GSE SYSTEMS INC
Form 10-K
March 26, 2014
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K
(Mark One)

x	ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 For the fiscal year ended December 31, 2013
o	TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934 For the transition period from ____ to ____

Delaware (State of incorporation)	52-1868008 (I.R.S. Employer Identification Number)
1332 Londontown Blvd., Suite 200, Sykesville MD (Address of principal executive offices)	21784 (Zip Code)

Registrant's telephone number, including area code: (410) 970-7800

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	NYSE MKT

SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT: NONE
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x

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

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 xNo o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes xNo o

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer or a smaller reporting company. See the definitions of "large accelerated filer", "accelerated filer" and "smaller reporting

company" in Rule 12b-2 of the Exchange Act. (Check one):

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

Indicate by check mark whether the registrant is a shell company (as defined in rule 12(b)-2 of the Exchange Act). Yes o No x

The aggregate market value of Common Stock held by non-affiliates of the Registrant was $26,662,881 on June 30, 2013, the last business day of the Registrant's most recently completed second fiscal quarter, based on the closing price of such stock on that date of $1.51.

The number of shares outstanding of the registrant's Common Stock as of March 25, 2014 was 17,887,859 shares.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Proxy Statement for the 2014 Annual Meeting of Stockholders to be filed pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended, are incorporated by reference into Part III.

TABLE OF CONTENTS

*to be incorporated by reference from the Proxy Statement for the registrant's 2014 Annual Meeting of Shareholders.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING STATEMENTS.

This report and the documents incorporated by reference herein contain "forward-looking" statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act that are based on management's assumptions, expectations and projections about us, and the industry within which we operate, that have been made pursuant to the Private Securities Litigation Reform Act of 1995 which reflect our expectations regarding our future growth, results of operations, performance and business prospects and opportunities. Wherever possible, words such as "anticipate", "believe", "continue", "estimate", "intend", "may", "plan", "potential", "predict", "expect", "should", "will" and similar expressions, or the negative of these terms or other comparable terminology, have been used to identify these forward-looking statements. These forward-looking statements may also use different phrases. These statements regarding our expectations reflect our current beliefs and are based on information currently available to us. Accordingly, these statements by their nature are subject to risks and uncertainties, including those listed under Item 1A Risk Factors, which could cause our actual growth, results, performance and business prospects and opportunities to differ from those expressed in, or implied by, these statements. We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make. Except as otherwise required by federal securities law, we are not obligated to update or revise these forward looking statements to reflect new events or circumstances. We caution you that a variety of factors, including but not limited to the factors described below under Item 1A Risk Factors and the following, could cause our business conditions and results to differ materially from what is contained in forward-looking statements:

- changes in the rate of economic growth in the United States and other major international economies;
- changes in investment by the nuclear and fossil electric utility industry, the chemical and petrochemical industries and the U.S. military;
- changes in the financial condition of our customers;
- changes in regulatory environment;
- changes in project design or schedules;
- contract cancellations;
- changes in our estimates of costs to complete projects;
- changes in trade, monetary and fiscal policies worldwide;
- currency fluctuations;
- war and/or terrorist attacks on facilities either owned or where equipment or services are or may be provided;
- outcomes of future litigation;
- protection and validity of our trademarks and other intellectual property rights;
- increasing competition by foreign and domestic companies;
- compliance with our debt covenants;
- recoverability of claims against our customers and others; and
- changes in estimates used in our critical accounting policies.

Other factors and assumptions not identified above were also involved in the formation of these forward-looking statements and the failure of such other assumptions to be realized, as well as other factors, may also cause actual results to differ materially from those projected. Most of these factors are difficult to predict accurately and are generally beyond our control. You should consider the areas of risk described above in connection with any forward-looking statements that may be made by us. You should not place undue reliance on any forward-looking statements. New factors emerge from time to time, and it is not possible for us to predict which factors will arise.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. You are advised, however, to consult any additional disclosures we make in proxy statements, quarterly reports on Form 10-Q and current reports on Form 8-K filed with the SEC.

PART I

ITEM 1. BUSINESS.

GSE Systems, Inc. ("GSE Systems", "GSE", the "Company", "our", "we" or "us"), a Delaware corporation organized in March 1994, is a world leader in real-time, high fidelity simulation. The Company provides simulation, educational, and engineering solutions and services to the nuclear and fossil electric utility industry and the chemical and petrochemical industries. As of December 31, 2013, GSE was the parent company of:

¨GSE Power Systems, Inc., a Delaware corporation;
¨GSE Power Systems, AB, a Swedish corporation;
¨GSE Engineering Systems (Beijing) Co. Ltd., a Chinese limited liability company;
¨GSE Systems, Ltd., a Scottish limited liability company;
¨GSE EnVision, LLC, a New Jersey limited liability company; and
¨EnVision Systems (India) Pvt. Ltd., an Indian limited liability company.

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 filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act (15 U.S.C. 78m(a) or 78o(d) 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 SEC. In addition, the public may read and copy any materials we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC at http://www.sec.gov.

Recent Developments.

It has been three years since a 9.0 magnitude earthquake and subsequent tsunami occurred along the northeast coast of Japan which damaged the Fukushima Daiichi I Nuclear Power Plant maintained by the Tokyo Electric Power Company (TEPCO). This natural disaster has had a significant impact on the nuclear power industry overall as well as on the Company's nuclear operating training simulator business.

- In Japan, all of the country's 50 nuclear reactors have been shut down. Nuclear power provided about 30% of the country's electricity prior to the Fukushima disaster and was expected to increase to at least 40% by 2017. In October 2012, the new Nuclear Regulatory Authority ("NRA") in Japan announced that nuclear power plant restart reviews would comprise both a safety assessment by the NRA and the briefing of affected local governments by the operators. In 2013, seven utilities applied for restart of 17 nuclear reactors. In February 2014, the Japanese government announced details of their draft Basic Energy Plan which effectively puts nuclear power back at the center of the country's energy plans, calling nuclear power an important baseload electricity source, but sets no specific targets for the percentage of power to be provided by nuclear energy. Restarting each reactor could cost around $1 billion in fees and will require a six-month review by the new Nuclear Regulation Authority. According to the MIT Technology Review, in the most optimistic scenarios, Japan might be able to fire up 10 reactors per year. For the year ended December 31, 2013, the Company's revenue from nuclear simulation customers in Japan decreased by $4.2 million compared to the year ended December 31, 2012. At March 31, 2011, just after the Fukushima disaster, the Company had backlog of $8.1 million from Japanese customers. At December 31, 2013, we have backlog from Japanese customers of $43,000. There are no significant orders from Japanese customers in our sales pipeline.

- Pre-Fukushima, Germany obtained about one quarter of its electricity from nuclear energy, using 17 reactors, per the World Nuclear Association. Following the Fukushima disaster, all of the country's nuclear power reactors which

began operation in 1980 or earlier were shut down. The remaining nine reactors will be closed by the end of 2022. For the year ended December 31, 2013, the Company's revenue from German nuclear simulation customers decreased by $1.6 million as compared to the year ended December 31, 2012. At March 31, 2011, just after the Fukushima disaster, the Company had backlog of $4.6 million from German customers. At December 31, 2013, we have backlog from German customers of $1.3 million. We anticipate some future orders from our German customers.

China's response to the Fukushima disaster was to postpone the approval of new nuclear power plants, but those new plants that were already under construction were allowed to continue. Thus, the Company's simulator projects that were already under way (new simulators for the Westinghouse AP1000 plants being built at Sanmen and Haiyang) have not been impacted. On May 31, 2012, the State Council, China's Cabinet, approved a nuclear safety plan for 2012 through 2015 following a nine month safety inspection of China's 41 nuclear power plants, which were either operating or under construction. This plan suggested that China will need to spend RMB 80 billion ($13 billion) on improving nuclear safety at 41 operating and under construction reactors by mid-2015. In October 2012, the Chinese government lifted the ban on new nuclear power stations but only for those plants to be built along the coast, in-land power plants continue to be banned. GSE's business in China remains strong. At December 31, 2013, we have backlog from Chinese end customers of $7.9 million as compared to $13.1 million at March 31, 2011.

- In the US, prior to the Fukushima disaster, there was anticipation of a nuclear "renaissance". GSE received contracts in 2010 from Westinghouse Electric Company LLC to provide operator training simulators for the first nuclear reactors to be built in the U.S. in over 30 years at the Vogtle and VC Summer nuclear power plants. The U.S. Nuclear Regulatory Commission was reviewing 13 combined construction and operating license ("CCOL") applications from 12 companies and consortia for 22 nuclear power reactors. Of these 13 CCOL applications, only 2 licenses have been issued (for the Vogtle and VC Summer plants), 2 have been suspended and 9 are still under review. No new CCOL's have been filed with the NRC since the Fukushima disaster and the nuclear "renaissance" has not materialized. In response to the Fukushima disaster, in February 2012, the NRC voted to issue the first three new rules to deal with safety issues based on eight changes identified by the NRC's Fukushima task force, with implementation expected by the end of 2016. The three orders require safety enhancements of operating reactors, construction permit holders, and combined license holders. These orders require nuclear power plants to implement safety enhancements related to (1) mitigation strategies to respond to extreme natural events resulting in the loss of power at plants, (2) ensuring reliable hardened containment vents, and (3) enhancing spent fuel pool instrumentation. In addition, the NRC requested each reactor reevaluate the seismic and flooding hazards at their site using present-day methods and information.

In addition to the impact of the Fukushima disaster, (i) the U.S. economy continues to be sluggish, (ii) the current low natural gas prices are causing utilities considering nuclear power to reevaluate the economics of those decisions at this time and (iii) the economic uncertainty in Europe has negatively impacted capital spending by electric utilities doing business in Europe.

In response to these changes in the nuclear simulation market, the Company's strategy revolves around the following initiatives:

- The Company is repositioning itself to actively pursue business and develop strategic partnerships in those areas of the world where the construction of additional nuclear power plants is expected to grow.

  - With 20 nuclear reactors that provide about 13.8 gigawatts (GW) of generating capacity and another 28 reactors under construction that add another 30.6 GW, China plans to build nuclear power plants as a key part of curbing demand on fossil fuels. By 2015, China's government hopes to generate 30% of China's power from solar, renewable energy sources such as wind, and nuclear energy. State Nuclear Power Technology Corporation ("SNPTC") has adapted the Westinghouse Electric Company's AP1000 reactor technology into a larger design, called the CAP1400, which increases the power the reactor can produce from 1,000 megawatts to 1,400 megawatts. The National Energy Board granted its preliminary approval for the CAP1400 design in January 2014 and construction on China's first CAP1400 reactor is expected to begin at Shidaowan in April 2014. SNPTC said it would have "independent intellectual property rights" over the design, paving the way for exports to other countries, a commercial possibility SNPTC will explore in 2014, according to World Nuclear News. GSE is working to strengthen its relationships with the Chinese nuclear utilities and is developing plans to grow its Chinese subsidiary.

  - South Korea, which ranks fifth globally in nuclear power generation, has largely developed its own nuclear industry, building and operating its reactors through state-run utility Korea Electric Power Corp ("Kepco"). South Korea has 23 nuclear reactors, generating about one third of its electricity. In January 2014, the South Korean government approved a $7 billion project to build two nuclear plants. South Korea is seeking to export its nuclear technology with a goal of exporting 80 nuclear reactors by 2030. The Company has hired an agent in Korea and is working to strengthen its relationships with the Korean utilities. In 2013, the Company recorded $2.5 million in nuclear orders from an electric power utility in Korea.

  - Russia is moving forward with plans to expand the role of nuclear energy, with an expected 50% increase in output by 2020. In June 2010, the Russian government approved plans for 173 GWe of new generating capacity by 2030, 43.4 GWe of this being nuclear. Currently, there are 10 reactors under construction and another 24 planned. The

Company had done extensive upgrade work for the Leningrad Nuclear Power Plant prior to the consolidation of Russian nuclear power plants under Rosenergoatom in 2001 and received some additional work thereafter, but has received no additional work since 2008 due to the government decree that all operator training simulators for Russian nuclear power plants must be performed by a Russian-owned company. However, the law is changing and GSE is exploring options on how to reenter the Russian nuclear simulation market as well as cooperate in the international markets where Russia is selling its commercial nuclear technology. The Russian nuclear power industry is aggressively marketing its new plant designs throughout the world, including places such as Turkey, Vietnam, India and even in the UK.

Certain products continue to do well in the nuclear power upgrade market. GSE is selling its RELAP5-HD advanced thermohydraulic model for plants in Europe, Asia and the U.S. GSE has successfully sold its first two domestic upgrade programs using RELAP5-HD, and believes the success of these projects will help convince domestic customers of the value of this advanced model. To date, GSE has sold 23 RELAP5-HD projects around the world.

