounting for Stock-Based Compensation, established accounting and disclosure requirements using a fair-value-based method of accounting for stock based employee compensation plans. As allowed by SFAS No. 123, the Company has elected to continue to apply the intrinsic-value-based method of accounting describe above, and has adopted only the disclosure requirements of SFAS No. 123. The following table illustrates the effect on net income if the fair-value-based method had been applied to all outstanding and unvested awards in each period.

| (in thousands, except per share data) | Years ended December 31, | | |
|--|-----------------------------|-----------|-------------|
| | 2002 | 2001 | 2000 |
| Net income (loss) attributed to common stockholders, as reported | \$ (6,177) | \$ 242 | \$ (8,814) |
| Add stock-based employee compensation expense included in reported net loss, net of tax | 45 | - | - |
| Deduct total stock-based employee compensation expense determined under fair-value-method for all awards, net of tax | (422) | (878) | (1,657) |
| Pro forma net loss | \$ (6,554) | \$ (636) | \$ (10,471) |
| Net income (loss) per share, as reported: | | | |
| Basic | \$ (1.05) | \$ 0.05 | \$ (1.70) |
| Diluted | \$ (1.05) | \$ 0.05 | \$ (1.70) |
| Proforma net loss per share: | | | |
| Basic | \$ (1.12) | \$ (0.12) | \$ (2.02) |
| Diluted | \$ (1.12) | \$ (0.12) | \$ (2.02) |

The fair value of each option is estimated on the date of grant using a Black-Scholes option-pricing model with the following weighted-average assumptions used for grants during the years ended December 31, 2001, and 2000: expected volatility of 110%; dividend yield of 0%; risk-free interest rates ranging from 2.63% to 6.2%; and expected terms ranging from 1 to 7 years. The weighted-average fair value of options granted during 2001 and 2000 was \$1.55 per share, and \$3.93 per share, respectively. There were no options granted during 2002.

Earnings (loss) per share

Basic earnings per share is based on the weighted average number of outstanding common shares for the period. Diluted earnings per share adjusts the weighted average shares outstanding for the potential dilution that could occur if stock options, warrants, or convertible preferred stock were exercised or converted into common stock. The number of common shares and common share equivalents used in the determination of basic and diluted earnings (loss) per share was as follows:

| (in thousands, except share data) | Years ended December 31, | | |
|--|-----------------------------|-----------|------------|
| | 2002 | 2001 | 2000 |
| Numerator: | | | |
| Net income (loss) | \$ (5,943) | \$ 259 | \$ (8,814) |
| Preferred stock dividends | (234) | (17) | - |
| Net income (loss) attributed to common stockholders | \$ (6,177) | \$ 242 | \$ (8,814) |
| Denominator: | | | |
| Weighted-average shares outstanding for basic earnings per share | 5,863,134 | 5,217,453 | 5,181,972 |
| Effect of dilutive securities: | | | |
| Employee stock options, warrants and options outside the plan | - | 41,563 | - |
| Adjusted weighted-average shares outstanding and assumed conversions for diluted | | | |

| | | | |
|---|-----------|-----------|-----------|
| earnings per share | 5,863,134 | 5,259,016 | 5,181,972 |
| | ===== | ===== | ===== |
| Shares related to dilutive securities excluded because inclusion would be anti-dilutive: | 3,166,456 | 3,436,195 | 687,423 |
| | ===== | ===== | ===== |

The difference between the basic and diluted number of weighted average shares outstanding for the year ended December 31, 2001 represents dilutive stock options, warrants and convertible preferred stock to purchase shares of common stock computed under the treasury stock method, using the average market price during the period. The net income (loss) for the years ended December 31, 2002 and 2001 decreased by preferred stock dividends of \$234,000 and \$17,000, respectively, in calculating the per share amounts. For the year ended December 31, 2000, there were no preferred stock dividends. Conversion of the preferred stock was not assumed for the years ended December 31, 2002 and 2001 because the impact was anti-dilutive.

Concentration of credit risk

The Company is subject to concentration of credit risk with respect to contract receivables. Credit risk on contract receivables is mitigated by the nature of the Company's worldwide customer base and its credit policies. The Company's customers are not concentrated in any specific geographic region, but are concentrated in the energy and manufacturing industries. For the years ended December 31, 2002, 2001 and 2000, one customer accounted for approximately 11%, 17%, and 22%, respectively, of the Company's revenues. At December 31, 2002, the contracts receivable balance related to this significant customer was approximately \$1.33 million, or 11.9% of contract receivables, of which \$1.2 million was unbilled at year-end. In 2002, 2001 and 2000, another customer accounted for approximately 24%, 24%, and 11%, respectively, of the Company's revenues. At December 31, 2002, the contracts receivable balance related to this significant customer was approximately \$642,000, or 6.0% of the balance, of which \$123,000 was unbilled at year-end.

Fair values of financial instruments

The carrying amounts of current assets, current liabilities, and long-term debt reported in the Consolidated Balance Sheets approximate fair value.

Off balance sheet risk and foreign exchange contracts

The Company utilizes various derivative financial instruments to manage market risks associated with the fluctuations in foreign currency exchange rates. It is the Company's policy to use derivative financial instruments to protect against market risk arising in the normal course of business. The criteria the Company uses for designating an instrument as a hedge include the instrument's effectiveness in risk reduction and one-to-one matching of derivative instruments to underlying transactions. The Company monitors its foreign currency exposures to maximize the overall effectiveness of its foreign currency hedge positions. Principal currencies hedged include the Euro and the Japanese yen. The Company's objectives for holding derivatives are to minimize the risks using the most effective methods to reduce the impact of these exposures. The Company minimizes credit exposure by limiting counterparties to nationally recognized financial institutions.

Effective January 1, 2001, the Company adopted Statements of Financial Accounting Standards (SFAS) No. 133, "Accounting for Derivative Instruments and Hedging Activities," as amended by SFAS No. 138 which establishes accounting and reporting standards for derivative instruments. The adoption of Statement No. 133 resulted in no cumulative adjustment to income or other comprehensive income at January 1, 2001. All derivatives, whether designated as hedging relationships or not, are required to be recorded on the balance sheet at fair value. If the derivative is designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are recognized in earnings. If the derivative is designated as a cash flow hedge, the change in the fair value of the derivative and of the hedged item are recognized as an element of other comprehensive income. The Company utilizes forward exchange contracts, options and swaps, as defined by Statement No. 133, to hedge certain foreign currency balance sheet exposures.

At December 31, 2002, the Company had contracts for the sale of approximately \$383,000 and \$334,000 of Japanese Yen and Euros, respectively, at fixed rates. The contracts expire on various dates through November 2003. The Company has not designated the contracts as hedges and, accordingly, has recorded the estimated fair value of the contracts of \$11,000 at December 31, 2002 as other assets in the consolidated balance sheet and other income (expense) in the consolidated statement of operations.

Reclassifications

Certain reclassifications have been made to prior year amounts to conform with the current year presentation.

New Accounting Standards

In June 2001, the Financial Accounting Standards Board ("FASB") issued Statement of Financial Accounting Standards ("SFAS") No. 143, Accounting for Asset Retirement Obligations. SFAS No. 143 requires companies to record the fair value of an asset retirement obligation as a liability in the period in which it incurs a legal obligation associated with the retirement of tangible long-lived assets that result from the acquisition, construction, development, and/or normal use of the assets. A corresponding asset is also recorded that is depreciated over the life of the asset. Subsequent to the initial measurement of the asset retirement obligation, the obligation will be adjusted at the end of each period to reflect the passage of time and changes in the estimated future cash flows underlying the obligation. The Company is required to adopt SFAS

No. 143 on January 1, 2003. The adoption of SFAS No. 143 is not expected to have a material effect on the Company's financial position or results of operations.

In April 2002, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards (SFAS) No. 145, Rescission of FASB Statements No. 4, 44, and 64, Amendment of FASB Statement No. 13, and Technical Corrections. SFAS No. 145 provides for the rescission of several previously issued accounting standards, new accounting guidance for the accounting for certain lease modifications and various technical corrections that are not substantive in nature to existing pronouncements. The Company will adopt SFAS No. 145 as of January 1, 2003, except for the provisions relating to the amendment of SFAS No. 13, which were adopted for transactions occurring subsequent to May 15, 2002. Adoption of SFAS No. 145 is not expected to have a material impact on the consolidated financial statements.

In June 2002, the FASB issued SFAS No. 146, Accounting for Costs Associated with Exit or Disposal Activities. SFAS No. 146 requires that a liability for a cost associated with the exit or disposal activity be recognized when incurred at fair value. SFAS No. 146 eliminates the definition and requirements of EITF Issue 94-3. SFAS No. 146 is effective for exit or disposal activities that are initiated after December 31, 2002 and may have an effect on the timing of future restructuring charges taken, if and when they occur.

In November 2002, the FASB issued FASB Interpretation No. 45 (FIN 45), Guarantor's Accounting and Disclosure Requirements for Guarantees, Including Indirect Guarantees of Indebtedness of Others. FIN 45 addresses the disclosure requirements of a guarantor in its interim and annual financial statements about its obligations under certain guarantees that it has issued. FIN 45 also requires a guarantor to recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. The liability recognition requirements of FIN 45 will be applicable prospectively to all guarantees issued or modified after December 31, 2002. The Company is currently evaluating the impact FIN 45 will have on its consolidated financial statements.

In December 2002, the FASB issued SFAS No. 148, Accounting for Stock-Based Compensation - Transition and Disclosure, an amendment of FASB Statement No. 123. This Statement amends FASB Statement No. 123, Accounting for Stock-Based Compensation, to provide alternative methods of transition for an entity that voluntarily changes to the fair value based method of accounting for stock-based employee compensation. It also amends the disclosure provisions of that Statement to require prominent disclosure about the effects on reported net income of an entity's accounting policy decisions with respect to stock-based employee compensation. Finally, this Statement amends APB Opinion No. 28, "Interim Financial Reporting", to require disclosure about those effects in interim financial information. The transition provisions of this statement are effective for financial statements for 2002. The disclosure provisions of this statement will be effective for financial reports containing condensed financial statements for interim periods beginning in 2003. The Company plans to retain the intrinsic method to value stock options and accordingly, SFAS 148 will only impact the Company's future disclosure requirements.

In October 2002, the Emerging Issues Task Force of the FASB reached a consensus on the accounting for revenues in transactions that involve multiple deliverables. The guidance governs how to identify whether goods or services or both, that are to be delivered separately in a bundled sales arrangement, should be accounted for separately. This guidance will be effective July 1, 2003. The Company has not yet determined the impact this consensus will have on its consolidated financial statements.

In January 2003, the FASB issued Interpretation No. 46, "Consolidation of Variable Interest Entities" which requires the consolidation of certain types of entities. The Interpretation applies immediately to variable interest entities created or acquired after January 31, 2003. The Interpretation is effective for interim periods beginning after June 15, 2003 for an enterprise that has variable interest entities acquired prior to February 1, 2003. The Company will adopt the new Interpretation, as required, but does not expect adoption will have a material effect on its financial statements.

