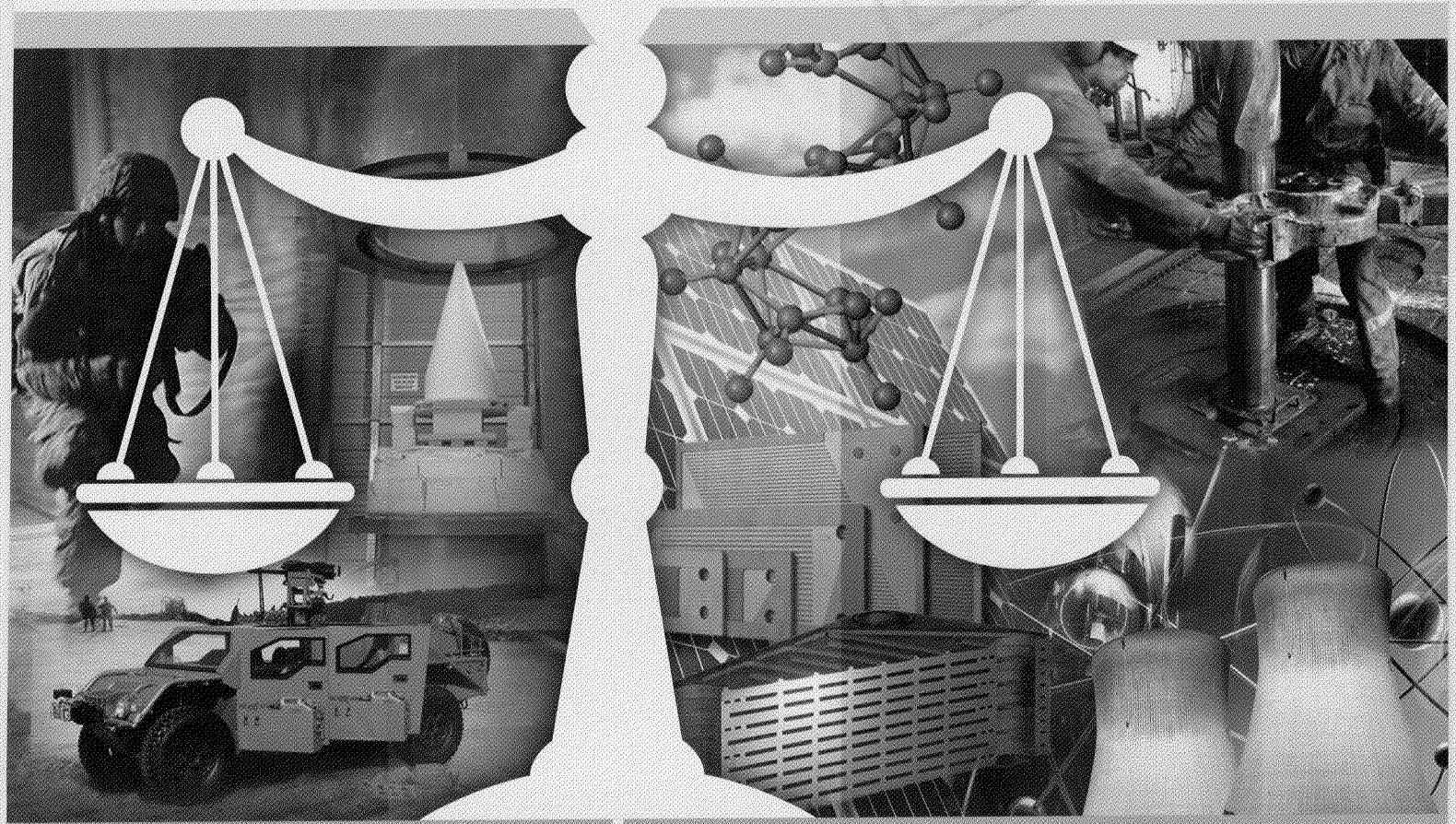
ceradyne, inc.



DEFENSE

Lightweight Ceramic Body Armor
Military Vehicle Armor
Missile Radomes
Combat Helmets

DIVERSIFIED MARKETS

Solar Energy
Nuclear Power
Oil and Gas / Downhole Drilling
Emerging Technology
Precision Investment Casting (PIC)
Semiconductor / Ion Implantation
Aluminum Smelting

"THE GLOBAL PATH FORWARD"

2009 Annual Report

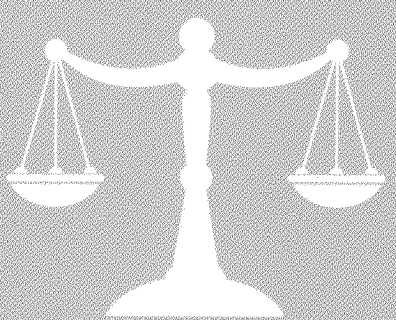
CORPORATE PROFILE

Ceradyne, Inc. develops, manufactures and markets advanced technical ceramic products and components for defense, industrial, oil and gas, automotive/diesel, semiconductor, solar energy, nuclear power, and other alternative energy applications.

The Company's expertise in ceramic material science, combined with vertically integrated manufacturing, contributes to a range of lean processes from key equipment design, to raw material powder production, to on-time delivery of high quality products. Integration of the complete process provides Ceradyne divisions with the ability to produce custom precision parts that meet demanding specifications. The Company markets its advanced technical ceramic products to a broad range of industries in 63 countries.

Ceradyne products include lightweight ceramic body armor, military vehicle armor, combat helmets, missile radomes, ceramic crucibles for the solar industry, thrust bearings for oil and gas downhole drilling, neutron absorbing chemicals and structural composites, diesel engine components, microwave tube parts, industrial seals, fluid handling components, proprietary ceramic bearings, and materials used in precision investment casting (PIC).

Ceradyne serves a wide range of emerging markets from its domestic and international manufacturing locations and sales offices.



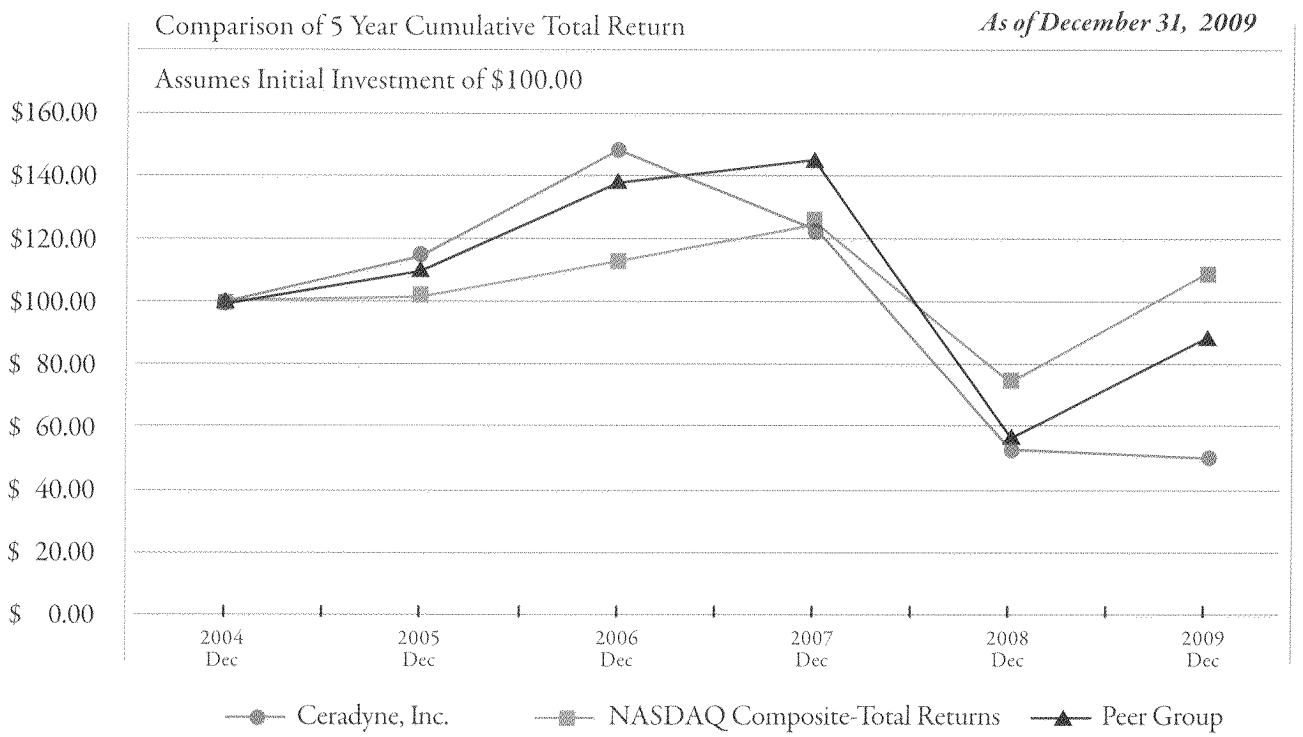
On the front cover, Ceradyne's global path forward is depicted by a scale representing the balance between Defense and Diversified Markets.

FINANCIAL HIGHLIGHTS

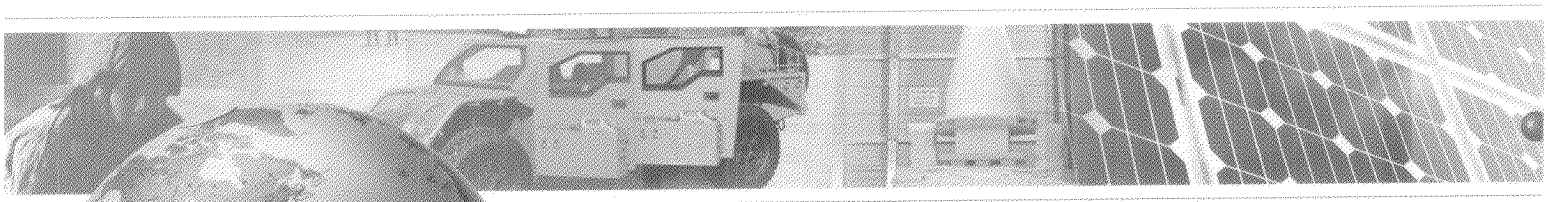
Amounts in thousands, except per share data	Years Ended December 31, 2009	2008	2007
Net sales	$400,575	$680,197	$756,835
Income from operations	7,730	165,586	220,778
Net income	8,515	104,480	142,183
Fully diluted income per share	0.33	3.91	5.13
Cash and cash equivalents	122,154	215,282	155,103
Short-term investments	117,666	6,140	29,582
Working capital	406,207	400,835	359,923
Total assets	849,704	854,527	782,654
Total long-term debt at stated amount*	82,163	102,631	98,748
Stockholders' equity	$649,717	$638,994	$591,817

* The total long-term debt consisted of an outstanding convertible bond amounting to $93.1 million at 12/31/2009 and $121.0 million at both 12/31/2008 and 12/31/2007. The difference from these amounts and the above stated amounts of long-term debt of $82.2 million, $102.6 million and $98.7 million at 12/31/2009, 12/31/2008, 12/31/2007, respectively, is the unamortized discount.

COMPANY STOCK / PERFORMANCE GRAPH



The above graph shows a comparison of the cumulative total return to stockholders of the Company, the Nasdaq Stock Market (U.S. Companies), and the Nasdaq stocks (SIC 3200-3299 U.S. Companies, stone, clay, glass and concrete products) from December 31, 2004 to December 31, 2009.



"Our actions taken in 2009, necessitated by the global recession, have laid the groundwork for a leaner, more diversified, growth-oriented Ceradyne in 2010 and beyond. I'm personally energized by the progress we've made in newer areas such as energy-related advanced technical ceramics for photovoltaic solar cell, nuclear power plant, and oil and gas/downhole operations.

Our recent investor/analyst event entitled "Ceradyne— The Global Path Forward" encompasses the strategy which we believe will drive our performance."

Joel P. Moskowitz
Chief Executive Officer, President, Chairman of the Board

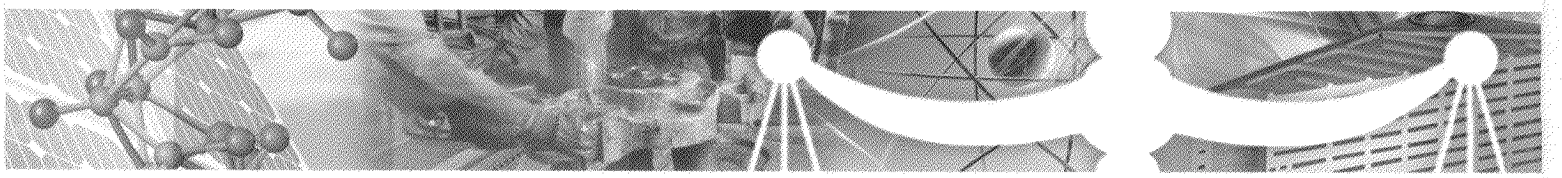
LETTER TO OUR SHAREHOLDERS

This is the 25th Annual Shareholders' Letter that I have written. Your company, Ceradyne, Inc., went public through an Initial Public Offering on July 19, 1984 at a split adjusted price of $3.33 per share. What a 25 year run we have had! I believe that the best years for Ceradyne are still ahead of us. With the comfort of an extremely strong balance sheet, our management is dedicated to implementing a strategy under which Ceradyne will transform itself into a global, diversified, advanced technical ceramic company with a mix of defense and industrial product offerings. The scale shown on the cover of this 2009 Annual Report reflects our balanced efforts to achieve this. But first, let's take a look at 2009, our most challenging year in a decade.

By any measure, 2009 was a tough year. We responded to a variety of challenges in a responsible and rapid manner that allowed us to remain profitable, generate cash, reduce redundant resources of plant and personnel, and yet remain in excellent shape for the future which, we believe, will see a resumption of growth in sales and earnings on a more sustainable basis. In spite of a decrease in sales of 41% from $680 million in 2008 to $401 million in 2009, we remained in the black with earnings of $0.33 per fully diluted share, which included charges of approximately $0.40 per fully diluted share resulting from restructuring and impairment charges totaling $18.7 million. This $18.7 million included a pre-tax $10.3 million restructuring charge for the closure of our plant in Bazet, France; $2.7 million in other severance expenses; a non-cash, pre-tax Ceradyne, Canada, goodwill impairment charge of $3.8 million and $1.9 million in accelerated depreciation resulting from a revision of the estimated useful lives of certain assets. Furthermore, the 2009 results were favorably impacted by an $8.1 million tax benefit.

Although the global recession impacted almost all areas of the Company (solar crucibles being the exception, but even there we saw unit price erosion), the largest continuing decline was in lightweight ceramic body armor which had sales of $170 million in 2009. This was down from $385 million in 2008 and the high watermark of $535 million in 2007. Our 2010 body armor outlook is for about $100 million in sales, which we anticipate will be the approximate annual level we will see going forward, depending on possible implementation of the XSAPI system, normal "in-use" replacements, the government's decision to maintain an industrial base, newer armor systems and anticipated requirements from U.S. allies. Ceradyne body armor will remain an important ingredient in the Company's product mix, but at a reduced level from prior years.

We, at Ceradyne, understand ceramic armor's role on the bottom line, but also its more important purpose: saving American lives. From a recent e-mail:



"We received the plates on the 18th of December 2009 and this past Sunday, the 14th of February, the new plates saved their first life.

"One of our team members in Afghanistan was shot in the chest, leg and hand. The one to the chest hit in the area of the heart and the Ceradyne plate stopped the round. He is expected to have a full recovery. I just wanted to thank you all for helping save one of the good guys."

2009 was the beginning of an inflection point for Ceradyne. We enter 2010 a much leaner company. We reduced our total headcount by 19%, or 464 employees. We closed our marginal French facility and moved its operations to Kempten, Germany, and plan by 2011 to move some of these operations to Tianjin, China.

Financially, we are in excellent shape. In 2009, we bought back 567,000 shares of Ceradyne common stock at an average price of $17.20 per share. We also purchased and retired $27.9 million aggregate principal amount of our convertible debt for $23.2 million. Under the original repurchase programs approved by Ceradyne's Board of Directors, as of December 31, 2009 we were authorized to repurchase up to an additional $45.5 million of our common stock and an additional $26.8 million of our convertible debt, depending on market conditions and Ceradyne's anticipated cash requirements.

Our cash, cash equivalents and short-term investments increased to approximately $240 million from 2008's year-end $221 million.

On January 11, 2010, Ceradyne hosted an investor and analyst reception in New York City entitled **"Ceradyne—The Global Path Forward."** At this event, the Company exhibited the products it anticipates will take us forward as a global, diversified, advanced technical ceramic company. These products and markets included:

DEFENSE
- Lightweight Ceramic Body Armor
- Military Vehicle Armor
- Missile Radomes (Nose Cones)
- Combat Helmets

DIVERSIFIED MARKETS
- Solar—Photovoltaic
- Nuclear—Power Plants
- Oil and Gas—Downhole Drilling
- Emerging Technology
- Precision Investment Casting (PIC)
- Semiconductor/Ion Implantation
- Aluminum Smelting

The balance of this year's shareholders' letter will further outline our plans for 2010 and beyond.

DEFENSE

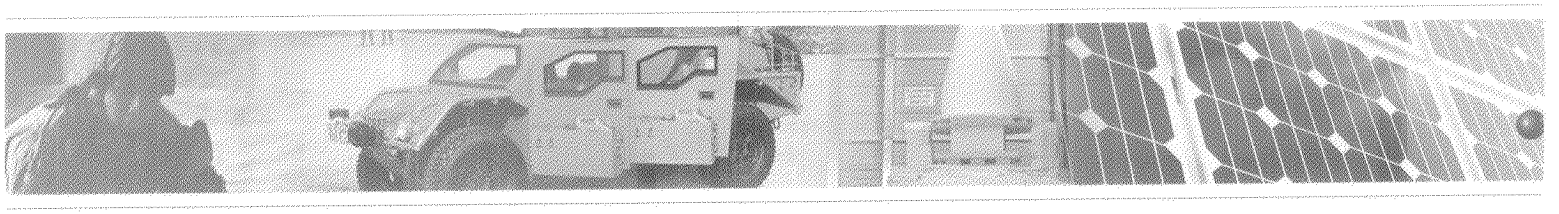
BODY ARMOR

After shipping about $2 billion in lightweight ceramic body armor in the past decade, we believe that the body armor business will decline but will remain an important Ceradyne product offering. Our year-end backlog of body armor was about $50 million. This does not include the unexercised portion of the approximately $2 billion of the ID/IQ (Indefinite Delivery/Indefinite Quantity) XSAPI/ESAPI contract which runs through October 2013. Body armor will continue to represent good upside potential, but with considerable risk. The government's decisions related to maintaining an armor industrial base, as well as other factors mentioned earlier in this letter, will determine our sales levels.

Ceradyne believes it is the only vertically integrated ceramic body armor supplier. We continue to perform dedicated research and development with the ultimate goal of a ballistically sound, lighter weight ceramic armor system.

VEHICLE ARMOR

We continue to see growth in our vehicle armor business, both as a supplier of armor components to prime original equipment manufacturers (OEMs) and as a subcontractor to various armor assembly corporations. We believe there will be continued growth in this market, both from new, lighter, more ballistic-tolerant vehicles and from substantive "reset" plans to refurbish vehicles used in Iraq and Afghanistan. We are currently producing vehicle armor in our Wixom, Michigan, and Irvine, California factories.



We have successfully "launched" our first small boat armor project as part of a Foreign Military Sale of armored patrol boats to the government of Iraq.

COMBAT HELMETS

Our June 2009 acquisition of the assets and business of Diaphorm Technologies in Salem, New Hampshire, put us in the race for next-generation combat helmets using proprietary seamless construction technology. Based on the future results of government procurement, our plans include high-volume helmet production in our Irvine, California facility while maintaining R&D and prototype activities in New Hampshire.

MISSILE RADOMES (NOSE CONES)

We continue to see growth in our ceramic missile radome business. Our radome facility in Scottdale, Georgia, is anticipated to grow steadily over the next few years from approximately $7.5 million in radome sales in 2009 to a projected $15 million in 2011. Much of this growth is predicated on a continued increase of Lockheed's PAC-3 missile radome orders.

We believe that the hostile physical environment expected to be faced by future missile systems will dictate the need for ceramic missile radomes. The government recently awarded an R&D contract to Ceradyne for the development of next-generation missile radomes.

DIVERSIFIED MARKETS

SOLAR

We believe that the market for our solar related ceramic crucibles represents one of the most promising markets that we are pursuing. Industry projections indicate strong annual growth rates of 35% to 50% over at least the next 5 years. Ceradyne ceramic crucible technology is used in the production of polycrystalline silicon. Polycrystalline silicon is expected to account for over 50% of the total market.

Our non-reusable (one-time use) large (holds over 1,000 pounds of silicon) ceramic crucibles are used to melt silicon into large ingots used for photovoltaic solar cells and silicon wafers. We produce these crucibles in Scottdale, Georgia and Tianjin, China.

We are currently constructing a 218,000 square-foot manufacturing plant near our current facility in Tianjin, China. At an estimated cost of $33 million, this new Ceradyne facility, which we expect to be in operation in 2011, will be dedicated primarily to the manufacturing of ceramic crucibles for the solar industry with about 15% of its space reserved for use by Ceradyne's ESK Ceramics for precision advanced technical ceramic components.

The 2007 acquisition of Minco provided the Company its source of high purity fused silica. One of the applications we continue to focus on is precision investment casting (PIC) utilizing a proprietary formula which results in minimum finishing; thus higher quality and lower cost.

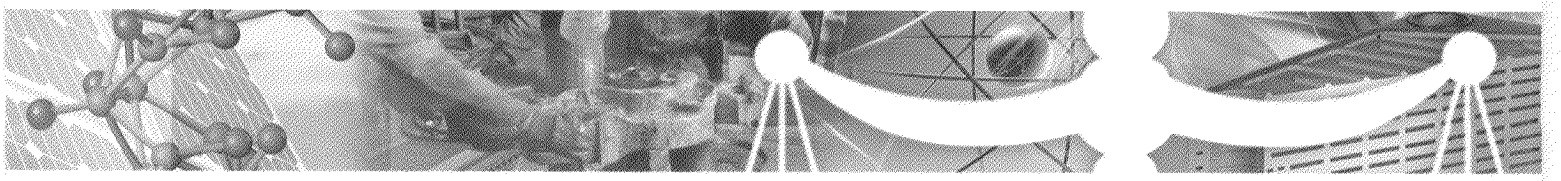
NUCLEAR

As part of our strategy of advanced ceramics for alternative energy, Ceradyne is actively expanding its efforts as they relate to nuclear power plants. Much of our technology centers on the neutron absorbing characteristics of the element boron (B), particularly the isotope ^{10}B.

The acquisition of the ^{10}B isotope separation plant (formerly EaglePicher Boron—Quapaw, Oklahoma) put us in the nuclear chemicals and ceramic business. This facility (now named Ceradyne Boron Products) produces over 80% of the world's ^{10}B.

Next to solar energy, we view nuclear power as a very exciting alternative energy market for our neutron absorbing technical ceramic products. In 2010, we will be manufacturing products for the nuclear industry at Ceradyne Boron Products, Ceradyne Canada, and Ceradyne's German subsidiary, ESK Ceramics. We estimate that nuclear related products for Ceradyne will be approximately $26 million in sales in 2010.

Our enthusiasm for the future of nuclear energy rests on what is being called a "nuclear renaissance." The current U.S. administration has pledged up to $54 billion in loan guarantees for nuclear power plants as well as $28 billion for related research. Current estimates are that the U.S. will build 24 nuclear power plants in the next 20 years (up from zero in the past 30 years). China is discussing 120 new nuclear power plants by 2030 and France derives 85% of its electricity from nuclear power plants. Nuclear power is a clean, inexpensive, continuous source of electricity (compared to solar or wind power).



Our products are designed to store spent nuclear fuel rods as well as act as radioactive protection when introduced as chemicals in the nuclear power plant's cooling water.

In addition to our current nuclear related product line, we are working on specially designed technical ceramics to be used in the decommissioning of weapons coupled with converting weapons grade plutonium into nuclear power plant fuel, MOX (mixed oxides).

CERADYNE BEARING TECHNOLOGY

In 2009, we supplied multiple patented ceramic bearing assemblies for directional drilling operations through tight shale gas formations in Texas, Louisiana and Pennsylvania. After several minor iterations to these prototype designs, we experienced outstanding performance and have targeted this year for our initial production volumes.

Our projections for oil and gas related ceramics for 2010 exceed $10 million for the first time and will be used not only in bearings, but in downhole logging and sand and particulate filters.

EMERGING MARKETS

The underlying core of Ceradyne's success through the years has been our technology. We are particularly focused on state-of-the-art, often physically large, advanced technical ceramic products. The unique materials used in these products have physical, chemical and electrical properties not found in other materials such as metals, polymers or traditional ceramic compositions. The following products and opportunities represent programs in an early or prototype development phase.

ALUMINUM SMELTING

We have developed an electrically conducting ceramic for use in the cathode in aluminum smelters. If we are successful, the total available annual market could exceed several hundred million dollars. Although we have been working with aluminum companies for years, the recession and the conservative nature of the industry have delayed full-scale commercial implementation.