As evidenced by the new safety rules that the NRC has recently issued, the Chinese State Council's Safety Plan, and the creation in Japan of the Nuclear Regulatory Authority, there will be additional governmental regulations requiring plant modifications and new testing scenarios that will result in the need for higher fidelity simulation. According to Platts.com, U.S. nuclear plant operators estimate they will spend $3.6 billion in post-Fukushima upgrades. GSE has developed PSA-HD™ and DesignEP™, which are engineering-grade nuclear simulation solutions for both full-scope simulator and desktop simulator applications. PSA-HD allows operating personnel to train for and develop responses to severe accident scenarios based on the operations of their specific facility. DesignEP provides a desktop solution that allows engineers, safety analysis specialists, emergency planners and plant operating personnel all to experiment with new designs and procedures to address severe accident conditions. Both solutions utilize MAAP 5.0 and MAAP 4.0 (referred to collectively as "MAAP") as the calculation engine, with GSE's real-time executive and graphical interface to provide a dynamic, real-time solution for severe accident analysis. MAAP is an Electric Power Research Institute (EPRI) software program that performs severe accident analysis for nuclear power plants including assessments of core damage and radiological transport. A valid license to MAAP from EPRI is required to use MAAP with PSA-HD and DesignEP. PSA-HD's real-time code can be integrated with a nuclear plant's existing full-scope training simulator and is applicable to all current nuclear plant designs. GSE's solutions can be used to validate the utility's severe accident management guidelines (SAMGs), demonstrate the safety of current plant designs to regulators and stakeholders, and identify potential issues with existing plant design that may require modification. The solutions include high-fidelity models of the plant's reactor core, containment structures and spent fuel pool. The models simulate severe accident conditions which mirror those that occurred at the Fukushima facility, such as the release of radioactive materials due to overheating of the core, exposure of the fuel rods in the spent fuel pool, and hydrogen build up in the containment building.

- As the energy industry continues to build power generation capacity and extend the useful life of current assets, GSE is using its sophisticated simulation technology to mitigate risk in new development projects. GSE's technology and experienced staff enable clients to view design scenarios virtually, identify and correct problems before construction, avoid delays and more effectively design human machine interaction. Simulators used during the planning and design phase of these new development projects provide customers their first view at testing the interface between systems manufactured by different suppliers as well as allowing them to see their plants operating with the design data. Finding issues pre-construction or early in construction can save valuable time and money, ensuring on-time start-up of capital assets. GSE products such as ControlSim™ and ISIS™ are used to help customers rapidly design and test plant instrumentation and control (I&C) and human machine interface (HMI) designs. GSE has integrated its proven simulation tools with its new centralized data repository and revision management system into a platform for I&C and HMI design engineers. ControlSim is designed for rapid development and testing of plant control and logic strategies and HMI design. GSE has added the ability to publish the resulting model as engineering drawings in PDF or AutoCAD formats with relevant data such as the I/O list, set points and other constants in electronic or document formats. GSE's ISIS central database is a distributed, powerful system to support the management of data on complex multi-year projects, automate tedious processes to reduce engineering hours, and provide a central point for integration of all GSE or 3rd party engineering design applications into a cohesive simulator development system.

GSE is working with Small Modular Reactor (SMR) designers to assist with the early design phase of these reactors. Two of the primary SMR designers are using the Company's simulation technology and engineering expertise to help with design submissions, control strategy development, human factors engineering of the control room and other high value applications. Per a 2011 report by the University of Chicago Energy Policy Institute, SMR's could significantly mitigate the financial risk associated with full-scale plants, potentially allowing small reactors to compete effectively with other energy sources, such as coal-fired plants. The anticipated benefits of these designs are lower capital costs, faster construction, scalable power production and enhanced safety. The U.S. Department of Energy's Office of Nuclear Energy is trying to help accelerate the timelines for the commercialization and deployment

The fossil fuel power industry is experiencing a period of transition as utilities are shifting away from power generated by coal fired plants to power generation from gas-fired power plants. This transition will continue because

of ever increasing regulations of coal-fired plants (Clean Air and Clean Water Acts), a proliferation of state standards for the production of renewable power, and a generous supply of natural gas from shale. Gas-fired plants equipped with combined cycle gas turbine (CCGT) technology compliment wind and solar power because they can start and stop quickly, and are thus capable of offsetting the fluctuations in renewable power.

In response to this transition, the Company will focus on sales of simulators to utilities that will be retrofitting their plants to comply with the U.S. Clean Air and Clean Water Acts which go into effect in 2015 and 2017. The simulator can be used to test the plant changes prior to implementation in the plant, thus helping to ensure a successful implementation of the new pollution control retrofits. The gas plant market continues to be a major point of focus for the Company for both virtual commissioning and training opportunities.

The Company is targeting significant growth in its high margin EnVision product line which provides fundamental engineering and plant operational training across the spectrum of the oil and gas industry. With product already covering 90% of refining operations, the Company is investing in the upstream segment of the market with new products being developed for the Liquefied Natural Gas and Natural Gas Liquids (LNG-NGL) markets. This will allow the Company to take advantage of the growing gas market which is adding significant assets around the world, and accordingly needs a trained and qualified workforce.

LNG is one of the fastest growing energy markets worldwide. Given the number and scale of new LNG projects proposed or under construction, global production capacity could more than double by the end of the decade. According to the IEA, this growth will require a $250 billion investment in liquefaction plants, coastal regasification import terminals, and special LNG tankers over the next 30 years.

The Company is also targeting key strategic areas such as Latin America, China and Russia. Regionally, the company is taking advantage of its local language content and targeting Spanish speaking markets, particularly in Latin America. A representative network is being established to have closer contact with customers. Marketing campaigns are targeting Spanish speaking customers, and Latin American trade shows. The Company is translating much of its key product offerings into Chinese and Russian language to target the developing markets where the Company already has channels to market through its offices in China and Joint Venture (GSE-RUS) in Russia.

The Company is also investing in product improvements. Additional product developments include a facelift to the product to match features currently available in modern control systems, as well as expanding the use of EnVision Simulators for emergency management training and coordination. The intent is to provide tools to help train on procedures, communications command and control between desk operators and outside operators in handling emergency situations, gas and fluid leaks, overfill situations, fire etc.

To accomplish all of this, the Company is expanding resources to support the growth of the EnVision product line through executive support, additional sales resources, additional technical and management resources, and increased marketing.

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.

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

In 2007, the Company formed a subsidiary, GSE Systems Ltd., in the United Kingdom. The British subsidiary was established to provide training solutions to the nuclear power industry.

On April 26, 2010, the Company completed the acquisition of TAS Holdings Ltd ("TAS"). TAS, located in Stockton-on-Tees in the United Kingdom, provides engineering consulting, specializing in electrical system design, instrumentation and controls engineering and automation engineering. The majority of TAS's customers resided in the petroleum refining, oil and gas, chemical and petrochemical industries. On March 31, 2012, the Company combined its TAS operations with GSE Systems Ltd, its UK subsidiary.

On January 4, 2011, the Company completed the acquisition of EnVision Systems, Inc. ("EnVision"). EnVision, which has been renamed GSE EnVision LLC, provides interactive multi-media tutorials and simulation models, primarily to the petrochemical and oil & gas refining industries. EnVision has an Indian subsidiary based in Chennai, India, and was founded in 1991. EnVision's tutorials and simulation models serve the entry-level training market for the oil & gas refining and specialty chemicals industries. EnVision's products provide a foundation in process fundamentals and plant operations and interaction. EnVision has completed more than 750 installations in over 28 countries and its approximately 130 clients include Shell Oil Company, BP Products North America ("BP"), Total and Chevron.

Nuclear and Fossil Fuel Power Simulation.

Industry History

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 U.S. nuclear power industry, use of a simulator that accurately reflects the current actual plant design is mandated by the U.S. Nuclear Regulatory Commission ("NRC"). 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 U.S. 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. U.S. plant operating licenses are tied to simulator certification. Other countries throughout the world look to the NRC for guidance in establishing their local controls for nuclear plants.

Full scope power plant simulators are a physical representation of the entire plant control room. For older plants, 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. For newer plants, the control rooms consist mainly of digital control systems and a series of computer screens used by the operator to control the plant. 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. The more sophisticated and accurate engineering codes allow customers to use the simulator to help validate plant design, control system strategies, control system displays, and develop plant operating procedures and training material.

Simulation also is used to validate proposed plant equipment changes and 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.

The importance of nuclear power to the U.S. energy supply is resulting 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.

As control system vendors aggressively pursued the replacement of old style control systems and control rooms with modern digital control systems ("DCS"), the fossil simulation market also changed. Utility customers demanded simulators as part of the control system upgrades, and DCS vendors recognized the value in using simulators early in the design process. Control strategies and equipment set points are validated on the simulator prior to plant start up to ensure the control schemes work properly and the expected plant performance is achieved. Performing these tests on a high fidelity simulator saves days or weeks in the plant start up, thereby reducing cost and ensuring quicker revenue generation by the utility.

Industry Future

According to ExxonMobil's 2012 The Outlook for Energy: A View to 2040, the global demand for energy is expected to rise by 30% by 2040 and by 60% in non-OECD countries. Electrical generation will account for 40% of global energy consumption.

Viewed as a clean, non-carbon producing source of energy, the public perception of nuclear power became more favorable in the early 2000's and there was significant expectation of a "nuclear renaissance" which would lead to a substantial increase in the number of new nuclear reactors being built worldwide. However, the anticipated renaissance has been slowed by the economic downturn in 2008 the natural disasters that caused the destruction of the Fukushima Daiichi plant in Japan in 2011, and the price of alternative fuels such as natural gas in the USA. Reactions to the Fukushima disaster has been mixed. Japan has shutdown all of its 50 nuclear reactors as its government decides what role nuclear power should play in the future and Germany has decided to phase out of nuclear power by 2022. However other countries are continuing to build new nuclear reactors, including China, Russia and South Korea.

The NRC is evaluating what direction to give the industry as a result of the events at Fukushima. The Company anticipates the need for U.S. utilities to extend the capabilities of their simulators to simulate long lasting events with serious electrical system issues, degradation of battery backup systems and other equipment problems. In addition, the Company anticipates the need for real-time simulation of core damage resulting from the lack of available cooling capacity. Engineering codes used to calculate the safety margins of plants can be used to accurately simulate plant damage resulting from extensive reactor fuel damage. The Company has developed a method to implement these engineering codes in the real-time simulator environment to provide the most accurate simulation solution available on the market. PSA-HD™ is the Company's real-time solution for severe accident simulation. PSA-HD will enable utilities to better test, validate and train on Severe Accident Management Guidelines.

The Company sees the continued construction of new nuclear plants both domestically and internationally providing significant opportunities for expansion of the Company's business. Westinghouse and its consortium team member The Shaw Group are under contract to provide two Westinghouse AP1000™ nuclear power plants at the Vogtle site, located in Burke County, Georgia. The new units are expected to begin commercial operation in 2016 and 2017. In addition to the Vogtle plant, the Westinghouse consortium is constructing two AP1000 nuclear power plants at SCANA Corporation's V.C. Summer Nuclear Station in Jenkinsville, S.C.

Internationally, there are currently 70 nuclear reactors under construction in 14 countries. Per the World Nuclear Association ("WNA"), China has 20 nuclear power reactors in commercial operation, 28 under construction and another 31 planned. China's aim is to have a six fold or more increase in nuclear capacity by 2020. Russia has 33 nuclear power reactors in operation, 10 reactors are under construction and an additional 31 planned. A total of 173 reactors are planned for construction by 2030 in 28 countries, including Argentina, Brazil, Bulgaria, Canada, Finland, France, India, Pakistan, Romania, Slovakia, South Korea, Taiwan, Ukraine and the United Arab Emirates. Other Middle East and Asia Pacific countries are actively evaluating the potential for nuclear power.

The U.S. Department of Energy believes that there is a need and a market in the U.S. for Small Modular Reactors ("SMRs"), and started a program in 2011 to advance the licensing and commercialization of SMR designs. In March 2012, the DOE issued a Funding Opportunity Announcement worth up to $452 million for SMR development. Babcock & Wilcox received the first award in November 2012 and signed an agreement in April 2013 that provides B&W with $79 million in federal funding for design development and U.S. NRC certification and licensing of its mPower SMR design. In December 2013, the DOE announced it had selected NuScale power as the recipient of its second award which includes a five-year cost-sharing program including up to $226 million in funding. The DOE will provide 50% of the cost of the project and requires matching funding from the company. The anticipated benefits of these designs are lower capital costs, faster construction, scalable power production and enhanced safety. Two of the primary SMR designers are using the Company's simulation technology and engineering expertise to help

in the early design phase of these plants.

Beyond new construction, numerous U.S. and international utilities are extending the useful life of their current assets. These license extension processes in the nuclear industry will result in significant changes in plant equipment and control room technology. Based upon U.S. NRC 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. In January 2010, The Shaw Group, a major nuclear engineering and construction company, estimated that up to 67 reactors in the future could be up-rated to produce more power, creating a $25 billion market for plant modifications in the U.S. alone.