3. Investment in Avantium International B.V.

On February 24, 2000, the Company licensed certain of its simulation software products to Avantium International B.V. ("Avantium") in exchange for 251,501 shares of Avantium preferred stock, valued at \$2.5 million, and 352,102 shares of Avantium common stock, valued at \$349,000. The software license, which is perpetual in nature, gives Avantium the right to use the software in the development of new software products. Each share of preferred stock is convertible into common stock.

Avantium was formed to develop high-speed experimentation and simulation ("HSE&S") technologies for application in new product and process development in pharmaceutical, petrochemical, fine chemical, biotechnology and polymers industries. Avantium expects to develop HSE&S technologies through in-house development and contract research at leading universities, hardware developers and informatics companies. Avantium has various investors, including Shell International Chemical, SmithKline Beecham, W.R. Grace, Akzo Nobel, three major European universities and various venture capital firms.

During the year ended December 31, 2000, the Company recognized software-licensing revenue of \$2.9 million based on the fair value of the consideration received from Avantium. The fair value was established based on cash paid by other investors for their respective preferred and common stock interests in Avantium. The Company has delivered all elements of the software and has no other obligations to Avantium, other than standard warranty. The Company accounted for its investment in Avantium using the cost method of accounting based on management's conclusion that the Company did not have significant influence with respect to the operations of Avantium. During the year ended December 31, 2000, the Company also received an additional \$2.9 million contract from Avantium to make certain improvements and enhancements to the software on a best efforts basis. The rates and margins in the contract were comparable to those the Company earns performing services for its other customers.

As a result of the experience with Avantium in 2000, the Company concluded that a combination of the relevant interests of the two companies would significantly increase the potential of both organizations. In addition, focusing the technical and marketing resources of Avantium and the GSE VirtualPlant team would produce significant cost savings.

On March 6, 2001, the Company sold its VirtualPlant business technology and assets to Avantium. GSE received 8% of Avantium's stock, thus increasing its holdings in Avantium to approximately 19%, and recognized a gain on the sale of \$3.3 million, before income taxes. This gain was determined based on the estimated fair market value of the Avantium stock received (\$9.60 per share), based on an independent appraisal, less the book value of the assets sold, approximately \$700,000 in severance costs payable to certain former employees of VirtualPlant, that were not hired by Avantium, and other transaction expenses.

The appraised value of \$9.60 per share was calculated using the Discounted Cash Flow income valuation method. Under this method, the annual debt-free cash flow and residual value are discounted and added together to arrive at Avantium's Aggregate Market Value. Avantium's annual debt-free cash flow was estimated for the next five years, using Avantium's forecasts of revenue, operating expenses, working capital, and fixed asset investments, and then discounted at a rate of 20%. The residual value, or capitalized cash flows beyond the five-year forecast period, was calculated using a capitalization rate of 15%. Since Avantium is a closely held company, a discount for illiquidity of 20% was applied to the Aggregate Market Value determined. This value was then divided by the number of outstanding shares to arrive at the per share appraised value.

The appraised value was significantly higher than Avantium's net tangible book value as of the date of the VirtualPlant sale. As Avantium was a start-up phase company at the March 6, 2001 valuation date, it had not begun generating positive earnings or cash flow. As such, its book value was comprised primarily of the initial investments made in the company, less accumulated operating losses. Based upon the business plans provided by Avantium for analysis, quantifiable future earnings generation was expected for the business, and Avantium was on track with its business development plans. Thus, the Company determined that the use of the income valuation method would provide a more accurate estimate of the valuation of the stock than the net tangible book value.

Although the Company retained one seat on the supervisory board of Avantium, management concluded that such seat did not provide the Company with significant influence. Accordingly, the Company continued to account for its investment in Avantium using the cost method. The cost method requires that if a decline in fair value below cost is judged by management to be other than temporary, the cost basis must be written down to fair value as a new cost basis, and the amount of the write-down is included in earnings as a realized loss. Any new cost basis derived in this manner is not changed for subsequent recoveries in fair value.

On February 7, 2002, Avantium completed a private placement round of financing which resulted in 20 million Euros in new capital and the conversion of 11 million Euros of convertible debt. The equity issuance and debt conversion diluted GSE's ownership in Avantium to 6.1%. The estimated fair market value of Avantium following the financing was \$47.4 million. Accordingly, the Company concluded that this transaction was evidence of "an other than temporary decline" in the fair value of its investment in Avantium. Thus, in the fourth quarter 2001, the Company wrote down its investment in Avantium to \$2.9 million and recognized a \$4.6 million pre-tax charge.

In the first quarter, 2003, Avantium indicated that it was pursuing another private placement round of financing. Based upon the Company's discussions with Avantium, GSE believes that its ownership in Avantium will be diluted to less than 1%. Accordingly, the Company concluded that this pending transaction was evidence of "an other than temporary decline" in the fair value of its investment in Avantium. Thus, in the fourth quarter 2002, the Company wrote down its investment in Avantium and recognized a \$2.8 million pre-tax charge.

4. Contract receivables

Contract receivables represent balances due from a broad base of both domestic and international customers. All contract receivables are considered to be collectible within twelve months. Recoverable costs and accrued profit not billed represent costs incurred and associated profit accrued on contracts that will become billable upon future milestones or completion of contracts. The components of contract receivables are as follows:

| (in thousands) | December 31, | |
|---|--------------|-----------|
| | 2002 | 2001 |
| Billed receivables | \$ 6,909 | \$ 6,640 |
| Recoverable costs and accrued profit not billed | 4,014 | 5,009 |
| Allowance for doubtful accounts | (162) | (41) |
| Total contract receivables | \$ 10,761 | \$ 11,608 |

5. Inventories

Inventories consist of the following:

| (in thousands) | December 31, |
|----------------|--------------|
|----------------|--------------|

| | 2002 | 2001 |
|-------------------|----------|----------|
| Raw materials | \$ 1,203 | \$ 1,143 |
| Service parts | 357 | 423 |
| Total inventories | \$ 1,560 | \$ 1,566 |

6. Prepaid expenses and other current assets

Prepaid expenses and other current assets consist of the following:

| (in thousands) | December 31, | |
|--|--------------|----------|
| | 2002 | 2001 |
| Investment in sales-type lease - current portion | \$ 1,875 | \$ 1,016 |
| Prepaid expenses | 449 | 742 |
| Employee advances | 86 | 84 |
| Deferred income taxes | - | 587 |
| Other current assets | 246 | 493 |
| Total | \$ 2,656 | \$ 2,922 |

7. Property and equipment

Property and equipment consist of the following:

| (in thousands) | December 31, | |
|---|--------------|----------|
| | 2002 | 2001 |
| Computer equipment | \$ 5,571 | \$ 4,730 |
| Leasehold improvements | 878 | 878 |
| Furniture and fixtures | 1,882 | 2,051 |
| | 8,331 | 7,659 |
| Accumulated depreciation and amortization | (6,634) | (5,897) |
| Property and equipment, net | \$ 1,697 | \$ 1,762 |

Depreciation and amortization expense was approximately \$540,000, \$706,000, and \$1,163,000, for the years ended December 31, 2002, 2001, and 2000, respectively.

8. Software development costs

Software development costs, net, consist of the following:

| (in thousands) | December 31, | |
|--|--------------|----------|
| | 2002 | 2001 |
| Capitalized software development costs | \$8,166 | \$7,725 |
| Accumulated amortization | (3,765) | (3,919) |
| Software development costs, net | \$ 4,401 | \$ 3,806 |

Software development costs capitalized were approximately \$2,478,000, \$809,000, and \$1,869,000, for the years ended December 31, 2002, 2001 and 2000, respectively. Amortization of software development costs capitalized was approximately \$1,883,000, \$2,019,000, and \$2,202,000, for the years ended December 31, 2002, 2001 and 2000, respectively, and were included in cost of revenue.

9. Goodwill

Goodwill consists of the following:

| (in thousands) | December 31, |
|----------------|--------------|
|----------------|--------------|

| | ----- 2002 ----- | ----- 2001 ----- |
|--------------------------|------------------------|------------------------|
| Goodwill, at cost | \$ 5,370 | \$ 4,855 |
| Accumulated amortization | (2,469) | (2,469) |
| | ----- | ----- |
| Goodwill, net | \$ 2,901 | \$ 2,386 |
| | ===== | ===== |

10. Long-term Debt

The Company's long-term debt consists of the following notes payable and other financing arrangements:

| (in thousands) | December 31, | |
|--|--------------|----------|
| | 2002 | 2001 |
| Line of credit with bank | \$ 5,431 | \$ 4,988 |
| Notes payable to related parties (see Note 16) | 650 | 1,100 |
| Obligations under financing leases | 3,784 | 2,645 |
| Notes payable, other | 73 | 241 |
| Total notes payable and financing arrangements | 9,938 | 8,974 |
| Less amounts payable within one year | 1,905 | 2,284 |
| Long-term portion | \$ 8,033 | \$ 6,690 |

Line of Credit

The Company has a \$10.0 million bank line of credit under which the Company and its subsidiaries, GSE Process Solutions, Inc. and GSE Power Systems, Inc., are jointly and severally liable as co-borrowers. The credit facility provides for borrowings to support working capital needs and foreign letters of credit (\$2.0 million sublimit). The line is collateralized by substantially all of the Company's assets and provides for borrowings up to 85% of eligible accounts receivable, 50% of eligible unbilled receivables and 40% of eligible inventory (up to a maximum of \$1.2 million). GP Strategies Corporation, one of the Company's major stockholders, has provided a limited guarantee totaling \$1.8 million. The interest rate on this line of credit is based on the bank's prime rate plus 0.75% (5.00% as of December 31, 2002), with interest only payments due monthly. At December 31, 2002, the Company's available borrowing base was approximately \$6.9 million, of which approximately \$5.4 million had been utilized. The credit facility expired on March 23, 2003, but the Company's bank agreed to extend the credit facility until March 31, 2004. Accordingly, the balance outstanding under this credit facility at December 31, 2002 has been classified as long-term debt on the December 31, 2002 balance sheet.

The credit facility requires the Company to comply with certain financial ratios and precludes the Company from paying dividends and making acquisitions beyond certain limits without the bank's consent. As of December 31, 2002, the Company was not in compliance with its financial ratio covenants. The Company has received a written waiver from the bank for noncompliance and amendments to the required financial ratio covenants for 2003.

On March 23, 2003 the Company's existing credit facility was extended until March 31, 2004, with the following amendments to the agreement:

* the maximum commitment under the credit facility was reduced from \$10.0 million to \$6.5 million as of March 23, 2003; with an additional reduction to \$5.5 million on October 1, 2003; and a final reduction to \$5.0 million on January 1, 2004

* the interest rate charged was increased from the bank's prime rate plus .75% to the bank's prime rate plus 1.00%.

* payment of all dividends is prohibited, including dividends due to ManTech on its outstanding preferred stock.

* certain covenant modifications were made to position the Company for future compliance.

* GP Strategies extended their \$1.8 million limited guarantee of the Company's bank facility through March 31, 2004. In consideration for the extension of the guarantee, the Company will issue 150,000 shares of its common stock to GP Strategies. The number of shares was calculated based upon a 10% fee divided by the closing price of GSE's common stock on March 21, 2003.