SEMICONDUCTOR ION IMPLANTATION

Our 2008 acquisition of SemEquip in Billerica, Mass., provided Ceradyne the patented science to produce the ClusterBoron® molecule $B_{18}H_{22}$ for next-generation semiconductor chips. Although the recession and the significant 2008-2009 semiconductor downturn have slowed commercial implementation, we achieved several technical milestones in 2009 and expect this disruptive technology to become a "process of record" at one international semiconductor company by the end of 2010.

INDUSTRIAL TOOLING

Certain Ceradyne ceramic compositions have an extremely long life and have other superior operating characteristics when compared to various high-grade metal alloys. In the past, the stumbling block has been cost. The forming and final exacting finishing of our ceramics often require relatively expensive operations, such as diamond grinding. However, Ceradyne continually works toward cost reduction through "near net shape" and other cost-effective forming techniques. This has led to a number of early-stage industrial opportunities, including: extrusion equipment, dies, glass handling molds, microreactors, and heat exchangers.

MANAGEMENT

I want to close with a word about our management and employees. In my typical investor conference presentation, there is always a slide called "Experienced Management Team" which lists the 11 officers and key managers and their years in our industry. The experience column ranges from 6 years to 47 years with an average of 20 years. These individuals and our Ceradyne Team are the Company. On behalf of myself, our Board and you, our shareholders, I wish to say to them, thank you.

Very truly yours,

CERADYNE, INC.

Joel P. Moskowitz

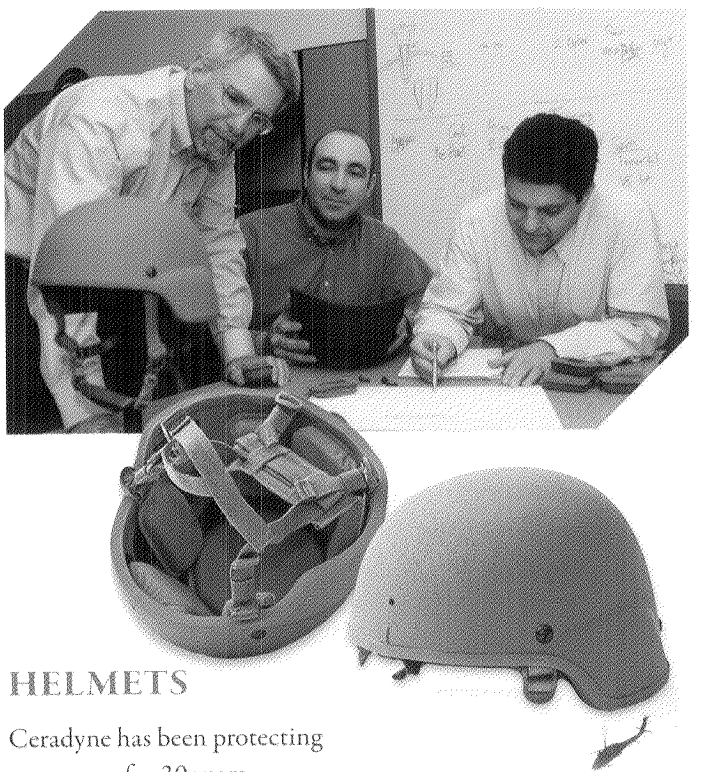
Chief Executive Officer, President, Chairman of the Board

DEFENSE

BODY ARMOR

Ceradyne's lightweight ceramic body armor was the revenue and income driver of the Company. We shipped almost $2 billion of our body armor during the past 10 years and saved countless American lives in Iraq and now Afghanistan. The Company was a pioneer developer of its advanced technical ceramic armor systems dating back to the early 1980s. This led to the development of a series of body armor systems for use by our warfighters in various battle environments. The 2004 acquisition of ESK Ceramics, the Company's primary raw ceramic materials supplier, directly led to Ceradyne's position as the only fully vertically integrated ceramic armor supplier from powder to ceramic to armor assembly.

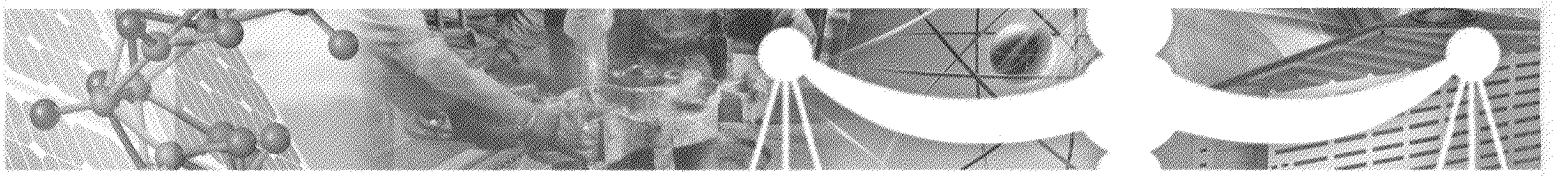
Shown above, a variety of Ceradyne body armor systems designed for specific ergonomic comfort and protection.



HELMETS

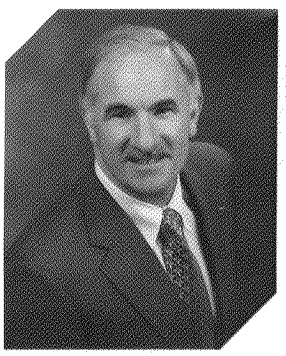
Ceradyne has been protecting our troops for 30 years—initially with our lightweight ceramic armor for military helicopters and then body armor and military vehicles. The most vulnerable area of the body, the head, was not in our sphere. Yet, head protection has been used by warriors for thousands of years—think knights in shining armor. The Company interacts almost daily with military and civilian Department of Defense agencies that are often the identical personnel who are specifying and procuring military helmets. Therefore, it was a natural progression for Ceradyne to take advantage of a target of opportunity and acquire the assets and proprietary seamless technology of Diaphorm Technologies in 2009. We are currently fully engaged in the design and certification of the next generation of military combat helmets.

Shown above, Bob Miller, General Manager, Vin Borbone, Engineering Manager, and Vasilios Brachos, R&D Operations Manager—the combat helmet team at Ceradyne Diaphorm.

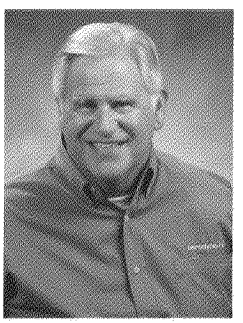


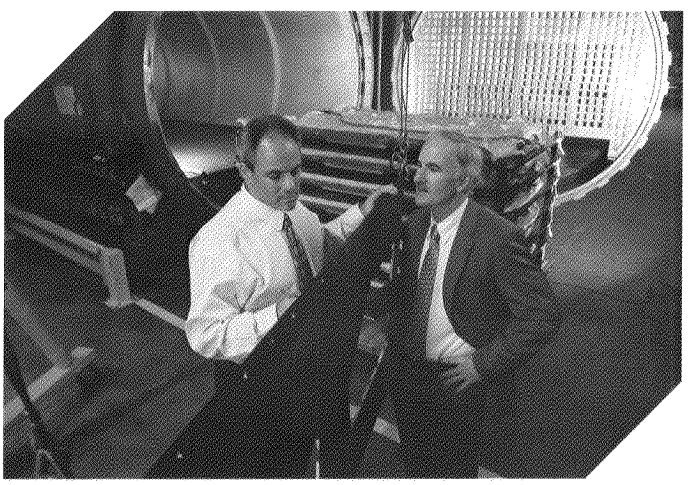
VEHICLE ARMOR

It is vital that military vehicles be protected in modern warfare with armor capable of defeating projectiles as well as lethal attack explosives such as IEDs (Improvised Explosive Devices). The armor must be structurally sound and as lightweight as possible. Ceradyne has developed several metal-ceramic-composite systems for use in various military vehicles. The Company has developed a vehicle armor system which is compliant with U.S. requirements for LTAS (Long Term Armor Strategy).



Ceradyne has recently begun production on a number of military vehicle components for the Humvee and M-ATV.



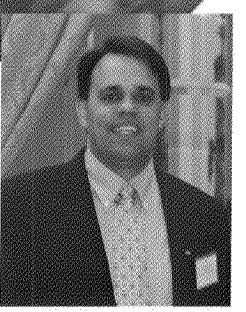


Top left - David Reed, President of North American Operations, oversees all defense, solar, semiconductor and nuclear operations.

Middle - Marc King, President of Ceradyne Armor Systems, is responsible for all armor programs and is based in the company's Washington, D.C. office.

Bottom - Michael Eckhaus, Director of Operations ACO (Advanced Ceramic Operations), and David Reed inspect vehicle panels in the Irvine, California facility.

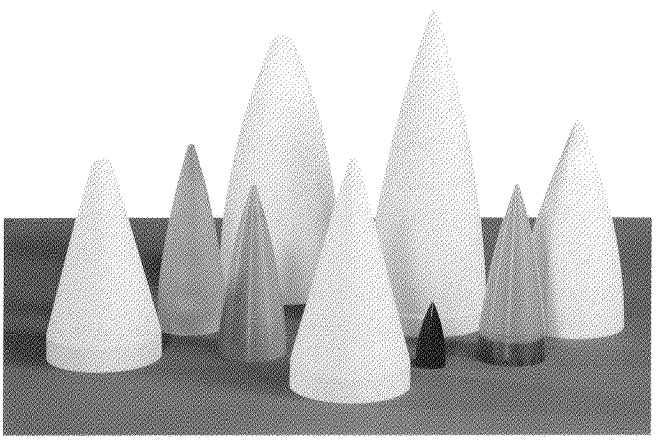
The missile shown in flight above is the PAC-3 (courtesy, Lockheed Missile and Space Division).



Bruce Lockhart, President of Ceradyne Thermo Materials.

RADOMES

The front tips of military missiles must have an aerodynamic shaped cover called a radome or nose cone. This radome must be structurally sound, transparent to electronic impulses and able to withstand extreme abrasion such as occurs when traveling through a rain storm at extreme velocities. Ceradyne has developed several advanced technical ceramic compositions for various military missile radomes. At its Scottdale, Georgia facility, the Company develops and manufactures not only the ceramic but additionally diamond machines the radome to exacting tolerances. We believe this is the only vertically integrated facility of its kind in the U.S.

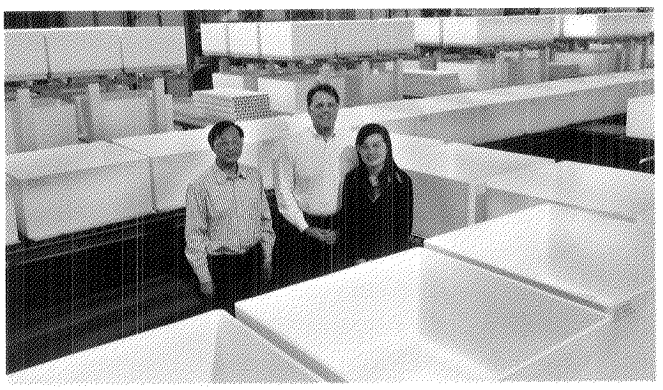


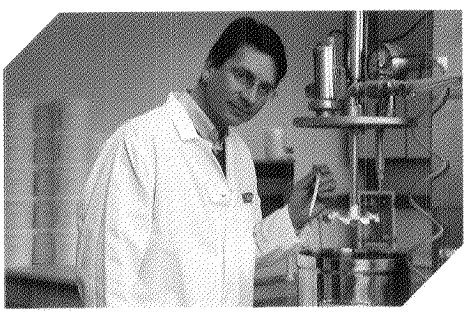
Shown above are Ceradyne ceramic radomes of differing compositions for several different missile systems.

EMERGING MARKETS

SOLAR

The solar industry is rapidly growing as the world responds to the price of oil and the need for "green" sustainable alternative energy sources. The primary solar system consists of flat silicon plates (usually called wafers) in a rectangular array. This photovoltaic solar panel converts approximately 16% of the sunlight striking it into electricity. It is estimated that over 80% of solar power is generated in this manner. Although solar power represents less than 1% of electricity





generated, the projected growth rate in 2010 compared to 2009 is 50% with growth estimated to exceed 35% per year for at least five years. These projections are at the core of our optimistic outlook and Capital Expenditure commitment to capacity expansion in China.

Ceradyne produces the physically large, square crucibles (containers—see photos) that are used to hold the molten silicon which is melted by Ceradyne's photovoltaic solar cell customers. These crucibles are not reusable and are manufactured to extremely high purity and structural integrity specifications.

Above - Dr. Christoph Lesniak, ESK Ceramics Vice President R&D, evaluating proprietary hard coating, pre-coat formula for solar crucibles.

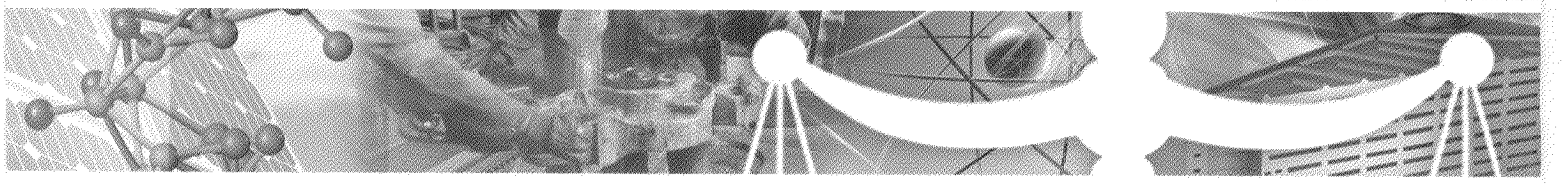
Ceradyne crucibles are state-of-the-art quality and are produced uncoated or with a patented hard-fired coating. These properties and our extensive production capacity in China allow us to differentiate our product from the competition.

The 2007 acquisition of Minco in Midway, Tennessee, provided Ceradyne its source of high purity fused silica powders which allowed Ceradyne to continue its vertical integration strategy.

Top right - Left to right. Lu Ning, Vice General Manager Sales and Administration, Ceradyne Tianjin Technical Ceramics, James Griffin, Operations Development Manager, Ceradyne Thermo Materials, Bruce Lockhart, President, Ceradyne Thermo Materials, Dr. Shuhai Wang, General Manager, Ceradyne Tianjin Technical Ceramics, at Ceradyne's 13.7 acre new plant site in Tianjin, China.

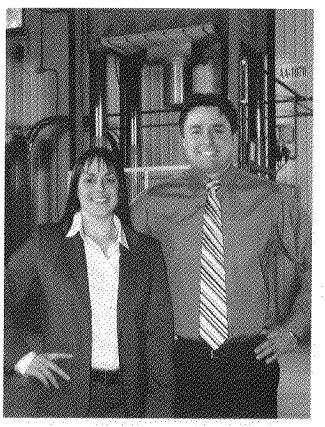
Above - Left to right. Amanda Samulski, Sales Manager Fired Industrial Products, Scott Higgenbottom, R&D Manager, Scott Davis, Sr. Sales Manager Crucibles, at Ceradyne Thermo Materials, Scottdale, Georgia.

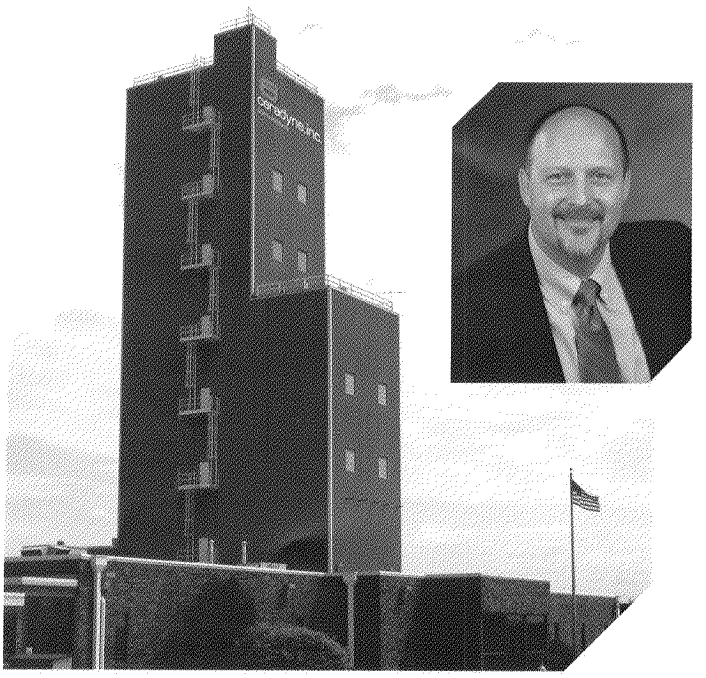
Top left - Ceradyne's Tianjin, China (existing) facility. Left to right, Dr. Shuhai Wang, General Manager, Bruce Lockhart, President Ceradyne Thermo Materials, Lu Ning, Vice General Manager Sales and Administration.

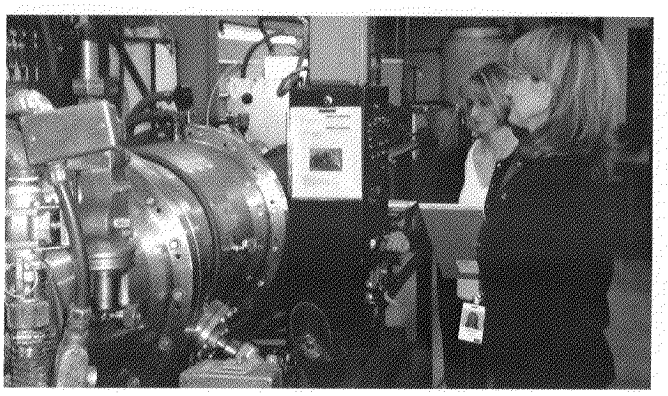


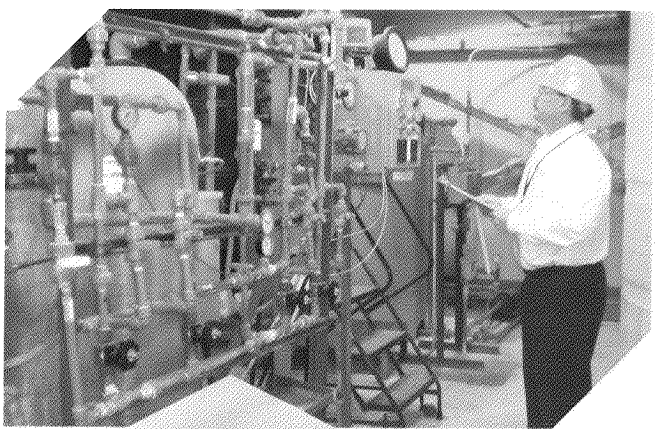
NUCLEAR

Ceradyne's commitment to nuclear energy is based on its expertise related to the neutron absorbing characteristics of the element boron (B) and the boron isotope ^{10}B. Our primary nuclear manufacturing facilities are Ceradyne Canada in Chicoutimi, Quebec, Canada, and our isotope separation facility, Ceradyne Boron Products in Quapaw, Oklahoma. However, ESK Ceramics in Kempten, Germany, and their boron carbide (B_4C) capabilities are also part of the Company's overall nuclear focus. The international nature of the proposed new nuclear power plants is being addressed on a global basis by Ceradyne's global marketing teams to be based in China.









Shown above - Ceradyne Canada's BORAL® nuclear waste containment structural segments.

Shown above, top - Michael Kraft, Ceradyne Vice President, responsible for nuclear and semiconductor products, is shown by the large isotope separation tower in Quapaw, Oklahoma.

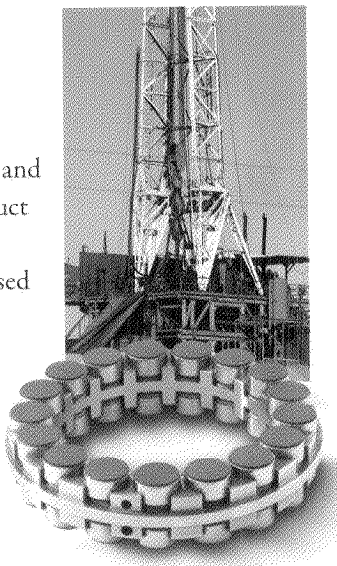
Shown above - Sandi Rushin and Beth Utley, Program Managers of Ceradyne Boron Products, view high purity heating furnace.

Shown left, top - Annie Villeneuve, Sales-Process Engineer, Eric Cantin, Director General, at Ceradyne Canada, which produces neutron absorbing structural panels primarily for on-site physical storage of spent nuclear fuel pellets. Shown in photo is the Company's proprietary hot press process used to produce its recently introduced BORTEC® components.

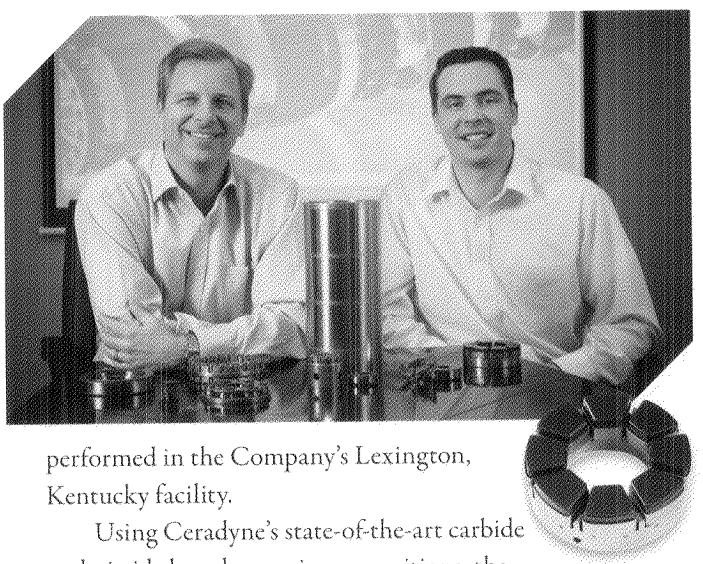
Shown left, bottom - Dennis Manning, General Manager, Ceradyne Boron Products, in the isotope separation facility designed to separate the isotopes of boron into ^{11}B (for semiconductor use) and ^{10}B (for nuclear power plants).

EMERGING MARKETS

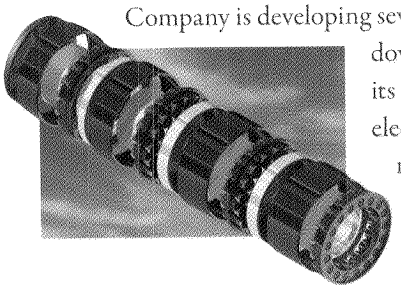
OIL & GAS

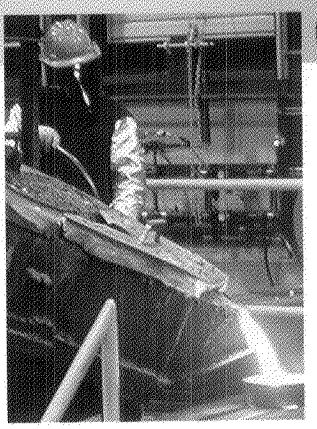


Ceradyne participates in a wide range of products used in the oil and gas industry for exploration and recovery. Our most recent product development is the Company's "stacked" bearing (see photos) used especially for horizontal or slant drilling in difficult formations. This patented design uses the Company's silicon carbide ceramic discs as the bearing surface. Prototype 2009 downhole tests indicated significant improvement in performance when compared to the industry's more traditional sealed ball bearing approach. The design and manufacturing of these bearings is being performed in the Company's Lexington, Kentucky facility.



Using Ceradyne's state-of-the-art carbide and nitride based ceramic compositions, the Company is developing several new products for downhole drilling as well as its high fracture-resistant, electrical-insulating silicon nitride for oil "logging" operations.





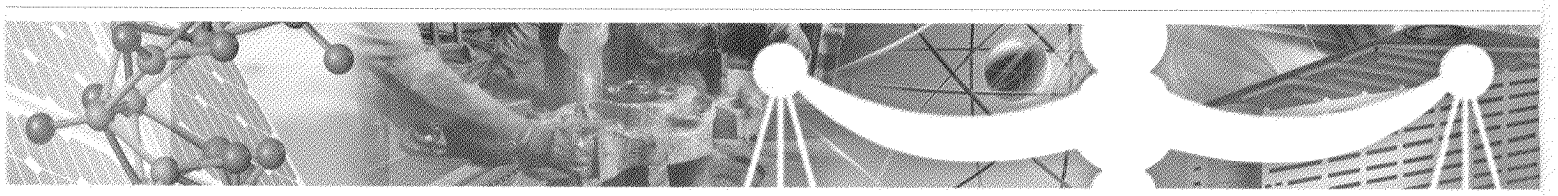
Dr. Thomas Juengling, President ESK Ceramics.

ALUMINUM SMELTING

Dr. Thomas Juengling (*shown above*) leads Ceradyne's ESK Ceramics' efforts related to aluminum smelting. The aluminum smelting process traditionally uses carbon based electrodes to heat the smelter in order to convert elements of the mineral bauxite into the light metal aluminum. ESK Ceramics has developed a non-carbon solution for the cathode portion—electrically conductive titanium diboride (TiB_2). Titanium diboride uses less electricity, lasts longer and increases productivity as well as not producing the greenhouse gas, carbon dioxide. The Company currently is in a multi-year prototype and test program in actual smelter operations.