Another phenomenon affecting the industry is the aging of the nuclear and fossil plant operator workforce which will result in the need for simulation to train the next generation of plant operators. Per the Center for Energy Workforce Development's 2013 Survey Results on "Gaps in the Energy Workforce Pipeline", the average age of employees in the energy industry increased from 46.7 in 2006 to 47.2 at the end of 2012. For the industry as a whole, almost 55% of the workforce may need to be replaced in the next 10 years due to attrition and retirement. Thus, the industry is faced with an aging workforce at the same time new capacity is needed, thereby placing significant pressure on the industry to find and train the next generation of operations and maintenance personnel. In their employment outlook for the utilities industry, the Bureau of Labor Statistics states "Because on-the-job training is very intensive in many utilities industry occupations, preparing a new workforce will be one of the industry's highest priorities during the next decade."

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, education, training, and engineering services for new plants and next generation learning products and services.

To this end, the Company is developing products and strategies to "change the way the energy industry learns." This entails training solutions beyond the traditional full scope simulator, inclusion of more computer based learning and visualization in industrial curriculum, making simulation more accessible to non-operating personnel such as managers, engineers and technicians, and using simulation to more effectively select and qualify workers.

GSE's Solutions

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 continues to invest in the development of sophisticated simulation solutions to address emerging technical and training needs of the industry. These developments focus on more advanced modeling of reactor and electrical system phenomena, as well as applications that incorporate plant design database in the simulator development cycle and support automated testing and lifecycle management of plant and simulator data.

The sophistication of the Company's proprietary simulation technology enables the Company to serve not only the operator training market, but to support the engineering and plant design market. The Company's technology is used for multiple purposes in plant design, including creation of the initial plant logic and control design prior to implementation by the DCS (distributed control systems) company; as a test bed for equipment sizing assumptions, and to test the efficacy of the human factors design of the control room screens.

The Company has also developed integrated training solutions which combine the power of the Company's simulation technology with training content to provide turn-key training for the power and process industries. These training programs will help industry bridge the gap between university level training and real world experience through simulation. Recognizing the workforce development challenges facing the power industry, the Company has invested in new learning platforms based upon 3D visualization and serious gaming technology. This technology has numerous applications from visualizing the complex phenomena inside a nuclear reactor to capturing the experience of a subject matter expert in how to maintain key plant equipment. This technology is also focused towards a new generation of power plant workers that learn differently and expect a more interactive and technology based delivery system. The result is the Company's Active 3Di learning environment.

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.

GSE provides both turn-key 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 for use primarily on UNIX, Linux and Windows computer platforms. The Company's Xtreme tools were designed for the Windows environment. Both technologies were specifically designed to provide user friendly graphic interfaces to the Company's high fidelity simulator.

Our Power Simulation products 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.

¨ Xtreme Tools™, a suite of software modeling tools developed under the Microsoft Windows environment. It includes:
¨Xtreme Flow™, a modeling tool that generates dynamic models for flow and pressure networks.
¨Xtreme Control™, a modeling tool that generates control logic models from logic diagrams.
¨Xtreme Logic™, a modeling tool that generates control logic models from schematic diagrams.
¨Xtreme Electric™, a modeling tool that generates electric system models from schematic and one-line diagrams.

¨ GPWR™, a generic pressurized water reactor full scope simulator, combining GSE's high fidelity models with a graphical representation of the control panels to provide everything from fundamentals training to systems training for plant operators. The GPWR can be run on GSE's VPanel display system or standard PCs.

¨ RELAP5-HD®, a real-time version of the safety analysis code RELAP5 developed by the Idaho National Laboratory. The Company's High Definition version of RELAP5 R/T enables the engineers to understand and control all of the internal functions of RELAP5, making this solution unique in the market.

¨ PSA-HD™, a real-time environment for running the Electric Power Research Institute's (EPRI) MAAP 5.0 severe accident analysis code. The MAAP 5.0 code is used by safety analysis engineers to estimate the effects of core damage in beyond design basis scenarios. PSA-HD provides an integrated simulator environment that gives engineers and operators a view of the entire plant response to severe accident events and allows for validation of the plant's Severe Accident Management Guidelines.

¨ SimExec® and OpenSim™, real-time simulation executive systems that control all real-time simulation activities and allow for an off-line software development environment in parallel with the training environment. OpenSim is targeted for users of Microsoft Windows operating systems, while SimExec is targeted for users of 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 Smart Tag technology, 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.

¨ SmartTools™, are a suite of tools that assist the simulator maintenance staff in automatically testing and documenting the performance of the simulator against baseline data to ensure the simulator continues to perform correctly. The tools were specifically designed to support the Scenario Based Testing requirements of the ANSI/ANS 3.5 2009 standard being adopted by the nuclear industry.

¨ Xtreme I/S™, a Microsoft Windows based Instructor Station that allows the use of Microsoft Word and PowerPoint to control the real-time simulation environment. Xtreme 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.
11

¨ 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.

¨ VPanel™, an interactive visual training solution. For customers that already have a full scope ANS 3.5 Certified simulator, the VPanel provides a second hardware platform that will run the ASN 3.5 Simulator software model at a fraction of the cost of building a second full scope simulator. The VPanel Simulator provides the same fidelity of operation as their existing simulator but the VPanel offers portability and versatility at a very affordable price. All of the features and functions of the full scope ANS 3.5 Simulator are duplicated in the VPanel simulator but the VPanel can be used in a classroom setting or as a second simulator to alleviate many of the time pressures our customers are experiencing with their current simulators. For nations considering entry into the nuclear power industry the VPanel is the ideal tool to help build a base of experienced nuclear workers either at a university or industrial training facility. Since the VPanel uses a software load from an ANS 3.5 Certified simulator it will accurately reflect the operations and response of an operating nuclear power plant. The VPanel provides nations entering the nuclear power industry with realistic hands on experience of the operation of a nuclear facility long before they begin construction on their facilities.

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 repairs.

Strategy

The goal of the Power Simulation business is to service the needs of the industry at the intersection of a growing global demand for energy and reduction in qualified energy operations professionals. This will take place on four fronts:

¨ Continue serving its traditional customer base, building new full scope simulators for newly constructed plants, and upgrading technology and services within the installed base.

¨ Combine its simulation capability with training content and new visualization technology to provide totally integrated training solutions for the new workforce.

¨ Expand the use of high fidelity simulation beyond training to help with plant design, control system design and verification, and control room human factors design.

¨ Helping the nuclear power industry respond to the impact of the Fukushima events.

Traditional Simulation Market. Nuclear power currently accounts for about 20% of the total electrical output in the United States and this percentage will likely remain the same even as total capacity increases. Any new nuclear power plants with electric output greater than 1,000 megawatts will likely be of the advanced reactor designs created by Westinghouse, General Electric and Areva. These new designs require new simulators and training programs, as they are different from the nuclear power plant designs currently in operation. Additionally, the market for Small Modular Reactors, for plants producing 45 megawatts – 200 megawatts will require new simulators and training programs for the same reasons. 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 nearly all existing U.S. 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 30 years. For example, several of the Company's U.S. utility customers have been replacing their existing hard panel control rooms with modern 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. GSE has received several projects in the last few years for implementing digital turbine control systems in U.S. plants.

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. This is particularly the case in China and India.

Education and Training. One of the most effective ways for adults to learn and retain knowledge is through experiential learning, or learning by doing. The Company continues to develop simulation products and learning materials that tightly couple experiencing plant operations through the use of a simulator, in a variety of learning environments. For example, increased training requirements and demands for performance improvement have resulted in simulator training time becoming scarce. By providing the actual training simulator models in a classroom setting, through VPanel solutions, the value of the simulator is increased by allowing more personnel the training advantages of interactive, dynamic real-time simulation. Traditionally the plant control room simulator asset was primarily used by the plant operating staff. These portable simulation devices are being used by non-traditional simulator users to become familiar with plant operations, practice scenarios prior to implementation in the plant, and for other system familiarization and studies by various departments throughout the utility.

Beyond traditional simulator applications are the Company's Activ3Di 3D products which merge high fidelity simulation with serious gaming and visualization. The benefits of this combined approach are:

¨Allows for situated learning
¨Combines high engagement and powerful content
¨Triggers profound reflections
¨Permits a rapid understanding of complex environments
¨Shows how actions affect context
¨Avoids repetitiveness and boredom associated with traditional learning methods

Engineering Simulation. The resurgence of the nuclear industry has produced many new nuclear designs, resulting in more intelligent control rooms and more complex digital control and safety systems. In addition to new nuclear "First-of-a-Kind" (FOAK) plant design, new types of energy plants such as Integrated Gasification Combined Cycle plants integrate chemical and power generation technologies through a variety of control platforms. A real-time, dynamic simulator supports the design of the plant in a way that was not available for the previous generation of plant design.

The simulator becomes a tool to: (1) reduce project risk during the design process, (2) provide an invaluable platform for demonstrating the new design to regulators, customers and stakeholders, and (3) train operators for licensing prior to plant commissioning.

Building a simulator when the design is not complete presents significant challenges. The Company is able to accomplish the task because its staff of senior engineers has modeled up to 8 to 10 different power plants in both nuclear and non-nuclear power generation. This gives the Company the ability to create workable interim solutions until the plant design is finalized. The key to the Company's success with this is its large engineering team experienced in nuclear power plant design and operation. Also, the high fidelity modeling products which are necessary to make possible the development of accurate models based on design data gives the plant designer the confidence that the simulator truly represents the performance of the future plant.

Optimize Existing Engineering Resources. GSE's Power domestic service organization focuses on simulator upgrades and retrofits. In addition to domestic resources, GSE has developed a network of trained engineers in Russia, Ukraine, Czech Republic, Bulgaria, 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.

Responding to Fukushima. The industry is undergoing significant evaluation and changes to ensure plants are able to effectively respond to "beyond design basis" events such as what happened at Fukushima. Coping strategies include ready access to equipment to be able to keep the reactor core covered with water even if power to key equipment is unavailable. These new operating regimes require new procedures, and expanded training. The Company's strength in its high fidelity modeling and ability to integrate other best-in-breed technology, enables it to offer the industry a technology platform that enables utilities to validate their new strategies and procedures, and train personnel from plant operators to emergency responders, and plant management.

Strategic Alliances

GSE'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.

Competition

The Power Simulation business encounters intense competition. In the nuclear simulation market, GSE competes directly with larger firms primarily from Canada and France, such as L-3 MAPPS Inc., a subsidiary of L-3 Communications, CORYS T.E.S.S and Western Services Corp. In the fossil simulation market, the Company competes with 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

For more than 40 years, the Company has been developing next-generation, custom training simulation technologies. Since we built the first commercial full-scope nuclear power plant simulator in 1971, the Company has completed more than 1,100 installations in 50 countries and has built more full-scope power plant simulators than all of our competitors combined. In 2013, approximately 67% of the Company's revenue was generated from end users outside the United States. Customers include, among others, ABB Inc., Comisión Federal de Electricidad (Mexico), EDF Energy (United Kingdom), Emerson Process Management, Kärnkraftsäkerhet och Utbildning AB (Sweden), Kraftwerks–Simulator-Gesellschaft mbH (Germany), Nuclear Engineering Ltd. (Japan), PSEG Nuclear, Inc., Shangdong Nuclear Power Co. Ltd. (China), Siemens AG, Slovenské elektrárne, a.s. (Slovakia), State Nuclear Power Automation System Engineering Company (China), and Westinghouse Electric Co.

The following Power Simulation customer has provided more than 10% of the Company's consolidated revenue for the indicated periods:

	Years ended December 31,		
	2013	2012	2011
Slovenské elektrárne, a.s.	24.4%	6.5%	10.0%

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. Market-oriented business and customer development teams define and implement specific campaigns to pursue opportunities in the power marketplace.

In 2012 the Company launched an expanded marketing program. Primary and secondary market research was conducted to determine key buying decisions of the Company's customers across the nuclear and thermal power generation markets as well as the process industries. The result was a clearer understanding of the Company's unique value in industry specialists, bandwidth of technical resources and technological offerings. The secondary research pointed out the need to promote the Company's broad range of solutions across all segments of the energy industry to deal with engineering, simulation and training needs.

The result of the research was the development of a new brand statement that builds from a solid history of industry-leading high-fidelity experience and tangible simulation results. The Company can help customers achieve, design, train and operate with performance excellence using the next level turnkey and modular solutions for training, simulation and engineering.

In addition to the brand statement, the Company updated its corporate logo, tagline, and website to better reflect its brand promise.

The Company has also launched a proactive public relations program, issuing more non-financial press releases aimed at product development and delivery, as well as the Company's role in numerous industry trade shows and technical conferences. A social media communications plan has been launched to build a stronger presence across all media as they play a critical role in marketing communications, and reflect how the customer base finds information about the company.