Notes Payable to Related Parties

In 2000, the Company issued a demand promissory note to ManTech that allowed the Company to borrow up to \$1.8 million at an interest rate of prime plus one percent. In addition, ManTech provided \$1.8 million in standby letters of credit to the Company's bank as additional collateral for the Company's credit facility. In April 2001, ManTech agreed to allow the Company's bank to draw upon ManTech's \$1.8 million letter of credit which supported the Company's credit facility, thus paying down a portion of the Company's bank debt in exchange for additional subordinated debt in the Company. Accordingly, the Company's promissory note to ManTech was amended to increase the amount to \$3.9 million. The amended note permitted ManTech to convert the principal amount of the note into GSE Series A convertible preferred stock at a conversion rate of \$100 per share. The Company determined that the conversion of this debt did not constitute a beneficial conversion. ManTech elected to convert its subordinated debt into equity on December 5, 2001 (see Note 13).

On June 25, 2001, the Company issued an additional unsecured promissory note to ManTech for \$1.0 million at an interest rate of prime plus one percent. The Company used the loan proceeds for working capital purposes. The note is subordinated to the Company's credit facility.

During 2002, the Company repaid ManTech \$350,000, plus \$247,000 of interest.

Obligations under financing leases

During 2000, 2001 and 2002 the Company entered into seven separate contracts with a customer for the lease of certain hardware and software under 36-month leases. The Company has accounted for the leases as sales-type leases. The Company assigned the payments due under the sales-type leases to a third-party financing company and received proceeds of \$2,589,000 in 2002 and \$2,198,000 in 2001. Since the Company remains contingently liable for amounts due to the third-party financing company, the remaining investment in and obligation under the financing leases are reflected in the Company's balance sheets as follows:

| (in thousands) | December 31, | |
|--------------------------------------|--------------|----------|
| | 2002 | 2001 |
| Net investment in sales-type leases: | | |
| Prepaid expense and other assets | \$ 1,875 | \$ 1,016 |
| Other assets - non current | 1,909 | 1,629 |
| Total net investment | \$ 3,784 | \$ 2,645 |
| Obligation under financing leases: | | |
| Current portion of long-term debts | \$ 1,875 | \$ 1,016 |
| Long-term debts | 1,909 | 1,629 |
| Total obligations | \$ 3,784 | \$ 2,645 |

Minimum rentals receivable under these leases at December 31, 2002 amount to \$2,275,000 in 2003, \$1,647,000 in 2004, and 435,000 in 2005. As of December 31, 2002, the components of the net investment in the sales-type leases are total minimum rentals receivable of \$4,357,000, less unearned interest income of \$573,000.

Debt maturities

Aggregate maturities of debt outstanding at December 31, 2002 are as follows:

| (in thousands) | |
|----------------|----------|
| 2003 | \$ 1,905 |
| 2004 | 7,607 |
| 2005 | 426 |
| Total | \$ 9,938 |

11. Income taxes

The consolidated loss before income taxes, by domestic and foreign sources, is as follows:

| (in thousands) | Years ended December 31, | | |
|----------------|--------------------------|----------|------------|
| | 2002 | 2001 | 2000 |
| Domestic | \$ (3,866) | \$ (135) | \$ (6,295) |
| Foreign | (688) | 41 | 18 |
| Total | \$ (4,554) | \$ (94) | \$ (6,277) |

The provision for (benefit from) income taxes is as follows:

| (in thousands) | Years ended December 31, | | |
|-------------------|--------------------------|----------|----------|
| | 2002 | 2001 | 2000 |
| Current: | | | |
| Federal | \$ (112) | \$ 54 | \$ (177) |
| State | (57) | 26 | 75 |
| Foreign | (42) | 43 | 366 |
| Subtotal | (211) | 123 | 264 |
| Deferred: | | | |
| Federal and State | 1,694 | (448) | 2,543 |
| Foreign | (94) | (28) | (270) |
| Subtotal | 1,600 | (476) | 2,273 |
| Total | \$ 1,389 | \$ (353) | \$ 2,537 |

The provision for (benefit from) income taxes varies from the amount of income tax determined by applying the applicable U.S. statutory rate to pre-tax (loss) income as a result of the following:

| | Effective tax rate percentage (%) | | |
|--|-----------------------------------|----------|---------|
| | Years ended December 31, | | |
| | 2002 | 2001 | 2000 |
| Statutory U.S. tax rate | (34.0)% | (34.0)% | (34.0)% |
| State income tax, net of federal tax benefit | (2.0) | 31.0 | 0.8 |
| Effect of foreign operations | 0.9 | 6.2 | 1.5 |
| Change in valuation allowance | 61.8 | (447.2) | 68.4 |
| Other | 3.8 | 68.9 | 3.7 |
| Effective tax rate | 30.5 % | (375.1)% | 40.4 % |

Deferred income taxes arise from temporary differences between the tax bases of assets and liabilities and their reported amounts in the financial statements. A summary of the tax effect of the significant components of the deferred income tax assets (liabilities) is as follows:

| (in thousands) | December 31, | |
|--|--------------|----------|
| | 2002 | 2001 |
| Net operating loss carryforwards | \$ 6,246 | \$ 5,589 |
| Software development costs | (1,615) | (1,263) |
| Expenses not currently deductible for tax purposes | 878 | 974 |
| Foreign tax credits | 379 | 379 |
| Property and equipment | (90) | (27) |
| Swedish tax deferral | - | (175) |
| Accrued expenses | 243 | 269 |
| Alternative minimum tax credit carryforwards | 162 | 217 |
| Investments | 1,512 | 470 |
| Other | 60 | 97 |
| Subtotal | 7,775 | 6,530 |
| Valuation allowance | (7,775) | (4,930) |
| Total | \$ - | \$ 1,600 |

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers the scheduled reversal of deferred tax liabilities and projected future income in making this assessment. Since the management could not substantiate recovery of the net deferred tax assets with currently available objective evidence, the Company has established a full valuation allowance of \$7,775,000 at December 31, 2002. If the Company is able to realize taxable income in the future, the valuation allowance will be reduced. The net change in the valuation allowance for deferred tax assets was an increase of \$2,845,000 and reduction of \$420,000 in 2002 and 2001, respectively.

At December 31, 2002, the Company had available \$15,146,000 and \$2,402,000 of domestic and foreign net operating loss carryforwards, respectively, which expire between 2012 and 2022. In addition, the Company had \$379,000 of foreign tax credit carryforwards, which expire between 2003 and 2005. These carryforwards will be utilized to reduce taxable income in subsequent years.

12. Capital stock

The Company's Board of Directors has authorized 20,000,000 total shares of capital stock, of which 18,000,000 are designated as common stock and 2,000,000 are designated as preferred stock. The Board of Directors has the authority to establish one or more classes of preferred stock and to determine, within any class of preferred stock, the preferences, rights and other terms of such class.

On March 6, 2001, with the completion of the sale of VirtualPlant to Avantium (see Note 3), the Company granted warrants to purchase shares of the Company's common stock to two non-employees. The warrants provide the right to purchase 37,500 shares of the Company's common stock at \$1.00 per share. In 2001, the Company recognized expense related to the warrants of \$115,000.

On March 9, 2001, with the completion of the sale of VirtualPlant to Avantium (see Note 3), the Company arranged a consulting agreement with a terminated employee. In consideration of consulting services, the Company granted fully vested options to purchase 53,000 shares of the Company's common stock at \$1.70 per share. In 2001, the Company recognized expense related to these options based on their estimated fair value of \$79,000.

As of December 21, 2001, the Company completed a rights offering granting rights to shareholders to purchase additional shares of common stock for a subscription price of \$2.53 per share. The rights granted 0.711 for every share of common stock held of record as of October 26, 2001. Each whole right entitled the shareholder to purchase one share of common stock for \$2.53 per share. As of December 31, 2001, the Company had a rights offering receivable of \$1.3 million due from its escrow agent and accrued \$139,000 of costs associated with the completion of the rights offering. The Company received the cash proceeds from its escrow agent in January 2002. The proceeds were used for a partial repayment of a \$1 million loan from ManTech and working capital requirements.

As of December 31, 2002, the Company has reserved 3,613,956 shares of common stock for issuance upon exercise of stock options and warrants and the conversion of preferred stock.

13. Series A Convertible Preferred Stock

On December 5, 2001, ManTech elected to convert \$3.9 million of subordinated debt into Series A convertible preferred stock at a conversion rate of \$100 per share. The Company has determined that the conversion of this debt into preferred stock did not constitute a beneficial conversion. The Series A convertible preferred stock has no voting rights and bears dividends at the rate of 6% per annum payable quarterly. Dividends will accumulate if not paid quarterly and compounded interest will accrue on any unpaid dividends. As of December 31, 2002 and 2001, the Company had accrued dividends payable of \$176,000 and \$17,000, respectively.

In the event of liquidation or dissolution of the Company, payment of available funds shall be made on the Series A convertible preferred stock (including payment in satisfaction of dividend obligations) prior and in preference to the common stock. ManTech at its discretion has the right to convert each share of Series A convertible preferred stock into GSE common stock at a purchase price of \$2.645 per share at any time after a one-year holding period from the date of issuance. At the end of the third year from the date of issuance, the Series A convertible preferred stock automatically converts into 1,474,480 shares of GSE common stock. Prior to ManTech's conversion of the Series A convertible stock to common stock, GP Strategies has the option to acquire 50% of the Series A convertible preferred stock for \$1,950,000.

14. Stock options

Long term incentive plan

During 1995, the Company established the 1995 Long-Term Incentive Stock Option Plan (the "Plan"), which includes all officers, key employees and non-employee members of the Company's Board of Directors. All options to purchase shares of the Company's common stock under the Plan expire seven years from the date of grant and generally become exercisable in three installments with 40% vesting on the first anniversary of the grant date and 30% vesting on each of the second and third anniversaries of the grant date, subject to acceleration under certain circumstances. At December 31, 2002, the Company had 808,024 shares of common stock reserved for the future grants under the Plan.