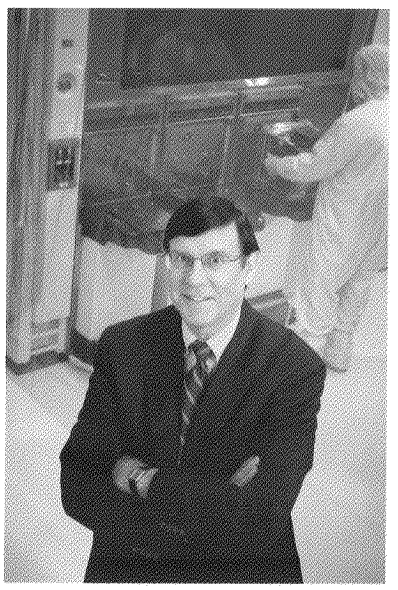
Middle, left - Jeff Waldal, President Semicon Associates, and Russ Ide, Product Manager, Ceradyne Bearing Technologies.

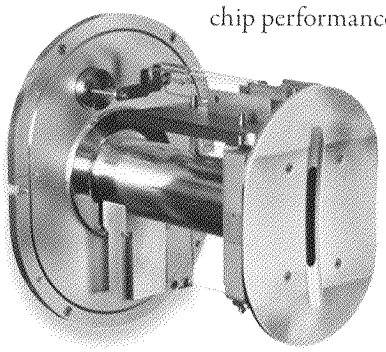
Bottom left - Ceradyne's stacked bearing used in oil and gas drilling operations.



SEMICONDUCTOR/ ION IMPLANTATION

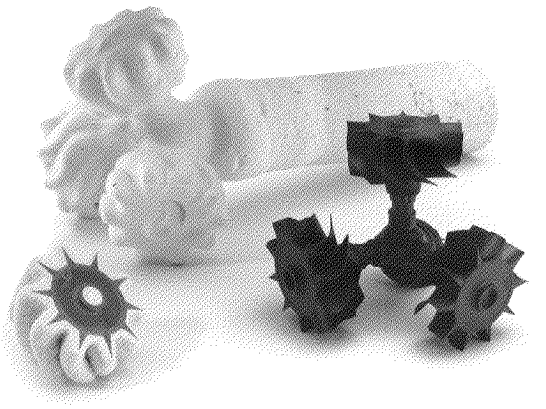
In order to produce a semiconductor chip, often a large (typical 300 mm) silicon wafer is doped with the element boron (B). The most widely used technology to accomplish this is an ion implantation method whereby the molecule BF_3 is ionized, resulting in boron atoms which are implanted in the wafer. Ceradyne's SemEquip division is based on a patented "disruptive technology" where the ClusterBoron® molecule $B_{18}H_{22}$ is used as the starting material. Once ionized, a multiple increased level of boron atoms (compared to the traditional method) is implanted. This process results in increased productivity for the semiconductor manufacturer and enhanced chip performance.





Top - Dr. Dale Jacobson, Senior Vice President of SemEquip, is shown with a "real time" ion implanter.

Above - Shown is the actual ionization chamber which Ceradyne's SemEquip produces and markets along with the ClusterBoron® $B_{18}H_{22}$.



PRECISION INVESTMENT CASTING (PIC)

In many foundries, investment casting, using ceramic "shells" formed via the lost wax process, is the main technology used to cast complicated or difficult to machine metal parts. Once the master part is formed, wax replicas are used as a disposable tool. This wax tool is "dipped" into a ceramic slurry and cured. The "dipping" process is repeated multiple times with the final ceramic shell being fired at an elevated temperature causing the wax to melt and run out of the hardened ceramic shell. The resulting product is a ceramic mold for hot molten metal casting. The final metal part will only be as precise as the interior of the ceramic shell.

Ceradyne's Minco division has developed a proprietary mold formulation for its PIC market. This allows Minco's customers to cast almost perfect near net shape parts with minimal final finishing required.

Shown above - Ceradyne PIC ceramic shell used to produce three metal turbo charger parts with each casting.

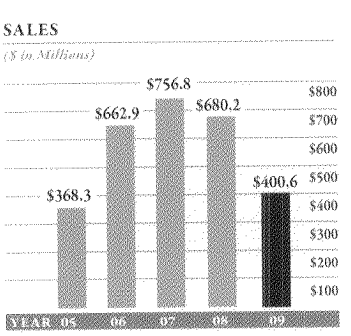
FINANCIALS

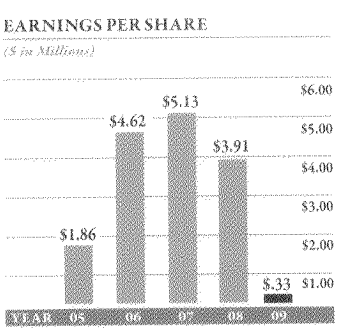
Consistent with our direction of 'The Global Path Forward' is a requirement that we develop the operating infrastructure in areas of finance, human relations, information technologies and global insurance programs to support the demands of an ever increasingly complex global business environment. In addition to this infrastructure, part of our success is dependent upon the development and maintenance of business processes and best practices in all areas of our business to maximize efficiencies. This year marked the first one where we initiated a worldwide insurance program to reduce our costs and our business risks. We also continued on our path of implementing SAP® as our enterprise resource planning system throughout all our operations. This implementation allows us, among other things, to improve our information systems to enable us to reduce costs, improve our supply chain and operate as a world-class manufacturing company. One of the many benefits from the implementation of SAP is that our financial reporting infrastructure continues to improve its performance of delivering timely financial data that ensures transparent information to our key decision makers among all our operations. Additionally, it allows us to improve and produce financial information consistent with the requirements of a public company reporting to the U.S. Securities and Exchange Commission. In 2009, we strengthened both our balance sheet and liquidity. Our large cash position allowed us to make advantageous open market purchases of our common stock and part of our convertible bond. Who says the Finance Department can't be a profit center?

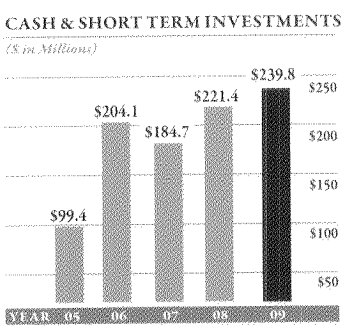
Jerrold J. Pellizzon, *Chief Financial Officer*

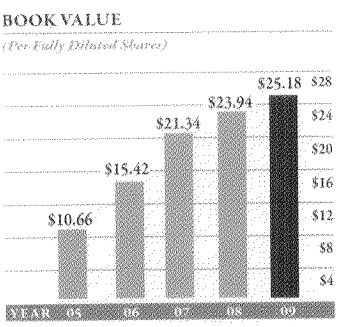
Sitting right to left, Ceradyne, Inc.: Jerrold J. Pellizzon, Chief Financial Officer and Terry Hart, Director Human Resources.

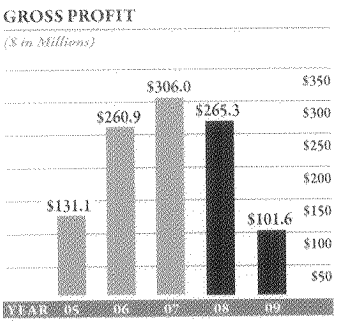
Standing right to left, ESK Ceramics: Evelyn Koch, Sr. Manager Human Resources, Clemens Kippes, Executive Vice President; Ceradyne, Inc.: Cary Okawa, Corporate Controller, Mark Huff, Director of MIS.











SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

(Mark One)

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

For the fiscal year ended December 31, 2009

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

For the transition period from _____ to _____

Commission file number 000-13059

CERADYNE, INC.

(Exact name of registrant as specified in its charter)

Delaware	**33-0055414**
(State or other jurisdiction of Incorporation or organization)	*(I.R.S. Employer Identification No.)*
3169 Red Hill Avenue, Costa Mesa, California	**92626**
(Address of principal executive offices)	*(Zip Code)*

(714) 549-0421

(Registrant's telephone number, including area code)

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

Title of Each Class:	**Name of Each Exchange on Which Registered:**
Common Stock, par value $0.01 per share	**The NASDAQ Stock Market LLC**

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

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act of 1933. YES ☐ NO ☑

Indicate by check mark whether the registrant is not required to file reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934. YES ☐ NO ☑

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

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

Indicate by check mark if disclosure of delinquent filers 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 ☐ Accelerated filer ☑ Non-accelerated filer ☐ Smaller reporting company ☐

(Do not check if a smaller reporting company)

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

The aggregate market value of registrant's common stock held by non-affiliates as of June 30, 2009 (the last business day of registrant's most recently completed second fiscal quarter) was approximately $430.1 million.

As of February 19, 2010, there were 25,406,190 shares of registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE: Portions of registrant's definitive proxy statement for its annual meeting of stockholders to be held on June 8, 2010 are incorporated by reference into Part III of this Form 10-K.

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PART I

NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Forward-looking statements are those that predict or describe future events or trends and that do not relate solely to historical matters. You can generally identify forward-looking statements as statements containing the words "believe," "expect," "will," "anticipate," "intend," "estimate," "project," "plan," "assume" or other similar expressions, or negatives of those expressions, although not all forward-looking statements contain these identifying words. All statements contained in this report regarding our future strategy, future operations, projected financial position, estimated future revenues, projected costs, future prospects, the future of our industries and results that might be obtained by pursuing management's current plans and objectives are forward-looking statements.

You should not place undue reliance on our forward-looking statements because the matters they describe are subject to known and unknown risks, uncertainties and other unpredictable factors, many of which are beyond our control. Our forward-looking statements are based on the information currently available to us and speak only as of the date of the filing of this report. New risks and uncertainties arise from time to time, and it is impossible for us to predict these matters or how they may affect us. Over time, our actual results, performance or achievements will likely differ from the anticipated results, performance or achievements that are expressed or implied by our forward-looking statements, and such difference might be significant and materially adverse to our security holders. We do not undertake and specifically decline any obligation to update any forward-looking statements or to publicly announce the results of any revisions to any statements to reflect new information or future events or developments.

We have identified some of the important factors that could cause future events to differ from our current expectations and they are described in this report in Item 1A under the caption "Risk Factors," in Item 7 under the caption "Management's Discussion and Analysis of Financial Condition and Results of Operations," and in Item 7A under the caption "Quantitative and Qualitative Disclosures About Market Risk," all of which you should review carefully.

ITEM 1. *BUSINESS*

Introduction

We develop, manufacture and market advanced technical ceramic products, ceramic powders and components for defense, industrial, automotive/diesel and commercial applications.

In many high performance applications, products made of advanced technical ceramics meet specifications that similar products made of metals, plastics or traditional ceramics cannot achieve. Advanced technical ceramics can withstand extremely high temperatures, combine hardness with light weight, are highly resistant to corrosion and wear, and often have excellent electrical capabilities, special electronic properties and low friction characteristics.

Our products include:

- lightweight ceramic armor and enhanced combat helmets for soldiers and other military applications;
- ceramic industrial components for erosion and corrosion resistant applications;
- ceramic powders, including boron carbide, boron nitride, titanium diboride, calcium hexaboride, zirconium diboride and fused silica, which are used in manufacturing armor and a broad range of industrial products and consumer products;
- evaporation boats for metallization of materials for food packaging and other products;
- durable, reduced friction, ceramic diesel engine components;
- functional and frictional coatings primarily for automotive applications;

- translucent ceramic orthodontic brackets;
- ceramic-impregnated dispenser cathodes for microwave tubes, lasers and cathode ray tubes;
- ceramic crucibles for melting silicon in the photovoltaic solar cell manufacturing process;
- ceramic missile radomes (nose cones) for the defense industry;
- fused silica powders for precision investment casting (PIC);
- neutron absorbing materials, structural and non-structural, in combination with aluminum metal matrix composite that serve as part of a barrier system for spent fuel wet and dry storage in the nuclear industry, and non-structural neutron absorbing materials for use in the transport of nuclear fresh fuel rods;
- nuclear chemistry products for use in pressurized water reactors and boiling water reactors;
- boron dopant chemicals for semiconductor silicon manufacturing and for ion implanting of silicon wafers; and
- ceramic bearings and bushings for oil drilling and fluid handling pumps.

Our customers include the U.S. government, prime government contractors and industrial, automotive, diesel and commercial manufacturers in both domestic and international markets.

The principal factor contributing to our growth in sales from 2002 through 2007 was demand by the U.S. military for ceramic body armor that protects soldiers, which was primarily the result of military conflicts such as those in Iraq and Afghanistan. This demand was driven by recognition of the performance and life saving benefits of utilizing advanced technical ceramics in lightweight body armor. Our sales also increased from 2004 through 2007 because of our acquisition of ESK Ceramics in August 2004, our acquisition of Minco, Inc. in July 2007, our acquisition of EaglePicher Boron, LLC in August 2007, which we renamed Boron Products, LLC, and the recent expansion of our operations into China. Our sales declined in 2008 primarily because of reduction in shipments of body armor. Our sales declined in 2009 primarily because of a continued reduction in shipments of body armor and also due to a reduction in shipments of our industrial products because of the severe economic recession.

Shipments of lightweight ceramic body armor represented $170.0 million or 42.4% of our total revenues in 2009, $385.0 million or 56.6% of our total revenues in 2008, and $535.3 million or 70.7% of our total revenues in 2007. Of these amounts, ESAPI (enhanced small arms protective inserts) body armor represented 26.4% of our total body armor shipments in 2009, 50.2% of our total body armor shipments in 2008, and 57.0% of our total body armor shipments in 2007.

Shipments of XSAPI, the newest ballistic threat generation of ceramic body armor plates, represented $48.2 million, or 12.0% of our total revenues and 28.4% of our total body armor shipments in 2009. These shipments were made against an Indefinite Delivery/Indefinite Quantity contract awarded to us in October 2008. This five-year contract has a maximum value of $2.3 billion and allows the U.S. government to order either XSAPI or ESAPI body armor from us. To date, we have received one delivery order under this contract in March 2009 for $76.8 million of XSAPI body armor. We anticipate shipping the remaining balance of this order, $28.6 million, during the first quarter of 2010. Since it is our policy to include in backlog only delivery orders with firm delivery dates, our backlog at December 31, 2009 does not include any amounts under this ID/IQ contract except for the balance of the initial delivery order.

Based on informal discussions with U.S. Army personnel, we believe the U.S. Army has decided that the current XSAPI weight from all suppliers, although in compliance with the weight limitations specified in the ID/IQ contract, is too heavy for use in the current military campaign in Afghanistan. Consequently, unless the U.S. Army changes its position regarding weight or the ballistic threat that the XSAPI plate defeats becomes more prevalent, we do not expect any additional orders for the current version of XSAPI ceramic body armor plates.

We are developing ESAPI and XSAPI designs that weigh 10% to 15% less than the current designs and will offer these to the U.S. Army and other Department of Defense users once these designs meet the current ballistic requirements. There is no assurance that we will be successful with these lighter weight designs.

We do have qualified lightweight body armor inserts that are viable for the Afghanistan campaign and these designs have been offered to the Army and the Marines. These designs offer significant weight savings at a reduced level of protection from the currently fielded ESAPI design. The Army and the Marines have shown interest in these designs and we continue to pursue these opportunities, but there is no assurance that we will be successful.

We believe there will continue to be a viable replacement business for body armor inserts that is procured through the Defense Supply Center Philadelphia (DSCP), and we expect continued procurements for replacement inserts during 2010. We will also continue to bid on Foreign Military Sales (FMS) for the first generation of inserts called Small Arms Protective Inserts (SAPI) through our existing ID/IQ contract with Aberdeen Proving Grounds.

Although we believe that demand for ceramic body armor will continue for many years, the quantity and timing of government orders depends on a number of factors outside of our control, such as the amount of U.S. defense budget appropriations and the level of international conflicts. Moreover, ceramic armor contracts generally are awarded in an open competitive bidding process and may be cancelled by the U.S. government at any time without penalty. Therefore, our future level of sales of ceramic body armor will depend on the U.S. military's continued demand for these products and our ability to successfully compete for and retain this business.

As a result of the ESK acquisition, we believe that we are the only ceramic body armor manufacturer with a vertically integrated approach of designing much of our key equipment and controlling the manufacturing process from the principal raw material powder to finished product.

Our Minco operation manufactures fused silica powders for a wide range of industrial applications and is a key supplier of this raw material to our Thermo Materials division. Our Boron Products operation produces the boron isotope ^{10}B. This isotope is a strong neutron absorber and is used for both nuclear waste containment and nuclear power plant neutron radiation critical control. Boron Products also produces complementary chemical isotopes used in the normal operation and control of nuclear power plants, and the boron isotope ^{11}B, which is used in the semiconductor manufacturing process as an additive to semiconductor grade silicon as a "doping" agent and where ultra high purity boron is required.

In June 2008, we purchased certain assets and technology related to proprietary technical ceramic bearings used for "downhole" oil drilling and for coal bed methane pumps and steam assisted oil extraction pumps. These assets and the intellectual property were acquired from a privately-owned business located in Greenwich, Rhode Island. This operation, which we now call Ceradyne Bearing Technology, has been relocated to our Lexington, Kentucky, facility. These bearings and pumps incorporate ceramic parts supplied by our ESK Ceramics subsidiary.

In August 2008, we acquired SemEquip, Inc., a late-stage startup technology company located in Billerica, Massachusetts. SemEquip develops and markets "cluster molecules" such as $B_{18}H_{22}$ for use in the ion implantation of boron (B) in the manufacture of semiconductors. SemEquip owns a portfolio of approximately 107 issued patents and pending patent applications.

In June 2009, we acquired substantially all of the business and assets and all technology and intellectual property related to ballistic combat and non-combat helmets of Diaphorm Technologies, LLC, based in Salem, New Hampshire. In connection with this acquisition, we submitted a proposal to the U.S. Marine Corps Systems Command in June 2009 in response to a solicitation for the procurement of Enhanced Combat Helmets (ECH), which are intended to provide substantially increased levels of protection compared to combat helmets now in use. In late July 2009, in response to our proposal, the U.S. Marine Corps System Command awarded us a contract for development test helmets valued at approximately $1.2 million. We delivered all of these test helmets in the quarter ended September 30, 2009. Subsequent to our delivery of the Enhanced Combat Helmets development test helmets in the quarter ended September 30, 2009, we were notified that the

initial helmets from all potential suppliers did not meet all of the legacy ballistic and non-ballistic test protocols. Therefore, the U.S. Marine Corps System Command delayed the program to allow a full review of the test protocols and in this light have recently issued a revised product description. On February 1, 2010, the Marines issued a modification to the contract requesting us and our competitors to submit additional development test helmets for testing early in the second quarter 2010. These changes have delayed the original projection for fielding these helmets from late 2010 to the first quarter of 2011. The U.S. Marine Corps and the U.S. Army have the option under this contract to procure up to a maximum of 246,840 helmets. We expect 2010 revenues from our police protection helmet business and this contract for additional test helmets to be approximately $7.0 to $9.0 million. Our strategy regarding this acquisition is to combine our successful track record in body armor programs with the proprietary helmet-forming technologies acquired from Diaphorm to create a world class manufacturer of Enhanced Combat Helmets.

We believe that numerous applications for ceramic products and technology have the potential to drive long-term growth of our business. Examples of applications for which we have developed or are currently developing products include:

- lightweight ceramic armor for military helmets, vehicles, boats and aircraft;
- ceramic components that have the potential to facilitate the extraction of oil from oil sands on a cost-effective basis;
- ceramic materials that have the potential to reduce significantly the cost of producing molten aluminum;
- chemical micro reactors, heat exchangers and hydraulic trim valves produced with our proprietary technology that have the potential to provide an economical substitute for steel in extreme environments;
- high purity fused silica ceramic crucibles used by several photovoltaic cell manufacturers in their silicon melting operation in order to produce polycrystalline silicon;
- storage containers made with our boron carbide powder that have the potential to be used for long-term containment of nuclear waste from nuclear power plants;
- small complicated ceramic components made using our injection molding technology that have the potential to be used as medical implants;
- ceramic bearing and bushing assemblies designed for longer life due to their rugged construction and the erosion, corrosion and lubricity characteristics of the ceramic bearing surface; and
- cluster chemicals such as $B_{18}H_{22}$ and cluster ion implantation hardware required to facilitate the manufacture of advanced semiconductor chips.

To meet increasingly higher performance standards, advanced technical ceramics have stringent technical manufacturing requirements. We have designed and customized our facilities and capital equipment to enhance our advanced technical ceramic manufacturing processes. We have also implemented lean manufacturing initiatives to lower costs and drive further efficiencies in our manufacturing processes, and are expanding our facilities in China to add manufacturing capacity for the production of ceramic crucibles.

We conduct our operations through six operating segments: our Advanced Ceramic Operations division, our ESK Ceramics subsidiary, our Semicon Associates division, our Thermo Materials division, our Ceradyne Canada subsidiary and our Boron segment, which is comprised of our Boron Products and SemEquip subsidiaries.

Advanced Technical Ceramics

Evolving customer requirements in industrial processing, military systems, microwave electronics, automotive/diesel engine products and orthodontics have generated a demand for high performance materials

with properties not readily available in metals, plastics or traditional ceramics. The following table compares favorable typical properties of selected advanced technical ceramics with those of other selected materials.

Materials	Melting Point (Degrees Fahrenheit)	Hardness (Vickers Scale)	Chemical Resistance to Acids	Electrical Properties	Density (Grams per Cubic Centimeter)
Advanced technical ceramics . .	2,500 to 6,900	Up to 3,200	Excellent	From excellent insulators to conductors	2.5 to 4.5
High strength alloy steel	2,500 to 2,700	Up to 900	Fair	Conductors	7.0 to 9.0
High performance plastics	275 to 750	Up to 10	Good to Excellent	Good to excellent insulators	1.0 to 2.0

Ceramics such as earthenware, glass, brick and tile have been made for centuries and are still in common use today. The inertness and lasting qualities of ceramics are illustrated by artifacts uncovered intact in modern times. Almost all traditional ceramics, including those of ancient times, were based on clay. In the last fifty years, significant advances have been made in ceramic technology by applying specialized manufacturing processes to produce synthetic ceramic powders. Developments in aluminum oxide and other oxides resulted in ceramics that were excellent electrical insulators and were capable of withstanding high temperatures. In addition, industry advancements in ceramic material science have led to the development of a class of ceramics that are generally non-oxides, such as carbides, borides and nitrides. These non-oxide ceramics generally have mechanical properties that exceed those of oxide ceramics developed in prior periods. Collectively, these developments resulted in the ability to manufacture ceramics with great strength at elevated temperatures and reduced fragility, historically a primary limitation of ceramics. The products that have emerged from these advances are known as advanced technical (or structural) ceramics.

The properties of advanced technical ceramics present a compelling case for their use in a wide array of modern applications. However, to meet increasingly higher performance standards, advanced technical ceramics have stringent technical manufacturing requirements. First, manufacturers must start with fine synthetic ceramic powders of very high and consistent quality that are produced using a highly technical and specialized manufacturing process. Few suppliers of these high quality starting powders exist today and not all of these suppliers can consistently produce starting powders of the necessary quality and consistency in the volumes required by ceramic manufacturers. Second, the specialized equipment required to manufacture advanced technical ceramics must often be custom designed and is not readily available, requiring a significant investment in capital equipment and facilities to allow volume production. Manufacturing costs associated with the production of these ceramics are higher than those of the materials they replace. A portion of these costs is related to the need for diamond grinding finished components to exacting tolerances. To accelerate the use of advanced technical ceramics as a direct replacement for metals, plastics or traditional ceramics, these manufacturing costs need to be reduced. Cost reduction efforts include the production of blanks or feed stock to "near net shape" configurations in order to reduce the amount of diamond grinding needed. Manufacturers are also seeking to reduce costs through the use of high volume automated processing and finishing equipment and techniques, and to achieve economies of scale in areas such as powder processing, blank fabrication, firing, finishing and inspection.

Our Solution

We develop, manufacture and market advanced technical ceramic products, ceramic powders and components for defense, industrial, automotive/diesel and commercial applications. The table on the following pages illustrates some of the solutions we have designed to meet market opportunities and demands.

Market Opportunity	Demands of the Market	Our Solution
	Defense	
Lightweight ceramic body armor and boron carbide powders	Due to the proliferation of automatic weapons in tactical operations and terrorist conflicts, it has become necessary for vests or other armor to stop machine gun bullets while being light enough in weight to allow freedom of movement without undue fatigue.	We have developed lightweight bullet resistant ceramic body armor solutions, including SAPI (small arms protective inserts), ESAPI (enhanced small arms protective inserts), ESBI (enhanced side ballistic inserts) and other systems. These products generally consist of hot pressed Ceralloy® 546 (boron carbide) or hot pressed Ceralloy® 146 (silicon carbide) and other ceramic coupled with backings such as Dyneema®, Spectra Shield® or Kevlar® purchased from third parties. Our subsidiary, ESK Ceramics, is a major manufacturer of boron carbide powders, which are used by us and our competitors to manufacture lightweight ceramic body armor.
Lightweight ceramic armor for military ground-based vehicles, boats and aircraft	Military ground-based vehicles, boats and aircraft require protection against automatic weapons. Weight, cost and vehicle compatibility are critical technical parameters.	We have developed a series of lightweight, cost effective ceramic armor systems and attachment mechanisms that have multi-hit protection at various threat levels and can be added to an existing vehicle or designed into new vehicles, boats and aircraft.
Missile radomes (nose cones)	Defensive tactical missile systems such as the PAC-3 (Patriot Advanced Capability) are designed to fly at extremely high velocities, survive tight turning radii and operate in severe weather conditions. These operating conditions preclude the use of conventional polymer materials for radomes.	We have developed advanced technical ceramic radomes made of fused silica ceramics which meet certain specifications of these tactical defensive missile systems, and have developed a modified silicon nitride radomes for more demanding requirements. We have also established a precision diamond grinding capability to finish these radomes.