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, China and the United Kingdom. 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 the Czech Republic, Bulgaria, Japan, Mexico, People's Republic of China, South Africa, South Korea, Taiwan, Ukraine and the United Kingdom.

II. Process Industries.

Industry

Throughout the process industries there is continuing competitive pressure, reduction of technical resources, and an aging workforce 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. In addition, the process industries are facing increasing safety standards via legislation and national and international standards and codes of practice. The Gulf of Mexico oil spill disaster in 2010 raised the public's awareness of the financial, environmental and safety issues associated with human operating errors and this has added pressure to the process industries to ensure that their operators are fully trained and that safety issues are addressed.

The Future

The process industries such as oil refining, and specialty chemicals have long relied on steady state simulation for plant design and optimization. The trend going forward is to leverage the investment in steady-state models into a dynamic simulation environment that can be used both in the design process and for operator training. The industry phrase is multipurpose dynamic simulation. Equally important are the same labor issues that are facing other sectors of the energy industry and manufacturing in general, and that is the aging workforce. Compounding the problem for the process industries versus the nuclear industry is the lack of regulation surrounding operator qualifications and training.

The Company sees the same opportunity to provide integrated simulation and training solutions to the process industries as it does for the power generation industry. In addition to plant operating personnel, the supporting engineering and control system suppliers face the same challenges as subject matter experts retire and the next generation of workers have little practical experience to go along with their formal education.

Industry investment in the oil and gas sector is shifting towards the upstream segment of the industry. This includes gas oil separation, shipment and storage, liquefied natural gas process and gas to liquids. According to PricewaterhouseCoopers' research report entitled, "Driving Value in Upstream Oil & Gas", since 2006 the Oil & Gas industry has increased upstream capital expenditure spending by 72%. Between 2006 and 2013, the industry outlaid more than $3.1 trillion in capital expenditure to exploration and development projects.

GSE's Solutions

GSE offers interactive multimedia tutorials and simulation models for teaching the fundamentals of various refinery and petrochemical plant operations, dynamic real-time simulation capabilities for process operator training and plant design validation and verification, and consultancy services for engineering design and safety regulations compliance.

The Company's EnVision suite of products provides Computer Based Tutorials and Process Specific Simulation Models to provide a sound fundamental knowledge of key processes and equipment. These products support both self-paced and instructor led learning environments. Each product fits a specific purpose and phase of the training cycle.

To address the custom operator training simulator market, GSE provides JPro™ which consists of an integrated software suite that can build, test and run simulation models, dynamically and in real time. These models are used for process and control system design, process scale up and evaluation, engineering study, advanced process control and operator training. The models can be used alone or connected to virtually any control system. JPro provides an easier to use interface to the same highly sophisticated model building environment of SimSuite Pro™. JPro uses the same interface

as GSE's JADE tool suite, thereby making it easier for customers of integrated gasification and combined cycle and other plants that require a combination of chemical plant and power plant modeling capabilities.

GSE UK is a UK supplier of engineering consultancy services which satisfy many of the needs of high availability, high hazard industries typified by a requirement to register under Control of Major Hazard Accident (COMAH) legislation in the United Kingdom. GSE UK's key engineering consultancy offerings include:

¨Arc flash hazard studies,
¨Electrical safety management,
¨Functional safety (IEC 61508) support,
¨Potentially explosive atmosphere support,
¨Alarm management, and
¨Preventative maintenance procedures incorporating human factors.

Building on client relationships developed in the provision of specialist consultancy, GSE UK seeks to develop long term relationships based on support in electrical, instrumentation, control and automation projects, electrical switchgear replacement and new automation systems.

In 2013, GSE UK delivered Arc Flash studies across several sites in Asia to a global tooling, engineered components and advanced materials supplier. The Company is developing relationships with other major companies for similar services.

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.

To address the upstream market potential, the Company has developed simulation and computer based tutorial solutions for the most common gas oil separation process used by most oil and gas producers. These standard products are a part of the Company's EnVision product line and were released for sale in October 2013.

Strategy

The Company is targeting significant growth in its high margin EnVision product line which provides fundamental engineering and plant operational training across the spectrum of the oil and gas industry. With products already covering 90% of refining operations, the company is investing in the upstream segment of the market with new products being developed for the Liquefied Natural Gas ("LNG") and Natural Gas Liquids ("NGL") markets. This will allow the company to take advantage of the growing gas market which is adding significant assets around the world, and accordingly needs a trained and qualified workforce.

LNG is one of the fastest growing energy markets worldwide. Given the number and scale of new LNG projects proposed or under construction, global production capacity could more than double by the end of the decade. According to the IEA, this growth will require a $250 billion investment in liquefaction plants, coastal regasification import terminals, and special LNG tankers over the next 30 years.

The Company is also targeting key strategic areas such as Latin America, China and Russia. Regionally, the company is taking advantage of its local language content and targeting Spanish speaking markets, particularly in Latin America. A representative network is being established to have closer contact with customers. Marketing campaigns are targeting Spanish speaking customers, and Latin American trade shows. The Company is translating much of its key product offerings into Chinese and Russian language to target to developing markets where the Company already has channels to market through its offices in China and Joint Venture (GSE-RUS) in Russia.

The Company is also investing in product improvements. Additional product development include a facelift to the product to match features currently available in modern control systems, as well as expanding the use of EnVision Simulators for emergency management training and coordination. The intent is to provide tools to help train on procedures, communications command and control between desk operators and outside operators in handling emergency situations, gas and fluid leaks, overfill situations, fire etc.

To accomplish all of this, the Company is expanding resources to support the growth of the EnVision product line through executive support, additional sales resources, additional technical and management resources, and increased marketing.

Customers

Hydrocarbon and chemical process customers include numerous large oil refineries and chemical plants such as BP (Germany), Statoil ASA (Norway), Bayernoil (Germany), Chevron, Emerson Process Management, Saudi Basic Industries Corporation (Saudi Arabia), Shell Oil, Savannah River Nuclear Solutions, LLC, Total (Belgium), and Bechtel Hanford National Laboratory.

Competition

GSE's process simulation 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 Invensys 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 enables them to compete in operator training simulation, such as Kongsberg and RSI Simcon. There are also the smaller training companies that compete at the lower cost levels of Computer Based Training ("CBT") or simple simulations close to CBT such as Simtronics.

The GSE focus on dynamic simulation for training and design validation is a business strength, and its vendor independence, with the ability to integrate to different vendor's process control systems, is also a value which is

appreciated by customers. 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. Sales representatives and partners are located in Azerbaijan, Bulgaria, China, Egypt, Mexico, Qatar, Saudi Arabia, Malaysia, Romania, Singapore, Thailand, UAE, and Vietnam. Relationships developed with typical power plant DCS companies are now expanding to process plant applications as the DCS companies target an increase in market share in the process industries. In addition, the acquisition of EnVision Systems provides access to a large installed base of computer based learning customers that may require more plant specific simulator solutions.

Competitive Advantages.

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

¨ Reputation for Customer Satisfaction. As part of its ISO-9000 Quality Program Certification, GSE measures customer satisfaction across numerous factors such as On-Time Delivery, Problem Solving, and Customer Communication. In each category measured we routinely exceed customer expectations.

¨ Industry Expertise. GSE is a leading innovator and developer of real-time software with more than 40 years of experience producing high fidelity real-time simulators. 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 235 employees, including approximately 180 engineers and scientists. Of the 180 engineers, approximately 49% 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, while an additional 33% have master degrees, and another 12% have doctorate degrees in the aforementioned fields.

¨ 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 applications, thereby enabling it or its customers to develop high fidelity real-time software quickly, accurately and at lower costs. The Company has a substantial library of Process Specific Simulation models and Computer Based Learning Modules aimed at the oil and gas, refining and specialty chemicals market.

¨ 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.

¨ Training Curricula. The Company has developed hundreds of detailed courses and simulator exercise material or specific industrial applications including oil and gas refining, gas-oil production and separation and desalination.

¨ International Strengths. Approximately 67% of the Company's 2013 revenue was derived from international sales of its products and services. GSE has a multinational sales force with offices located in Beijing, China, Nyköping, Sweden, Stockton-on-Tees, UK, Chennai, India and agents, representatives and partners in 20 other countries. To capitalize on international opportunities and penetrate foreign markets, the Company has established strategic alliances and partnerships with several foreign entities and universities.

Intellectual Property.

The Company depends upon its intellectual property rights in its proprietary technology and information. GSE maintains a portfolio of trademarks (both registered and unregistered), copyrights (both registered and unregistered), and licenses. While such trademarks, copyrights and licenses as a group are of material importance to the Company, it does not consider any one trademark, copyright, or license to be of such importance that the loss or expiration thereof would materially affect the Company. The Company relies upon a combination of trade secrets, copyright, 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 does not own any patents. 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 has six registered U.S. trademarks: GSE Systems®, JTOPMERET®, RELAP5-HD®, D/3®, SABL® and SimExec®. Some of these trademarks have also been registered in foreign countries. The Company also claims trademark rights to BRUS™, ESmart™, GAARDS™, GCONTROL+™, GFLOW+™, GLOGIC+™, GPovera™, ISIS Application and Development Environment (JADE)™, OpenSim™, PEGASUS Plant Surveillance and Diagnosis System™, PSA-HDTM, RACS™, Sens Base™, SIMON™, SimSuite Power™, SimSuite Pro™, SmartTutor™, THOR™, VPanel ™, Vis and Xtreme I/S™.

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 any patents in the future, 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 2013, 2012, and 2011 consolidated revenue by industries served:

	2013	2012	2011
Nuclear power industry	65%	59%	67%
Fossil fuel power industry	16%	19%	16%
Process industry	16%	19%	15%
Training and education industry	3%	3%	2%
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 or other payment terms. As of December 31, 2013, the Company's aggregate contract backlog totaled approximately $38.0 million of which approximately $18.9 million or 49.7% is expected to be converted to revenue by December 31, 2014. As of December 31, 2012, the Company's aggregate contract backlog totaled approximately $51.9 million.

Employees.

As of December 31, 2013, the Company had 235 employees as compared to 246 employees at December 31, 2012.

ITEM 1A. RISK FACTORS.

The following are some of the factors that we believe could cause our actual results to differ materially from historical results and from the results contemplated by the forward-looking statements contained in this report and other public statements made by us. Additional risks and uncertainties not presently known to us, or that we currently see as immaterial, may also harm our business. Most of these risks are generally beyond our control. If any of the risks or uncertainties described below, or any such additional risks and uncertainties actually occurs, our business, results of operations and financial condition could be materially and adversely affected. The following information should be read in conjunction with Item 7 -Management's Discussion and Analysis of Financial Condition and Results of Operations and the consolidated financial statements and related notes under Item 8 Financial Statements and Supplementary Data.

Our business is largely dependent on sales to the nuclear power industry. Any disruption in this industry would have a material adverse effect upon our revenue.

In 2013, 65% of GSE's revenue was from customers in the nuclear power industry (59% in 2012 and 67% in 2011). The Company expects to derive a significant portion of its revenue 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, such as the one which occurred at the Fukushima Daiichi nuclear plant in 2011, and general economic conditions.

Our sales to foreign customers expose us to risks associated with operating internationally.

Sales of products and services to end users outside the United States accounted for approximately 67% of the Company's consolidated revenue in 2013, 70% of consolidated revenue in 2012, and 66% of consolidated revenue in 2011. Consequently, our businesses are subject to a variety of risks that are specific to international operations, including the following:

¨export regulations that could erode profit margins or restrict exports;
¨compliance with the U.S. Foreign Corrupt Practices Act and similar non-U.S. regulations;
..the burden and cost of compliance with foreign laws, treaties and technical standards and changes in those regulations;
¨contract award and funding delays;
¨potential restrictions on transfers of funds;
¨potential difficulties in accounts receivable collection;
¨currency fluctuations;
¨import and export duties and value added taxes;
¨transportation delays and interruptions;
¨difficulties involving strategic alliances and managing foreign sales agents or representatives;
¨uncertainties arising from foreign local business practices and cultural considerations; and
¨potential military conflicts and political risks.

While we have and will continue to adopt measures to reduce the potential impact of losses resulting from the risks of our foreign business, we cannot ensure that such measures will be adequate. The following countries have provided more than 10% of our consolidated revenue for the indicated period:

Year Ended
December 31,

	2013	2012	2011
Slovak Republic	24%	6%	10%
United Kingdom	14%	16%	12%
People's Republic of China	10%	11%	5%
Federal Republic of Germany	2%	8%	12%
Japan	1%	9%	13%

Our expense levels are based upon our expectations as to future revenue, so we may be unable to adjust spending to compensate for a revenue shortfall. Accordingly, any revenue shortfall would likely have a disproportionate effect on our operating results.