Stock option activity under the Plan is as follows:

| | Shares | Weighted Average Exercise Price |
|--|-----------|---------------------------------------|
| Options outstanding, as of January 1, 2000 | 1,167,605 | \$ 4.93 |
| Options exercised | (10,880) | (3.56) |
| Options canceled | (14,620) | (3.73) |
| Options granted | 295,000 | 5.07 |
| ----- | | |
| Options outstanding, as of December 31, 2000 | 1,437,105 | \$ 4.81 |
| Options exercised | (25,000) | (1.33) |
| Options canceled | (99,950) | (4.59) |
| Options granted | 547,000 | 1.95 |
| ----- | | |
| Options outstanding, as of December 31, 2001 | 1,859,155 | \$ 4.03 |
| Options exercised | (128,000) | (2.05) |
| Options canceled | (39,179) | (2.00) |
| Options granted | - | - |
| ----- | | |
| Options outstanding, as of December 31, 2002 | 1,691,976 | \$ 4.15 |
| ===== | | |

ABLE>

The following table summarizes information relating to currently outstanding and exercisable options at December 31, 2002:

| Range of Exercise Prices | Options Outstanding | | | Options Exercisable | |
|-----------------------------|------------------------|---|---------------------------------------|------------------------|---------------------------------------|
| | Options Outstanding | Weighted Average Remaining Contract Life in Years | Weighted Average Exercise Price | Options Exercisable | Weighted Average Exercise Price |
| \$1.48 - \$2.95 | 546,050 | 5.0 | \$ 2.16 | 294,650 | \$ 2.26 |
| \$2.96 - \$4.43 | 789,485 | 3.8 | 3.67 | 389,485 | 3.83 |
| \$4.44 - \$5.90 | 200,000 | 4.1 | 4.75 | 200,000 | 4.75 |
| \$5.91 - \$7.38 | 10,000 | 4.3 | 6.38 | 10,000 | 6.38 |
| \$7.39 - \$8.85 | 20,000 | 4.2 | 7.50 | 14,000 | 7.50 |
| \$8.86 - \$11.80 | 200 | 3.6 | 11.25 | 200 | 11.25 |
| \$11.81 - \$14.75 | 126,241 | 2.7 | 14.11 | 126,241 | 14.11 |
| Total | 1,691,976 | 4.1 | \$ 4.15 | 1,034,576 | \$ 4.89 |
| | ===== | | | ===== | |

15. Commitments and contingencies

Leases

The Company is obligated under certain noncancelable operating leases for office facilities and equipment. Future minimum lease payments under noncancelable operating leases as of December 31, 2002 are as follows:

| | |
|----------------|-----------------|
| (in thousands) | |
| 2003 | \$ 1,740 |
| 2004 | 1,624 |
| 2005 | 1,584 |
| 2006 | 1,378 |
| 2007 | 1,115 |
| Thereafter | 286 |
| Total | <u>\$ 7,727</u> |

Total rent expense under operating leases for the years ended December 31, 2002, 2001, and 2000 was approximately \$1,842,000, \$1,924,000, and \$2,101,000, respectively.

Letters of credit and performance bonds

As of December 31, 2002, the Company was contingently liable for approximately \$747,000 under seven letters of credit used as payment bonds on contracts, all of which were secured by cash deposits classified as restricted cash in the consolidated balance sheet. As of December 31, 2002, the Company was contingently liable for approximately \$149,000 under three performance bonds on contracts, all of which were secured by letters of credit of the Company's foreign subsidiary. In addition, the Company has \$111,000 in escrow until April 30, 2003 as a performance bond deposit in connection with a simulator contract in Taiwan. This deposit is classified as an other asset in the consolidated balance sheets at December 31, 2002 and 2001.

Contingencies

Various actions and proceedings are presently pending to which the Company is a party. In the opinion of management, the aggregate liabilities, if any, arising from such actions are not expected to have a material adverse effect on the financial position, results of operations or cash flows of the Company.

16. Other related party transactions

In January 2000, the Company issued 116,959 shares of its common stock to ManTech for \$500,000. The proceeds of the stock issuance were used for working capital.

Due to the Company's liquidity situation at the end of 2000, GSE experienced some difficulties in procuring supplies from its vendors for business operations. In January 2001, the Company entered into a purchasing arrangement with ManTech whereby ManTech dealt directly with some of the Company's vendors, ordered the supplies needed and had the products shipped in accordance with the Company's instructions. Purchases under this agreement totaled \$843,000 for the year ended December 31, 2001. This purchasing arrangement terminated in June 2001, and the Company has no outstanding obligations to ManTech, in connection with this purchasing arrangement as of December 31, 2002. The supplies purchased through ManTech were at the same prices at which the Company could have procured the supplies directly.

In September 2001, the Company entered into a sublease agreement with ManTech, allowing ManTech to sublease 2,088 square feet of space at the Company's Columbia, Maryland office through September 2002. Subsequent to September 2002, the lease is on a month to month basis. For the years ended December 31, 2002 and 2001, such sublease rentals amounted to \$32,000 and \$13,000, respectively.

In September, 2001, the Company entered into an alliance with General Physics Corporation, the leading supplier of operator instructional training programs for the Power industry. In addition to cooperating in marketing of individual products, the companies will combine some of General Physics' extensive training materials and programs with GSE's power plant simulation models to provide interactive and adaptive total training solutions. GSE will also help sell and distribute General Physics' GFE product to GSE's customer base.

On December 7, 2001, the Company agreed to make certain cash and in-kind contributions to RedStorm Scientific, Inc. ("RedStorm") in exchange for a 10.1% interest in RedStorm. RedStorm is a privately held computational drug design company. Its technology (patents pending), known as Fyrestar, utilizes bio-informatics and computer-aided molecular design to create lead compounds that are developed into successful new drugs. It greatly reduces the significant cost associated with screening thousands of potential compounds common in the drug development process.

The Company paid \$50,000 to RedStorm in the fourth quarter of 2001 and made additional cash payments of \$200,000 in the year ended December 31, 2002. GSE's in-kind contribution consists of the development of a graphical user interface that will allow scientists to easily

access and use the Fyrestar technology and the development of additional functionality to Fyrestar, allowing results to be graphically displayed as the calculations take place. This will allow scientists the opportunity to adjust their assumptions in real time and further improve results. GSE will receive a perpetual, worldwide, royalty-free, non-transferable exclusive license for RedStorm's software products solely in the power and process control markets.

One of the Company's directors is also on RedStorm's Board of Directors and another director owns approximately 0.5% of RedStorm. The Company has accounted for its investment in RedStorm using the equity method of accounting based on management's conclusion that the Company has significant influence with respect to the operations of RedStorm. During 2002, the Company recorded a loss of \$59,000 on this investment.

In October 2002, the Company purchased a Chinese subsidiary of ManTech. See the discussion of this transaction in Note 18. Acquisitions and dispositions.

17. Employee benefits

The Company has a qualified defined contribution plan that covers substantially all U.S. employees under Section 401(k) of the Internal Revenue Code. Under this plan, the Company's stipulated basic contribution matches a portion of the participants' contributions based upon a defined schedule. Contributions are invested by an independent investment company in one or more of several investment alternatives. The choice of investment alternatives is at the election of each participating employee. The Company's contributions to the plan were approximately \$215,000, \$293,000, and \$340,000, for the years ended December 31, 2002, 2001, and 2000, respectively.

18. Acquisitions and dispositions

Acquisitions

In October 2002, the Company completed an acquisition for the Process business unit which was accounted for using the purchase method. The Company purchased the stock of ManTech Automation Systems (Beijing) Company Ltd, from ManTech International Corp. The Chinese company, which has seven employees, was renamed GSE Systems Engineering (Beijing) Company Ltd. The purchase price was \$45,000 and was allocated 100% to certain assets and property and equipment.

In December 1997, the Company acquired 100% of the outstanding common stock of J.L. Ryan, Inc. ("Ryan") for an initial purchase price of \$1,000,000 and contingent consideration based on the performance of the business from 1998 to 2002. A minimum of \$250,000 of such earnings payments for each of 1998 and 1999 was guaranteed by the Company. The Company paid \$600,000 in cash upon the closing of the transaction and entered into a promissory note payable in four annual installments of \$100,000 each beginning on January 2, 1999. This acquisition was accounted for under the purchase method. For the years ended December 31, 2002 and 2000, the contingent consideration in excess of the minimum guaranteed amount was approximately \$515,000, and \$549,000, respectively, which the Company has recorded as additions to goodwill. For the year ended December 31, 2001, there was no contingent consideration.

Dispositions

On November 30, 2000, the Company completed the sale of its GSE Process Solutions N.V. subsidiary ("GSE Belgium") to Newton Beheer B.V., pursuant to a stock purchase agreement, whereby Newton Beheer B.V. acquired all of the assets and assumed all of the liabilities of GSE Belgium. The aggregate cash sales for GSE Belgium was \$1. The Company recognized a loss before income taxes on this transaction of \$990,000. Included in the Consolidated Statement of Operations for the year ended December 31, 2000, are revenues of \$1.5 million and operating losses of \$346,000 attributable to GSE Belgium prior to the sale to Newton Beheer B.V.

19. Segment information

The Company's two reportable segments are its core business units Process and Power. (The Company's VirtualPlant business is reported under the Process segment.) The accounting policies of the segments are the same as those described in Note 2, Summary of significant accounting policies. The Company is primarily organized on the basis of these two business units. The Company has a wide range of knowledge of control and simulation systems and the processes those systems are intended to improve, control and model. The Company's knowledge is concentrated heavily in the process industries, which include the specialty chemicals, food & beverage, and pharmaceuticals fields, as well as in the power generation industry. The Process business unit is primarily engaged in process control in a variety of commercial industries. Contracts typically range from three to nine months. The Power business unit is primarily engaged in simulation and plant security for the power generation industry and simulation for the process industries, with the vast majority of customers being in the nuclear power industry. Contracts typically range from 18 months to three years. The Power business unit is comprised of three divisions: Power Simulation, Plant Security Systems, and Process Simulation.

The Company evaluates the performance of its business units utilizing "Business Unit Contribution", which is substantially equivalent to earnings before interest and taxes before allocating any corporate expenses. The segment information regarding the divested businesses is also included below (see, Note 3, Investment in Avantium International B.V. and Note 18, Acquisitions and dispositions).

The table below presents information as of and for the years ended December 31, 2002, 2001, and 2000 about the reportable segments:

| (in thousands) | 2002 | | |
|--------------------------------|------------|-----------|-----------|
| | Process | Power | Total |
| Contract revenue | \$ 22,941 | \$ 20,175 | \$ 43,116 |
| Business unit contribution | \$ 2,574 | \$ (736) | \$ 1,838 |
| Total assets | \$ 15,852 | \$ 12,569 | \$ 28,421 |
| Additions to long-lived assets | \$ 2,299 | \$ 638 | \$ 2,937 |
| | | | |
| | 2001 | | |
| | Process | Power | Total |
| Contract revenue | \$ 24,999 | \$ 25,332 | \$ 50,331 |
| Business unit contribution | \$ 3,745 | \$ 1,672 | \$ 5,417 |
| Total assets | \$ 16,833 | \$ 14,861 | \$ 31,694 |
| Additions to long-lived assets | \$ 974 | \$ 372 | \$ 1,346 |
| | | | |
| | 2000 | | |
| | Process | Power | Total |
| Contract revenue | \$ 25,208 | \$ 30,507 | \$ 55,715 |
| Business unit contribution | \$ (4,053) | \$ 4,549 | \$ 496 |
| Total assets | \$ 16,831 | \$ 17,719 | \$ 34,550 |
| Additions to long-lived assets | \$ 1,913 | \$ 921 | \$ 2,834 |

Contract revenue for the Process segment includes revenue for the Company's VirtualPlant and Belgian businesses of \$7.6 million for the year ended December 31, 2000. Business unit contribution for the Process segment includes losses for VirtualPlant and Belgium of \$3.7 million for the year ended December 31, 2000.

For the years ended December 31, 2002, 2001, and 2000, one Power Simulation customer (Battelle's Pacific Northwest National Laboratory) accounted for approximately 11%, 17%, and 22%, respectively, of the Company's consolidated revenue. The Pacific Northwest National Laboratory is the purchasing agent for the Department of Energy and the projects the Company performs in Eastern and Central Europe. For the years ended December 31, 2002, 2001, and 2000, one Process Automation customer (Westinghouse Savannah River Company) accounted for approximately 24%, 24%, and 11%, respectively, of the Company's consolidated revenue.