Market Opportunity	Demands of the Market	Our Solution
Lightweight ballistic rated helmets that provide increased protection for our troops.	In order to meet survivability goals without affecting the soldier's functionality, improvements in head gear are needed for soldiers. Unfortunately, combat helmets have only seen small incremental improvements during the last twenty years. The ballistic material, generally thermo-set Aramid based, used in these legacy helmets have remained very similar and have reached their maximum performance.	We are manufacturing and demonstrating the new ECH (Enhanced Combat Helmet) that offers over a 35% improvement against fragmentation threats for the U.S. Marines and Army. This is accomplished by utilizing new thermoplastic UHMWPE (Ultra High Molecule Weight Poly Ethylene) materials recently developed by both Dyneema and Honeywell which offer improved ballistic performance at lighter weights vs. thermo-set Aramids. Our proprietary Seamless Ballistic™ processing technique enhances the performance of the ballistic material while cost effectively manufacturing it to the required protective helmet shape and meeting other legacy specifications of the U.S. military for head gear protection.
	Industrial	
Advanced ceramic structural parts	Applications such as high performance pump seals, blast nozzles, chemical processing, and pulp and paper manufacturing, require components with corrosion and wear resistant properties, mechanical strength, hardness, favorable friction properties and the ability to withstand extreme temperature fluctuations.	We have developed products for each of these applications which have excellent wear resistant properties, lightness, hardness and the ability to withstand extremely high temperatures. We manufacture these products using primarily our EKasic® silicon carbide, silicon nitride and boron carbide ceramic.

Market Opportunity	Demands of the Market	Our Solution
Boron compounds and metallurgy	Increasing productivity requirements in primary industries are met with boron nitride powders, which are used as high temperature lubricants and release agents. As filler material in polymers and silicones, boron nitride is used for heat conducting and insulating films in the electronic industry. Aluminum and steel foundries increasingly require consumables with longer lifetimes to improve their overall efficiencies.	In the aluminum extrusion industry, boron nitride powder, spray or suspension is used as a release agent to keep the hot metal away from the extrusion die. In furnace and high temperature applications it is used as an insulation sleeve or support for graphite heaters. Boron nitride's largely inert behavior towards molten metals makes it an ideal material for applications in direct contact with such materials. We supply break rings for horizontal continuous casting and side-dams for thin strip casting. We also supply high density and high purity silicon nitride products for aluminum-foundries worldwide.
Evaporation boats	Packaging materials used for snack and other food products are often lined with an aluminum coating to preserve shelf life. The coating, or metallization, process requires a tool, called an evaporation boat, which can withstand the high temperature and corrosiveness of melted aluminum.	We have developed evaporation boats, typically made using boron nitride/titanium diboride, that can withstand direct contact with highly corrosive liquids, such as melted aluminum. These evaporation boats are used in the metallization of various surfaces, including paper, plastic and glass.
Industrial equipment requiring critical protection against severe wear or corrosion	Failure of industrial equipment is often caused by premature wearing out of surfaces due to abrasive action. An example is paper making equipment where the pulp slurry runs at 5,000 feet per minute.	Sintered reaction bonded silicon nitride (SRBSN) industrial wear parts are designed to replace hard metal or oxide ceramic wear surfaces, resulting in greater productivity, quality and longer uptime. Our proprietary advanced technical ceramic side dams are used in the production of steel in the continuous casting process.

Market Opportunity	Demands of the Market	Our Solution
Photovoltaic (solar cell) manufacturing requiring crucibles for melting silicon	In order to produce cost effective solar cell components, it is necessary to melt silicon in a crucible or vessel that will be able to contain the molten silicon yet not allow unwanted chemicals to contaminate the melt.	We have developed a high purity fused silica ceramic crucible (receptacle) which is being used by several photovoltaic cell manufacturers in their silicon melting operation in order to produce polycrystalline silicon. We also manufacture the fused silica powders that are a key material for the production of our ceramic crucibles.
Radioactive waste management and nuclear chemistry products	Increasing stockpiles of radioactive nuclear waste require materials that can be used to safely transport and store items such as spent nuclear fuel rods. New and existing nuclear power plants also require materials capable of containing neutron radiation during day-to-day operations.	The boron atom in boron carbide powder is able to capture neutrons, thus reducing the radioactive risk associated with transportation and storage of nuclear waste. Our Boral® product line, which consists of a hot-rolled sheet containing a core of uniformly distributed boron carbide and aluminum particles that is enclosed within layers of pure aluminum, forms a solid and effective barrier for the storage of nuclear waste. We also manufacture the boron isotope ^{10}B in its pure form. This isotope is a strong neutron absorber and is used for both nuclear waste containment and nuclear power plant neutron radiation critical control. We also produce complementary chemical isotopes used in the normal operation and control of nuclear power plants.
Semiconductor silicon wafer manufacturing requiring ^{11}B isotopes	Silicon based semiconductor devices require 'p' dopants to move the electrons through the electronic materials.	We produce the boron isotope ^{11}B which is used in the semiconductor wafer manufacturing processes as an additive to semiconductor grade silicon as a "doping" agent and where ultra high purity boron is required.
Materials for precision investment casting	The market is demanding lower cost, thinner molds and faster mold build times.	We have developed fused silica refractory blends that enable the production of highly efficient, single-use mold systems for precision investment casting.

Market Opportunity	Demands of the Market	Our Solution
Ceramic bearings, bushings and seals for fluid handling	In order to make an effective transition in fluid handling pumps from the pump itself to the exterior, it is necessary to have an interface with excellent friction and erosion and corrosion properties.	We have developed a number of primarily silicon carbide compositions and shapes for a wide variety of precision components for use in contact with rotational elements in fluid handling pumps. These are produced primarily by our ESK Ceramics subsidiary in Kempten, Germany.
Specially designed heavy duty bearings and bushings	It is necessary to maintain the position and integrity of heavy duty rotational shafts in downhole oil drilling and/or water pumps in severe environments.	In June 2008, we acquired a series of proprietary designs for heavy duty "stacked bearings" and bushings which utilize our advanced technical ceramic sliding surface interface.
In converting silicon wafers to semiconductors, it is necessary to introduce atoms of the element boron into the silicon matrix.	The market has developed and generally utilizes technology known as ion implantation. Starting materials used in ion implantation such as BF_3 have been generally utilized for many years. However, as the requirements for higher current semiconductor chips increase and the number of chips per unit area on the silicon wafer increases, there is a need for ion implantation which improves the manufacturing throughput of high boron content in semiconductor chips.	Our acquisition of SemEquip, Inc. in August 2008 brought to Ceradyne the intellectual property for the "cluster" molecule $B_{18}H_{22}$ as well as other cluster molecules. These materials are designed to increase the productivity of the ion implantation technology in part due to the large numbers of atoms such as boron.
	Automotive/Diesel	
Heavy-duty diesel truck engines	In order to achieve diesel engine life of 500,000 miles or more without major maintenance, and to meet current environmental requirements, it may be necessary to replace metal engine components with longer lasting, lighter weight, lower friction ceramic parts at acceptable unit costs.	Our SRBSN ceramic cam rollers replace conventional steel cam rollers in order to allow diesel engines to run at higher internal pressures and thus meet environmental and other requirements.

Market Opportunity	Demands of the Market	Our Solution
Wear-resistant functional and frictional coatings, surface engineered components	Engines generate extreme vibration during operation that can cause components joined by nuts and bolts to loosen. Traditionally, locknut washers have been used for this application.	Our wear-resistant functional and frictional coatings utilizing entrapped hard particles, primarily diamonds, are applied to shims in lieu of using locknut washers. These coatings increase the static friction coefficient and minimize the effects of vibration and allow more economic and efficient designs of engines, particularly in the auto industry.
	Commercial	
Orthodontic brackets	Traditional stainless steel orthodontic brackets are often considered unsightly. Substitute clear plastic materials can be weak and may stain. Some orthodontic patients prefer aesthetically pleasing brackets which can be affixed to each tooth to support the arch wire.	Our translucent ceramic orthodontic brackets are inert, reveal the color of the patient's teeth, and allow the orthodontist to correct the patient's bite. Our marketing partner, 3M Unitek, sells this translucent ceramic bracket under the brand name Clarity™.
BORONEIGE® boron nitride powder	The cosmetic industry utilizes very fine, white, silky, smooth powders as a base for a wide range of products including lipstick, eye shadow, facial creams, rouge and other related products. There is an increasing demand for these base materials which can make up to forty percent of the end product. Generally, the requirements include white color, controlled chemistry and surface area.	Boron nitride, which is made by our ESK Ceramics subsidiary, is a well controlled micro structure white powder. The use of our unique boron nitride called BORONEIGE® is anticipated to grow as the availability of the base powders and the use of various cosmetic products increase.

Our Competitive Strengths

We believe that several aspects of our company provide us a competitive advantage in the markets we serve, including the following:

Broad Technical Expertise in Ceramic Material Science. Since the founding of our company in 1967, our core business has been researching, developing, designing, manufacturing and marketing advanced technical ceramic products. Specifically, our expertise is in a class of ceramics known as non-oxide structural ceramics. Many of our staff are technically trained, including 148 employees with degrees in ceramic engineering or related sciences, of which 32 have Ph.D. degrees. We have continuously sought to develop and manufacture innovative ceramic products not only for the markets that we currently serve but to identify and apply our experience and capabilities to emerging markets and applications. For example, our expertise allows us to develop ceramic armor products expeditiously and manufacture them on a significant scale.

Proprietary Equipment and Manufacturing Processes. The specialized equipment required to manufacture ceramic powders and advanced technical ceramics must often be custom designed and is not readily

available. Over the past several decades, we have designed and constructed a substantial array of highly specialized and customized equipment and manufacturing processes, including our hot press lines and furnaces. We believe our custom equipment and manufacturing processes allow us to meet the high volume demands of our customers in the markets that we serve.

Vertically Integrated Manufacturer. We are a vertically integrated manufacturer of lightweight ceramic body armor and other ceramic products such as crucibles for photovoltaic solar cell manufacturing. Our ESK Ceramics subsidiary manufactures boron carbide powder — the key raw material used in the production of our body armor. ESK Ceramics has been a supplier of boron carbide powder to us for over 30 years. We form the boron carbide powder into ceramic armor plates using our own furnaces and hot presses. We then apply backing materials purchased from third parties to the plates to complete a ceramic body armor system ready to ship to our customers. Owning a source of our principal raw material, together with our manufacturing capacity at our Lexington, Kentucky plant, should allow us to fulfill current and anticipated demand for our ceramic body armor, while enabling us to manage our costs, product yields and high quality standards. Our acquisition of Minco, Inc. in 2007 provided Ceradyne with its own source of fused silica ceramic powders, which are the primary raw material in the manufacturing of crucibles (receptacles) used in the manufacturing of photovoltaic solar cells. The crucibles are used as the container for melting large (450 kilogram) ingots of silicon. Recently, we internally developed a proprietary hard ceramic coating designed to act as a barrier between the molten silicon and the Ceradyne crucible.

Strong Position in Multiple Markets. We maintain a strong position in many of the markets that we serve. We believe that we are the leading supplier of lightweight ceramic personnel armor products to the U.S. government based on the history of orders that the U.S. government has issued. We further believe that we supply a significant portion of products in many of the markets we serve including: boron carbide powders; translucent ceramic orthodontic brackets; ceramic missile radomes, commonly known as nose cones, for the PAC-3 missile program; sintered reaction bonded silicon nitride, which we call SRBSN, for industrial and automotive applications; evaporation boats used to apply the metallic coating to packaging materials; and wear resistant functional and frictional coatings for the automotive industry. We believe that our leadership position in ceramic body armor and in many of the other markets that we serve provides us with a key advantage in securing new and continuing business. Additionally, we believe that our EKasic® (silicon carbide) product line of industrial pump seals and bearings allows us to be a leader in fluid handling products.

Key Customer Relationships. We have longstanding relationships with many of our significant customers in the defense, industrial, automotive/diesel and commercial markets that we serve, which have enhanced our ability to obtain business over time. For example, for more than 20 years we have sold our advanced technical ceramic products to various agencies of the U.S. government. Since 2003, we have derived a significant portion of our revenues from the Army, Marines, Air Force and other branches of the U.S. military. We possess significant knowledge of the applicable purchasing requirements and product specifications within each of the branches of the U.S. military that we serve, and we believe that we have established an excellent reputation with key individuals within each branch.

Experienced Management Team and Entrepreneurial Culture. Our success is attributable in large part to the extensive knowledge and experience of our management team and key personnel. Our executive management team has substantial experience in advanced technical ceramic materials science and our Chief Executive Officer and our President of North American Operations each has more than 25 years of experience in the ceramics industry. Our management team has demonstrated its ability to identify, execute and integrate strategic acquisitions into our business through our acquisitions of ESK Ceramics in August 2004, Quest Technology in May 2004, a boron carbide/aluminum cladding product line known as Boral® in June 2006, Minco, Inc. in July 2007, EaglePicher Boron, LLC in August 2007, assets and intellectual property related to heavy duty "stacked bearings" and bushings in June 2008, SemEquip, Inc. in August 2008, and the assets and business of Diaphorm Technologies, LLC in June 2009. Moreover, we believe that the entrepreneurial culture that has been fostered at Ceradyne since 1967 enhances our ability to develop innovative products for the markets that we serve.

Our Business Strategy

Our goal is to create value for our stockholders by profitably developing, manufacturing and selling advanced technical ceramic components to customers in existing and new markets where there is a need for new materials that will increase the efficiency, productivity and life of our customers' end products. Key elements of our strategy for achieving this goal include:

Capitalizing on Opportunities in the Defense Market. The current geopolitical climate, terrorist threats and heightened international conflicts such as those in Iraq and Afghanistan, have been the primary factors driving demand for our defense products. Our defense marketing and sales efforts emphasize sales of ceramic body armor for military personnel to the U.S. government and, with the authorization of the U.S. government, to foreign allies of the United States. We also intend to expand our lightweight ceramic armor products to address additional body armor applications, such as enhanced combat helmets as well as new defense applications in vehicles, boats and aircraft. In response to a solicitation notice from the U.S. military, we have developed a new generation of body armor, called XSAPI, that is capable of withstanding higher ballistic threats than previous versions with approximately the same product weight.

Continuing to Increase our Non-Defense Revenue Base. We plan to continue to grow our non-defense customer base, primarily through promoting existing products to new customers and developing new products for new and existing customers. We focus on educating our current and potential customers on the advantages of our advanced technical ceramics compared to alternative solutions, and assisting them in developing advanced technical ceramic components for existing or new products and applications. Our technical and marketing staff educates our customers through direct sales visits, by preparing technical papers and product literature, and by participating in technical conferences, trade shows and exhibitions. Based on these efforts, we believe there is an opportunity to further expand the use of advanced technical ceramic products. For example, we are working with 3M Unitek on developing the next generation of translucent ceramic orthodontic brackets. We also are working with companies in the aluminum industry on utilizing ceramic materials in their next generation smelting production processes that have the potential to reduce the cost of producing aluminum. We also intend to further increase our customer, product and market base by converting certain advanced technical ceramics, originally developed for defense applications, to industrial and commercial applications. In addition to organically growing our product portfolio and market reach, we plan to continue to identify strategic acquisition opportunities that broaden our product lines within industrial and commercial markets. For example, a key strategic reason for our acquisitions of ESK Ceramics, the Boral® product line, Minco, Inc., EaglePicher Boron, LLC., and SemEquip, Inc., as well as the expansion of our operations into Canada and China, were to further increase our non-defense revenue base.

Our acquisition of SemEquip, Inc. in August 2008 is intended to allow us to broaden our participation and position us to participate in future semiconductor markets. SemEquip's development of cluster molecules such as $B_{18}H_{22}$ may be a key in the manufacture of next generation high current semiconductor devices. Our acquisition in June 2008 of certain assets and intellectual property related to heavy duty "stacked bearings" and bushings provides Ceradyne with a new product line of relatively large, rugged ceramic bearings and bushings. These components will be used in severe environments such as "downhole" oil drilling and submersible fluid handling pumps.

Identifying New Products and Markets. We intend to identify new products and markets to meet evolving customer requirements for high performance materials. Due to the special properties of the advanced technical ceramics we produce, we believe there are numerous applications and markets for such materials. Our research and development efforts have identified several new applications for advanced technical ceramics in both existing markets, such as the defense industry, and new markets, including the energy, metals production and chemical industries. Such new applications include lightweight ceramic armor for military vehicles, boats and aircraft; ceramic components that have the potential to facilitate extraction of oil from oil sands on a cost-effective basis; ceramic materials that have the potential to reduce significantly the cost of producing molten aluminum; chemical micro reactors, heat exchangers and hydraulic trim valves produced with our proprietary technology that have the potential to provide an economical substitute for steel in extreme environments; storage containers made with our boron carbide powder that have the potential to be used for

long-term containment of nuclear waste from nuclear power plants; and small complicated ceramic components made using our injection molding technology that have the potential to be used as medical implants. We also expect to continue to benefit from the addition of ESK Ceramics' expertise in ceramic powders and products, which has expanded the scope and scale of our product development efforts.

Investing to Improve our Gross Margins and Manufacturing Efficiencies. We focus on cost containment, productivity enhancements and manufacturing efficiencies as a means to drive earnings growth. We have implemented lean manufacturing initiatives, such as Demand Flow® Technology and 5-S plus Safety in order to reduce inventories, scrap and queue times and to increase productivity. Additionally, we continue to evaluate opportunities to employ automation and dedicated work cells to expand our in-line production efficiency. We also continue to seek ways to reduce our manufacturing costs by evaluating opportunities to relocate or expand manufacturing operations within the United States as well as internationally. For example, in 2004, we began expanding our high energy-utilization manufacturing processes at our new Lexington, Kentucky facility, where the cost of electricity, which comprises a significant portion of our cost of product sales, is substantially lower than in California. We plan to evaluate strategic manufacturing relationships in international markets, including joint ventures or acquisitions, particularly in low cost manufacturing areas such as Mexico and China. We completed the construction in June 2007, of a new approximately 98,000 square foot facility in Tianjin, China for the manufacture of ceramic crucibles which are used for melting silicon in the photovoltaic solar cell manufacturing process. We are increasing this capacity and will start construction during 2010 of an approximately 218,000 square foot facility in Tianjin, China for the manufacture of ceramic crucibles. We also plan to develop strategic relationships with other manufacturing companies or key customers whose expertise or financial resources can assist us in accomplishing our objectives. We initiated a major improvement to our data and information technology systems with the implementation of SAP enterprise software applications. It is our intention to integrate the use of SAP software throughout our Company with a target completion date of December 2011.

Market Applications and Products

Our products are sold into four principal markets: defense, industrial, automotive/diesel and commercial. The following is a description of our principal products by market application:

Defense

Lightweight Ceramic Armor. We have developed and currently manufacture lightweight ceramic armor capable of protecting against threats as great as 12.7 millimeter armor piercing machine gun bullets. Compared to traditional steel armor plates, our ceramic armor systems offer weight savings as great as 40%. Using hot pressed Ceralloy® ceramic, our armor plates are laminated with either Spectra Shield®, Dyneema®, Kevlar™, fiberglass, custom hybrid laminates or aluminum, and formed into a wide variety of shapes, structures and components. Initially, our manufactured ceramic armor was used principally for military helicopter crew seats and airframe panels. We are now also a major supplier of lightweight ceramic body armor for the U.S. military, and lightweight ceramic armor for military helicopters. We are also a supplier of armor systems for military vehicles.

Boron Carbide Powders. We manufacture boron carbide powder, which is the principal raw material used in the production of our lightweight ceramic body armor. Our ESK Ceramics subsidiary is one of the world's leading manufacturers of this material. ESK Ceramics has been a supplier of boron carbide powder to us for over 30 years and periodically supplies our ceramic body armor competitors.

Missile Radomes (Nose Cones). We manufacture conical shaped, precision machined ceramic radomes which are designed for the front end of defensive missiles. These radomes are used where missile velocities are high and operating environments are severe, and the thermal shock and erosion resistance, high strength and microwave transparency properties of advanced technical ceramics are required. Our ceramic radomes are used on the PAC-3 (Patriot Advanced Capability) missile and various future missile system prototypes.

Industrial

Fluid Handling/Wear Parts. We supply products made primarily of our EKasic® silicon carbide, silicon nitride and boron carbide, which have excellent wear resistant properties, lightness, hardness, and can withstand extremely high temperatures. Products furnished are used in high performance pump seals, bearings for fluid handling, blast nozzles and chemical processing.

Boron Compounds and Metallurgy Ceramics. Boron nitride powders have excellent release properties and are highly resistant to wear and corrosion. These powders are used in the forming and bending of glass, as an additive in refractory materials, and as a lubricant for aluminum extrusion. Our silicon nitride products have excellent thermal shock resistance and temperature stability up to 1,200° Centigrade. These products are used for transportation of liquid aluminum, for use in low and high pressure casting and in liquid aluminum processes.

Evaporation Boats. Our evaporation boats are used in the metallization of various surfaces such as plastic, paper or glass. Metallization is a process based on the deposition of a metallic vapor under vacuum to coat a substrate surface with a thin layer of aluminum, zinc, copper or silver. The preferred metal for the metallizing process is aluminum. Evaporation boats have direct contact with highly corrosive molten metal alloys and are made out of a boron nitride/titanium diboride composite material. These products provide packaging manufacturers the ability to apply vaporized aluminum to packaging material that as a finished product helps to preserve and maintain the shelf life of food products.

Industrial Wear Components. Our industrial wear components are made primarily of our Ceralloy® 147 sintered reaction bonded silicon nitride (SRBSN). These SRBSN ceramic components are generally incorporated in high wear areas of industrial machinery where severe abrasive conditions would otherwise wear out vital components. Our wear resistant parts are used to replace parts made of materials such as tungsten carbide or ceramics such as aluminum oxide. Applications include paper making equipment, abrasive blasting nozzles, metal cutting tool inserts as well as custom products.

Radioactive Waste Management. Boron carbide powder has a high cross-section for capturing neutrons, making it an ideal material for the management of radioactive nuclear waste from nuclear power plants. Typical applications include use in neutron absorbing parts, such as control rods in nuclear power plants, and nuclear shielding in the storage and transportation of nuclear waste materials. Our Boral® product line, which consists of a rolled sheet containing a core of uniformly distributed boron carbide and aluminum particles that is enclosed within layers of pure aluminum, forms a solid and effective barrier for the storage of nuclear waste. We also produce the boron isotope ^{10}B. This isotope is a strong neutron absorber and is used for both nuclear waste containment and nuclear power plant neutron radiation critical control.

Ceramic-Impregnated Dispenser Cathodes. We manufacture ceramic-impregnated dispenser cathodes for microwave tubes used in radar, satellite communications, electronic countermeasures and other applications. Dispenser cathodes, when heated, provide a stream of electrons which are magnetically focused into an electron beam. Microwave dispenser cathodes are primarily composed of a porous tungsten matrix impregnated with ceramic oxide compounds. The use of ceramic-impregnated cathodes reduces the amount of energy necessary to create a high level of electron emissions. Our ceramic-impregnated cathodes are also used in ion lasers and cathode ray tubes.

Tempered Glass Furnace Components and Metallurgical and Industrial Tooling. Fused silica ceramic does not, to any material extent, expand when heated or contract when cooled. This material is therefore used for industrial tooling components and molds where complicated shapes and dimensions are maintained over a wide range of temperatures. Such applications include forming and shaping titanium metal used in aircraft manufacture. Other applications take advantage of fused silica's excellent thermal shock resistance and inertness when in contact with glass. We have the capability to make fused silica ceramic rollers up to 14 feet in length used in glass tempering furnaces.

Fused Silica Ceramic Crucibles. We manufacture fused silica ceramic crucibles, or receptacles, which are used in the fabrication of polycrystalline silicon for photovoltaic solar cells that convert sunlight into electricity. These crucibles are designed to withstand high temperatures and thermal shock when in contact

with molten silicon, without contaminating the melt. In 2008, we introduced a proprietary hard ceramic coating to line the crucible's interior.

Precision Ceramics. We manufacture a variety of hot pressed Ceralloy® ceramic compositions that are precision diamond ground to exacting tolerances, primarily for microwave tube applications. The interior cavities of microwave tubes often require microwave absorbing ceramic components capable of operating at elevated temperatures and in high vacuums.

Samarium Cobalt Permanent Magnets. We manufacture and market our samarium cobalt magnets as components primarily for microwave tube applications. Electron beams in microwave tubes generated by the dispenser cathodes described above can be controlled by the magnetic force provided by these powerful permanent magnets. The magnets are generally small sub-components of microwave traveling wave tubes.

Boron Isotopes and Molecules for the Nuclear Industry. We enrich and manufacture the boron isotope ^{10}B which is a material that is used by the nuclear power industry. The ^{10}B isotope is critical to the safe operations of the U.S. nuclear power industry, waste storage, and the stability and safe-keeping of nuclear weapons.