Our revenue was $47.6 million, $52.2 million, and $51.1 million for the years ended December 31, 2013, 2012, and 2011, respectively. Our operating income (loss) was $(10.7) million, $2.0 million, and $2.2 million for the years ended December 31, 2013, 2012, and 2011, respectively. Our 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 us and our competitors, and fluctuating global economic conditions. Since our expense levels are based in part on our expectations as to future revenue and includes certain fixed costs, we 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 our operating results.

Our backlog is subject to reduction and cancellation.

Backlog represents products or services that our customers have committed by contract to purchase from us. Our backlog as of December 31, 2013 and 2012 was $38.0 million and $51.9 million, respectively. Our backlog is subject to fluctuations and is not necessarily indicative of future backlog or sales. Moreover, cancellations of purchase orders or reductions of the services requested in existing contracts could substantially and materially reduce our backlog and, consequently, future revenues. Our failure to replace canceled or reduced backlog would have an adverse effect on our operating results.

We are a party to fixed price contracts and will enter into similar contracts in the future, which could result in reduced profits or losses if we are not able to accurately estimate or control costs.

A significant portion of our revenue is attributable to contracts entered into on a fixed price basis, which allows us to benefit from cost savings, but we carry the burden of cost overruns. If our initial estimates are incorrect, or if unanticipated circumstances arise, we could experience cost overruns which would result in reduced profits or even result in losses on these contracts. Our financial condition is dependent upon our ability to maximize our earnings from our contracts. Lower earnings or losses caused by cost overruns could have a negative impact on our financial results.

Under time and materials contracts, we are paid for labor at negotiated hourly billing rates and for certain expenses. Under cost-reimbursable contracts, which are subject to a contract ceiling amount, we are reimbursed for allowable costs and paid a fee, which may be fixed or performance based. However, if costs exceed the contract ceiling or are not allowable under the provisions of the contract or applicable regulations, we may not be able to obtain reimbursement for all such costs.

Our inability to successfully estimate and manage costs on each of these contract types may materially and adversely affect our financial condition.

We are dependent on product innovation and research and development, which costs are incurred prior to revenue for new products and improvements.

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

We use derivative instruments in the normal course of our business which could result in financial losses that negatively impact our net income.

We periodically enter into forward foreign exchange contracts to manage market risks associated with the fluctuations in foreign currency exchange rates on foreign-denominated trade receivables. We could recognize financial losses as a result of volatility in the market values of these contracts or if a counterparty fails to perform. We attempt to minimize credit exposure by limiting counterparties to internationally recognized financial institutions.

We issue performance, advance payment, and bid bonds in the normal course of our business which could result in financial losses that negatively impact our net income.

We are often required to issue performance bonds to our customers as a normal part of our business activities. Our customers may have the ability to draw upon these performance bonds in the event we fail to cure a material breach of the contract within 30 days of receiving notice from the customer regarding the nature of the breach. As of December 31, 2013, we had issued advance payment and performance bonds on eleven contracts totaling $4.9 million, of which $1.1 million have been cash collateralized; the largest of these performance bonds was for $2.7 million. As of the date hereof, we have $3.6 million advance payment and performance bonds outstanding, of which $1.1 million have been cash collateralized. Although we expect no material breaches to occur on these contracts, if such a breach were to occur and we failed to cure such breach, we could incur a loss of up to $3.6 million.

We rely upon our intellectual property rights for the success of our business; however, the steps we have taken to protect our intellectual property may be inadequate.

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

The industries in which we operate are highly competitive. This competition may prevent us from raising prices at the same pace at which our costs increase.

Our businesses operate in highly competitive environments with both domestic and foreign competitors, many of whom have substantially greater financial, marketing and other resources than we do. The principal factors affecting competition include price, technological proficiency, ease of system configuration, product reliability, applications expertise, engineering support, local presence and financial stability. We believe competition in the simulation 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. As our business has a significant international component, changes in the value of the dollar could adversely affect our ability to compete internationally.

We may encounter difficulties in effectively integrating acquired businesses.

As part of our business strategy, we have acquired companies with compatible or related products. These and any future acquisitions we make will be accompanied by the risks commonly encountered in acquisitions of companies, which include, among other things:

¨potential exposure to unknown liabilities of the acquired companies;
¨higher than anticipated acquisition costs and expenses;
¨

difficulty and expense of assimilating the operations and personnel of the companies, especially if the acquired operations are geographically distant;
- potential disruption of our ongoing business and diversion of management time and attention;
- failure to maximize our financial and strategic position by the successful incorporation of acquired technology;
- difficulties in adopting and maintaining uniform standards, controls, procedures and policies;
- loss of key employees and customers as a result of changes in management; and
- possible dilution to our shareholders.

We may not be successful in overcoming these risks or any other problems encountered in connection with any of our acquisitions. We may make a strategic acquisition knowing that the transaction may adversely affect our short-term profitability, perhaps because the acquisition candidate may be experiencing operating losses. We may believe that acquiring such a company outweighs the operating losses the candidate is experiencing and the losses that we expect to experience before being able to make the acquisition candidate profitable. The completion of such an acquisition in the future would negatively affect our profitability and may cause a decline in our stock price. While we believe we have established appropriate and adequate procedures and processes to mitigate the risks of such an acquisition, there is no assurance that the transaction will be successful and not have a negative effect on profitability.

A failure to attract and retain technical personnel could reduce our revenue and our operational effectiveness.

There is a continuing demand for qualified technical personnel. We believe that our future growth and success will depend upon our ability to attract, train and retain such personnel. Our design and development efforts depend on hiring and retaining qualified technical personnel. Although we currently experience relatively low rates of turnover for our technical personnel, the rate of turnover may increase in the future. An inability to attract or maintain a sufficient number of technical personnel could have a material adverse effect on our contract performance or on our ability to capitalize on market opportunities.

The nuclear power industry, our largest customer group, is associated with a number of hazards which could create significant liabilities.

Our business could expose us to third party claims with respect to product, environmental and other similar liabilities. Although we have sought protection 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. Certain of our products and services are used by the nuclear power industry primarily in operator training. Although our contracts for such products and services typically contain provisions designed to protect us from potential liabilities associated with such use, there can be no assurance that we would not be materially adversely affected by claims or actions which may potentially arise.

Cyber security incidents could disrupt business operations, result in the loss of critical and confidential information, and adversely impact our reputation and results of operations.

Global cyber security threats can range from uncoordinated individual attempts to gain unauthorized access to our information technology (IT) systems to sophisticated and targeted measures known as advanced persistent threats. While we employ comprehensive measures to prevent, detect, address and mitigate these threats (including access controls, data encryption, vulnerability assessments, continuous monitoring of our IT networks and systems and maintenance of backup and protective systems), cyber security incidents, depending on their nature and scope, could potentially result in the misappropriation, destruction, corruption or unavailability of critical data and confidential or proprietary information (our own or that of third parties) and the disruption of business operations. The potential consequences of a material cyber security incident include reputational damage, litigation with third parties, diminution in the value of our investment in research, development and engineering, and increased cyber security protection and remediation costs, which in turn could adversely affect our competitiveness and results of operations.

Third-party claims that we allegedly infringe the intellectual property rights of others may be costly to defend or settle and could damage our business.

We cannot be certain that our software and services do not infringe issued patents, copyrights, trademarks or other intellectual property rights of third parties. We may be subject to legal proceedings and claims from time to time, including claims of alleged infringement of intellectual property rights of third parties by us or our licensees concerning their use of our software products and integration technologies and services. Third parties may bring claims of infringement against us. Because our software is integrated with our customers' networks and business processes, as well as other software applications, third parties may bring claims of infringement against us, as well as our customers and other software suppliers, if the cause of the alleged infringement cannot easily be determined.

Claims of alleged infringement may have a material adverse effect on our business and may discourage potential customers from doing business with us on acceptable terms, if at all. Defending against claims of infringement may be time-consuming and may result in substantial costs and diversion of resources, including our management's attention to our business. Furthermore, a party making an infringement claim could secure a judgment that requires us to pay substantial damages. A judgment could also include an injunction or other court order that could prevent us from

selling our software or require that we re-engineer some or all of our products. Claims of intellectual property infringement also might require us to enter costly royalty or license agreements. We may be unable to obtain royalty or license agreements on terms acceptable to us or at all. Our business, operating results and financial condition could be harmed significantly if any of these events occurred, and the price of our common stock could be adversely affected. In addition, we have agreed, and may agree in the future, to indemnify certain of our customers against claims that our software infringes upon the intellectual property rights of others. Although we carry general liability insurance, our current insurance coverage may not apply to, and likely would not protect us from, liability that may be imposed under any of the types of claims described above.

We are subject to a wide variety of laws and regulations.

Our businesses are subject to regulation by U.S. federal and state laws and foreign laws, regulations and policies. Changes to laws or regulations may require us to modify our business objectives if existing practices become more restricted, subject to escalating costs or prohibited outright. Particular risks include regulatory risks arising from federal laws, such as laws regarding export of sensitive technologies or technical information. Our business and the industries in which we operate are also at times being reviewed or investigated by regulators, which could lead to enforcement actions, fines and penalties or the assertion of private litigation claims and damages.

Our stockholder protection rights agreement and classified Board of Directors could deter acquisition proposals and make it difficult for a third party to acquire control of the Company, which could have a negative effect on the price of our Common Stock.

We have a stockholder protection rights agreement and a classified Board of Directors, which could discourage potential acquisition proposals and could delay or prevent a change in control. This deterrent could adversely affect the price of our Common Stock and make it difficult to affect a change in the composition of the Board of Directors or a change in management of the Company.

The price of our common stock is highly volatile and could decline regardless of our operating performance.

The market price of our common stock could fluctuate in response to, among other things:

¨changes in economic and general market conditions;
..changes in the outlook and financial condition of certain of our significant customers and industries in which we have a concentration of business;
..changes in financial estimates, treatment of our tax assets or liabilities or investment recommendations by securities analysts following our business;
.. changes in accounting standards, policies, guidance or interpretations or principles;
¨sales of common stock by our directors, officers and significant stockholders;
¨our failure to achieve operating results consistent with securities analysts' projections; and
¨the operating and stock price performance of competitors.

These factors might adversely affect the trading price of our common stock and prevent you from selling your common stock at or above the price at which you purchased it. In addition, in recent periods, the stock market has experienced significant price and volume fluctuations. This volatility has had a significant impact on the market price of securities issued by many companies, including ours and others in our industry. These changes can occur without regard to the operating performance of the affected companies. As a result, the price of our common stock could fluctuate based upon factors that have little or nothing to do with our company, and these fluctuations could materially reduce our share price.

A sustained decline in the price of our common stock or weaker than forecasted operating results could result in further write-downs of capitalized software.

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 determined using the straight-line method over the remaining estimated economic life of the product, typically three years. On an annual basis, and more frequently as conditions indicate, the Company assesses the recovery of the unamortized software development 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 the future undiscounted cash flows. The excess of any unamortized computer software costs over the related net realizable value is written down and charged to operations.

Based upon indicators of impairment in the second quarter of 2013, which included a substantial decrease in the Company's market capitalization, the Company performed an interim goodwill impairment test as of June 30, 2013. In conjunction with the goodwill impairment test, we analyzed the net realizable value of our capitalized software

development costs and, based upon the results of this analysis, took a $2.2 million charge to earnings for a write-down of the capitalized software development costs. As of December 31, 2013, we performed an additional assessment of our capitalized software development costs and determined that no further write-down was warranted. However, we cannot provide assurance that we will not incur an impairment charge in future periods as a result of changing conditions.

.

ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

ITEM 2. PROPERTIES.

The Company is headquartered in a facility in Sykesville, Maryland (approximately 43,000 square feet). The lease for this facility expires on June 30, 2018. The Company has subleased approximately 1,000 square feet of the facility.

In addition, the Company leases office space domestically in St. Marys, Georgia, Cary, North Carolina and Tarrytown, New York and internationally in Beijing, China, Chennai, India, Nyköping, Sweden and Stockton-on-Tees, England. The Company leases these facilities for terms ending between 2014 and 2018. The Company is currently leasing office space in Madison, NJ; this lease will terminate on April 30, 2014 and will not be renewed.

ITEM 3. LEGAL PROCEEDINGS.

The Company and its subsidiaries are from time to time involved in ordinary routine litigation incidental to the conduct of its business. The Company and its subsidiaries are not a party to, and its property is not the subject of, any material pending 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. MINE SAFETY DISCLOSURES.

Not applicable.

PART II

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

The Company's common stock is listed on the NYSE MKT Stock Exchange, where it trades under the symbol "GVP". The following table sets forth, for the periods indicated, the high and low sale prices for the Company's common stock reported by the NYSE MKT Stock Exchange for each full quarterly period within the two most recent fiscal years:

2013

Quarter	High	Low
First	$2.55	$1.97
Second	$2.00	$1.49
Third	$1.85	$1.40
Fourth	$1.73	$1.54

2012

Quarter	High	Low
First	$2.43	$1.71
Second	$2.88	$2.07
Third	$2.38	$1.86
Fourth	$2.20	$1.76

The following table sets forth the equity compensation plan information for the year ended December 31, 2013:

Plan category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights (a)	Weighted Average Exercise Price of Outstanding Options, Warrants and Rights (b)	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c)
Equity compensation plans approved by security holders	3,035,987	$ 3.38	820,253
Equity compensation plans not approved by security holders	--	$ --	--
Total	3,035,987	$ 3.38	820,253

There were approximately 944 holders of record of the common stock as of December 31, 2013. 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 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.