For the years ended December 31, 2002, 2001, and 2000, 35%, 37%, and 26% of the Company's consolidated revenue were from customers in the chemicals industry, respectively, and 40%, 38%, and 55% of the Company's consolidated revenue were from customers in the nuclear power industry, respectively.

A reconciliation of segment business unit contribution to consolidated income before taxes for the years ended December 31, 2002, 2001, and 2000 is as follows:

| (in thousands) | Years ended December 31, | | |
|--|--------------------------|----------|------------|
| | 2002 | 2001 | 2000 |
| Segment business unit contribution | \$ 1,838 | \$ 5,417 | \$ 496 |
| Corporate expenses | (3,332) | (3,293) | (5,096) |
| Gain (loss) on disposition of assets | - | 3,273 | (990) |
| Write-down on investment of Avantium International B.V. | (2,783) | (4,605) | - |
| Interest expense, net | (277) | (886) | (687) |
| Loss before income taxes | \$ (4,554) | \$ (94) | \$ (6,277) |

A reconciliation of segment total assets to total consolidated assets as of the years ended December 31, 2002, 2001, and 2000 is as follows:

(in thousands)

| | December 31, | | |
|--------------------------------------|--------------|-----------|-----------|
| | 2002 | 2001 | 2000 |
| Segment total assets | \$ 28,421 | \$ 31,694 | \$ 34,550 |
| Other assets unallocated to segments | 473 | 1,980 | 1,399 |
| Total consolidated assets | \$ 28,894 | \$ 33,674 | \$ 35,949 |

The Company designs, develops and delivers business and technology solutions to the energy, process and manufacturing industries worldwide. Revenue, operating income (loss) and identifiable assets for the Company's United States, European, and Asian operations as of and for the years December 31, 2002, 2001, and 2000 are as follows:

(in thousands)

| | 2002 | | | | |
|--|---------------|------------|---------|--------------|--------------|
| | United States | Europe | Asia | Eliminations | Consolidated |
| Contract revenue | \$ 41,496 | \$ 1,575 | \$ 45 | \$ - | \$ 43,116 |
| Transfers between geographic locations | 92 | 38 | - | (130) | - |
| Total contract revenue | \$ 41,588 | \$ 1,613 | \$ 45 | \$ (130) | \$ 43,116 |
| Operating loss | \$ (794) | \$ (716) | \$ (18) | \$ - | \$ (1,528) |
| Identifiable assets, at December 31 | \$ 36,000 | \$ 1,363 | \$ 52 | \$ (8,521) | \$ 28,894 |
| | 2001 | | | | |
| | United States | Europe | Asia | Eliminations | Consolidated |
| Contract revenue | \$ 47,004 | \$ 3,327 | \$ - | \$ - | \$ 50,331 |
| Transfers between geographic locations | 123 | 37 | - | (160) | - |
| Total contract revenue | \$ 47,127 | \$ 3,364 | \$ - | \$ (160) | \$ 50,331 |
| Operating income (loss) | \$ 2,294 | \$ (647) | \$ 71 | \$ - | \$ 1,718 |
| Identifiable assets, at December 31 | \$40,168 | \$ 1,921 | \$ 101 | \$ (8,516) | \$33,624 |
| | 2000 | | | | |
| | United States | Europe | Asia | Eliminations | Consolidated |
| Contract revenue | \$ 44,441 | \$ 11,274 | \$ - | \$ - | \$ 55,715 |
| Transfers between geographic locations | 490 | 610 | - | (1,100) | - |
| Total contract revenue | \$ 44,931 | \$ 11,884 | \$ - | \$ (1,100) | \$ 55,715 |
| Operating loss | \$ (263) | \$ (4,326) | \$ (66) | \$ - | \$ (4,655) |
| Identifiable assets, at December 31 | \$44,688 | \$ 2,912 | \$ 199 | \$ (11,850) | \$ 35,949 |

20. Supplemental disclosure of cash flow information

| (in thousands) | Years ended December 31, | | |
|---|--------------------------|---------|---------|
| | 2002 | 2001 | 2000 |
| Software product license sold in exchange for stock of buyer (see Note 3) | \$ - | \$ - | \$2,895 |
| Issuance of options/warrants to non-employees (see Note 12) | \$ - | \$ 194 | \$ - |
| Conversion of related party note payable to preferred stock (see Note 10) | \$ - | \$3,900 | \$ - |
| Cash paid: | | | |
| Interest | \$ 485 | \$ 845 | \$ 889 |
| Income taxes | \$ 385 | \$ 434 | \$ 271 |

21. Quarterly financial data (unaudited)

The Company's quarterly financial information has not been audited but, in management's opinion, includes all adjustments necessary for a fair presentation.

| (in thousands, except per share data) | Year ended December 31, 2002 Quarterly Data | | | |
|---------------------------------------|---|----------------|---------------|----------------|
| | First Quarter | Second Quarter | Third Quarter | Fourth Quarter |
| Contract revenue | \$ 11,274 | \$ 12,131 | \$ 10,612 | \$ 9,099 |
| Operating income (loss) | 725 | 220 | (72) | (2,401) |
| Net income (loss) | 432 | 123 | (82) | (6,416) |
| Earnings (loss) per common share: | | | | |
| Basic | \$ 0.06 | \$ 0.01 | \$ (0.02) | \$ (1.10) |
| Diluted | \$ 0.06 | \$ 0.01 | \$ (0.02) | \$ (1.10) |
| | Year ended December 31, 2001 Quarterly Data | | | |
| | First Quarter | Second Quarter | Third Quarter | Fourth Quarter |
| Contract revenue | \$ 12,478 | \$ 11,845 | \$ 13,823 | \$ 12,185 |
| Operating income (loss) | (209) | 464 | 1,154 | 309 |
| Net income (loss) | 1,714 | 468 | 601 | (2,524) |
| Earnings (loss) per common share: | | | | |
| Basic | \$ 0.33 | \$ 0.09 | \$ 0.12 | \$ (0.49) |
| Diluted | \$ 0.33 | \$ 0.09 | \$ 0.11 | \$ (0.48) |

The first quarter 2001 net income includes a \$3.3 million gain before income taxes on the sale of the Company's VirtualPlant technology and assets to Avantium. The fourth quarter 2001 net income includes a \$4.6 million pre-tax write down of the Company's investment in Avantium (see Note 3, Investment in Avantium International B.V.) and a \$420,000 reduction of the Company's deferred tax valuation allowance.

The fourth quarter 2002 net income includes a \$2.8 million pre-tax write down of the Company's investment in Avantium and a \$2.8 million increase in the Company's deferred tax valuation allowance.

GSE SYSTEMS, INC.
FORM 10-K
For the Year Ended December 31, 2001

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

None.

GSE SYSTEMS, INC.
FORM 10-K
For the Year Ended December 31, 2002

PART III

The information required in response to Items 10, 11, 12 and 13 is hereby incorporated by reference to the information under the captions "Election of Directors", "Principal Executive Officers of the Company Who Are Not Also Directors", "Executive Compensation", "Voting Securities and Principal Stockholders", "Security Ownership of Management", and "Certain Related Transactions" in the Proxy Statement for the Company's 2003 Annual Meeting of Shareholders.

ITEM 14. CONTROLS AND PROCEDURES.

Within the 90-day period prior to the filing of this report, GSE management, including the Chief Operating Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of the design and operation of the company's disclosure controls and procedures as defined in Exchange Act Rule 13a-14(c). Based on that evaluation, the Chief Operating Officer and Chief Financial Officer concluded that the company's disclosure controls and procedures were effective as of the date of that evaluation. There have been no significant changes in internal controls, or in factors that could significantly affect internal controls, subsequent to the date the Chief Operating Officer and Chief Financial Officer completed their evaluation.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES, AND REPORTS ON FORM 8-K.

(a)(1) List of Financial Statements

The following financial statements are included in Item 8:

GSE Systems, Inc. and Subsidiaries

Independent Auditors' Report

Consolidated Balance Sheets as of December 31, 2002 and 2001 Consolidated Statements of Operations for the years ended December 31, 2002, 2001, and 2000

Consolidated Statements of Comprehensive Loss for the years ended December 31, 2002, 2001, and 2000 Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2002, 2001, and 2000 Consolidated Statements of Cash Flows for the years ended December 31, 2002, 2001, and 2000 Notes to Consolidated Financial Statements

(a)(2) List of Schedules

All other schedules to the consolidated financial statements are omitted as the required information is either inapplicable or presented in the consolidated financial statements or related notes.

(a)(3) List of Exhibits

The Exhibits which are filed with this report or which are incorporated by reference are set forth in the Exhibit Index hereto.

(b) Reports on Form 8-K:

Form 8-K was filed by the Registrant with the Securities and Exchange Commission on November 15, 2002 regarding the revised financial projections for 2002 in a Conference Call to investors. Specifically, the Company revised (i) yearly revenue to about \$45 million, and (ii) earnings per share to around 10-12 cents.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

GSE Systems, Inc.

By: / S / Chin-Our Jerry Jen
Chin-Our Jerry Jen
Chief Operating Officer and
President

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

Date: March 31, 2003

/ S / Chin-Our Jerry Jen
Chin-Our Jerry Jen, Chief Operating
Officer and President
(Principal Executive Officer)

Date: March 31, 2003

/ S / JEFFERY G. HOUGH
Jeffery G. Hough, Senior Vice President
and Chief Financial Officer
(Principal Financial and Accounting
Officer)

Date: March 31, 2003

(Jerome I. Feldman, Chairman of the Board)
(Dr. Sheldon L. Glashow, Director)
(Scott N. Greenberg, Director)
(Dr. Roger Hagengruber, Director)
(Joseph W. Lewis, Director)
(John A. Moore, Jr., Director)
(George J. Pedersen, Director)

By: / S / JEFFERY G. HOUGH
Jeffery G. Hough
Attorney-in-Fact

A Power of Attorney, dated February 11, 2003, authorizing Jeffery G. Hough to sign this Annual Report on Form 10-K for the fiscal year ended December 31, 2002 on behalf of certain of the directors of the Registrant is filed as Exhibit 24 to this Annual Report.

SECTION 302 CERTIFICATIONS

I, Chin-Our Jerry Jen, certify that:

1. I have reviewed this annual report on Form 10-K of GSE Systems, Inc.;
2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;
3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:
 - a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;
 - b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this annual report (the "Evaluation Date"); and
 - c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;
5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):
 - a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and
 - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and
6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 31, 2003

*/S/ CHIN-OUR JERRY JEN
Chin-Our Jerry Jen
President and Chief Operating Officer
(Principal Executive Officer)
SECTION 302 CERTIFICATIONS*

I, Jeffery G. Hough, certify that:

1. I have reviewed this annual report on Form 10-K of GSE Systems, Inc.;
2. Based on my knowledge, this annual report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this annual report;
3. Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this annual report;
4. The registrant's other certifying officers and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-14 and 15d-14) for the registrant and have:
 - a) designed such disclosure controls and procedures to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this annual report is being prepared;
 - b) evaluated the effectiveness of the registrant's disclosure controls and procedures as of a date within 90 days prior to the filing date of this

annual report (the "Evaluation Date"); and

c) presented in this annual report our conclusions about the effectiveness of the disclosure controls and procedures based on our evaluation as of the Evaluation Date;

5. The registrant's other certifying officers and I have disclosed, based on our most recent evaluation, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies in the design or operation of internal controls which could adversely affect the registrant's ability to record, process, summarize and report financial data and have identified for the registrant's auditors any material weaknesses in internal controls; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls; and

6. The registrant's other certifying officers and I have indicated in this annual report whether there were significant changes in internal controls or in other factors that could significantly affect internal controls subsequent to the date of our most recent evaluation, including any corrective actions with regard to significant deficiencies and material weaknesses.