Boron Isotopes for Semiconductors. We produce the boron isotope ^{11}B, which is used in the semiconductor manufacturing process as an additive to semiconductor grade silicon as a "doping" agent and where ultra high purity boron is required. With our acquisition of SemEquip, Inc. in August 2008, we now produce the cluster boron molecule $B_{18}H_{22}$ for next generation semiconductor devices.

Precision Investment Casting Products. We manufacture fused silica grains and powder products that are used in precision investment casting (PIC), a highly sophisticated manufacturing process used to make a wide range of precision dimensioned castings for a broad base of different industries. The process requires low expansion materials for one time use in the casting process. Our products include proprietary blends that reduce our customers' cast and cycle time.

Heavy Duty Bearings. In June 2008, we acquired the proprietary rights for a series of heavy duty rugged ceramic bearing components for downhole oil drilling and various water pump applications. The unique designs are intended to extend the life of drilling equipment by reducing premature failures during operations.

Automotive/Diesel

Wear-Resistant Functional and Frictional Coatings. We manufacture our EKagrip® Foils for wear-resistant functional and frictional coatings for fastener applications utilizing entrapped hard particles, primarily diamonds. This product line increases the static friction coefficient, minimizes the effects of vibration and allows more economic and efficient designs of engines, particularly in the auto industry.

Diesel Engine Components. We have been manufacturing ceramic cam rollers for heavy-duty diesel engines since 1999, and now have production contracts to supply cam rollers to several major engine companies. However, an original equipment manufacturer that had been using our ceramic cam rollers, developed a new diesel truck engine that was introduced in 2007 to meet new environmental regulations. This new engine is designed to use steel cam rollers rather than our more expensive ceramic cam rollers. Consequently, sales of our cam rollers to this manufacturer declined beginning in 2007 and we expect further declines through 2010. We also supply a fuel systems manufacturer with components for a diesel fuel pump. In addition, we are engaged in development projects with a number of other diesel engine and fuel pump systems manufacturers worldwide for various ceramic components.

Commercial

Ceramic Orthodontic Brackets. In orthodontics, to correct a patient's tooth alignment, usually a small stainless steel bracket is attached to each tooth. These brackets provide a guide to the archwire, which is the wire that sets into each bracket. The cosmetic appearance of this metal is often considered unattractive. Together with 3M Unitek, we have developed a ceramic bracket which 3M Unitek markets to orthodontists under the brand name Clarity™. The translucency of this ceramic bracket, together with the classic ceramic

properties of hardness, chemical inertness and imperviousness, result in a cosmetic substitute for traditional stainless steel brackets. These brackets reveal the natural color of the patient's teeth while performing the structural functions of traditional stainless steel brackets. We have recently developed and manufacture a next generation ceramic orthodontic bracket which 3M Unitek sells under the brand name Clarity SL™.

BORONEIGE® Boron Nitride Powder. We manufacture and market to the cosmetic industry a very fine, white, silky, smooth powder called *BORONEIGE®*,which is used as a base for a wide range of products including lipstick, eye shadow, facial creams, rouge and other related products.

Operating Segments and Facilities

We serve our markets through six segments with manufacturing facilities in several locations across the United States, one in Canada, one in China, one in Europe, and one in India. The following table includes a summary of our facilities and products comprising our six operating segments.

Operating Segment and Facility Location	Products
Ceradyne Advanced Ceramic Operations Costa Mesa and Irvine, California[1] Approximately 216,000 square feet Lexington, Kentucky[2] Approximately 115,000 square feet Wixom, Michigan[3] Approximately 29,000 square feet Salem, New Hampshire[4] Approximately 16,000 square feet Mountain Green, Utah[5] Approximately 18,000 square feet Bangalore, India[6] Approximately 21,000 square feet	*Defense Applications:* • Lightweight ceramic armor • Enhanced combat helmets *Industrial Applications:* • Ceralloy® 147 SRBSN wear parts • Precision ceramics • Ceramic bearings and bushings *Automotive/Diesel Applications:* • Ceralloy® 147 SRBSN automotive/diesel engine parts *Commercial Applications:* • Ceramic orthodontic brackets • Components for medical devices
ESK Ceramics Kempten, Germany[7] Approximately 599,000 square feet Bazet, France[8] Approximately 88,000 square feet (anticipated to be sold during the first quarter of 2010)	*Defense Applications:* • Boron carbide powders for body armor *Industrial Applications:* • Ceramic powders: boron carbide, boron nitride, titanium diboride, calcium hexaboride and zirconium diboride • Silicon carbide parts • Evaporation boats for the packaging industry • High performance fluid handling pump seals *Automotive/Diesel Applications:* • EKagrip® functional and frictional coatings *Commercial Applications:* • BORONEIGE® boron nitride powder for cosmetics

Operating Segment and Facility Location	Products
Ceradyne Semicon Associates Lexington, Kentucky[9] Approximately 35,000 square feet	*Industrial Applications:* • Ceramic-impregnated dispenser cathodes for microwave tubes, lasers and cathode ray tubes • Samarium cobalt magnets
Ceradyne Thermo Materials Scottdale and Clarkston, Georgia[10] Approximately 225,000 square feet Tianjin, China[11] Approximately 98,000 square feet Midway, Tennessee[12] Approximately 105,000 square feet	*Defense Applications:* • Missile radomes (nose cones) • High purity fused silica used to manufacture missile radomes (nose cones) *Industrial Applications:* • Glass tempering rolls • Metallurgical tooling • Castable and other fused silica products • Crucibles for photovoltaic solar cell applications • Turbine components used in aerospace applications
Ceradyne Canada Chicoutimi, Canada[13] Approximately 86,000 square feet	*Industrial Applications:* • Boral® structural neutron absorbing materials • Metal matrix composite structures
Boron Quapaw, Oklahoma[14] Approximately 128,000 square feet North Billerica, Massachusetts[15] Approximately 19,000 square feet	*Industrial Applications:* Nuclear Applications: • Nuclear chemistry products for use in pressurized water reactors and boiling water reactors • Radioactive containment for use in spent fuel transport and storage • Burnable poisons for coating of uranium fuel pellets Semiconductor Applications: • Cluster molecules such as $B_{18}H_{22}$ for ion implantation for next generation P-dopants • Ionization chambers for ionizing cluster molecules for ion implantation • Development of cluster ion implantation sub-systems • Advanced ion source materials for the manufacture of logic and memory chips

(1) We have leases on our facilities in Costa Mesa, California, aggregating approximately 99,000 square feet, all of which expire in October 2010. We own our 40,000 square foot facility in Irvine, California. In Irvine, California, a 76,000 square foot facility under a lease that expires in April 2011.

(2) We own our facility in Lexington, Kentucky.

(3) We have a lease on our Wixom, Michigan facility which expires in April 2010.

(4) We have a lease on our Salem, New Hampshire facility which expires in March 2015.

(5) We have a lease on our Mountain Green, Utah facility which expires in March 2012.

(6) We have a lease on our Bangalore, India facility which expires in June 2014.

(7) We own our facility in Kempten, Germany, as well as the 28-acre property on which our facility is located.

(8) We own our facility in Bazet, France, as well as the four-acre property on which our facility is located. This property is in escrow to be sold on February 28, 2010.

(9) We own our facility in Lexington, Kentucky, as well as the five-acre property on which our facility is located.

(10) We own an 85,000 square foot facility in Scottdale, Georgia, as well as the five-acre property on which our facility is located. We have a lease on our 140,000 square foot facility in Clarkson, Georgia which expires in June 2013.

(11) We own our facility in Tianjin, China, as well as the four-acre property on which our facility is located.

(12) We own our facility in Midway, Tennessee as well as the 40-acre property on which our facility is located.

(13) We own our facility in Chicoutimi, Quebec, Canada, as well as the seven-acre property on which our facility is located.

(14) We own our facility in Quapaw, Oklahoma as well as the 155-acre property on which our facility is located.

(15) We have a lease on our facility in North Billerica, Massachusetts which expires in April 2012.

Sales, Marketing and Customers

Each of our six operating segments maintains a separate sales and marketing force promoting its individual products. As of December 31, 2009 we had 80 employees directly involved in sales and marketing, including 48 sales and marketing personnel located outside the United States. We also have agreements with manufacturers' representatives in foreign countries who are compensated as a percent of sales in their territory. Sales to customers located outside the United States represented approximately 33.9% of our net sales in 2009, 27.0% in 2008 and 18.0% in 2007.

We continue to explore various domestic and international relationships to increase our sales and market penetration. We seek long-term relationships such as multi-year agreements or exclusive relationships with our customers to achieve a more consistent and predictable flow of orders and shipments.

We sell products and components to the U.S. government and government agencies, as well as to government contractors, original equipment manufacturers and to end users. The U.S. government and government agencies collectively represented approximately 40.8% of our net sales in 2009, 54.1% in 2008 and 71.6% in 2007. As of December 31, 2009 and 2008, there were no other external customers that accounted for 10% or more of our revenue.

We sell our translucent ceramic orthodontic brackets, commonly known as braces, only to 3M Unitek. Sales to 3M Unitek represented approximately 2.4% of our net sales in 2009, 1.5% in 2008 and 1.7% in 2007. In December 2005, we entered into a new supply agreement with 3M Unitek that expires in December 2010, and which may be extended by 3M Unitek at its option for an additional two years. This new agreement replaced our original, March 1986 joint development and supply agreement with 3M Unitek. 3M Unitek is a major manufacturer of stainless steel orthodontic brackets and, early in our relationship, shared with us the functional specifications and properties which ceramic brackets would be required to satisfy. With this information and our experience with translucent ceramics in defense applications, we developed, and in 1987 began manufacturing, translucent ceramic brackets. Under the original supply agreement, 3M Unitek was required to purchase ceramic orthodontic brackets exclusively from Ceradyne until September 2007. Under the terms of the new agreement, 3M Unitek will continue to purchase 100% of their Clarity and Transcend brand ceramic orthodontic product lines exclusively from us for as long as 3M Unitek continues to sell such products. The new agreement further stipulates that Unitek must purchase from Ceradyne at least 50% of the ceramic orthodontic brackets 3M Unitek requires for next generation designs, which it introduced in 2007.

Manufacturing Processes

We employ a number of advanced technical ceramic manufacturing processes that enable us to deliver high quality products designed to meet specific customer requirements. The processes used to manufacture our principal products are described below.

Hot Pressing. Our hot pressing process is generally used to fabricate ceramic shapes for lightweight ceramic armor. We have designed and constructed induction heated furnaces capable of operating at temperatures exceeding 4,000°F in inert atmospheres at pressures up to 5,000 pounds per square inch. With this equipment, we can fabricate parts more than 26 inches in diameter, which is considered large for advanced technical ceramics. Using multiple cavity dies and special tooling, we can produce a number of parts in one furnace during a single heating and pressing cycle.

Our raw materials are fine powders procured from our ESK Ceramics subsidiary, as well as from several outside suppliers. After we process them, the powders are either loaded directly into the hot pressing molds or are shaped into pre-forms prior to loading into the hot pressing molds. The powders are placed in specially prepared graphite tooling, most of which we machine to shape. Heat and pressure are gradually applied to the desired level, carefully maintained and finally reduced. The furnace is then removed from the press and allowed to cool, permitting the press to be used with another furnace. For most products, this cycle takes approximately 20 hours. The resultant ceramic product generally has mechanical, chemical and electrical properties of a quality approaching theoretical limits. Almost all products, other than armor, are then finished by diamond grinding to meet precise dimensional specifications.

Ceramic Powders (Boron Carbide TETRABOR®, Boron Nitride, Titanium Diboride, Calcium Hexaboride, Zirconium Diboride). We purchase raw materials like carbon, boric acid and oxides from outside vendors. These raw materials are converted into the final formulation in large high temperature processes using an arc furnace. After the resultant material is cooled, it is broken down into fine particulates that are then purified through a chemical treatment. The next process is the production and classification of various grain sizes. The manufacturing processes result in a very high and consistent quality powder. The resulting finished ceramic powder products are used in a wide range of applications, such as ceramics and powders for abrasives, armor, neutron absorption and refractories.

Sintering and Reaction Bonding of Silicon Nitride (SRBSN). The sintering of reaction bonded silicon nitride results in our Ceralloy® 147 SRBSN, which is used in industrial and automotive/diesel applications. This SRBSN process begins with relatively inexpensive high purity elemental silicon (Si) powders, which contrasts sharply with some other competitors' manufacturing techniques which start with relatively more expensive silicon nitride (Si_3N_4) powders.

After additives are incorporated by milling and spray drying, the silicon powders are formed into shapes through conventional ceramic processing such as dry pressing. These shapes are then fired in a nitrogen atmosphere which converts the silicon part to a silicon nitride part. At this step (reaction bonding), the silicon nitride is pressure sintered in an inert atmosphere increasing the strength of the component threefold. As a result of SRBSN processing, the ceramic crystals grow in an intertwining "needle-like" fashion which we have named NeedleLok™. The NeedleLok™ structure results in a strong, tough, high fracture energy part. This process can be used to produce extremely high production volumes of parts due to the use of conventional pressing processes.

Manufacture of Translucent Ceramics (Transtar®). We produce translucent aluminum oxide (Transtar®) components primarily for use as orthodontic ceramic brackets. We purchase the high purity powders from outside vendors and process them using dedicated conventional ceramic mechanical dry presses. The formed blanks are then fired in a segregated furnace in a hydrogen atmosphere at over 3,000°F until the ceramics enter into a mechanically strong, translucent condition. These fired translucent brackets then have certain critical features diamond ground into them. The next step is a proprietary treatment of the bonding side in order to permit a sound mechanical seal when bound to the patient's teeth. In the final step we furnace braze a stainless steel channel into each archwire slot which has been previously diamond ground into the bracket.

Functional Coatings (Surface Engineered). Our functional coatings are formed by the deposition of hard particles, primarily diamonds, in a nickel layer on steel, aluminum or titanium. We purchase the hard particles — sized between nanometers and 60μm — from outside vendors and customize these raw materials through chemical treatment. Before being coated, the metal parts are chemically cleaned and deburred. The final product is manufactured by an electroless nickel coating process with simultaneous embedding of hard particle grains. The final step is the hardening of the nickel surface by a heat treatment process up to 660°F.

Evaporation Boats (LaserMet®, DiMet®, TriMet®, FlashMet®). Evaporation boats are ceramic sintered parts consisting of titanium diboride/boron nitride and other nitride compositions for our TriMet® product. These components, in the form of ceramic powders, are milled and conditioned. The key forming process is hot pressing, which results in solid sintered billets. From these sintered billets, the evaporation boats are machined with proprietary processes to various types and shapes.

Sintered Parts. For the production of sintered parts, we either buy raw materials like silicon carbide from outside vendors or use our own ceramic powders. With our specific developed processes, we condition the ceramic powders by incorporating additives, milling, and spray drying into ready-to-press powders. We then utilize the processing steps of forming, green machining, sintering and final machining as the materials are transformed into various shapes. We utilize a broad range of technological processes and equipment to accomplish this. Examples of these processes include cold isostatic pressing, axial dry pressing, injection molding, extrusion molding, pressure sintering, hot pressing, hot isostatic pressing and pressureless sintering.

Diamond Grinding. Many of our advanced technical ceramic products must be finished by diamond grinding because of their extreme hardness. Our finished components typically are machined to tolerances of $\pm$.001 inch and occasionally are machined to tolerances up to $\pm$.0001 inch. To a very limited extent, we also perform diamond grinding services for customers independent of our other manufacturing processes to specifications provided by the customer. Our diamond grinding facilities can perform surface grinding, diameter grinding, ultrasonic diamond grinding, diamond lapping, diamond slicing and honing. The equipment includes manual, automatic and computer numerically controlled, or CNC, grinders. We have specially adapted the CNC grinders for precision grinding of ceramic contours to exacting tolerances.

Sintering of Fused Silica Ceramics. Sintering of fused silica ceramics is the process we use to fabricate fused silica ceramic shapes for applications in crucibles for use in the manufacturing of photovoltaic solar cells, metallurgical tooling, missile radomes (nose cones) and other industrial uses. To fabricate fused silica ceramic shapes, fused silica powders are made into unfired shapes through slip casting or other ceramic forming processes. These unfired "green" shapes are fired at temperatures up to 2,500°F. The final shapes are often marketed in the "as fired" condition or, in some cases, precision diamond ground to achieve specific dimensional tolerances or surface finishes required by certain customers.

Injection Molding. Certain markets, like medical device components, require ceramic shapes that are small, highly configured and held to tight dimensional tolerances. Many of these can only be produced by the injection molding process. At the present time these powders tend to be oxide ceramics, primarily zirconia, alumina and/or blends thereof that we mix in house. The ceramic powder is then blended with organic ingredients that constitute a proprietary binder system. The resultant feedstock allows us to process the material through a standard injection-molding machine into a precision mold designed by us.

Boron Carbide and Aluminum Metal Matrix Composites. For the production of metal matrix composite materials, we hot press relatively large ingots of aluminum and boron carbide. These ingots are subsequently either extruded or rolled and then cut into the final configuration. For the production of Boral®, we acquire an extruded aluminum material into which we place a proprietary mixture of aluminum and boron carbide powder. We roll this material into thin sheets of shield material, which can then be cut into numerous sizes.

Boron Isotopes. We use gravity to separate natural boron material into the two isotopes of boron, ^{10}B and ^{11}B through the use of a large tower. We then convert these isotopes into specific molecules requested by our customers, such as boric acid, zirconium diboride, boron trifluoride or Boron metal. We employ a broad range of technological equipment and processes to produce the isotopically enriched molecule of choice.

High Purity Fused Silica. To produce our fused silica powder products, we melt washed quartz sand into large ingots using an electric arc melting process and then crush the ingots into powder products using various crushing, grinding, milling, and size separation equipment. The melting process transforms the quartz raw material into fused silica glass. The phase transformation that occurs during the melting process results in a finished product whose thermal expansion is much less than that of the quartz sand raw material.

Raw Materials

The starting raw materials for our manufacturing operations are generally fine, synthetic powders available from several domestic and foreign sources, including our subsidiary, ESK Ceramics. ESK Ceramics supplied 670 tons of boron carbide powder and silicon carbide to us in 2009, 923 tons in 2008 and 1,078 tons in 2007. We have owned ESK Ceramics since August 23, 2004. Our Minco, Inc. subsidiary, which we acquired on July 10, 2007, supplies us with high purity fused silica powders. Other raw materials, such as the backing material for ceramic armor, graphite and metal components, are procured from several commercial sources.

Quality Control

We make our products to a number of exacting specifications. In order to meet both internal quality criteria and customer requirements, we implement a number of quality assurance programs such as in-process statistical process control (SPC). We implement these quality programs separately at each of our manufacturing locations and in different ways depending on the processes. The results of these well deployed programs assist us in understanding and predicting limited exposure to non-conforming products.

Our Advanced Ceramic Operations, ESK Ceramics, Boron Products, Minco and Thermo Materials facilities have received ISO 9001 Certification. Semicon Associates and SemEquip, Inc. are ISO 9000 compliant.

Engineering and Research

Our engineering and research efforts consist of application engineering in response to customer requirements, in addition to new materials and product development aimed at creating demand for new products. Our efforts create new products, modify existing products to fit specific customer needs and result in developing enhanced ceramic processes.

We allocate costs associated with application engineering and research between cost of product sales and research and development expense. Application engineering efforts devoted to specific customer orders generally are recognized as cost of product sales, while the balance of engineering and research costs is included in research and development and expensed as incurred. Our research and development expenses were approximately $12.3 million in 2009, $14.8 million in 2008, and $17.6 million in 2007.

Competition

Our products compete with advanced technical ceramic products and powders from other companies, as well as with high strength steel alloys and plastic products. When competing with other advanced technical ceramic products and powders, we believe the principal competitive factors are manufacturing capacity and the ability to deliver products, price, product performance, material specifications, application engineering capabilities, customer support and reputation. Some of our competitors include ArmorWorks, The Protective Group, Ceramtec, the Armor Holdings and Cercom subsidiaries of BAE Systems, CoorsTek, Denka, Momentive Performance Materials, Hitachi, HC Starck, Kyocera's Industrial Ceramics Group, Morgan, Saint Gobain, Kennametal, Spectra-Mat, UK Abrasives, Vesuvius, C-E Minerals, NHTC, Holtec, Nukem and General Electric. Many of our current or potential competitors have greater financial, marketing and technical resources than we do. We cannot guarantee that we will be able to compete successfully against our current or future competitors. If we fail to compete successfully, there could be material adverse effects on our business, financial condition and results of operations. In many applications we also compete with manufacturers of non-ceramic materials. When competing with high strength steel alloys and plastic products, we may not be able to compete effectively when price is a primary consideration, because our products are typically more expensive as a result of higher manufacturing costs associated with the production of advanced technical ceramics.

Backlog

We record an item as backlog when we receive a contract, purchase order or other notification indicating the number of units to be purchased, the purchase price, specifications, delivery requirements and other customary terms and conditions. Our backlog was approximately $126.4 million as of December 31, 2008 and approximately $135.5 million as of December 31, 2009. We expect that substantially all of our backlog as of December 31, 2009 will be shipped during 2010.

Patents, Licenses and Trademarks

We rely primarily on trade secrecy to protect compositions and processes that we believe are proprietary. In certain cases, the disclosure of information concerning such compositions or processes in issuing a patent could be competitively disadvantageous. However, our management believes that patents are important for technologies where trade secrecy alone is not a reliable source of protection. Accordingly, we have applied for, or have been granted, several U.S. patents relating to compositions, products or processes that our management believes are proprietary, including lightweight ceramic armor.

We have been issued two U.S. patents relating to translucent ceramics for orthodontic brackets. The first of these two patents expired in September 2007, and the second patent expires in October 2013. We co-invented and co-own these patents with 3M Unitek. Together with 3M Unitek, we have granted licenses to companies whose ceramic orthodontic brackets infringe our joint patents. These companies pay both of us royalties based on sales of their orthodontic ceramic brackets for the remaining life of the patents.

In addition to the above, we have been issued 38 U.S. patents and have 102 patents pending and have applied for corresponding foreign patents in various foreign countries. Of the number of patents indicated above, our ESK Ceramics subsidiary has been issued 8 U.S. patents, while 8 patents are pending, and our SemEquip subsidiary has been issued 20 U.S. patents and 87 patents are pending.

The proprietary coarse grained silicon carbide materials, including silicon carbide materials with graphite inclusions, are protected by patents in Europe, the United States, Canada, Japan and the Czech Republic. These patents expire in 2017. Other patents and one patent pending also relate to sintered silicon carbide materials, the earliest expiring in 2011. Another patent for evaporation boats has been issued in Europe, the United States, Canada and Japan. This patent expires in 2019. Other patents relate to Ekagrip® friction enhancing coatings, the earliest expiring in 2019. Other patents relate to titanium diboride materials, boron nitride materials and coatings and composite ceramic materials.

The patents issued to our SemEquip subsidiary relate to its ion source and method of making semiconductor devices. SemEquip's pending patent applications relate to its ion source, semiconductor devices and synthesis of the molecular cluster source feed material, octadecaborane, $B_{18}H_{22}$, used in its ion source.

The patents we acquired from Diaphorm Technologies, LLC in June 2009 include the apparatus and methods for producing helmets.

"Ceralloy®," the name of our technical ceramics, "Ceradyne®" and the Ceradyne logo, comprising the stylized letters "CD®," are our major trademarks registered in the United States and various foreign countries. We also have other trademarks, including "Transtar®," "Semicon®," "Thermo®," "Defender®," "NeedleLok®," "Thermo-Sil™," "BORAL®," and "Ramtech®". The ESK Ceramics logo, and ESK Ceramics' major product trademarks, including "TETRABOR®", "EKasic®", "DiMet®", "TriMet®", "MYCROSINT®", "EKagrip®", "BOROMID®", "EKamold®", "LaserMet®", "EllipsoMet®" and "EKatherm®" are registered in Germany and many countries worldwide. The ESK Ceramics' product trademarks "BORONEIGE®" and "EKathemis®" are registered in Germany and registration has been applied for in many countries worldwide. The Minco logo, consisting of an ingot design featuring the word "Minco" in the center of the ingot, is registered in the United States. SEMEQUIP®, CLUSTERION®, CLUSTERCARBON®, and CLUSTERBORON® are registered trademarks in the United States and CLUSTERBORON® is also registered in Japan, South Korea and Taiwan. "Diaphorm®" and "Fiber-Tuned®" are registered trademarks in the United States and "Seamless Ballistic®" is registered in the United States, Madrid and Singapore and pending registration has been applied for in many countries worldwide. "Max Pro-Armor", Application Number 77/306,318 has been allowed.

Employees

As of December 31, 2009 we had 2,039 employees, including 127 employees with undergraduate or graduate degrees in ceramic engineering or related sciences. Of these total employees, 1,629 were in manufacturing, 166 were in engineering and research, 80 were in sales and marketing, and 164 were in general management, finance and administration. We also use temporary labor in some of our production operations. We generally consider our relationship with employees to be excellent. None of our U.S.-based employees are represented by labor unions. The employees of ESK Ceramics have elected a work council, an entity which represents employees and is entitled to information and co-determination rights under German law. We consider our relationship with the work council to be good.

Availability of SEC Filings

We file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission. You can read our SEC filings over the Internet at the SEC's website at http://www.sec.gov. We also make our SEC filings available free of charge through our Internet website as soon as reasonably practicable after we electronically file them with, or furnish them to, the SEC. Our website address is www.ceradyne.com. The reference to our website address does not constitute incorporation by reference into this report of the information contained at that site.