Issuer Purchases of Equity Securities

On March 21, 2011, the Board of Directors authorized the purchase of up to $3.0 million of the Company's common stock in accordance with the safe harbor provisions of Rule 10b-18 of the Securities Exchange Act of 1934. During the year ended December 31, 2012, the Company repurchased 280,113 shares at an aggregate cost of $0.5 million. During the year ended December 31, 2013, the Company repurchased 494,424 shares at an aggregate cost of $819,000 and completed the share repurchase program.

Month	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of publicly announced program	Approximate dollar value of shares that may yet be purchased under the program
January 1 - January 31	-	$ -	1,104,487	$ 819,773
February 1 - February 28	-	$ -	1,104,487	$ 819,773
March 1 - March 31	1,100	$ 2.00	1,105,587	$ 817,574
April 1 - April 31	17,589	$ 1.95	1,123,176	$ 783,257
May 1 - May 31	109,156	$ 1.71	1,232,332	$ 597,000
June 1 - June 30	89,654	$ 1.62	1,321,986	$ 451,853
July 1 - July 31	98,206	$ 1.61	1,420,192	$ 294,023
August 1 - August 31	33,155	$ 1.54	1,453,347	$ 242,821
September 1 - September 30	46,394	$ 1.60	1,499,741	$ 168,811
October 1 - October 31	99,170	$ 1.68	1,598,911	$ 1,999
November 1 - November 30	-	$ -	1,598,911	$ 1,060
December 1 - December 31	-	$ -	1,598,911	$ 1,060

Performance Graph

The following graph compares the Company's cumulative total shareholder return since December 31, 2008 through December 31, 2013 with that of the NYSE MKT Composite Index and a peer group index. The Peer Group consists of companies selected on a line-of-business basis and includes Aspen Technology, Inc., L-3 Communications Holdings and Honeywell International. The graph assumes an initial investment of $100 on December 31, 2008 in the Company's common stock and each index. There were no dividends declared or paid by the Company during the five year period. The Company has never paid a dividend on its common stock. The indices are re-weighted daily, using the market capitalization on the previous tracking day. The comparisons shown in the graph below are based upon historical data. The stock price performance shown in the graph below is not necessarily indicative of, or intended to forecast, the potential future performance of the Company's common stock. The graph was prepared for the Company by Research Data Group, Inc.

	12/08	12/09	12/10	12/11	12/12	12/13
GSE Systems, Inc.	100.00	92.88	61.36	33.05	36.61	27.12
NYSE MKT Composite	100.00	135.53	175.07	179.96	190.69	200.56
Peer Group	100.00	122.90	153.88	160.55	195.21	286.42

ITEM 6. SELECTED FINANCIAL DATA.

Historical consolidated results of operations and balance sheet data presented below have been derived from the historical financial statements of the Company. This information should be read in connection with the Company's consolidated financial statements.

(in thousands, except per share data)	Years ended December 31,				
	2013	2012	2011	2010	2009
Consolidated Statements of Operations:					
Contract revenue	$47,562	$52,246	$51,126	$47,213	$40,060
Cost of revenue	34,981	34,509	34,781	36,081	29,736
Write-down of capitalized software development costs	2,174	-	-	-	-
Gross profit	10,407	17,737	16,345	11,132	10,324
Operating expenses:					
Selling, general and administrative	15,836	14,865	12,672	11,683	7,749
Goodwill impairment loss	4,462	-	-	-	-
ESA related charges	-	-	-	-	1,508
Depreciation	570	562	497	579	504
Amortization of definite-lived intangible assets	207	313	948	102	-
Total operating expenses	21,075	15,740	14,117	12,364	9,761
Operating income (loss)	(10,668)	1,997	2,228	(1,232)	563
Interest income, net	105	162	131	19	56
ESA related charges	-	-	-	-	(865)
Gain (loss) on derivative instruments	265	(121)	(68)	(913)	763
Other income (expense), net	(67)	(175)	72	83	(397)
Income (loss) before income taxes	(10,365)	1,863	2,363	(2,043)	120
Provision (benefit) for income taxes	146	689	(438)	206	917
Net income (loss)	$(10,511)	$1,174	$2,801	$(2,249)	$(797)
Basic income (loss) per common share (1)	$(0.58)	$0.06	$0.15	$(0.12)	$(0.05)
Diluted income (loss) per common share (1)	$(0.58)	$0.06	$0.15	(0.12)	$(0.05)
Weighted average common shares outstanding:					
-Basic	18,151	18,384	18,952	18,975	16,938
-Diluted	18,151	18,458	19,123	18,975	16,938

	As of December 31,				
	2013	2012	2011	2010	2009
Consolidated Balance Sheet data:					
Working capital	$25,991	$29,782	$30,240	$30,040	$31,469
Total assets	48,827	62,564	58,815	53,614	49,520
Long-term liabilities	487	1,459	2,352	799	206
Stockholders' equity	30,387	40,830	38,783	36,906	37,143

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

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 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 U.S. generally accepted accounting principles ("GAAP"), the revenue under these fixed-price contracts is accounted for on the percentage-of-completion method. This methodology recognizes revenue and earnings as work progresses on the contract and is based on an estimate of the revenue and earnings earned to date, less amounts recognized in prior 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. Estimated contract earnings are reviewed and revised periodically as the work progresses, and the cumulative effect of any change in estimate is recognized in the period in which the change is identified. Estimated losses are charged against earnings in the period such losses are identified. The Company recognizes revenue arising from contract claims either as income or as an offset against a potential loss only when the amount of the claim can be estimated reliably and realization is probable and there is a legal basis of the claim.

Uncertainties inherent in the performance of contracts include labor availability and productivity, material costs, change order scope and pricing, software modification 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.

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 long-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 normally provide for "post customer support service" (PCS) in terms of software upgrades, software enhancements or telephone support. In order to obtain PCS, the customers normally must purchase a separate contract. Such PCS arrangements are generally for a one-year period renewable annually and include customer support, unspecified software upgrades, and maintenance releases. The Company recognizes revenue from these contracts ratably over the life of the agreements.

Revenue from the sale of software licenses which do not require significant modifications or customization for the Company's modeling tools are recognized when the license agreement is signed, the license fee is fixed and determinable, delivery has occurred, and collection is considered probable.

Revenue for contracts with multiple elements is recognized in accordance with ASC 605-25 Revenue Recognition-Multiple Element Arrangements.

Revenue from certain consulting contracts is 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.

Capitalization of Computer Software Development Costs. In accordance with U.S. generally accepted accounting principles, 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 amortizes the costs, on a straight line method, over the three year estimated useful life of the product. As of December 31, 2013, the Company has net capitalized software development costs of $1.0 million. On an annual basis, and more frequently as conditions indicate, the Company assesses the recovery of the unamortized software development 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 operations. 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.

During the second quarter of 2013, the Company incurred a charge of $2.2 million related to the write-down of certain capitalized software development costs based on the net realizable value analysis performed in conjunction with our goodwill impairment test.

Valuation of Contingent Consideration for Business Acquisitions. Acquisitions may include contingent consideration payments based on future financial measures of an acquired company. Contingent consideration is required to be recognized at fair value as of the acquisition date. We estimate the fair value of these liabilities based on financial projections of the acquired companies and estimated probabilities of achievement. We believe our estimates and assumptions are reasonable; however, there is significant judgment involved. At each reporting date, the contingent consideration obligation will be revalued to estimated fair value and changes in fair value subsequent to the acquisition will be reflected in income or expense in the consolidated statements of operations, and could cause a material impact to our operating results. Changes in the fair value of contingent consideration obligations may result from changes in discount periods and rates, changes in the timing and amount of revenue and/or earnings estimates and changes in probability assumptions with respect to the likelihood of achieving the various earn-out criteria.

Deferred Income Tax Valuation Allowance. Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements. Management makes a regular 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 asset to its realizable value. As of December 31, 2013, the Company's largest deferred tax asset of $5.2 million primarily relates to a U.S. net operating loss carryforward of $14.7 million which expires in various amounts between 2020 and 2033. The amount of U.S. loss carryforward which can be used by the Company each year is limited due to changes in the Company's ownership which occurred in 2003. Thus, a portion of the Company's loss carryforward may expire unutilized. We believe that the Company will achieve profitable operations in future years that will enable the Company to recover the benefit of its net deferred tax assets. However, other than a portion of the net deferred tax assets that are related to the Company's Indian, and Chinese subsidiaries, the recovery of the net deferred tax assets could not be substantiated by currently available objective evidence. Accordingly, the Company has established a $7.1 million valuation allowance for its net deferred tax assets.

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 contract revenue.

($ in thousands)	Years ended December 31,					
	2013	%	2012	%	2011	%
Contract revenue	$47,562	100.0%	$52,246	100.0%	$51,126	100.0%
Cost of revenue	34,981	73.5 %	34,509	66.1 %	34,781	68.0 %
Write-down of capitalized software development costs	2,174	4.6 %	0	0.0 %	0	0.0 %
Gross profit	10,407	21.9 %	17,737	33.9 %	16,345	32.0 %
Operating expenses						
Selling, general and administrative	15,836	33.3 %	14,865	28.5 %	12,672	24.8 %
Goodwill impairment loss	4,462	9.4 %	0	0.0 %	0	0.0 %
Depreciation	570	1.2 %	562	1.1 %	497	1.0 %
Amortization of definite-lived intangible assets	207	0.4 %	313	0.6 %	948	1.9 %
Total operating expenses	21,075	44.3 %	15,740	30.2 %	14,117	27.7 %
Operating income (loss)	(10,668)	-22.4 %	1,997	3.7 %	2,228	4.3 %
Interest income, net	105	0.2 %	162	0.3 %	131	0.3 %
Gain (loss) on derivative instruments, net	265	0.5 %	(121)	-0.2 %	(68)	-0.1 %
Other income (expense) , net	(67)	-0.1 %	(175)	-0.3 %	72	0.1 %
Income (loss) before income taxes	(10,365)	-21.8 %	1,863	3.5 %	2,363	4.6 %
Provision (benefit) for income taxes	146	0.3 %	689	1.3 %	(438)	-0.9 %
Net income (loss)	$(10,511)	-22.1 %	$1,174	2.2 %	$2,801	5.5 %

Comparison of the Years Ended December 31, 2013 to December 31, 2012.

Contract Revenue. Contract revenue for the year ended December 31, 2013 totaled $47.6 million, which was 9.0% lower than the $52.2 million of revenue for the year ended December 31, 2012. The Company recorded total orders of $32.0 million in the year ended December 31, 2013 as compared to $52.7 million in the year ended December 31, 2012. Included in the 2012 orders was a $9.3 million change order for a contract to build a new nuclear power plant simulator for a two unit reactor plant in Slovakia. In the years ended December 31, 2013 and 2012, the Company recognized $11.6 million and $3.3 million of contract revenue, respectively, on this project using the percentage-of-completion method, which accounted for 24.4% and 6.5% of the Company's consolidated revenue, respectively. The project is expected to be completed at the end of the first quarter 2014. As an aftermath to the Fukushima earthquake and tsunami which occurred over 2 years ago, the Japanese have shut down all of their nuclear reactors and the Germans have announced plans to shut down all of their nuclear reactors by 2022. Accordingly, the Company has seen significant reductions in revenue from nuclear customers in both Japan and Germany, two traditionally strong sources of revenue. For the year ended December 31, 2013, revenue generated from nuclear simulation customers in Japan decreased by $4.2 million and revenue generated from nuclear simulation customers in Germany decreased by $1.6 million as compared to the prior year. Additionally, fossil fuel simulation revenue has decreased $2.7 million for the year ended December 31, 2013 as compared to the prior year as capital expenditures by fossil fueled power generation companies have been delayed due to the economic and regulatory uncertainty regarding coal-fired power plants. During the year ended December 31, 2013 the Company also experienced a $1.1 million reduction in revenue from GSE's wholly-owned subsidiary, GSE EnVision LLC ("EnVision") as compared to the same period in the prior year. The reduction in revenue was primarily due to the substantial completion of a project

received in 2012 to provide simulation and computer-based learning modules to the subsidiary of a global energy services company. Furthermore, the Company also completed two significant projects during the year ended December 31, 2012. These projects included a full scope AGR replacement simulator for a British utility, a substantial upgrade project for a full scope simulator in the Ukraine. Revenue related to these projects for the year ended December 31, 2012 totaled $2.9 million.