Date: March 31, 2003

/S/ JEFFERY G. HOUGH

Jeffery G. Hough

Senior Vice President and Chief Financial Officer

(Principal Financial and Accounting Officer)

CERTIFICATIONS PURSUANT TO

**18 U.S.C. SECTION 1350
ADOPTED PURSUANT TO**

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

As required by 18 U.S.C. Section 1350, I, Chin-Our Jerry, President and Chief Operating Officer, hereby certify that, to the best of my knowledge:

1. This Annual Report on Form 10-K for the period ended December 31, 2002 fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and
2. The Information contained in this report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 31, 2003

*/S/CHIN-OUR JERRY JEN
Chin-Our Jerry Jen
President and Chief Operating Officer
(Principal Executive Officer)*

As required by 18 U.S.C. Section 1350, I, Jeffery G. Hough, Senior Vice President and Chief financial Officer, hereby certify that to the best of my knowledge:

1. This Annual Report on Form 10-K for the period ended December 31, 2002 fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, and
2. The information contained in this report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 31, 2003

*/S/JEFFERY G. HOUGH
Jeffery G. Hough
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)*

A signed original of this written statement required by Section 906 has been provided to GSE Systems, Inc. and will be retained by GSE Systems, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

EXHIBIT INDEX

The following exhibits are either filed herewith or have been previously filed with the Securities and Exchange Commission and are referred to and incorporated by reference.

| Exhibit | Description of Exhibit | Exhibit Number | Page |
|---------|---|----------------|------|
| 3. | Articles of Incorporation and Bylaws | | |
| a. | Third Amended and Restated Certificate of Incorporation of the Company. Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on October 24, 2001 and incorporated herein by reference. | | |
| b. | Form of Amended and Restated Bylaws of the Company. Previously filed in connection with Amendment No. 1 to the GSE Systems, Inc. Form S-1 Registration Statement as filed with the Securities and Exchange Commission on June 14, 1995 and incorporated herein by reference. | | |
| 4. | Instruments Defining Rights of Security Holders, including Indenture. | | |
| a. | Specimen Common Stock Certificate of the Company. Previously filed in connection with Amendment No. 3 to the GSE Systems, Inc. Form S-1 Registration Statement as filed with the Securities and Exchange Commission on July 24, 1995 and incorporated herein by reference. | | |
| 4. | Instruments Defining Rights of Security Holders, including Indenture. | | |
| a. | Specimen Common Stock Certificate of the Company. Previously filed in connection with Amendment No. 3 to the GSE Systems, Inc. Form S-1 Registration Statement as filed with the Securities and Exchange Commission on July 24, 1995 and incorporated herein by reference. | | |
| 10. | Material Contracts | | |
| a. | Agreement among ManTech International Corporation, National Patent Development Corporation, GPS Technologies, Inc., General Physics Corporation, Vattenfall Engineering AB and GSE Systems, Inc. (dated as of April 13, 1994). Previously filed in connection with the GSE Systems, Inc. Form S-1 Registration Statement as filed with the Securities and Exchange Commission on April 24, 1995 and incorporated herein by reference. | | |
| b. | GSE Systems, Inc. 1995 Long-Term Incentive Plan, amended as of April 5, 1999. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 30, 1999 and incorporated herein by reference. * | | |

| Exhibit | Description of Exhibit | Exhibit Number | Page |
|---------|---|----------------|------|
| c. | Form of Option Agreement Under the GSE Systems, Inc. 1995 Long-Term Incentive Plan. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 22, 1996 and incorporated herein by reference. * | | |
| d. | Office Lease Agreement between Sterling Rutherford Plaza, L.L.C. and GSE Systems, Inc. (dated as of February 10, 1998). Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 21, 1998 and incorporated herein by reference. | | |
| e. | Office Lease Agreement between Red Branch Road, L.L.C. and GSE Systems, Inc. (dated February 10, 1998). Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 21, 1998 and incorporated herein by reference. | | |
| f. | Executive Employment Agreements between GSE Systems, Inc. and Directors Jerome I. Feldman, George J. Pedersen, Scott N. Greenberg, and John A. Moore, Jr. (dated January 1, 1999). Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on August 1, 2001 and incorporated herein by reference.* | | |
| g. | Warrant Agreements with GP Strategies and ManTech International | | |

Corporation (dated September 13, 1999). Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on August 15, 2001 and incorporated herein by reference.

- h. Change of Control Agreements between GSE Systems, Inc. and Jerry Jen and Jeffery G. Hough (dated March 10, 2000). Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on August 1, 2001 and incorporated herein by reference.*
- i. Loan and Security Agreement among GSE Systems, Inc., GSE Process Solutions, Inc., GSE Power Systems, Inc., and National Bank of Canada, dated March 23, 2000. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 30, 2000 and incorporated herein by reference.

| Exhibit | Description of Exhibit | Exhibit Number | Page |
|---------|---|-------------------|------|
| j. | \$10,000,000 Promissory Note dated March 23, 2000, from GSE Systems, Inc., GSE Process Solutions, Inc., and GSE Power Systems, Inc. to National Bank of Canada. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 30, 2000 and incorporated herein by reference. | | |
| k. | GP Strategies, Inc. Guarantee to National Bank of Canada, dated March 23, 2000. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 30, 2000 and incorporated herein by reference. | | |
| l. | Subscription and Shareholders' Agreement by and among Avantium International B.V., B.V. Licht en Kracht Maatschappij, SmithKline Beecham PLC, S.R. One, Limited, GSE Systems, Inc. Delft University of Technology, Universiteit Twente, Eindhoven University of Technology, the Generics Group Limited, and Alpinvest Holding NV, dated February 24, 2000. Previously filed in connection with the GSE Systems, Inc. Form 10-K as filed with the Securities and Exchange Commission on March 30, 2000 and incorporated herein by reference. | | |
| m. | Asset Sale and Purchase Agreement between GSE Systems, Inc. and Avantium International B.V. dated March 6, 2001. Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on March 21, 2001 and incorporated herein by reference. | | |
| n. | Executive Compensation Plan for Jerry Jen (dated August 28, 2002). Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on September 20 2002 and incorporated herein by reference.* | | |
| o. | \$1,000,000 promissory note dated June 25, 2001 to ManTech International Corporation. Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on August 1, 2001 and incorporated herein by reference. | | |

| Exhibit | Description of Exhibit | Exhibit Number | Page |
|---------|--|-------------------|----------|
| p. | Preferred Stock Issuance Agreement by and between GSE Systems, Inc. and ManTech International Corporation (dated December 5, 2001). Previously filed in connection with the GSE Systems, Inc. Form 8-K as filed with the Securities and Exchange Commission on December 12, 2001 and incorporated herein by reference. | | |
| q. | Fifth Modification Agreement dated March 21, 2003 to the Loan and Security Agreement among GSE Systems, Inc., GSE Process Solutions, Inc., GSE Power Systems, Inc. and National Bank of Canada dated March 23, 2000 which was transferred on or about January 15, 2002 to PNC Bank, National Association. | 99.1 | X-99.1 |
| 21. | Subsidiaries. | | |
| a. | List of Subsidiaries of Registrant at December 31, 2002. | 21.1 | X-21.1-1 |
| 23. | Consents of Experts and Counsel | | |

a. Independent Auditors' Consent. 23.1 X-23.1-1

Exhibit
Number

Page

Exhibit Description of Exhibit

24. Power of Attorney

a. Power of Attorney for Directors' and Officers' Signatures on SEC Form 10-K. 24.1 X-24.1-1

99. Additional Exhibits

a. Form of Right of First Refusal Agreement. Previously filed in connection with Amendment No. 3 to the GSE Systems, Inc. Form S-1 Registration Statement as filed with the Securities and Exchange Commission on July 24, 1995 and incorporated herein by reference.

* Management contracts or compensatory plans required to be filed as exhibits pursuant to Item 14 (c) of this report.

Exhibit 21.1

SUBSIDIARIES OF REGISTRANT AT DECEMBER 31, 2002

The companies listed below are directly or indirectly owned 100% by GSE Systems, Inc. and are included in its consolidated financial statements.

o MSHI, Inc., GSE Power Systems AB, GSE Process Solutions, Inc., GSE Erudite Software, Inc. and GSE Systems Engineering (Beijing) Company Ltd. are wholly owned subsidiaries of GSE Systems, Inc.

o GP International Engineering & Simulation, Inc. and GSE Services Company L.L.C. are wholly owned subsidiaries of GSE Power Systems, Inc. which is a wholly owned subsidiary of MSHI, Inc.

o GSE Systems UK, Ltd. and GSE Process Solutions B.V. are wholly owned subsidiaries of GSE Process Solutions, Inc.

o J.L. Ryan, Inc., acquired by GSE Power Systems, Inc. in December 1997, has been merged with and into GSE Power Systems, Inc. as of February 1998, with GSE Power Systems, Inc. being the surviving corporation.

| Name | Place of Incorporation or Organization |
|--|--|
| MSHI, Inc. | State of Virginia |
| GSE Power Systems AB | Sweden |
| GSE Process Solutions, Inc. | State of Delaware |
| GSE Erudite Software, Inc. | State of Delaware |
| GP International Engineering & Simulation, Inc. | State of Delaware |
| GSE Services Company L.L.C. | State of Delaware |
| GSE Power Systems, Inc. | State of Delaware |
| GSE Systems UK, Ltd. | United Kingdom |
| GSE Process Solutions B.V. | The Netherlands |
| GSE Systems Engineering (Beijing) Company, Ltd | Peoples Republic of China |

Exhibit 23.1

Independent Auditors' Consent

The Board of Directors
GSE Systems, Inc.

We consent to the incorporation by reference in the registration statement (No. 333-08805) on Form S-8 of GSE Systems, Inc. of our report dated March 21, 2003 relating to the consolidated balance sheets of GSE Systems, Inc. and subsidiaries as of December 31, 2002 and 2001, and the related consolidated statements of operations, comprehensive loss, changes in stockholders' equity and cash flows for each of the years in the three-year period ended December 31, 2002, which report appears in the December 31, 2002 annual report on Form 10-K of GSE Systems, Inc. Our report refers to the Company's adoption of SFAS No. 142, Goodwill and Other Intangible Assets, on January 1, 2002.