EXECUTIVE OFFICERS OF CERADYNE

Our executive officers and their ages as of February 23, 2010 are as follows:

Name	Age	Position
Joel P. Moskowitz	70	Chairman of the Board, Chief Executive Officer and President
David P. Reed	55	Vice President, and President of North American Operations and Assistant Corporate Secretary
Jerrold J. Pellizzon	56	Chief Financial Officer and Corporate Secretary
Michael A. Kraft	47	Vice President of Nuclear and Semiconductor Business Units
Thomas Jüngling	46	Vice President, and President of ESK Ceramics
Bruce R. Lockhart	47	Vice President, and President of Thermo Materials
Jeffrey J. Waldal	45	Vice President, and President of Semicon Associates
Thomas A. Cole	63	Vice President, Business Development

Joel P. Moskowitz co-founded our predecessor company in 1967. He served as our President from 1974 until January 1987, and has served as our President since September 1987. In addition, Mr. Moskowitz has served as our Chairman of the Board and Chief Executive Officer since 1983. Mr. Moskowitz currently serves on the Board of Trustees of Alfred University. Mr. Moskowitz obtained a B.S. in Ceramic Engineering from Alfred University in 1961 and an M.B.A. from the University of Southern California in 1967.

David P. Reed joined us in November 1983, and has served as a Vice President since January 1988. In February 2005, Mr. Reed was appointed to the newly created position of President of North American Operations, with responsibility for all the company's business units located in North America. Mr. Reed's focus has been and will continue to be on lightweight ceramic armor systems. Prior to joining us, Mr. Reed served as Manager, Process Engineering for the Industrial Ceramic Division of Norton Co. from 1980 to 1983. Mr. Reed obtained a B.S. in Ceramic Engineering from Alfred University in 1976 and an M.S. in Ceramic Engineering from the University of Illinois in 1977.

Jerrold J. Pellizzon joined us in September 2002 and serves as our Chief Financial Officer and Corporate Secretary. Prior to joining us, Mr. Pellizzon was Chief Executive Officer of DrSoy Nutrition, Inc., a developer of soy protein based food products, from 2000 until 2002. From 1994 through 2000, Mr. Pellizzon served as Chief Operating Officer and Chief Financial Officer of Met-Rx Substrate Technologies. From 1984 to 1993,

Mr. Pellizzon was Chief Financial Officer for Breton Construction, Inc., and served on their executive committee and board of directors. Prior to 1984, Mr. Pellizzon held executive and management positions at Duke Timber Construction/Tobin Steel Company and was employed as a C.P.A. in public accounting. Mr. Pellizzon obtained his B.S. in Economics from UCLA in 1975.

Michael A. Kraft joined us in February 2005 and served as Vice President of Sales, Marketing and Business Development until June 2007, when he was appointed Vice President of Nuclear and Semiconductor Business Units. Prior to joining us, Mr. Kraft was Managing Director of BVI Capital Partners, an investment bank that provides restructuring services, from 2003 through 2005, and President and Founder of KAM Solutions, LLC, an engineering and materials testing services firm, in 2003. From 2000 through 2002, Mr. Kraft was President, USA, for Rational AG and from 1993 through 2000, he held various management and marketing positions with Kulicke & Soffa Industries, Inc. Prior to 1993, Mr. Kraft held various management and marketing positions with General Electric Company. He holds degrees with honors from Michigan State University in electrical engineering and an M.B.A. degree from Pennsylvania State University.

Thomas Jüngling joined us in July 2005 as Director of Business Development and Technology Integration and has served as Chief Technology Officer since January 2006. In September 2007, Mr. Jüngling was promoted to President of our ESK Ceramics subsidiary, and he was appointed a Vice President of Ceradyne in December 2007. Prior to joining us, Mr. Juengling was Business Unit Manager at Inovan GmbH & Co. KG, Germany. From 1996 to 2004, Mr. Jüngling held various positions at Elektroschmelzwerk, Kempten GmbH (ESK Ceramics) and Wacker-Chemie GmbH, Germany. Mr. Jüngling obtained his Diploma in Mechanical Engineering in 1988 and his PhD in Engineering (Material Science) in 1992, both from the University of Karlsruhe, Germany.

Bruce R. Lockhart joined our Thermo Materials division as its President in September of 2001, and was appointed a Vice President of Ceradyne in February 2003. Prior to joining us, Mr. Lockhart had 16 years of varied experience in the ceramic industry, the majority of which was with Thermal Ceramics Inc., a provider of products for engineered heat management solutions. Mr. Lockhart received a B.S. in Ceramic Engineering from Clemson University in 1985 and an M.B.A. from Clemson University in 1990.

Jeffrey J. Waldal joined our Semicon Associates division in 1995 as a quality manager, and was promoted to manufacturing manager in 1997 and to President of Semicon in 1999. Mr. Waldal was elected as a Vice President in February 2003. He is currently responsible for the operations, finances and marketing at Semicon Associates. Mr. Waldal began his career as senior materials technician at United Technologies — Pratt & Whitney Aircraft. He was employed for eight years at Ladish Company, Inc. as quality supervisor and quality manager. Mr. Waldal currently serves on the board of directors as Chairman for Kentucky Manufacturing Assistance Center and is a member of the University of Kentucky College of Engineering Dean's Advisory Council. Mr. Waldal obtained a degree in Non-Destructive Testing from Hutchinson Technology Institute in 1984, a B.A. in Business Management from the University of Kentucky in 1995, and an M.B.A. from Eastern Kentucky University in 1998.

Thomas A. Cole joined Ceradyne when we acquired Minco, Inc. in July 2007. He had been serving as Minco's President and Chief Executive Officer since 2000. He was appointed Ceradyne's Vice President of Business Development in March 2008. Mr. Cole's early career was with Corning Inc. for 17 years in various manufacturing and operating roles mostly in technical ceramics and advanced refractories. He left Corning in 1987 when he participated in a buyout of Corning's Corhart Refractories Division and since then was engaged in fixing troubled businesses and selling them. He successfully completed the cycle with seven companies over the last twenty years before joining Ceradyne. Mr. Cole received a B.S. from the College of Ceramics at Alfred University in 1969 and an M.B.A. from the University of Buffalo in 1971.

Our officers are appointed by and serve at the discretion of our Board of Directors.

ITEM 1A. *RISK FACTORS*

This Annual Report on Form 10-K contains forward-looking statements, as described at page 3 of this report under the caption "Note Regarding Forward-Looking Statements." We believe that the risks described

below are the most important factors which may cause our actual future results of operations to differ materially from the results projected in the forward-looking statements.

Risks Related to Our Business

A substantial portion of our revenues is derived from the sale of defense related products, primarily ceramic body armor. If demand for ceramic body armor declines, if federal budget appropriations involving our products are reduced, if we fail to obtain new government contracts or delivery orders under existing contracts, or if existing government contracts or orders are cancelled, our revenues, profit and cash flow will be materially and adversely affected.

In recent years, a substantial portion of our revenues has been derived from the sale of defense related products, particularly ceramic body armor, either directly or indirectly to the U.S. government. The sale of defense related products represented 49.6% of our revenues in 2009, 61.8% in 2008 and 74.0% in 2007. We anticipate that a substantial portion of our revenues for the foreseeable future will continue to come from sales of defense related products; however, we expect that sales of defense related products will be lower in 2010 than they were in 2009. Our dependence on defense related business, and on sales of ceramic armor in particular, entails several risks, including those described below.

Our defense related business is highly sensitive to changes in national and international defense and budget priorities. For example, in the years 2003 through 2007, our revenues from the sale of ceramic body armor increased significantly due to the U.S. military's acceleration of its program to equip its soldiers with ceramic body armor systems, in part, because of the war in Iraq. In 2008, however, demand for ceramic body armor began to decline due in part to the reduction in hostilities in Iraq and because most combat troops were already equipped with the current generation of ceramic body armor, known as ESAPI. The outlook for ceramic body armor in 2010 and beyond is uncertain for several reasons, including President Obama's announced priority of withdrawing troops from Iraq by mid 2010, and the rate at which the U.S. military will proceed with implementing the next ballistic threat generation of ceramic body armor plates, known as XSAPI (discussed further below). Demand for ceramic body armor could decline further from 2009 levels for a variety of reasons, including a lessening of conflicts in the Middle East and other high risk areas, or a reduction in U.S. defense budget appropriations. If that were to occur, our revenues from the sale of defense related products would be reduced and our profit and cash flow could be materially and adversely affected.

Many defense contracts are awarded in an open competitive bidding process, and our past success in winning government contracts does not guarantee that we will win any new contracts in the future. Our success depends upon our ability to successfully compete for and retain such government contracts. If we, or if prime contractors for which we are a subcontractor, fail to win any future bids, or if we are unable to replace business lost upon cancellation, expiration or completion of a contract, our revenues, profit and cash flow from the sale of defense related products would be reduced.

Moreover, government contracts typically may be cancelled by the government at any time without penalty, other than our right to be reimbursed for certain expenses and inventory. If the U.S. government were to cancel any of our government contracts, our revenues, profit and cash flow would be reduced.

As of December 31, 2008, all orders under the $747.5 million adjusted maximum value Indefinite Delivery/Indefinite Quantity (ID/IQ) contract for ceramic body armor awarded to us in August 2004 had been released and the corresponding shipments were completed in 2008. In October 2008, we were awarded an ID/IQ contract by the U.S. Army for the next ballistic threat generation of ceramic body armor plates, known as XSAPI, as well as for the current generation of ESAPI plates. This five-year contract has a maximum value of $2.3 billion. However, we anticipate that the government will order either XSAPI or ESAPI, but not both. Therefore, the total amount of this ID/IQ award likely will not exceed $1.1 billion over the life of the contract. One of our competitors was awarded a similar ID/IQ contract. We expect that government orders under these contracts will be split among ourselves and our competitor, so our sales under our contract will likely be less than the $1.1 billion possible total amount.

We believe we will not receive any further delivery orders for XSAPI as the U.S. military with the recent growth of military operations in Afghanistan, has shown more interest in procuring body armor that weighs less than the current ESAPI and XSAPI body armor inserts while being able to defeat similar ballistic threats. We are currently developing ESAPI and XSAPI designs that weigh 10% to 15% less than the current designs and will offer these to the U.S. Army and other Department of Defense users once these designs meet the current requirements. There is no assurance that we will be successful with these lighter weight designs.

We do have qualified lightweight body armor inserts that are viable for the Afghanistan campaign and these designs have been offered to the Army and the Marines. These designs offer significant weight savings at a reduced level of protection from the currently fielded ESAPI design. The Army and the Marines have shown interest in these designs and we continue to pursue these opportunities but there is no assurance that we will be successful.

Based on our current backlog and anticipated orders for ceramic body armor and the level of sales to date in 2010, we expect our shipments of ceramic body armor to be lower in fiscal year 2010 than in fiscal year 2009. For the next several quarters, and perhaps longer, demand for ceramic body armor is likely to be the most significant factor affecting our sales.

Although we believe that demand for ceramic body armor will continue for many years, the quantity and timing of government orders depends on a number of factors outside of our control, such as the amount of U.S. defense budget appropriations, positions and strategies of the current U.S. government, the level of international conflicts and the deployment of armed forces. Our future level of sales of ceramic body armor will depend on our ability to successfully compete for and retain this business.

If we are not successful in obtaining and retaining sufficient new body armor business to keep our manufacturing capacity utilized, we may be required to record impairment charges for the reduction in value of our fixed assets devoted to manufacturing body armor. If this were to occur, our earnings would be reduced in the period we incur the impairment charge.

If the performance requirements for ceramic body armor are modified by the U.S. military, we may incur delays or additional costs to change the design of our product, or we may not be able to satisfy the new requirements with our existing ceramic materials and processes. If this were to occur, our costs could increase and our revenues, profit and cash flow would decline.

The ceramic body armor we manufacture must comply with stringent performance specifications established by the U.S. military, such as weight and the level of ballistic protection it must provide, and these specifications may be modified by the military in new procurements, as well as under existing contracts. For example, during the quarter ended March 31, 2005, the U.S. military directed us to modify the specifications of the lightweight ceramic body armor that we had been manufacturing, from the version commonly referred to as SAPI (small arms protective insert), to a revised requirement commonly referred to as ESAPI (enhanced small arms protective insert). The revised requirement is more difficult to manufacture than the SAPI version. The change to this new design resulted in production delays and increased costs to us during the first quarter of 2005 as we developed new designs to meet the revised requirement and experienced manufacturing inefficiencies. In the future, the U.S. military may make additional changes to the performance requirements for body armor, and we may experience delays or additional costs to satisfy the new requirements, or we may be unable to meet the new requirements at all with our existing ceramic materials and processes. If this were to occur, our revenues from ceramic body armor would decline and our profitability would suffer.

We rely on two critical materials to make ceramic body armor. A delay or inability to obtain sufficient quantities of these materials could limit the amount of body armor we can manufacture and therefore result in reduced revenues, profit and cash flow.

The critical materials required to manufacture our ceramic body armor are boron carbide powder, which is the principal raw material used in the production of the ceramic armor plates, and an ultra-high molecular weight polyethylene textile material, which we laminate to the surface of the ceramic armor plates.

We obtain substantially all of our boron carbide powder from ESK Ceramics, which has been a supplier of boron carbide powder to us for over 30 years. We acquired ESK Ceramics in August 2004, and it is now our subsidiary. If our ESK Ceramics subsidiary experiences production problems, supplies of boron carbide powder may be insufficient from other sources to meet our requirements for ceramic body armor.

The ultra-high molecular weight polyethylene textile material is available in the United States only from Honeywell International, Inc., under the brand name Spectra Shield®, and from Royal DSM N.V., under the brand name Dyneema®. Although we believe that sufficient quantities of these materials will be available to fulfill our projected needs, a delay or interruption in the supply of either of these materials could adversely affect our ability to fulfill our current orders for ceramic body armor.

If a delay or reduction in supplies of boron carbide powder or either Spectra Shield or Dyneema occurs, we may not be able to ship all of our orders for ceramic body armor, which could result in reduced revenues, profit and cash flow.

If demand for our products declines, we may have inefficient or under-utilized capacity, and our gross margins, profit and cash flow may suffer.

In response to the increased demand for ceramic body armor for military personnel and cam rollers for diesel engines, as well as our other products, we have added significant manufacturing capacity since early 2002.

Demand for our products, particularly ceramic armor and cam rollers, may not remain at levels sufficient to utilize all of the manufacturing capacity that we have added since early 2002. Much of our manufacturing facilities and production equipment, such as our furnaces and hot presses, are special purpose in nature and cannot be adapted easily to make other products. Also, a substantial amount of the boron carbide powder produced by ESK Ceramics is currently used by us and our competitors to make ceramic body armor. If the demand for ceramic body armor declines substantially from current levels, ESK Ceramics may have significant under-utilized capacity for boron carbide powder. Therefore, a substantial decline in demand for our ceramic body armor or cam rollers could result in significant excess manufacturing capacity, which would result in under absorption of overhead expense and reduced profit, and we may be required to record impairment charges for the reduction in value of our fixed assets devoted to manufacturing these products. If this were to occur, our earnings would be reduced in the period we incur the impairment charge.

An original equipment manufacturer that had been using our ceramic cam rollers developed a new diesel truck engine that was introduced in 2007 to meet new environmental regulations. This new engine is designed to use steel cam rollers rather than our more expensive ceramic cam rollers. Consequently, sales of our cam rollers to this customer declined beginning in 2007 and we expect further declines through 2010. Unless we can replace this lost business with sales of our ceramic cam rollers to new customers, our revenues, profits and cash flow from this product line will decline further in 2010.

If we fail to increase our non-defense revenue, and if the demand for ceramic body armor decreases, our revenues, profit and cash flow will be materially and adversely affected.

In 2009, 49.6% of our revenues and 64.3% of our gross profits were from sales of defense-related products. Because our dependence on defense-related products exposes us to significant risks, part of our business strategy is to continue to increase our non-defense revenue base by identifying new products and markets for our advanced technical ceramics, and by increasing sales to our existing non-defense customers. Our ability to execute this strategy successfully depends, in part, on our ability to increase market acceptance of our advanced technical ceramics as a replacement for materials such as metals, plastics and traditional ceramics. While advanced technical ceramics have certain advantages over other materials, such as the ability to withstand extremely high temperatures and combining hardness with light weight, they are more expensive to produce. As a result, the market for advanced technical ceramic products may be limited to high-end applications where price is not a critical competitive factor, where the characteristics of advanced technical ceramics may justify the higher costs compared to other materials or where other materials are not suitable. Due to these limitations on the market for advanced technical ceramics, the market for our products may not

grow as we anticipate and we may not be able to increase our non-defense revenue base. If we are unable to execute this strategy, and if the demand for ceramic body armor decreases, our revenues, profit and cash flow will be materially and adversely affected.

Growth in our operations may strain our resources, and if we fail to successfully manage potential future growth, we could incur higher operating costs and delays in the production of our products, which could result in reduced revenues, profit and cash flow.

The volume of orders for ceramic body armor for military personnel, as well as the introduction of new products and recent acquisitions of other businesses, are placing, and will continue to place, a significant strain on our operational, financial and managerial resources and personnel. To effectively manage potential future growth, we must continue to:

- add manufacturing capacity and personnel;
- implement and improve our operational, financial and management information systems;
- develop the management skills of our managers and supervisors;
- add new management personnel; and
- train, motivate and manage our employees.

Any failure to effectively manage growth could result in increased operating costs and delays in the development and production of our products. If this occurs, our revenues, profit and cash flow could decline.

We may generate less profit than expected or even lose money on our fixed price government contracts.

Most of our government contracts provide for a predetermined, fixed price for the products we sell regardless of the costs we incur. When making proposals for fixed-price contracts, we must rely on our ability to accurately estimate our costs and ability to manufacture and deliver the products on time and at a reasonable profit. Our actual production costs may, however, exceed forecasts due to unanticipated delays or increased cost of materials, components, labor, capital equipment or other factors. As a result, we may incur losses on fixed price contracts that we had expected to be profitable, or such contracts may be less profitable than we expected, which could have a material adverse effect on our business, financial condition and results of operations.

Our business is subject to various laws and regulations favoring the U.S. government's contractual position, and our failure to comply with such laws and regulations could harm our operating results and prospects.

As a contractor to the U.S. government, we must comply with laws and regulations relating to the formation, administration and performance of federal government contracts that affect how we do business with our customers and may impose added costs on our business. These rules generally favor the U.S. government's contractual position. For example, these regulations and laws include provisions that allow unsuccessful bidders to protest or challenge contracts we have been awarded, and allow the government to unilaterally terminate, reduce or modify our government contracts.

The accuracy and appropriateness of certain costs and expenses used to substantiate our direct and indirect costs for the U.S. government under fixed-price contracts are subject to extensive regulation and audit by the Defense Contract Audit Agency, an agency of the U.S. Department of Defense. Responding to governmental audits, inquiries or investigations may involve significant expense and divert management's attention. Our failure to comply with these or other laws and regulations could result in contract termination, suspension or debarment from contracting with the federal government, civil fines and damages and criminal prosecution and penalties. Any of these consequences could have a material adverse effect on our business, financial condition, results of operations and liquidity.

We currently depend entirely on 3M Unitek for sales of our ceramic orthodontic brackets. If we are unable to maintain our existing level of business with 3M Unitek our revenues, profit and cash flow from this product line will decline.

We sell our ceramic orthodontic brackets exclusively to 3M Unitek under a five year supply agreement that we entered into with 3M Unitek in December 2005. This supply agreement replaces our original agreement with 3M Unitek that would have expired in September 2007, under which 3M Unitek was required to purchase all ceramic orthodontic brackets exclusively from us, and we were permitted to sell ceramic orthodontic brackets only to 3M Unitek. Under the terms of the new agreement, 3M Unitek will continue to purchase their Clarity and Transcend brand ceramic orthodontic product lines exclusively from us for as long as 3M Unitek continues to sell those products. The new agreement further stipulates that Unitek must purchase from Ceradyne at least 50% of the ceramic orthodontic brackets 3M Unitek requires for next generation designs, which it introduced in 2007. Except under limited circumstances, Ceradyne is not permitted to sell ceramic orthodontic brackets to any other customers under the new agreement. As a result of our agreement with 3M Unitek, our revenue from ceramic orthodontic brackets is dependent entirely upon 3M Unitek. 3M Unitek also offers traditional stainless steel orthodontic brackets. We cannot guarantee that 3M Unitek will devote substantial marketing efforts to the sale of our ceramic orthodontic brackets, or that 3M Unitek will not reassess its commitment to our product. If 3M Unitek fails to actively market our ceramic orthodontic brackets or decides to promote a competing product over ours, this could cause the sales of our ceramic orthodontic brackets to decline.

Moreover, the first of our two patents for our ceramic orthodontic brackets, which we jointly own with 3M Unitek, expired in September 2007. Consequently, we may not be able to prevent third parties from manufacturing and selling competitive ceramic orthodontic brackets. Ceramic orthodontic brackets manufactured and sold by third parties may be less expensive than ours and may cause sales of our ceramic orthodontic brackets to decline either as a result of pricing pressure or loss of market share.

In addition, the future success of our ceramic orthodontic brackets depends on our ability to maintain and increase market acceptance for our product compared to other competitive solutions, including traditional stainless steel brackets and newer products such as transparent plastic orthodontic aligners, synthetic sapphire brackets and other ceramic brackets. If 3M Unitek reduces its purchases of ceramic orthodontic brackets from us or if competitive products gain market share, the sales of our ceramic orthodontic brackets may decline, resulting in a decrease in our revenues, profit and cash flow.

Our business is subject to risks associated with doing business outside the United States.

Shipments to customers outside of the United States accounted for approximately 33.9% of our sales in 2009, 27.0% of our sales in 2008 and 18.0% of our sales in 2007. Our ESK Ceramics subsidiary is located in Germany. Its sales to customers located outside of the United States represented approximately 74.7% of its total sales during 2009, approximately 70.7% of its total sales during 2008, and approximately 65.9% of its total sales during 2007. The increase in foreign sales in 2009 compared to 2008 was due primarily to increased sales of our products in the Asian market as a result of the opening, in June 2007, of our 98,000 square foot facility in Tianjin, China, where we manufacture ceramic crucibles, primarily for the Chinese market. We will commence construction during 2010 of an additional 218,000 square foot facility in Tianjin, China to expand production capacity for ceramic crucibles, which we believe will lead to further growth in sales in the Asian market.

We anticipate that international shipments will account for a significant portion of our sales for the foreseeable future. Therefore, the following risks associated with international business activities could have material adverse effects on our performance:

- burdens to comply with multiple and potentially conflicting foreign laws and regulations, including export requirements, tariffs and other barriers, health and safety requirements, and unexpected changes in any of these factors;
- difficulty in staffing and managing international operations;

- differences in intellectual property protections;
- difficulty in obtaining export licenses from the U.S. government for sales of our defense-related products;
- potentially adverse tax consequences due to overlapping or differing tax structures;
- fluctuations in currency exchange rates; and
- risks associated with operating a business in a potentially unstable political climate.

We have traditionally invoiced our sales from the United States to customers in foreign countries in U.S. dollars. Consequently, if the U.S. dollar becomes more expensive relative to the currencies of our foreign customers, the price of our products that we export from the United States to those countries will rise and our sales into those countries may fall. In addition, in the future, we may be required to denominate foreign sales in the local currencies of our customers. In that case, if the U.S. dollar were to become more expensive relative to the currencies of our foreign customers, we would receive fewer U.S. dollars for each unit of foreign currency that we receive when our customers pay us. Therefore, a more expensive U.S. dollar would cause us to incur losses upon the conversion of accounts receivable denominated in foreign currencies. Such losses could harm our results of operations.

Our ESK Ceramics subsidiary, located in Kempten, Germany invoices approximately 72.0% of its sales in Euros. ESK Ceramics' sales to customers located in the United States are invoiced in U.S. dollars. If the Euro becomes more expensive relative to the currencies of ESK Ceramics' customers located outside the European Union, the price of its products sold to customers in those countries will rise and its sales into those countries may fall.

We may make future acquisitions which may be difficult to integrate, divert management resources, result in unanticipated costs, or dilute our stockholders.

Part of our continuing business strategy is to make acquisitions of, or investments in, companies, products or technologies that complement our current products, enhance our market coverage, technical capabilities or production capacity, or offer growth opportunities. Future acquisitions could pose numerous risks to our operations, including:

- we may have difficulty integrating the purchased operations, technologies or products;
- we may incur substantial unanticipated integration costs;
- assimilating the acquired businesses may divert significant management attention and financial resources from our other operations and could disrupt our ongoing business;
- acquisitions could result in the loss of key employees, particularly those of the acquired operations;
- we may have difficulty retaining or developing the acquired businesses' customers;
- acquisitions could adversely affect our existing business relationships with suppliers and customers;
- we may fail to realize the potential cost savings or other financial benefits and/or the strategic benefits of the acquisitions; and
- we may incur liabilities from the acquired businesses for infringement of intellectual property rights or other claims, and we may not be successful in seeking indemnification for such liabilities or claims.

In connection with these acquisitions or investments, we could incur debt, amortization expenses related to intangible assets, large and immediate write-offs, assume liabilities, or issue stock that would dilute our current stockholders' percentage of ownership. We may not be able to complete acquisitions or integrate the operations, products or personnel gained through any such acquisition without a material adverse effect on our business, financial condition and results of operations.