At December 31, 2013, the Company's backlog was $38.0 million, of which $650,000 related to the Slovakia contract. The Company's backlog decreased 26.8% from December 31, 2012 when the Company's backlog totaled $51.9 million.

Gross Profit. Gross profit totaled $10.4 million for the year ended December 31, 2013 as compared to $17.7 million for the year ended December 31, 2012. As a percentage of revenue, gross profit decreased from 33.9% for the twelve months ended December 31, 2012 to 21.9% for the twelve months ended December 31, 2013. Excluding the $2.2 million non-cash write-down of capitalized software development costs, which is discussed below, gross profit totaled $12.6 million and 26.5% as a percentage of revenue for the year ended December 31, 2013.

The $36.5 million full scope simulator and digital control system project for a Slovak utility made up 24.4% of the Company's total revenue in 2013 as compared to 6.5% of revenue in 2012. The significant increase in revenue on the Slovakia contract as an overall percentage of the Company's revenue was the largest factor contributing to the decrease in the Company's overall gross margin because this project has a gross profit lower than the Company's normal gross profits. In addition, the decrease in gross margin reflects lower revenue from EnVision products in 2013. EnVision products have gross profit margins significantly higher than the Company's normal gross profit margins.

Write-down of capitalized software development costs. The Company makes ongoing evaluations of the recoverability of its capitalized software projects by comparing the unamortized amount for each product to the estimated net realizable value of the product. If such evaluations indicate that the unamortized software development costs exceed the net realizable value, we write off the amount by which the unamortized software development costs exceed net realizable value. For the quarter ended June 30, 2013, we incurred a charge of $2.2 million related to the write-off of certain capitalized software development costs.

Selling, General and Administrative Expenses. Selling, general and administrative ("SG&A") expenses totaled $15.8 million and $14.9 million for the years ended December 31, 2013 and 2012, respectively. Fluctuations in the components of SG&A spending were as follows:

- Business development costs decreased from $5.0 million for the year ended December 31, 2012 to $4.5 million in the year ended December 31, 2013. During the year ended 2013, the primary cost savings related to reductions in the Company's marketing and public relations programs. In addition, the Company's biennial Simworld International Users Conference was last held in Dubai in 2012. During 2013 the Company incurred $173,000 related to these programs as compared to $382,000 during the same period in the prior year. Bidding and proposal costs, which are the costs of operations personnel assisting with the preparation of contract proposals totaled $1.9 million for the year ended December 31, 2013, a $100,000 increase from the prior year.

- The Company's general and administrative expenses totaled $7.9 million and $7.0 million for the years ended December 31, 2013 and 2012, respectively. The increase of $0.9 million is primarily attributable to the following:

  - The Company incurred foreign currency translation losses of $111,000 for the year ended December 31, 2013 compared to gains of $313,000 for the year ended December 31, 2012.
  - The Company's subsidiary in the United Kingdom moved to a new office and reorganized its reporting structure in early 2013, resulting in an increase of $200,000 in general and administrative expenses in 2013 as compared to 2012. In conjunction with the dissolution of the joint venture agreement with GSE-UNIS Simulation Technology Co., Ltd. ("GSE-UNIS"), the Company's subsidiary in China moved to a new office during the fourth quarter of 2013. As a result, facility costs for the subsidiary were higher in the fourth quarter than the first three quarters of 2013 and are expected to remain at that level for the next two years.

- Gross spending on software product development ("development") expenses, for the twelve months ended December 31, 2013 totaled $2.9 million, as compared to $2.4 million for the twelve months ended December 31, 2012. The Company capitalized $1.3 million for both the twelve months ended December 31, 2013 and 2012, respectively. Net development spending increased from $1.1 million for the twelve months ended December 31, 2012 to $1.6 million for the twelve months ended December 31, 2013.

  - The Company's Activ-3Di™ visualization team, which develops 3D technology to add to our training programs, incurred $99,000 and $334,000 of costs related to this effort during the twelve months ended December 31, 2013 and 2012, respectively.
  - During the twelve months ended December 31, 2013 EnVision completed its new gas-oil separation process simulation training tool and tutorial and continued its development of a new upstream amine treatment unit training tool. Development expense related to the EnVision product line totaled $364,000 and $465,000 for the twelve months ended December 31, 2013 and 2012, respectively.
  - Spending on simulation software product development totaled $2.4 million for the twelve months ended December 31, 2013. For the twelve months ended December 31, 2012, development expense totaled $1.6 million. The Company's development expenses were mainly related to ISIS™, our configuration management system, maintenance to our GPWR™ and JADE™ applications, and advance modeling software such as RELAP5-HD® and PSA-HD™.

Goodwill impairment loss. The Company incurred a goodwill impairment loss of $4.5 million during the second quarter of 2013. Refer to the Liquidity and Capital Resources section below for further discussion regarding the factors leading to the impairment loss and the valuation methodologies and assumptions used in the goodwill impairment test.

Depreciation. Depreciation expense totaled $570,000 and $562,000 for the years ended December 31, 2013 and 2012, respectively.

Amortization of definite-lived intangible assets. Amortization expense related to definite-lived intangible assets totaled $207,000 and $313,000 for the years ended December 31, 2013 and 2012, respectively. Amortization is recognized on a straight-line basis over the estimated useful life of the intangible assets, except for contractual customer relationships and contract backlog, which are recognized in proportion to the related projected revenue streams.

Operating Income (Loss). The Company had an operating loss of $(10.7) million (-22.4% of revenue) in the year ended December 31, 2013, as compared with operating income of $2.0 million (3.7% of revenue) for the year ended December 31, 2012. The variances were due to the factors outlined above.

Interest Income, Net. The Company's interest income, net totaled $105,000 and $162,000 for the years ended December 31, 2013 and 2012, respectively.

At December 31, 2013, the Company had a revolving credit agreement for a revolving line of credit with Susquehanna which is scheduled to expire on June 30, 2014. The credit facility enables the Company to borrow funds to support working capital needs and to collateralize letters of credit which will be issued as performance bonds. The line of credit, which is in the principal amount of up to $7.5 million, bears interest at a rate equal to the Wall Street Journal Prime Rate of Interest, floating with a floor of 4 ½%.

The deferred financing costs incurred when the Susquehanna line of credit was first established in 2011 were amortized over the original two-year term of the line of credit. Amortization began in November 2011. Amortization of deferred financing costs totaled $10,000 and $12,000 for the twelve months ended December 31, 2013 and 2012, respectively.

At December 31, 2013 and 2012, the Company had approximately $1.1 million and $1.8 million, respectively, of cash in escrow accounts with Susquehanna Bank that were being used as collateral for various advance payment bid and performance bonds. An additional $0.8 million were held in certificates of deposit as of December 31, 2012. The Company recorded interest income of $8,000 and $29,000 from the certificates of deposit and escrow accounts in the years ended December 31, 2013 and 2012, respectively.

The Company had $9.5 million and $16.4 million deposited in an unrestricted money market account with Susquehanna on December 31, 2013 and 2012, respectively. Interest income earned on the money market accounts totaled $43,000 in each of the years ended 2013 and 2012, respectively.

Interest income on deposits held by the Company's Swedish subsidiary decreased from $88,000 in the year ended December 31, 2012 to $41,000 for the year ended December 31, 2013. The decrease was primarily attributable to the lower cash balance held by the subsidiary during 2013.

The Company had other interest income of $23,000 and $14,000 for the years ended December 31, 2013 and 2012, respectively.

Loss on Derivative Instruments, net. The Company periodically enters into forward foreign exchange contracts to manage market risks associated with the fluctuations in foreign currency exchange rates on foreign-denominated trade receivables. As of December 31, 2013, the Company had foreign exchange contracts outstanding of approximately 0.2 million Pounds Sterling, 13.3 million Euro, and 10.1 million Japanese Yen at fixed rates. The contracts expire on various dates through May 31, 2016. The Company had not designated the contracts as hedges and has recognized a loss on the change in the estimated fair value of the contracts of $489,000 for the twelve months ended December 31,

2013.

At December 31, 2012, the Company had foreign exchange contracts outstanding of approximately 0.8 million Pounds Sterling, 9.9 million Euro, and 61.8 million Japanese Yen at fixed rates. The contracts expire on various dates through May 2016. The Company had not designated the contracts as hedges and had recognized a loss on the change in the estimated fair value of the contracts of $202,000 for the twelve months ended December 31, 2012.

The estimated net fair values of the contracts at December 31, 2013 and 2012 were net liabilities of $513,000 and $23,000, respectively, and were recorded on the balance sheets as follows:

(in thousands)	December 31, 2013	2012
Asset derivatives		
Prepaid expenses and other current assets	$140	$296
Other assets	2	20
	142	316
Liability derivatives		
Other current liabilities	(637)	(190)
Other liabilities	(18)	(149)
	(655)	(339)
Net fair value	$(513)	$(23)

The foreign currency denominated trade receivables and unbilled receivables that are related to the outstanding foreign exchange contracts at December 31, 2013 are remeasured at the end of each period into the functional currency using the current exchange rate at the end of the period. For the years ended December 31, 2013 and 2012, the Company incurred gains of $754,000 and $81,000, respectively, from the remeasurement of such trade and unbilled receivables.

Other Income (Expense), Net. The Company recognized $(67,000) and $(175,000) of other expense, net for the years ended December 31, 2013 and 2012, respectively.

- During 2013 and 2012, the Company recognized losses of $148,000 and $238,000, respectively, relating to its pro rata share of operating results from its equity investment in GSE-UNIS. In December 2012, GSE-UNIS had a reduction in force of 29 employees, reducing their headcount to 54. Approximately $100,000 of the 2012 equity loss was due to the severance accrued for this downsizing. In 2013, the Company agreed to sell its 49% stake in GSE-UNIS to its partner, Beijing Unis Venture Capital Co., Ltd. and terminate the joint venture agreement as of July 31, 2013. The sales price was basically equivalent to the Company's investment in GSE-UNIS as of the closing date. The Company reclassified $1.2 million from Other Assets to Other Current Assets as of December 31, 2013
- As a 10% owner of the Emirates Simulation Academy ("ESA") in the UAE, the Company was required to provide a guarantee of 10% of ESA's credit facility. The Company provided the guarantee by depositing cash into an interest bearing, restricted account with the Union National Bank ("UNB"). In 2009, the Company wrote off the entire balance in this account. In the second quarter of 2013, the Company was notified by UNB that the ESA line of credit had been paid off by utilizing the guarantees from the three owners. The balance remaining in our account after the settlement of the guarantee, $82,000 was transferred to the Company and the UNB account was closed.
- On May 22, 2013, the Company and Electrobalt Holding, a Russian Federation closed joint-stock company, created a 50/50 joint venture called General Simulation Engineering RUS Limited Liability Company ("GSE RUS"). GSE's equity contribution was 1.5 million Roubles ($46,000) and was paid to the joint venture in November 2013. For the three months and year ended December 31, 2013, the Company recognized an $8,000 equity loss on its investment in GSE RUS.
- The Company had other miscellaneous income of $7,000 and $63,000 for the years ended December 31, 2013 and 2012, respectively.

Provision for Income Taxes.

The Company files tax returns in the United States federal jurisdiction and in several state and foreign jurisdictions. Because of the net operating loss carryforwards, the Company is subject to U.S. federal and state income tax examinations from years 1997 and forward and is subject to foreign tax examinations by tax authorities for years 2007 and forward. Open tax years related to state and foreign jurisdictions remain subject to examination but are not considered material to our financial position, results of operations or cash flows.

An uncertain tax position taken or expected to be taken in a tax return is recognized in the financial statements when it is more likely than not (i.e., a likelihood of more than fifty percent) that the position would be sustained upon examination by tax authorities that have full knowledge of all relevant information. A recognized tax position is then measured at the largest amount of benefit that is greater than fifty percent likely of being realized upon ultimate settlement. Interest and penalties related to income taxes are accounted for as income tax expense.

The Company, through its acquisition of EnVision on January 4, 2011, recorded $320,000 of unrecognized tax benefits as well as a receivable from the EnVision shareholders for the same amount as indemnity for this tax position. During 2012, the Company partially reduced both the liability and receivable from the EnVision acquisition by $269,000 as the related period is now outside the applicable statute of limitations. During 2012 and 2013, the Company also recorded $165,000 and $187,000 of tax liabilities for certain foreign tax contingencies, respectively. The Company made payments of $8,000 and $103,000 during 2012 and 2013, respectively, related to these foreign tax contingencies.

The Company's tax expense in 2013 was $146,000 and consisted of $22,000 state income taxes, $(159,000) foreign income tax benefits from the Company's foreign subsidiaries, $4,000 U.S. alternative minimum tax, $83,000 for foreign income tax withholding on several non-U.S. contracts, $245,000 of foreign income tax liabilities, and $(49,000) tax benefit resulting from OCI allocation.