*/s/ KPMG LLP
Baltimore, Maryland
March 28, 2003*

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS that the undersigned Officers and Directors of GSE Systems, Inc., a Delaware corporation, hereby constitute and appoint Jerry Jen and Jeffery G. Hough, and each of them, the true and lawful agents and attorneys-in-fact of the undersigned with full power and authority in said agents and attorneys-in-fact, and in any one or both of them, to sign for the undersigned and in their respective names as Officers and Directors of the Corporation, the Annual Report of Form 10-K of the Corporation to be filed with the Securities and Exchange Commission, Washington, D.C., under the Securities Exchange Act of 1934, as amended, and any amendment or amendments to such Annual Report, hereby ratifying and confirming all acts taken by such agents and attorneys-in-fact, or any one or more of them, as herein authorized. This Power of Attorney, which is dated as of February 11, 2003, may be executed in any number of counterparts, and such signatures may be by means of facsimile or other means of transmission.

| <i>Name</i> | <i>Title</i> |
|---|---|
| <i>/s/ Jerome I Feldman Jerome I. Feldman</i> | <i>Chairman of the Board</i> |
| <i>/s/Chin-Our Jerry Jen Chin-Our Jerry Jen</i> | <i>President, Chief Operating Officer and Director(Principal Executive Officer)</i> |
| <i>/s/ Jeffery G. Hough Jeffery G. Hough</i> | <i>Senior Vice President and Chief Financial Officer (Principal Finance and Accounting Officer)</i> |
| <i>/s/ Sheldon L. Glashow Sheldon L. Glashow, Ph.D.</i> | <i>Director</i> |
| <i>/s/ Scott N. Greenberg Scott N. Greenberg</i> | <i>Director</i> |
| <i>/s/ John A. Moore, Jr. John A. Moore, Jr.</i> | <i>Director</i> |
| <i>/s/ George J. Pedersen George J. Pedersen</i> | <i>Director</i> |
| <i>/s/ Joseph W. Lewis Joseph W. Lewis</i> | <i>Director</i> |
| <i>/s/ Roger L. Hagenruber Roger L. Hagenruber, Ph.D.</i> | <i>Director</i> |

FIFTH MODIFICATION AGREEMENT

THIS FIFTH MODIFICATION AGREEMENT ("MODIFICATION") is made as of the 21st day of March 2003, by and among GSE SYSTEMS, INC., a Delaware corporation ("GSE SYSTEMS"), GSE PROCESS SOLUTIONS, INC., a Delaware corporation ("GSE PROCESS"), and GSE POWER SYSTEMS, INC., a Delaware corporation ("GSE POWER," and together with GSE SYSTEMS and GSE PROCESS, collectively, "BORROWERS"), MSHI, INC., a Virginia corporation ("MSHI"), GSE ERUDITE SOFTWARE, INC., a Delaware corporation ("ERUDITE"), GSE SERVICES COMPANY L.L.C., a Delaware limited liability company ("SERVICES"), GP INTERNATIONAL ENGINEERING & SIMULATION, INC., a Delaware corporation ("GP ENGINEERING"), GP STRATEGIES CORPORATION, a Delaware corporation ("GP STRATEGIES"), MANTECH INTERNATIONAL CORPORATION, a New Jersey corporation ("MANTECH") and PNC BANK, NATIONAL ASSOCIATION ("LENDER"). MSHI, ERUDITE, SERVICES, and GP ENGINEERING are referred to collectively as the "GUARANTORS."

RECITALS

Pursuant to the terms of a Loan and Security Agreement dated as of March 23, 2000, as Amended pursuant to a First Modification Agreement dated as of May 30, 2000, a Second Modification Agreement dated as of July 20, 2000, a Third Modification Agreement dated as of March 20, 2001, a Fourth Modification Agreement dated as of January 14, 2002, and various letter agreements executed from time to time (the aforesaid Loan and Security Agreement, as amended from time to time, "LOAN AGREEMENT") by and between the BORROWERS and the NATIONAL BANK OF CANADA ("NBOC"), NBOC provided a credit facility to the BORROWERS in the originally stated maximum principal amount of Ten Million Dollars (\$10,000,000.00). On or about January 15, 2002, NBOC transferred to the LENDER all of its right, title, and interest in, to and under the LOAN AGREEMENT and the credit facility extended to the BORROWERS pursuant thereto.

All capitalized terms used herein and not otherwise defined shall have the same meaning herein as in the LOAN AGREEMENT.

The GUARANTORS have guaranteed all of the BORROWERS' obligations to the LENDER pursuant to Guaranty Agreements dated as of March 23, 2000.

GP STRATEGIES has guaranteed all of the BORROWERS' obligations to the LENDER (subject to certain limitations set forth therein) pursuant to a Limited Guaranty Agreement dated as of March 23, 2000.

MANTECH presently provides certain subordinated loans to GSE SYSTEMS as set forth in the Subordination and Intercreditor Agreement dated as of June 25, 2001 between MANTECH and the LENDER.

The CREDIT FACILITY is secured by, among other things, the security interests and liens granted by the BORROWERS and the GUARANTORS to the LENDER pursuant to the LOAN AGREEMENT and the other LOAN DOCUMENTS.

The BORROWERS are in default under the LOAN AGREEMENT as a result of violations of Sections 6.21, 6.22 and 6.24 of the LOAN AGREEMENT as of their FISCAL YEAR ending December 31, 2002 ("EXISTING DEFAULTS"). As a result of the occurrence of the EXISTING DEFAULTS, the LENDER may terminate the CREDIT FACILITY and accelerate the time for payment of the OBLIGATIONS and exercise its rights and remedies upon default. Notwithstanding the EXISTING DEFAULTS, the LENDER is continuing to provide advances under the LOAN and has not, as of the date hereof, demanded repayment of any sums under the CREDIT FACILITY.

The BORROWERS have requested that the LENDER extend the TERMINATION DATE under the LOAN AGREEMENT to March 31, 2004 and to otherwise modify certain terms of the LOAN AGREEMENT. The BORROWERS have also requested that the LENDER waive the EXISTING DEFAULTS.

NOW, THEREFORE, in consideration of the premises, and other good and valuable consideration, the receipt and adequacy of which are hereby acknowledged, the parties agree as follows:

Section 1. Recitals. The parties acknowledge the accuracy of the above Recitals and hereby incorporate the Recitals into this MODIFICATION.

Section 2. LIBOR Borrowing under the Loan Agreement. The BORROWERS agree that, notwithstanding anything to the contrary set forth in the LOAN AGREEMENT, henceforth the BORROWERS shall not make elections for LIBOR BORROWINGS or otherwise elect to accrue interest at the ADJUSTED LIBOR RATE, and the LENDER shall have no obligation to make any advances under the CREDIT FACILITY as LIBOR BORROWINGS.

Section 3. Amendment To Loan Agreement. The LOAN AGREEMENT is hereby amended and modified as follows:

a. Section 1.11 of the LOAN AGREEMENT captioned "Applicable Margin" is hereby amended by deleting the percentage "0.75%" appearing under the heading "BASE RATE" and inserting in lieu thereof the percentage "1.00%."

b. Section 1.12 of the LOAN AGREEMENT captioned "Base Rate" is hereby amended and restated in its entirety as follows:

Section 1.12. Base Rate. The term "BASE RATE" means the base commercial lending rate of the LENDER as publicly announced to be in effect from time to time, such rate to be adjusted automatically, without notice, on the effective date of any change in such rate. This rate of interest is determined from time to time by the LENDER as a means of pricing some loans to its customers and is neither tied to any external rate of interest or index nor does it necessarily reflect the lowest rate of interest actually charged by the LENDER to any particular class or category of customers of the LENDER.

c. Section 1.31. of the LOAN AGREEMENT captioned "Dollar Cap" is hereby amended and restated in its entirety as follows:

Section 1.31. DollarCap. The term "DOLLAR CAP" means: (a) from March 23, 2003 through September 30, 2003, Six Million Five Hundred Thousand Dollars (\$6,500,000.00); (b) from October 1, 2003 through December 31, 2003, Five Million Five Hundred Thousand Dollars (\$5,500,000.00); and (c) from January 1, 2004 through the TERMINATION DATE, Five Million Dollars (\$5,000,000.00).

d. Section 1.101 of the LOAN AGREEMENT captioned "Termination Date" is hereby amended and restated in its entirety as follows:

Section 1.101. Termination Date. The term "TERMINATION DATE" means March 31, 2004.

e. Section 2.1 of the LOAN AGREEMENT captioned "Agreement to Extend the Loan" is hereby further amended by amending and restating the fifth sentence thereof in its entirety as follows:

In the event that the principal balance outstanding under the LOAN, plus the L/C EXPOSURE less the aggregate STATED AMOUNT of LETTERS OF CREDIT permitted and outstanding under the CASH SECURED L/C FACILITY, ever exceeds the MAXIMUM CREDIT AMOUNT (or any of the percentages or sublimits set forth therein) the BORROWERS shall immediately upon demand of the LENDER (and on March 23, 2003, October 1, 2003, January 1, 2004, without demand of the LENDER), pay to the LENDER in case the amount of such excess and all accrued interest thereon and, in addition to any other rights and remedies of the LENDER hereunder, prior to such repayment such over advances shall bear interest at the highest rate provided under this AGREEMENT.

f. Sections 6.21 and 6.22 of the LOAN AGREEMENT captioned "Minimum EBITDA" and "Minimum Tangible Net Worth Plus Subordinated Debt" respectively, are hereby amended and restated in their entirety as follows:

Section 6.21. Minimum EBITDA. The EBITDA of the BORROWERS and their respective consolidated SUBSIDIARIES measured on a consolidated basis, measured at the end of each QUARTER, shall be:

(a) for the QUARTER ending March 31, 2003, not less than Three Hundred Thousand Dollars (\$300,000.00);

(b) for the QUARTER ending June 30, 2003, not less than Eight Hundred Seventy-Five Thousand Dollars (\$875,000.00);

(c) for the QUARTER ending September 30, 2003, not less than One Million Five Hundred Seventy-Five Thousand Dollars (\$1,575,000.00); and

(d) for the QUARTER ending December 31, 2003, not less than One Million One Hundred Thousand Dollars (\$1,100,000.00).

Section 6.22. Minimum Tangible Net Worth Plus Subordinated Debt. As of the end of each QUARTER set forth below of the BORROWERS and their respective consolidated SUBSIDIARIES, the sum of TANGIBLE NET WORTH plus SUBORDINATED DEBT of the BORROWERS and their respective consolidated SUBSIDIARIES on a consolidated basis shall be not less than the respective amount set forth for such QUARTER:

(a) for the QUARTER ending March 31, 2003: Two Million Six Hundred Thousand Dollars (\$2,600,000.00);

(b) for the QUARTER ending June 30, 2003: Two Million Eight Hundred Thousand Dollars (\$2,800,000.00);

(c) for the QUARTER ending September 30, 2003: Three Million Three Hundred Fifty Thousand Dollars (\$3,350,000.00); and

(d) for the QUARTER ending December 31, 2003: Three Million Seven Hundred Fifty Thousand Dollars (\$3,750,000.00).

g. Section 6.23 of the LOAN AGREEMENT captioned "Minimum Current Ratio" is hereby deleted.

h. Section 6.24 of the LOAN AGREEMENT captioned "Ratio of Total Liabilities to Tangible Net Worth Plus Subordinated Debt" is hereby deleted.

i. Section 7.5 of the LOAN AGREEMENT is hereby amended and restated in its entirety as follows:

Section 7.5. Restricted Payments. None of the BORROWERS shall make any RESTRICTED PAYMENTS, except that provided no DEFAULT or EVENT OF DEFAULT shall have occurred or shall occur after giving effect to such RESTRICTED PAYMENT and provided the total amount of such RESTRICTED PAYMENTS in any given FISCAL YEAR do not exceed fifty percent (50%) of its NET PROFIT AFTER TAX for such FISCAL YEAR: (a) With respect to the GSE POWER SYSTEMS AB NOTE, GSE SYSTEMS may permit GSE Power Systems AB to offset dividends due GSE SYSTEMS to repay regularly scheduled payments of interest in accordance with the stated terms of such note or payments of principal in accordance with the stated terms of such note, when and as any of the same become due (but without giving effect to any acceleration or any amendment which would have the effect of increasing such payments) under such note; (b) the other BORROWERS may pay cash dividends to GSE SYSTEMS; and (c) a BORROWER may make payments to other BORROWERS.