The cost of electricity is a significant portion of our cost of product sales. An increase in the cost of electricity may cause our profit margins to decline.

Electricity is essential for the production of our products and comprises a significant portion of our cost of product sales. The cost of electricity for our manufacturing operations in the United States, Europe and China was approximately $12.7 million during 2009, approximately $13.2 million during 2008, and approximately $13.5 million during 2007. Over the last several years, the cost of electricity from utility companies has increased, particularly in California where a significant portion of our manufacturing facilities are located. Management utilizes utility industry specialists and consultants to help manage and implement strategies to minimize annual price increases at its Advanced Ceramic Operations' facilities located in California. For other locations in the United States and Germany, management's strategy is to enter into long term contracts to obtain fixed price increases in order to increase its ability to accurately forecast future energy costs and ensure a stable cost structure. Fluctuations in the cost of electricity affect our ability to accurately forecast future energy costs and consequently our profitability. If the cost of electricity were to increase substantially, our gross profit margins may decline.

We may not be able to adequately safeguard our intellectual property rights and trade secrets from unauthorized use, and we may become subject to claims that we infringe on others' intellectual property rights.

We rely on a combination of patents, trade secrets, trademarks, and other intellectual property laws, nondisclosure agreements with employees and customers and other protective measures to preserve our proprietary rights to our products and production processes. These measures afford only limited protection and may not preclude competitors from developing products or processes similar or superior to ours. Moreover, the laws of certain foreign countries do not protect intellectual property rights to the same extent as the laws of the United States.

Although we implement protective measures and intend to defend our proprietary rights, these efforts may not be successful. From time to time, we may litigate within the United States or abroad to enforce our issued or licensed patents, to protect our trade secrets and know-how or to determine the enforceability, scope and validity of our proprietary rights and the proprietary rights of others. For example, we are currently involved in two lawsuits in Germany that we initiated to enforce our proprietary rights. Enforcing or defending our proprietary rights could be expensive, requires management's attention and might not bring us timely or effective relief.

Furthermore, third parties may assert that our products or processes infringe their patent rights. Our patents may be challenged, invalidated or circumvented. Although there are no pending or threatened intellectual property lawsuits against us, we may face litigation or infringement claims in the future. Infringement claims could result in substantial costs and diversion of our resources even if we ultimately prevail. A third party claiming infringement may also obtain an injunction or other equitable relief, which could effectively block the distribution or sale of allegedly infringing products. Although we may seek licenses from third parties covering intellectual property that we are allegedly infringing, we may not be able to obtain any such licenses on acceptable terms, if at all.

Our ability to operate effectively could be impaired if we were to lose the services of our key personnel, or if we are unable to recruit qualified managers and key personnel in the future.

Our success depends on the continued service of our management team and key personnel, including Joel P. Moskowitz, our Chairman and Chief Executive Officer and President; David P. Reed, our Vice President, and President of North American Operations; Jerrold J. Pellizzon, our Chief Financial Officer and Corporate Secretary; and Thomas Jüngling, the President of our ESK Ceramics subsidiary. Mr. Moskowitz was diagnosed with non-Hodgkin's lymphoma in October 2004. He completed chemotherapy treatments in January 2005, and his current diagnosis indicates that the non-Hodgkin's lymphoma is in remission.

If Mr. Moskowitz becomes unable to continue working due to health reasons, or if one or more of these individuals were to resign or otherwise terminate their employment with us, we could experience a loss of

sales, delays in new product development and diversion of management resources, and we may have difficulty replacing any of these individuals. We do not have employment agreements or key person insurance on any of our executive employees.

Competition for qualified managers and key personnel is intense and we may not be able to recruit and retain such personnel. If we are unable to retain our existing managers and employees or hire and integrate new personnel, we may experience operating inefficiencies, production delays and reduced profitability.

Our manufacturing facilities are subject to a number of operational risks, including hazards associated with ceramic manufacturing and natural disasters, any of which could have a material adverse impact on our productivity and results of operations.

Due to the nature of our business, we are exposed to hazards associated with ceramic manufacturing, such as:

- accidents or mechanical failure;
- fires or explosions of furnaces; and
- employee exposure to extreme temperatures or hazardous substances.

In addition, the location of our facilities exposes us to potential earthquakes and other natural disasters. These hazards may cause personal injury, loss of life and damage to property, which could lead to a substantial interruption or suspension of operations, potential loss of customers and sales, government fines and lawsuits by injured persons. Any such consequences could have an adverse effect on the productivity and profitability of a particular manufacturing facility or on us as a whole.

Defects in our products could harm our reputation for quality products, increase our operating expenses, reduce sales of our products and impact cash flow.

Our products have in the past contained, and may in the future contain, errors or defects that may be detected at any point in the life of the products. Such errors could result in delays in shipping and sales during the period required for their correction and additional expense associated with their reworking or replacement. Real or perceived defects in our products may result in product returns, loss of sales, delays in market acceptance, injury to our reputation and increased warranty costs, which could reduce our sales and profit. For example, in March 2002, the U.S. government notified us that several lots of our SAPI lightweight ceramic body armor failed to pass ballistics reverification tests. As a result, we stopped production of our SAPI product, modified the design of our product and resumed shipping approximately four months later. In addition, we agreed to correct or replace at our expense all supplies of our SAPI product sales that did not meet the original contractual requirements.

If we are unable to compete successfully against current and future competitors, our revenues could decline.

Our products compete with advanced technical ceramic products from other companies, as well as with high strength steel alloys and plastic products.

When competing with other advanced technical ceramic products, we believe the principal competitive factors are:

- manufacturing capacity and the ability to deliver products;
- price;
- product performance;
- material specifications;
- application engineering capabilities;

- customer support; and
- reputation.

When competing with high strength steel alloys and plastic products, we may not be able to compete effectively when price is a primary consideration, because our products are typically more expensive as a result of higher manufacturing costs associated with the production of advanced technical ceramics.

Some of our competitors include Armor Works, The Protective Group, Ceramtec, the Armor Holdings and Cercom subsidiaries of BAE Systems, CoorsTek, Denka, Momentive Performance Materials, Hitachi, HC Starck, Kyocera's Industrial Ceramics Group, Morgan, Saint Gobain, Kennametal, Spectra-Mat, UK Abrasives, Vesuvius, C-E Minerals, NHTC, Holtec, Nukem and General Electric. Many of our current or potential competitors have greater financial, marketing and technical resources than we do. If we fail to compete successfully against our current or future competitors, our revenues, profit and cash flow could decline.

Uninsured losses arising from third party claims brought against us could result in payment of substantial damages, which would decrease our cash reserves and could harm our profit and cash flow.

Our products are used in applications where the failure to use our products properly or their malfunction could result in serious bodily injury or death. We may not have adequate insurance to cover the payment of any potential claim related to such injuries or deaths. Insurance coverage may not continue to be available to us or, if available, may be at a significantly higher cost.

We are subject to extensive government regulation, and our failure or inability to comply with these regulations could subject us to penalties and result in a loss of our government contracts, which could reduce our revenues, profit and cash flow.

We must comply with and are affected by various government regulations that impact our operating costs, profit margins and our internal organization and operation of our business. Furthermore, we have production contracts with governmental entities and are subject to additional rules, regulations and approvals applicable to government contractors. We are also subject to routine audits to assure our compliance with these requirements. Our failure to comply with these regulations, rules and approvals could result in the imposition of penalties and the loss of our government contracts and disqualification as a U.S. government contractor. As a result, our revenues, profit and cash flow could be reduced.

In addition, a number of our employees involved with defense related business are required to obtain security clearances from the U.S. government. Our business may suffer if we or our employees are unable to obtain the security clearances that are required.

Like other companies operating internationally, we are subject to the Foreign Corrupt Practices Act and other laws which prohibit improper payments to foreign governments and their officials by U.S. and other business entities. Violations of the Foreign Corrupt Practices Act may result in severe criminal penalties, which could have a material adverse effect on our business, financial condition, results of operations and liquidity.

If we fail to comply with environmental laws and regulations, we could incur an increase in our operating costs and a decrease in our profit and cash flow.

We are subject to a variety of environmental regulations relating to the use, storage, discharge and disposal of hazardous materials used to manufacture our products. Authorities could impose fines, suspend production, alter our manufacturing processes, or stop our operations if we do not comply with these regulations.

Until 1997, we produced certain products using beryllium oxide, which is highly toxic in powder form. This powder, if inhaled, can cause chronic beryllium disease in a small percentage of the population. We have been sued in the past by former employees and by employees of one of our customers and by their family members alleging that they had contracted chronic beryllium disease as a result of exposure to beryllium oxide

powders used in our products. The last of these claims was settled in 2002, and all of these claims have been dismissed without our incurring material liability. We may not, however, be able to avoid future liability to persons who may allege that they contracted chronic beryllium disease as a result of exposure to the beryllium oxide we used in prior years.

Any failure to comply with current or subsequently enacted environmental statutes and regulations could subject us to liabilities, fines or the suspension of production. Furthermore, any claims asserted against us in the future related to exposure to beryllium oxide powder may not be covered by insurance. Even if covered, the amount of insurance may be inadequate to cover any adverse judgment.

Fines and other punishments imposed on us for environmental violations and expenses we incur to remedy or comply with environmental regulations and future liability for incidences of chronic beryllium disease contracted by employees or employees of customers would decrease our cash reserves and could harm our profitability.

Our long term investments are subject to risks which may cause losses and affect the liquidity of these investments.

Our long term investments at December 31, 2009 included $20.0 million of auction rate securities which is net of the cumulative to date pre-tax impairment and pre-tax other than temporary impairment charges. Cumulatively to date, we have incurred $2.5 million in pre-tax impairment charges against other comprehensive income, $10.9 million in pre-tax other than temporary impairment charges and a realized loss of $2.3 million related to these securities. We received $5.3 million of proceeds in connection with the sale of the securities that resulted in the realized loss of $2.3 million. For the year ended December 31, 2009, we recognized a pre-tax credit of $6.1 million in other comprehensive income associated with the temporary increase in market value of auction rate securities, a $2.9 million in pre-tax other than temporary impairment charges and a realized loss of $2.3 million which totaled $5.2 million of charges against current earnings. The Company's investments in auction rate securities represent interests in collateralized debt obligations supported by pools of residential and commercial mortgages or credit cards, insurance securitizations and other structured credits, including corporate bonds. These auction rate securities are intended to provide liquidity via an auction process that resets the applicable interest rate at predetermined calendar intervals, allowing investors to either roll over their holdings or gain immediate liquidity by selling such interests at par. During the second half of the year 2007, the auctions for these securities failed and in 2008 and 2009 there was no liquid market for these securities. As a result of current negative conditions in the global credit markets, auctions for our investment in these securities are inactive. Consequently, the investments are not currently liquid through the normal auction process. If they remain illiquid and a buyer is not found outside the auction process, the value of these securities may decline further.

We review impairments associated with our auction rate securities each reporting period to determine the classification of the impairment as "temporary" or "other-than-temporary." A temporary impairment charge results in an unrealized loss being recorded in the other comprehensive income component of stockholders' equity. Such an unrealized loss does not reduce net income for the applicable accounting period because the loss is not viewed as other-than-temporary. We believe that a portion of the impairment of our auction rate securities investments is temporary and a portion is other-than-temporary.

Risks Related to our Common Stock

Our stock price has been volatile, and the value of an investment in our common stock may decline.

The market price and trading volume of our common stock has been subject to significant volatility, and this trend may continue. The value of our common stock may decline regardless of our operating performance or prospects. Factors affecting our market price include:

- initiation of coverage by securities analysts, securities analysts' buy/sell recommendations and any expressed beliefs of securities analysts regarding our business prospects or estimated trading multiples;

- our perceived prospects;
- variations in our operating results and whether we have achieved our key business targets;
- the limited number of shares of our common stock available for purchase or sale in the public markets;
- sales or purchases of large blocks of our stock;
- changes in, or our failure to meet, our earnings estimates;
- differences between our reported results and those expected by investors and securities analysts;
- decreases in our trading multiples on an absolute basis or relative to comparable companies;
- announcements of new contracts by us or our competitors;
- market reaction to any future acquisitions, joint ventures or strategic investments announced by us or our competitors;
- developments in the financial markets;
- market reaction to any adverse publicity or news stories; and
- general economic, political or stock market conditions.

Recent events have caused stock prices for many companies, including ours, to fluctuate in ways unrelated or disproportionate to their operating performance. The general economic, political and stock market conditions that may affect the market price of our common stock are beyond our control. The market price of our common stock at any particular time may not remain the market price in the future. In the past, securities class action litigation has been instituted against companies following periods of volatility in the market price of their securities. Any such litigation, if instituted against us, could result in substantial costs and a diversion of management's attention and resources.

Delaware law may delay or prevent a change in control, and may discourage bids for our common stock at a premium over its market price.

We are subject to the provisions of section 203 of the Delaware General Corporation Law. These provisions prohibit large stockholders, in particular a stockholder owning 15% or more of the outstanding voting stock, from consummating a merger or combination with a corporation unless this stockholder receives board approval for the transaction or 66⅔% of the shares of voting stock not owned by the stockholder approve the merger or transaction. These provisions of Delaware law may have the effect of delaying, deferring or preventing a change in control, and may discourage bids for our common stock at a premium over its market price.

ITEM 1B. *UNRESOLVED STAFF COMMENTS*

Not applicable.

ITEM 2. *PROPERTIES*

We serve our markets through six operating segments with manufacturing facilities in several locations across the United States, one in Canada, one in China, one in Europe and one in India. Please see the table under the caption "Operating Segments and Facilities" in Item 1 of this report for a summary of our facilities and products comprising our six operating segments.

ITEM 3. *LEGAL PROCEEDINGS*

Daniel Vargas, Jr. v. Ceradyne, Inc., Orange County Superior Court, Civil Action No. 07CC01232:

A class action lawsuit was filed on March 23, 2007, in the California Superior Court for Orange County, in which it was asserted that the representative plaintiff, a former Ceradyne employee, and the putative class

members, were not paid overtime at an appropriate overtime rate. The complaint alleged that the purportedly affected employees should have had their regular rate of pay for purposes of calculating overtime adjusted to reflect the payment of a bonus to them for the four years preceding the filing of the complaint, up to the present time. The complaint further alleged that a waiting time penalty should be assessed for the failure to timely pay the correct overtime payment. Ceradyne filed an answer denying the material allegations of the complaint. The motion for class certification was heard on November 13, 2008 and class certification was granted. On January 6, 2009, the court entered an order certifying the class. Ceradyne contends that the lawsuit is without merit on the basis that the bonuses that have been paid are discretionary and not of the type that are subject to inclusion in the regular hourly rate for purposes of calculating overtime. After a request for review by the Court of Appeal of the decision to grant class certification, a day-long mediation before a third-party neutral mediator, and an evaluation of the cost of litigation and the financial exposure in the case, Ceradyne agreed to provide a settlement fund of $1.25 million to resolve all issues in the litigation. The settlement specifically states that neither party is admitting to liability or lack thereof. Ceradyne believed that based upon the cost of further defense and the exposure in the case, it was best to settle the matter. On January 8, 2010, the Court has granted final approval of the settlement. The settlement funds will be paid to a third party administrator on or before March 18, 2010.

On October 21, 2009, Ceradyne made a settlement offer in relation to a claim pertaining to ballistic tests of armored wing assemblies. Ceradyne established a reserve of $1.0 million for this matter as of September 30, 2009.

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

No matters were submitted to a vote of security holders during the fourth quarter of 2009.

PART II

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

Our common stock is traded on the Nasdaq Stock Market under the symbol "CRDN." The following table shows the high and low closing sale prices for our common stock as reported by the Nasdaq Stock Market during the calendar quarters indicated:

	High	Low
Year Ended December 31, 2008		
First Quarter	$50.15	$27.92
Second Quarter	$43.13	$32.27
Third Quarter	$49.70	$32.19
Fourth Quarter	$36.06	$18.15
Year Ended December 31, 2009		
First Quarter	$24.84	$14.36
Second Quarter	$23.44	$17.24
Third Quarter	$20.25	$16.04
Fourth Quarter	$19.60	$15.95

As of February 19, 2010, there were 366 holders of record of our common stock.

We have never declared or paid cash dividends on our common stock and do not plan to pay any cash dividends in the near future. Our current policy is to retain all funds and earnings for use in the operation and expansion of our business.

We did not sell any equity securities during the year ended December 31, 2009 that were not registered under the Securities Act of 1933.

The following table sets forth information regarding shares of our common stock that we repurchased during the fourth quarter ended December 31, 2009.

Issuer Purchases of Equity Securities

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs
Month No. 1 (October 1 to October 31, 2009)	—	—	1,860,237	$50,196,703
Month No. 2 (November 1 to November 30, 2009)	260,000	$16.18	2,120,237	$45,990,609
Month No. 3 (December 1 to December 31, 2009)	25,000	$17.95	2,145,237	$45,541,877
Total	285,000	$16.33	2,145,237	$45,541,877

(1) On March 4, 2008, we announced that our board had authorized the repurchase of up to $100.0 million of our common stock in open market transactions, including block purchases, or in privately negotiated transactions. We did not set a time limit for completion of this repurchase program, and we may suspend or terminate it at any time.

ITEM 6. *SELECTED FINANCIAL DATA*

The following selected consolidated financial data as of December 31, 2005, 2006 and 2007 and for the years ended December 31, 2005 and 2006 are derived from our audited consolidated financial statements for those periods, which are not included in this report. The selected consolidated financial data as of December 31, 2008 and 2009 and for the years ended December 31, 2007, 2008 and 2009 are derived from our audited consolidated financial statements which are included in this report beginning on page F-1. The following data is qualified in its entirety by and should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our consolidated financial statements and the related notes included elsewhere in this report.

	Year Ended December 31,				
	2009[1]	2008[2]	2007[3]	2006	2005
	(amounts in thousands, except per share data)				
Statement of Income Data:					
Net sales	$400,575	$680,197	$756,835	$662,888	$368,253
Cost of product sales	298,956	414,885	450,787	401,991	237,115
Gross profit	101,619	265,312	306,048	260,897	131,138
Operating expenses:					
Selling	27,151	31,231	26,917	22,919	20,694
General and administrative	38,492	43,889	40,801	35,293	21,014
Acquisition related charges	(768)	9,824	—	—	—
Research and development	12,258	14,782	17,552	9,909	7,802
Restructuring — plant closure and severance	12,924	—	—	—	—
Goodwill impairment	3,832	—	—	—	—
Total operating expenses	93,889	99,726	85,270	68,121	49,510
Income from operations	7,730	165,586	220,778	192,776	81,628
Other income (expense):					
Interest income	4,091	7,553	12,394	6,687	434
Interest expense	(7,119)	(7,876)	(7,618)	(7,236)	(9,330)
Gain on early extinguishment of debt	1,881	—	—	—	—
Loss on auction rate securities	(5,187)	(5,870)	(2,114)	—	—
Miscellaneous, net	(979)	1,511	(311)	(799)	420
Total other income (expense)	(7,313)	(4,682)	2,351	(1,348)	(8,476)
Income before provision for income taxes	417	160,904	223,129	191,428	73,152
Provision for income taxes	(8,098)	56,424	80,946	64,934	26,422
Net income	$ 8,515	$104,480	$142,183	$126,494	$ 46,730
Net income per share:					
Basic	$ 0.33	$ 3.95	$ 5.22	$ 4.70	$ 1.90
Diluted	$ 0.33	$ 3.91	$ 5.13	$ 4.62	$ 1.86
Weighted average number of common shares outstanding:					
Basic	25,684	26,446	27,252	26,924	24,635
Diluted	25,802	26,689	27,732	27,352	25,107

	As of December 31,				
	2009	2008	2007	2006	2005
	(amounts in thousands)				
Balance Sheet Data:					
Cash and cash equivalents	$122,154	$215,282	$155,103	$ 13,547	$ 91,542
Short term investments	117,666	6,140	29,582	190,565	7,839
Working capital	406,207	400,835	353,923	332,063	212,309
Total assets	849,704	854,527	782,654	613,001	429,184
Total long-term debt	82,163	102,631	98,748	95,153	91,827
Stockholders' equity	649,717	638,994	591,817	421,881	267,700

(1) The operations of Diaphorm have been consolidated with ours since June 1, 2009.

(2) The operations of SemEquip, Inc. have been consolidated with ours since August 11, 2008.

(3) The operations of Minco, Inc. have been consolidated with ours since July 10, 2007. The operations of Ceradyne Boron Products have been consolidated with ours since September 1, 2007.

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

The following discussion and analysis of our financial condition and results of operations should be read together with "Selected Consolidated Financial Data," and our consolidated financial statements and related notes included elsewhere in this report. This discussion and analysis contains forward-looking statements that involve risks and uncertainties. We base these statements on assumptions that we consider reasonable. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of certain factors discussed in "Note Regarding Forward-Looking Statements," "Item 1A — Risk Factors," and elsewhere in this report.

Overview

We develop, manufacture and market advanced technical ceramic products, ceramic powders and components for defense, industrial, automotive/diesel and commercial applications. Our products include:

- lightweight ceramic armor and enhanced combat helmets for soldiers and other military applications;
- ceramic industrial components for erosion and corrosion resistant applications;
- ceramic powders, including boron carbide, boron nitride, titanium diboride, calcium hexaboride, zirconium diboride and fused silica, which are used in manufacturing armor and a broad range of industrial products and consumer products;
- evaporation boats for metallization of materials for food packaging and other products;
- durable, reduced friction, ceramic diesel engine components;
- functional and frictional coatings primarily for automotive applications;
- translucent ceramic orthodontic brackets;
- ceramic-impregnated dispenser cathodes for microwave tubes, lasers and cathode ray tubes;
- ceramic crucibles for melting silicon in the photovoltaic solar cell manufacturing process;
- ceramic missile radomes (nose cones) for the defense industry;
- fused silica powders for precision investment casting (PIC);
- neutron absorbing materials, structural and non-structural, in combination with aluminum metal matrix composites that serve as part of a barrier system for spent fuel wet and dry storage in the nuclear

industry, and non-structural neutron absorbing materials for use in the transport of nuclear fresh fuel rods;

- nuclear chemistry products for use in pressurized water reactors and boiling water reactors;
- boron dopant chemicals for semiconductor silicon manufacturing and for ion implanting of silicon wafers; and
- ceramic bearings and bushings for oil drilling and fluid handling pumps.

Our customers include the U.S. government, prime government contractors and large industrial, automotive, diesel and commercial manufacturers in both domestic and international markets.

We conduct our operations primarily through six operating segments. The following table includes a summary of our products by applications for our six segments.

Operating Segment and Facility Location	Products
Ceradyne Advanced Ceramic Operations Costa Mesa and Irvine, California Approximately 216,000 square feet Lexington, Kentucky Approximately 115,000 square feet Wixom, Michigan Approximately 29,000 square feet Salem, New Hampshire Approximately 16,000 square feet Mountain Green, Utah Approximately 18,000 square feet Bangalore, India Approximately 21,000 square feet	*Defense Applications:* • Lightweight ceramic armor • Enhanced combat helmets *Industrial Applications:* • Ceralloy® 147 SRBSN wear parts • Precision ceramics • Ceramic bearings and bushings *Automotive/Diesel Applications:* • Ceralloy® 147 SRBSN automotive/diesel engine parts *Commercial Applications:* • Ceramic orthodontic brackets • Components for medical devices
ESK Ceramics Kempten, Germany Approximately 599,000 square feet	*Defense Applications:* • Boron carbide powders for body armor *Industrial Applications:* • Ceramic powders: boron carbide, boron nitride, titanium diboride, calcium hexaboride and zirconium diboride • Silicon carbide parts • Evaporation boats for the packaging industry • High performance fluid handling pump seals *Automotive/Diesel Applications:* • EKagrip® functional and frictional coatings *Commercial Applications:* • BORONEIGE® boron nitride powder for cosmetics
Ceradyne Semicon Associates Lexington, Kentucky Approximately 35,000 square feet	*Industrial Applications:* • Ceramic-impregnated dispenser cathodes for microwave tubes, lasers and cathode ray tubes • Samarium cobalt magnets

Operating Segment and Facility Location	Products
Ceradyne Thermo Materials Scottdale and Clarkston, Georgia Approximately 225,000 square feet Tianjin, China Approximately 98,000 square feet Midway, Tennessee Approximately 105,000 square feet	*Defense Applications:* • Missile radomes (nose cones) • High purity fused silica used to manufacture missile radomes (nose cones) *Industrial Applications:* • Glass tempering rolls • Metallurgical tooling • Castable and other fused silica products • Crucibles for photovoltaic solar cell applications • Turbine components used in aerospace applications
Ceradyne Canada Chicoutimi, Quebec, Canada Approximately 86,000 square feet	*Industrial Applications:* • Boral® structural neutron absorbing materials • Metal matrix composite structures
Boron Quapaw, Oklahoma Approximately 128,000 square feet North Billerica, Massachusetts Approximately 19,000 square feet	*Industrial Applications:* Nuclear Applications: • Nuclear chemistry products for use in pressurized water reactors and boiling water reactors • Radioactive containment for use in spent fuel transport and storage • Burnable poisons for coating of uranium fuel pellets *Semiconductor Applications:* • Cluster molecules such as $B_{18}H_{22}$ for ion implantation for next generation P-dopants • Ionization chambers for ionizing cluster molecules for ion implantation • Development of cluster ion implantation sub-systems • Advanced ion source materials for the manufacture of logic and memory chips

The tables below show, for each of our six segments, revenues and income before provision for income taxes in the periods indicated.