The Company's tax expense in 2012 was $689,000 and consisted of $19,000 state income taxes, $414,000 foreign income taxes incurred by the Company's foreign subsidiaries, $22,000 U.S. alternative minimum tax, $69,000 for foreign income tax withholding on several non-U.S. contracts, and $165,000 of foreign income tax liabilities.

The Company has a full valuation allowance on its U.S. net deferred tax assets at December 31, 2013.

Comparison of the Years Ended December 31, 2012 to December 31, 2011.

Contract Revenue. Contract revenue for the year ended December 31, 2012 totaled $52.2 million, which was 2.2% higher than the $51.1 million of revenue for the year ended December 31, 2011. The Company recorded total orders of $52.7 million in the year ended December 31, 2012 as compared to $44.4 million in the year ended December 31, 2011. Included in the 2012 and 2011 orders were $9.3 million and $3.0 million in change orders, respectively, for a contract to build a new nuclear power plant simulator for a two unit reactor plant in Slovakia. The 2012 change orders increased the total contract value to $36.0 million and included a provision which waived all previous claims related to this contract. In the years ended December 31, 2012 and 2011, the Company recognized $3.3 million and $5.0 million of contract revenue, respectively, on this project using the percentage-of-completion method, which accounted for 6.3% and 10.0% of the Company's consolidated revenue, respectively. In addition, revenue generated from various contracts that the Company had received from a German customer decreased by approximately $2.8 million for the year ended December 31, 2012 as compared to the year ended December 31, 2011. Partially offsetting these decreases in revenue were the following: EnVision product revenue increased from $2.5 million in 2011 to $3.9 million in 2012. In 2012, the Company received a $3.7 million contract to provide EnVision simulation and computer-based learning modules to a subsidiary of a global energy services company. Revenue generated by this contract totaled $2.5 million in 2012. GSE UK's revenue increased $1.3 million from 2011 to 2012 mainly due to a large engineering consultancy contract received during 2012. In addition, GSE Power Systems, AB's, a Swedish Corporation, revenue increased $1.2 million from 2011 to 2012 primarily due to an increase in fossil simulation revenue.

At December 31, 2012, the Company's backlog was $51.9 million, of which $11.7 million related to the Slovakia contract. The Company's backlog increased 0.8% from December 31, 2011 when the Company's backlog totaled $51.5 million.

Gross Profit. Gross profit totaled $17.7 million for the year ended December 31, 2012 as compared to $16.3 million for the year ended December 31, 2011. As a percentage of revenue, gross profit increased from 32.0% for the twelve months ended December 31, 2011 to 33.9% for the twelve months ended December 31, 2012. The increase in gross profit reflected the following items:

The lower-margined $36.0 million full scope simulator and digital control system order received in 2009 from a Slovak utility made up 6.3% of the Company's total revenue in 2012 as compared to 10.0% of revenue in 2011. The $9.3 million change order from the Slovak utility received during 2012 increased the overall gross profit on the project and generated an additional $500,000 in gross profit on the project for the year ended December 31, 2012. In addition, the increased EnVision product revenue generated in 2012 as compared to 2011, which had an overall gross profit significantly higher than the Company's normal gross profit, attributed to the increase in the gross profit for the year ended December 31, 2012.

The lower-margined $26.8 million full scope simulator and digital control system order received in 2009 from a Slovak utility made up 10% of the Company's total revenue in 2011. The $3.0 million change order that was received on this contract in 2011 increased the overall gross margin on the project by approximately $585,000 in 2011.

Selling, General and Administrative Expenses. Selling, general and administrative ("SG&A") expenses totaled $14.9 million and $12.7 million for the years ended December 31, 2012 and 2011, respectively. Fluctuations in the components of SG&A spending were as follows:

- Business development and marketing costs increased from $5.6 million for the year ended December 31, 2011 to $6.8 million in the year ended December 31, 2012. During 2012, the Company hired an additional three business development resources in the United States and hired two additional business development resources in Europe as compared to the prior year. During 2012, the Company held its biennial Simworld International Users Conference in Dubai and launched an expanded marketing and public relations program. Costs related to these programs totaled $382,000 for the year ended December 31, 2012. Bidding and proposal costs, which are the costs of operations personnel assisting with the preparation of contract proposals totaled $1.8 million for the year ended December 31, 2012, a $300,000 increase from the prior year.

- The Company's general and administrative expenses totaled $7.0 million and $6.0 million for the years ended December 31, 2012 and 2011, respectively. The increase of $1.0 million was primarily attributable to the following:

  - The change in the fair value of contingent consideration related to the TAS and EnVision acquisitions resulted in expenses of $354,000 for the year ended December 31, 2012, as compared to a gain of $322,000 for the year ended December 31, 2011.
  - The Company implemented a global Enterprise Resource Planning system in 2012. Costs related to the support and maintenance of this implementation totaled $396,000.
  - The Company incurred $0 and $206,000 of expenses related to its acquisition efforts for the years ended December 31, 2012 and 2011, respectively. These acquisition costs were composed of legal, travel, due diligence, valuation and audit expenses.

- Gross spending on software product development ("development") expenses, for the twelve months ended December 31, 2012 totaled $2.4 million, as compared to $1.8 million for the twelve months ended December 31, 2011. The Company capitalized $1.3 million and $838,000 for the twelve months ended December 31, 2012 and 2011, respectively. Net development spending increased from $1.0 million for the twelve months ended December 31, 2011 to $1.1 million for the twelve months ended December 31, 2012.

  - The Company created a 3D visualization team in January 2011 to develop 3D technology to add to our training programs. The Company incurred $334,000 and $300,000 of costs related to this effort for the twelve months ended December 31, 2012 and 2011, respectively.
  - EnVision added an additional resource to its development team in 2012 and also began working on several new advancements mainly related to a gas-oil separation process and an upstream amine treatment unit. EnVision incurred $465,000 and $90,000 of development expense for the twelve months ended December 31, 2012 and 2011, respectively.
  - Spending on simulation software product development totaled $1.6 million for the twelve months ended December 31, 2012. For the twelve months ended December 31, 2011, development expense totaled $1.5 million. The Company's development expenses were mainly related to advancements on a new configuration management system which is a central data warehouse that supports various forms of data on a simulator, new feature enhancements to our JADE platform, and advancements to our PSA-HD severe accident platform.

Depreciation. Depreciation expense totaled $562,000 and $497,000 for the years ended December 31, 2012 and 2011, respectively.

Amortization of definite-lived intangible assets. Amortization expense related to definite-lived intangible assets totaled $313,000 and $948,000 for the years ended December 31, 2012 and 2011, respectively. Amortization is

recognized on a straight-line basis over the estimated useful life of the intangible assets, except for contractual customer relationships and contract backlog, which are recognized in proportion to the related projected revenue streams. In 2011, the Company accelerated the amortization expense related to one of TAS' customer relationships due to the completion of the customer contract. The acceleration resulted in an additional $116,000 of amortization expense in 2011.

Operating Income. The Company had operating income of $2.0 million (3.7% of revenue) in the year ended December 31, 2012, as compared with an operating income of $2.2 million (4.3% of revenue) for the year ended December 31, 2011. The variances were due to the factors outlined above.

Interest Income, Net. The Company's interest income, net totaled $162,000 and $131,000 for the years ended December 31, 2012 and 2011, respectively.

At December 31, 2012, the Company had a revolving credit agreement for a revolving line of credit with Susquehanna which is scheduled to expire on June 30, 2014. The credit facility enables the Company to borrow funds to support working capital needs and to collateralize letters of credit which will be issued as performance bonds. The line of credit, which is in the principal amount of up to $7.5 million, bears interest at a rate equal to the Wall Street Journal Prime Rate of Interest, floating with a floor of 4 ½%.

The deferred financing costs incurred when the Susquehanna line of credit was first established in 2011 are amortized over the original two-year term of the line of credit. Amortization began in November 2011. Amortization of deferred financing costs totaled $12,000 and $2,000 for the twelve months ended December 31, 2012 and 2011, respectively.

At December 31, 2012 and 2011, the Company had approximately $1.8 million and $4.2 million, respectively, of cash in certificates of deposit and escrow accounts with Susquehanna and Bank of America that were being used as collateral for various bid and performance bonds. An additional $0.8 million and $1.8 million were held in other certificates of deposit as of December 31, 2012, and 2011, respectively. The Company recorded interest income of $29,000 and $27,000 from the certificates of deposit and escrow accounts in the years ended December 31, 2012 and 2011, respectively.

The Company had $16.4 million and $8.2 million deposited in an unrestricted money market account with Susquehanna on December 31, 2012 and 2011, respectively. Interest income earned on the money market accounts totaled $43,000 and $35,000 for the years ended 2012 and 2011, respectively.

Interest income on deposits held by the Company's Swedish subsidiary increased from $65,000 in the year ended December 31, 2011 to $88,000 for the year ended December 31, 2012. The increase was primarily attributable to the higher cash balance held by the subsidiary during 2012.

The Company had other interest income of $14,000 and $6,000 for the years ended December 31, 2012 and 2011, respectively.

Loss on Derivative Instruments, net. The Company periodically enters into forward foreign exchange contracts to manage market risks associated with the fluctuations in foreign currency exchange rates on foreign-denominated trade receivables. As of December 31, 2012, the Company had foreign exchange contracts outstanding of approximately 0.8 million Pounds Sterling, 9.9 million Euro, and 61.8 million Japanese Yen at fixed rates. The contracts expire on various dates through May 2016. The Company had not designated the contracts as hedges and has recognized a loss on the change in the estimated fair value of the contracts of $202,000 for the twelve months ended December 31, 2012.

At December 31, 2011, the Company had foreign exchange contracts outstanding of approximately 3.1 million Pounds Sterling, 12.0 million Euro, and 383.5 million Japanese Yen at fixed rates. The contracts expire on various dates through May 2016. The Company had not designated the contracts as hedges and had recognized a gain on the change in the estimated fair value of the contracts of $73,000 for the twelve months ended December 31, 2011.

The estimated net fair values of the contracts at December 31, 2012 and 2011 were a net asset (liability) of $(23,000) and $169,000, respectively, and were recorded on the balance sheets as follows:

	December 31,	
(in thousands)	2012	2011
Asset derivatives		
Prepaid expenses and other current assets	$296	$393

Other assets	20	90
	316	483
Liability derivatives		
Other current liabilities	(190)	(258)
Other liabilities	(149)	(56)
	(339)	(314)
Net fair value	$(23)	$169

The foreign currency denominated trade receivables and unbilled receivables that are related to the outstanding foreign exchange contracts at December 31, 2012 are remeasured at the end of each period into the functional currency using the current exchange rate at the end of the period. For the years ended December 31, 2012 and 2011, the Company incurred a gain (loss) of $81,000 and ($141,000), respectively, from the remeasurement of such trade and unbilled receivables.

Other Income (Expense), Net. The Company recognized ($175,000) of other expense, net for the year ended December 31, 2012 as compared to $72,000 of other income, net for the year ended December 31, 2011.

- During 2012 and 2011, the Company recognized a loss of $238,000 and $41,000, respectively, relating to its pro rata share of operating results from GSE-UNIS Simulation Technology Co., Ltd. In December 2012, GSE-UNIS had a reduction in force of 29 employees, reducing their headcount to 54. Approximately $100,000 of the 2012 equity loss was due to the severance accrued for this downsizing.
- The Company had other miscellaneous income of $63,000 and $113,000 for the years ended December 31, 2012 and 2011, respectively.

Provision for Income Taxes.

The Company files tax returns in the United States federal jurisdiction and in several state and foreign jurisdictions. Because of the net operating loss carryforwards, the Company is subject to U.S. federal and state income tax examinations from years 1997 and forward and is subject to foreign tax examinations by tax authorities for years 2006 and forward. Open tax years related to state and foreign jurisdictions remain subject to examination but are not considered material to our financial position, results of operations or cash flows.

An uncertain tax position taken or expected to be taken in a tax return is recognized in the financial statements when it is more likely than not (i.e., a likelihood of more than fifty percent) that the position would be sustained upon examination by tax authorities that have full knowledge of all relevant information. A recognized tax position is then measured at the largest amount of benefit that is greater than fifty percent likely of being realized upon ultimate settlement. Interest and penalties related to income taxes are accounted for as income tax expense.

The Company, through its acquisition of EnVision on January 4, 2011, recognized deferred tax liabilities of $1.0 million resulting in a reduction of the Company's U.S. net deferred tax asset by the same amount. As a result of this acquisition, in accordance with ASC-805 Business Combinations, the Company reduced the valuation allowance on its U.S. net deferred tax assets and recognized the change in the valuation allowance ($1.0 million) through the income tax provision.

The Company, through its acquisition of EnVision on January 4, 2011, recorded $320,000 of unrecognized tax benefits as well as a receivable from the EnVision shareholders for the same amount as indemnity for this tax position. During 2012, the Company partially reduced both the liability and receivable from the EnVision acquisition by $269,000 as the related period is now out