Section 4. Amendment Fee. In consideration of the agreements of the LENDER hereunder, the BORROWERS shall pay to the LENDER an unconditional and non-refundable fee equal to Seventy-Five Thousand Dollars (\$75,000.00) which shall be due and payable on the date hereof. In addition, so long as there are any OBLIGATIONS which remain outstanding as of such dates, the following non-refundable and unconditional fees: (a) Fifty Thousand Dollars (\$50,000.00) which shall be due and payable on October 1, 2003; and (b) Fifty Thousand Dollars (\$50,000.00) which shall be due and payable on January 1, 2004. The fees shall not be considered to be payment of any of the LENDER's expenses incurred in connection with the CREDIT FACILITY or this MODIFICATION, nor shall it be considered to modify or limit the ability of the LENDER to terminate in accordance with the provisions of the LOAN AGREEMENT and the other LOAN DOCUMENTS, the ability of the BORROWERS to borrow under the LOAN, or obtain LETTERS OF CREDIT. The fees are, instead, intended as part of the compensation which is earned by the LENDER for agreeing to provide the CREDIT FACILITY in accordance with the terms of the LOAN DOCUMENTS.

Section 5. Waiver of Existing Defaults. Subject to the terms and conditions of this MODIFICATION, the LENDER hereby waives the EXISTING DEFAULTS. The contrary notwithstanding, the waiver granted herein shall not constitute a waiver of any other violation, DEFAULT, or EVENT OF DEFAULT which may exist under the LOAN AGREEMENT or any other LOAN DOCUMENT, whether or not known to the LENDER, nor shall it constitute a waiver of any future violation, DEFAULT, or EVENT OF DEFAULT occurring under the LOAN AGREEMENT or other LOAN DOCUMENT, including without limitation, any future or additional violation of Sections 6.21 and/or 6.22 of the LOAN AGREEMENT.

Section 6. Acknowledgement of Guarantors, GP Strategies and Mantech. Each of the GUARANTORS, GP STRATEGIES and MANTECH hereby acknowledges the modifications and other terms set forth herein and, except as specifically modified hereby, ratifies and confirms all of its respective obligations under the LOAN DOCUMENTS to which it is a party.

Section 7. Other Terms. Except as specifically modified herein, all other terms and provisions of the LOAN DOCUMENTS remain in full force and effect and are hereby ratified and confirmed.

Section 8. Additional Representation and Warranties. As an inducement to the LENDER to enter into this MODIFICATION, the BORROWERS, the GUARANTORS, GP STRATEGIES and MANTECH here by make the following additional representations and warranties to the LENDER:

a. Each of them: (i) has the power to enter into this MODIFICATION and any related documents, and to perform all of its obligations hereunder and there under; (ii) has duly authorized the entry into and performance of this MODIFICATION and all related documents and agrees to deliver to the LENDER a certificate of corporate resolutions evidencing same; and (iii) is in good standing in the state of its incorporation (or formation) and in all other states in which it transacts business, except where the failure to be in good standing would not materially affect performance under the LOAN DOCUMENTS.

b. None of them is in default of any of its respective duties or obligations of the LOAN DOCUMENTS (other than the EXISTING DEFAULTS).

c. No event exists which constitutes, or which with the passage of time, the giving of notice, or both, would constitute a default under the LOAN AGREEMENT or any of the LOAN DOCUMENTS (other than the EXISTING DEFAULTS).

d. None of them is in default under any other contract, agreement or instrument to which it is party or under which it or any of its property is bound.

e. The execution, delivery and performance of this MODIFICATION will not immediately, or with the passage of time, the giving of notice, or both violate any laws or result in a default under any contract, agreement, or instrument to which any of them is a party or by which any of them or any of their property is bound.

f. All warranties and representations previously made to the LENDER by the each of them in connection with the LOAN DOCUMENTS remain true, accurate and complete, except to the extent that the LENDER has previously been notified.

g. There are no outstanding judgements, tax liens, or pending litigation against any of them, and there are no actions, suits, investigations or proceedings pending or, to the knowledge of any of them, threatened against any of them or against any of the COLLATERAL, except as disclosed on a schedule to the LOAN DOCUMENTS or Schedule A attached hereto.

h. No material adverse change has occurred in the financial condition of any of the BORROWERS or any of the GUARANTORS, as indicated on their financial statement most recently submitted to and reviewed by the LENDER, and no event has occurred or circumstance exists which may cause such a material adverse change.

i. This MODIFICATION and all of the LOAN DOCUMENTS, as modified and amended in accordance herewith, are the valid and binding obligations of each of them and are fully enforceable in accordance with all stated terms.

Section 9. No Intended Novation Or Refinancing. All parties hereto expressly acknowledge that no novation of the CREDIT FACILITY, the LOAN or the LOAN DOCUMENTS is intended by the parties, and that the modifications, amendments, and restatements contemplated by this AGREEMENT are not intended to evidence or to be construed as a refinancing of the LOAN or the CREDIT FACILITY.

Section 10. Confirmation of Liens. Each of the BORROWERS and GUARANTORS ratifies and confirms that all existing liens, security interests, and other pledges and grants of collateral which have been previously granted or conveyed by the BORROWERS and the GUARANTORS with respect to the CREDIT FACILITY are intended to remain in full force and effect, without any loss or reduction in the priority or enforceability of any liens, security interests, or pledges.

Section 11. Final Agreement. This MODIFICATION and the other LOAN DOCUMENTS, as modified herein, constitute the entire agreement between the parties hereto with respect to the CREDIT FACILITY, and may not be altered, modified or amended except by writing executed by the LENDER and any other party against whom any such modification or amendment is to be enforced.

Section 12. Fees and Expenses. The BORROWERS, jointly and severally, agree to promptly pay all costs and expenses incurred by the LENDER in connection with this MODIFICATION, including, but not limited to, all attorneys' fees.

Section 13. Binding Effect. This MODIFICATION shall inure to the benefit of the parties hereto, and shall be binding upon, their respective personal representatives, successors and assigns.

Section 14. Choice Of Law. The laws of the State of New York (excluding, however, conflicts of law principles) shall govern and be applied to determine all issues related to this MODIFICATION and the right and obligations of the parties hereto, including the validity, construction, interpretation, and enforceability of this MODIFICATION and its various provisions and the consequences and legal effect of all transactions and events which resulted in the execution of this MODIFICATION or which occurred or were to occur as a direct or indirect result of this MODIFICATION having been executed.

Section 15. Tense, Gender, Defined Terms, Captions. As used herein, the plural shall refer to and include the singular, and the singular shall refer to and include the plural. The use of any gender shall include and refer to any other gender. All defined terms are completely capitalized throughout this MODIFICATION. All captions are for the purpose of convenience only.

Section 16. Time. Time is of the essence with respect to this MODIFICATION and all terms and conditions described herein.

Section 17. No Defenses; Release Of Claims. As of the date of this AGREEMENT, none of the BORROWERS has any offsets, defenses, counterclaims, or other claims or defenses which would lessen, delay, or mitigate against its duties and obligations to repay and perform the OBLIGATIONS in accordance with all stated terms of the LOAN DOCUMENTS, as amended. As of the date of this AGREEMENT, none of the GUARANTORS or GP STRATEGIES has any offsets, defenses, counterclaims, or other claims or defenses which would lessen, delay, or mitigate against its duties and obligations to repay and perform its "OBLIGATIONS," as such term is defined in its respective Guaranty Agreement, in accordance with all stated terms of the LOAN DOCUMENTS, as amended, to which it is a party. Each of the BORROWERS, GUARANTORS, GP STRATEGIES and MANTECH hereby releases, waives, discharges and agrees to hold the LENDER and its officers, directors, agents, attorneys, and employees harmless from any and all claims, known or unknown, which such BORROWER, GUARANTORS, GP STRATEGIES or MANTECH might have against the LENDER or its officers, directors, agents, attorneys, or employees which in any way relate, pertain, or arise, directly or indirectly, from the CREDIT FACILITY, the LOAN DOCUMENTS, this MODIFICATION, or which otherwise relate or pertain to the collateral securing the obligations of the BORROWERS (or any of them) to the LENDER, the transactions described in this MODIFICATION, or conduct of the parties with respect thereto.

Section 18. No Waiver. The LENDER, at any time or from time to time, may waive all or any rights under this MODIFICATION or the other LOAN DOCUMENTS, as amended, but any such waiver or indulgence by the LENDER at any time or from time to time shall not constitute a future waiver of performance or exact performance by the BORROWERS.

Section 19. Waiver of Trial by Jury. Each party to this MODIFICATION agrees that any suit, action, or proceeding, whether claim or counterclaim, brought or instituted by any party hereto or any successor or assign of the party on or with respect to this MODIFICATION or any other LOAN DOCUMENT or which in any way related, directly or indirectly, to the OBLIGATIONS or any event, transaction, or occurrence arising out of or in any way connected with any of the OBLIGATIONS, or the dealings of the parties with respect thereto, shall be tried only by a court and not by a jury. EACH PARTY HEREBY EXPRESSLY WAIVES ANY RIGHT TO A TRIAL BY JURY IN ANY SUCH SUIT, ACTION, OR PROCEEDING.

IN WITNESS WHEREOF, the parties hereto have executed this MODIFICATION under seal as of the date first above written. This MODIFICATION may be executed in counterparts and may be delivered via facsimile.

WITNESS/ATTEST:

BORROWERS:

GSE SYSTEMS, INC.

By: /s/Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough

Title: Senior Vice President

GSE PROCESS SOLUTIONS, INC.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

GSE POWER SYSTEMS, INC.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

GUARANTORS:

MSHI, INC.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

WITNESS/ATTEST:

GSE ERUDITE SOFTWARE, INC.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

GSE SERVICES COMPANY L.L.C.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

GP INTERNATIONAL ENGINEERING & SIMULATION, INC.

By: /s/ Jeffery G. Hough (SEAL)
Name: Jeffery G. Hough
Title: Senior Vice President

GP STRATEGIES:

GP STRATEGIES CORPORATION

By: /s/ Scott N. Greenberg (Seal)
Name: Scott N. Greenberg
Title: President

MANTECH:

MANTECH INTERNATIONAL CORPORATION

By: /s/ Matthew P. Galaski (SEAL)
Name: Matthew P. Galaski
Title: Vice President

PNC BANK, NATIONAL ASSOCIATION

By: /s/ Craig T. Sheetz (SEAL)
Name: Craig T. Sheetz
Title: Vice President

Schedule A

Third Party Claim of Defendant and Third Party Plaintiff Western Services Corporation v. GSE Systems, Inc., in the United States District Court for the District of Maryland, Case Number AMD 02-3878, filed February 10, 2003.