Segment revenues (in millions):

	Year Ended December 31,		
	2009	2008	2007
Advanced Ceramic Operations	$214.1	$450.5	$587.3
ESK Ceramics	105.1	152.2	160.6
Semicon Associates	7.7	8.6	8.0
Thermo Materials	66.1	80.2	32.0
Ceradyne Canada	1.7	5.2	3.9
Boron	27.3	19.0	7.7
Inter-segment elimination	(21.4)	(35.5)	(42.7)
Total revenue from external customers	$400.6	$680.2	$756.8

Segment income before provision for taxes (in millions):

	Year Ended December 31,		
	2009	2008	2007
Advanced Ceramic Operations	$ 22.8	$145.4	$209.2
ESK Ceramics	(24.9)	4.2	13.4
Semicon Associates	0.7	1.4	1.1
Thermo Materials	12.8	23.7	2.3
Ceradyne Canada	(6.9)	(0.1)	(3.0)
Boron	(4.1)	(15.5)	0.7
Inter-segment elimination	—	1.8	(0.6)
Total segment income before provision for taxes	$ 0.4	$160.9	$223.1

We categorize our products into four market applications. The table below shows the percentage contribution of our total sales to external customers of each market application in the different time periods.

	Year Ended December 31,		
	2009	2008	2007
Defense	49.6%	61.8%	74.0%
Industrial	41.2	30.6	20.1
Automotive/Diesel	6.3	5.8	4.2
Commercial	2.9	1.8	1.7
Total	100.0%	100.0%	100.0%

The principal factor contributing to our growth in sales from 2002 through 2007 was demand by the U.S. military for ceramic body armor that protects soldiers, which was primarily the result of military conflicts such as those in Iraq and Afghanistan. This demand was driven by recognition of the performance and life saving benefits of utilizing advanced technical ceramics in lightweight body armor. Our sales also increased from 2004 through 2007 because of our acquisition of ESK Ceramics in August 2004, our acquisition of Minco, Inc. in July 2007, our acquisition of EaglePicher Boron, LLC in August 2007, which we renamed Boron Products, LLC, and the recent expansion of our operations into China. Our sales declined in 2008 primarily because of reduction in shipments of body armor. Our sales declined in 2009 primarily because of a continued reduction in shipments of body armor and also due to a reduction in shipments of our industrial products because of the severe economic recession.

Shipments of lightweight ceramic body armor represented $170.0 million or 42.4% of our total revenues in 2009, $385.0 million or 56.6% of our total revenues in 2008, and $535.3 million or 70.7% of our total revenues in 2007. Of these amounts, ESAPI (enhanced small arms protective inserts) body armor represented 26.4% of our total body armor shipments in 2009, 50.2% of our total body armor shipments in 2008, and 57.0% of our total body armor shipments in 2007.

Shipments of XSAPI, the newest ballistic threat generation of ceramic body armor plates, represented $48.2 million, or 12.0% of our total revenues and 28.4% of our total body armor shipments in 2009. These shipments were made against an Indefinite Delivery/Indefinite Quantity contract awarded to us in October 2008. This five-year contract has a maximum value of $2.3 billion and allows the U.S. government to order either XSAPI or ESAPI body armor from us. To date, we have received one delivery order under this contract in March 2009 for $76.8 million of XSAPI body armor. We anticipate shipping the remaining balance of this order, $28.6 million, during the first quarter of 2010. Since it is our policy to include in backlog only delivery orders with firm delivery dates, our backlog at December 31, 2009 does not include any amounts under this ID/IQ contract except for the balance of the initial delivery order.

Based on informal discussions with U.S. Army personnel, we believe the U.S. Army has decided that the current XSAPI weight from all suppliers, although in compliance with the weight limitations specified in the

ID/IQ contract, is too heavy for use in the current military campaign in Afghanistan. Consequently, unless the U.S. Army changes its position regarding weight or the ballistic threat that the XSAPI plate defeats becomes more prevalent, we do not expect any additional orders for the current version of XSAPI ceramic body armor plates.

We are developing ESAPI and XSAPI designs that weigh 10% to 15% less than the current designs and will offer these to the U.S. Army and other Department of Defense users once these designs meet the current ballistic requirements. There is no assurance that we will be successful with these lighter weight designs.

We do have qualified lightweight body armor inserts that are viable for the Afghanistan campaign and these designs have been offered to the Army and the Marines. These designs offer significant weight saving at a reduced level of protection from the currently fielded ESAPI design. The Army and the Marines have shown interest in these designs and we continue to pursue these opportunities, but there is no assurance that we will be successful.

We believe there will continue to be a viable replacement business for body armor inserts that is procured through the Defense Supply Center Philadelphia (DSCP), and Ceradyne expects continued procurements for replacement inserts during 2010. We will also continue to bid on Foreign Military Sales (FMS) for the first generation of inserts called Small Arms Protective Inserts (SAPI) through our existing ID/IQ contract with Aberdeen Proving Grounds.

Although we believe that demand for ceramic body armor will continue for many years, the quantity and timing of government orders depends on a number of factors outside of our control, such as the amount of U.S. defense budget appropriations and the level of international conflicts. Moreover, ceramic armor contracts generally are awarded in an open competitive bidding process and may be cancelled by the U.S. government at any time without penalty. Therefore, our future level of sales of ceramic body armor will depend on the U.S. military's continued demand for these products and our ability to successfully compete for and retain this business.

Our order backlog was $135.5 million as of December 31, 2009 and $126.4 million as of December 31, 2008. Orders for ceramic armor represented approximately $70.9 million, or 52.3% of the total backlog as of December 31, 2009 and $65.5 million, or 51.8% of the total backlog as of December 31, 2008. We expect that substantially all of our order backlog as of December 31, 2009 will be shipped during 2010.

Based on our current backlog for ceramic body armor and on the other factors discussed above, we expect our shipments of ceramic body armor to be lower in fiscal year 2010 than in 2009.

Our sales to customers located outside of the United States have varied in recent years, representing $135.8 million, or 33.9% of net sales in 2009, $184.0 million, or 27.0% of net sales in 2008, and $136.2 million, or 18.0% of net sales in 2007. We currently have sales offices in Germany, China, England and Canada as well as commissioned independent sales representatives in other parts of Europe and Asia. Of our sales to customers located outside the United States, 38.2% were denominated in U.S. dollars during 2009.

Net Sales. Our net sales consist primarily of revenues from the sale of products, which we recognize when an agreement of sale exists, the product has been delivered according to the terms of the sales order and collection is reasonably assured. We may reduce revenue with reserves for sales returns. Allowances for sales returns, which are recorded at the time revenue is recognized, are based upon historical sales returns. We did not include a sales return provision at December 31, 2009 or 2008 because our historical experience with sales returns leads us to conclude that no allowance for sales returns is necessary.

We do not record a warranty reserve on the sale of our products. For our largest product line, body armor, all of which is sold to the U.S. government, each lot of body armor is tested at an independent laboratory and the lot cannot be released for shipment to the U.S. government until positive test results are received by both the U.S. government and us. For our non-body armor sales, we have experienced minimal claims from these types of sales. Additionally, due to the inherent nature, strength, durability and structural properties of ceramics, as well as a rigid quality control program that includes, for some of our customers, having the customer accept quality test results prior to shipment, we do not believe a warranty reserve is necessary.

Cost of Product Sales. Our cost of product sales includes the cost of materials, direct labor expenses and manufacturing overhead expenses. Our business requires us to maintain a relatively high fixed manufacturing overhead. As a result, our gross profit, in absolute dollars and as a percentage of net sales, is greatly impacted by our sales volume and the corresponding absorption of fixed manufacturing overhead expenses. Additionally, because many of our products are customized, we are frequently required to devote resources to sustaining engineering expenses associated with production efforts, which we also include in cost of product sales.

The cost of electricity comprises a significant portion of our cost of product sales. Our high electricity utilization is a direct result of the use of high temperature furnaces to hot press ceramic body armor inserts and to sinter silicon nitride ("Si3N4") for industrial products. Several years ago, we recognized the need to mitigate the cost of electricity and in 2003 we embarked on a plan to move production from California to Lexington, Kentucky. To date, we have moved all of our Si3N4 furnaces to Kentucky and have established three new hot press lines in Kentucky. No large scale furnaces have been added to the California facility in the past two years. The electricity cost in Kentucky is more stable than California because of the presence of coal fired power plants. Ceradyne may continue the shift of more production to Kentucky by moving further hot press production from California to Kentucky in the future. The price of electricity in Kentucky has been stable for the past three years and is projected by our supplier to continue to be stable over the next few years. We have a policy of locating new production facilities that require high levels of electricity in regions of the world that have either available hydroelectric or coal fired power plants.

The cost of electricity for our manufacturing operations in the United States and Europe was approximately $12.7 million, or 4.2% as a percentage of cost of product sales in 2009, $13.2 million, or 3.2% as a percentage of cost of product sales in 2008, and approximately $13.5 million, or 3.0% as a percentage of cost of product sales in 2007. Over the last several years, the cost of electricity from utility companies has increased, particularly in California where a significant portion of our manufacturing facilities are located. Management utilizes utility industry specialists and consultants to help manage and implement strategies to minimize annual energy price increases at our Advanced Ceramic Operations' California facilities. For other locations in the United States and Germany, management's strategy is to enter into long term contracts to obtain fixed price increases in order to increase its ability to accurately forecast future energy costs and ensure a stable cost structure. Fluctuations in the cost of electricity affect our ability to accurately forecast future energy costs and consequently our profitability. If the cost of electricity were to increase substantially, our gross profit margins may decline.

With regard to significant costs for raw materials that impact our gross margins, we rely on two critical materials to make ceramic body armor: boron carbide powder, which is the principal raw material used in the production of ceramic armor plates, and an ultra-high molecular weight polyethylene textile material, which we laminate to the surface of the ceramic armor plates. We obtain substantially all of our boron carbide powder from our subsidiary, ESK Ceramics, which has been a supplier of boron carbide powder to us for over 30 years. Boron carbide is made from borax and boric acid through a complicated furnace process. Historically, these raw material products have not experienced significant price and supply instability and consequently we have been able to obtain sufficient quantities of boron carbide material from ESK Ceramics. We have further identified a second source of boron carbide from a supplier that utilizes crude boron carbide from China and does the finishing in the United States. The crude boron carbide from China is inexpensive and offers a method to mitigate any internal cost increases at ESK Ceramics through the use of lower cost China material as part of the ESK Ceramics' raw material mix.

Selling Expenses. Our selling expenses consist primarily of salaries and benefits for direct sales and marketing employees, commissions for direct sales employees and for independent sales representatives, trade show expenses, rent for our sales offices, product literature, and travel and entertainment expenses.

General and Administrative Expenses. Our general and administrative expenses consist primarily of employee salaries and benefits, employee bonuses, which are computed quarterly and accrued in the quarter earned, professional service fees, rent for facilities and expenses for information technology.

Research and Development Expenses. Our research and development expenses consist primarily of employee salaries and benefits, materials and supplies related to ongoing application engineering in response to customer requirements for future products, and the research and development of new materials technology and products. These costs are expensed as incurred.

Change in Accounting for Convertible Debt

In May 2008, the FASB Staff issued new accounting guidance for convertible debt instruments that may be settled in cash upon conversion (including partial settlement) which specifies that issuers of such instruments should separately account for the liability and equity components in a manner that will reflect the issuer's nonconvertible debt borrowing rate when interest cost is recognized in subsequent periods. The Company adopted this new guidance as of January 1, 2009, and the adoption impacted the historical accounting for our 2.875% senior subordinated convertible notes due December 15, 2035 (the "Notes"). The implementation of this new accounting guidance for convertible debt resulted in the following retrospective changes in long-term debt, debt issuance costs (included in other noncurrent assets), deferred tax liability, additional paid in capital and retained earnings (in thousands):

	Net Increase (Decrease)				
	Long-Term Debt	Debt Issuance Costs	Deferred Tax Liability	Additional Paid In Capital	Retained Earnings
Allocation of long term debt proceeds and issuance costs to equity component on issuance date	$(29,261)	$(1,018)	$11,015	$17,228	$ —
Cumulative retrospective impact from amortization of discount on liability component and debt issuance costs	3,414	204	(1,252)	—	(1,958)
Cumulative retrospective impact at January 1, 2007	(25,847)	(814)	9,763	17,228	(1,958)
Retrospective impact from amortization of discount on liability component and debt issuance costs during the year	3,595	182	(1,331)	—	(2,082)
Cumulative retrospective impact at December 31, 2007	(22,252)	(632)	8,432	17,228	(4,040)
Retrospective impact from amortization of discount on liability component and debt issuance costs during the year	3,883	163	(1,450)	—	(2,270)
Cumulative retrospective impact at December 31, 2008	$(18,369)	$ (469)	$ 6,982	$17,228	$(6,310)

The adoption of the new accounting guidance also resulted in increased interest expense of approximately $3.7 million in 2008 and $3.4 million in 2007, and decreased net income by $2.3 million in 2008 and $2.1 million in 2007. The retrospective impact to earnings per share was a decrease of $0.09 in 2008 and $0.08 in 2007. As a result of the adoption of the accounting guidance for convertible debt, interest expense for the year ended December 31, 2009 includes non-cash interest expense from amortization of the discount on the liability component of $3.6 million and amortization of debt issuance costs of $399,000 which reduced net income by $4.0 million and earnings per share by $0.10.

As of December 31, 2009 and 2008, the long-term debt and the equity component (recorded in additional paid in capital, net of income tax benefit), determined in accordance with the new accounting guidance for convertible debt, comprised the following (in thousands):

	December 31, 2009	December 31, 2008
Long-term debt		
Principal amount	$ 93,100	$121,000
Unamortized discount	(10,937)	(18,369)
Net carrying amount	$ 82,163	$102,631
Equity component, net of income tax benefit	$ 16,399	$ 17,228

The discount on the liability component of long-term debt is being amortized using the effective interest method based on an annual effective rate of 7.5%, which represented the market interest rate for similar debt without a conversion option on the issuance date, through December 2012, which coincides with the first date that holders of the Notes can exercise their put option, as discussed in Note 4 of Notes to Consolidated Financial Statements commencing at page F-6 of this report. The amount of interest expense recognized relating to both the contractual interest coupon and the amortization of the discount on the liability component was $6.7 million in 2009, $7.4 million in 2008 and $7.1 million in 2007.

Results of Operations

The following table sets forth certain income and expense items from our financial statements for the years ended December 31, 2009, 2008 and 2007 expressed as a percentage of net sales.

	Year Ended December 31,		
	2009	2008	2007
Net sales	100.0%	100.0%	100.0%
Cost of product sales	74.6	61.0	59.6
Gross profit	25.4	39.0	40.4
Operating expenses:			
Selling	6.8	4.6	3.6
General and administrative	9.6	6.5	5.4
Acquisition related charges	(0.2)	1.4	—
Research and development	3.1	2.2	2.3
Restructuring — plant closure and severance	3.2	—	—
Goodwill impairment	1.0	—	—
Income from operations	1.9	24.3	29.1
Other income (expense)	(1.8)	(0.7)	0.3
Income before provision for income taxes	0.1	23.6	29.4
Net income	2.1%	15.4%	18.8%

Year Ended December 31, 2009 Compared to Year Ended December 31, 2008

Net Sales. Our net sales for the year ended December 31, 2009 were $400.6 million, a decrease of $279.6 million, or 41.1%, from $680.2 million in the prior year. The main causes of the decrease were a reduction in body armor shipments and a reduction in sales at our ESK Ceramics subsidiary due to the recent economic contraction. Overall, net sales for the year ended December 31, 2009 of our defense related products were $198.8 million, a decrease of $221.3 million, or 52.7%, from $420.1 million in the prior year and sales for the year ended December 31, 2009 of industrial products amounted to $164.9 million, a decrease of

$43.2 million, or 20.8%, from $208.1 million in the prior year. Sales of automotive/diesel products for the year ended December 31, 2009 were $25.1 million, a decrease of $14.3 million, or 36.2%, from $39.4 million in the prior year and our net sales of commercial products for the year ended December 31, 2009 were $11.8 million, a decrease of $0.8 million, or 6.1%, from $12.6 million in the prior year. The contraction of the global economy was a major reason for the decline in our sales volume and resulting gross profit in our industrial, automotive/diesel and commercial business lines. Also, contributing to the decline was a decrease in per unit sales prices of crucibles due to increased price competition.

Our Advanced Ceramic Operations division had net sales for the year ended December 31, 2009 of $214.1 million, a decrease of $236.4 million, or 52.5%, from $450.5 million in the prior year. The primary reason for this decrease was that shipments of ceramic body and other armor components for defense customers amounted to $188.6 million, a decrease of $221.1 million, or 54.0%, from $409.7 million of net sales in the prior year. The primary reason for the decline in shipments was a reduction in demand for ESAPI body armor sets from us by the U.S. Army because they achieved their targeted goal of 960,000 total sets of ESAPI received from all suppliers since 2005. This targeted goal of shipments was met at the end of September 2008. We received our first and only production order to date for the newest ballistic threat generation of body armor, XSAPI, plates on March 31, 2009 for $76.8 million under the ID/IQ contract discussed above under "Overview," and commenced shipments during April 2009. Net sales of XSAPI body armor for the three and twelve month periods ended December 31, 2009 were $10.1 million and $48.2 million, respectively. Other decreases in sales were from reductions in sales of combat vehicle armor of $5.1 million. Also contributing to the decrease in 2009 sales was a $12.6 million decline in shipments of automotive/diesel products due primarily to the reduction in production of the heavy-duty diesel trucks which was negatively affected by trucking companies' inability to secure financing to purchase new trucks with the result that some of our customers initiated reduced work hours to reduce production because of the decline in sales in the transportation industry as a result of the severe economic contraction during 2009. In addition, sales of industrial wear products declined by $1.7 million in 2009, also due to the severe economic contraction.

Sales to the automotive/diesel market represented 6.3% of sales for the year ended December 31, 2009 and 5.8% of sales for the year ended December 31, 2008. The recent events in the automotive industry have not had a material impact on our results of operations or liquidity. We have not experienced any modifications to payment terms due to issues involving customer liquidity in this industry segment.

Our ESK Ceramics subsidiary had net sales for the year ended December 31, 2009 of $105.1 million, a decrease of $47.1 million, or 31.0%, from $152.2 million in the prior year. On a constant currency basis, sales for the year ended December 31, 2009 were $108.7 million, a decrease of $43.5 million from the prior year. We computed sales on a constant currency basis by calculating 2008 sales in actual Euros and applying a monthly average foreign exchange rate of the Euro to the U.S. dollar during 2009, which was then compared to 2009 actual sales in U.S dollars. Sales of industrial products for the year ended December 31, 2009 were $64.3 million, a decrease of $32.6 million, or 33.7%, from $96.9 million in the prior year. Sales of automotive/diesel products for the year ended December 31, 2009 were $20.1 million, a decrease of $1.7 million, or 7.7%, from $21.8 million in the prior year. The decreases in sales for industrial and automotive/diesel products were primarily the result of the severe economic contraction during 2009. Sales of defense products for the year ended December 31, 2009 were $18.4 million, a decrease of $12.5 million, or 40.4%, from $30.9 million in the prior year. Included in sales of defense products for the year ended December 31, 2009 were inter-segment sales of $16.0 million compared to $28.4 million in the prior year, a decrease of $12.4 million of shipments to our Advanced Ceramic Operations division. The balance of the decrease was due to a reduction in sales of boron carbide powder to third parties in the defense industry for the year ended December 31, 2009, because their sales of ceramic body armor declined.

Our Semicon Associates division net sales for the year ended December 31, 2009 were $7.7 million, a decrease of $0.9 million, or 10.2%, from $8.6 million in the prior year. The decrease reflects lower shipments of microwave cathodes.

Our Thermo Materials division had net sales for the year ended December 31, 2009 of $66.1 million, a decrease of $14.1 million, or 17.5%, from $80.2 million in the prior year. The primary reasons for this

decrease were a reduction of $6.0 million in the sales of precision investment casting products and a $2.4 million reduction in refractory product sales, both due to the severe economic recession. Revenue from crucibles used in the manufacture of photovoltaic cells was $35.6 million, a decrease of $4.8 million, or 11.9%, from $40.4 million in the prior year. This decrease was caused by lower per unit sales prices due to increased price competition while units sold increased for the year ended December 31, 2009 compared to the prior year. Sales to the defense industry during the year ended December 31, 2009 were $8.3 million, an increase of $1.4 million, or 20.1%, from $6.9 million when compared to the prior year.

Our Ceradyne Canada subsidiary had net sales for the year ended December 31, 2009 of $1.7 million, a decrease of $3.5 million, or 68.1%, from $5.2 million in the prior year. To lower our costs of production, during the year ended December 31, 2009, we began to manufacture our Boral® product line internally. This caused a delay in production, resulting in a decline in net sales of $3.4 million during the year ended December 31, 2009.

Our Boron segment, which includes our Ceradyne Boron Products subsidiary, which we acquired on August 31, 2007, and our SemEquip, Inc. subsidiary, which we acquired on August 11, 2008 had net sales for the year ended December 31, 2009, of $27.3 million, an increase of $8.3 million, or 43.6%, from $19.0 million in the prior year. Sales for the year ended December 31, 2009 from Ceradyne Boron Products were $25.5 million, an increase of $7.1 million, or 38.9%, from $18.4 million during the prior year. The increased sales by Ceradyne Boron Products resulted from additional shipments to the nuclear industry of $7.4 million and were offset by a decline in sales to the semiconductor industry of $245,000. SemEquip's sales for the year ended December 31, 2009 were $1.8 million, an increase of $1.1 million, or 173.0%, from $0.7 million during the prior year. The increased sales by SemEquip, Inc. were the result of additional shipments of spare parts and an increase in engineering services, both to the semiconductor industry. Additionally, 2009 financial results included a full year of SemEquip's results compared to less than five months of results in 2008 as SemEquip was acquired in August 2008.

Gross Profit. Our gross profit for the year ended December 31, 2009 was $101.6 million, a decrease of $163.7 million, or 61.7%, from $265.3 million in the prior year. As a percentage of net sales, gross profit was 25.4% for the year ended December 31, 2009, compared to 39.0% for the prior year. This decrease in gross profit and gross profit as a percentage of net sales in the year ended December 31, 2009 caused primarily by substantially lower sales of body armor, particularly of higher margin sales of body armor and reduced operating leverage resulting in less absorption of manufacturing overhead expenses in the production of body armor. Our body armor product line was responsible for $119.9 million of the total decrease in gross profit in 2009 compared to 2008.

Also contributing to the decline in gross profits were lower sales and production volumes of most of our industrial product lines caused by reduced demand brought on by the recent sharp economic contraction, resulting in an increase of unabsorbed manufacturing overhead expenses. However, we did realize increases in gross profit of $3.9 million from a growth in sales to the nuclear industry, $0.7 million from expanding sales of products to the semiconductor industry, both by our Ceradyne Boron Products subsidiary, and $0.7 million from improvement in sales of ceramic radomes to the defense industry by our Thermo Materials Division.

Our Advanced Ceramic Operations division posted gross profit for the year ended December 31, 2009 of $59.7 million, a decrease of $128.2 million, or 68.2%, from $187.9 million in the prior year. As a percentage of net sales, gross profit was 27.9% for the year ended December 31, 2009, compared to 41.7% for the prior year. The primary reasons for the decrease in gross profit and gross profit as a percentage of net sales were lower volumes of production of body armor and industrial products resulting in an increase of unabsorbed manufacturing overhead expenses, higher scrap rates incurred in the production of body armor, and poorer sales mix caused by shipments of lower gross margin SAPI and XSAPI body armor products compared to the prior year.

Our ESK Ceramics subsidiary had a gross profit for the year ended December 31, 2009 of $14.5 million, a decrease of $23.7 million, or 62.1%, from $38.2 million in the prior year. Gross profit as a percentage of net sales was 13.8% in the year ended December 31, 2009 compared to 25.1% in the prior year. The decrease in gross profit and gross profit as a percentage of net sales were the result of an unfavorable sales mix due to

lower sales of ceramic powder for armor applications, an increase in unabsorbed manufacturing overhead expenses caused by lower production volumes, and lower sales of all product lines due to reduced demand for our products as a result of the recent economic contraction. Gross profit was also adversely impacted by the $1.9 million of charges for accelerated depreciation of fixed assets in connection with the closing of the facility in Bazet, France. Additional information regarding this plant closure is provided below under the caption "Restructuring — Plant Closure and Severance."

Our Semicon Associates division had gross profit for the year ended December 31, 2009 of $1.9 million, a decrease of $0.7 million, or 28.6%, from $2.6 million in the prior year. As a percentage of net sales, gross profit was 24.5% for the year ended December 31, 2009 compared to 30.8% for the prior year. The decrease in gross profit and in gross profit as a percentage of net sales in the year ended December 31, 2009 was due primarily to decreased sales of higher margin parts from our microwave cathode product line compared to the prior year.

Our Thermo Materials division had gross profit for the year ended December 31, 2009 of $23.1 million, a decrease of $9.8 million, or 29.8%, from $32.9 million in the prior year. As a percentage of net sales, gross profit was 34.9% for the year ended December 31, 2009, compared to 41.0% for the prior year. The primary reason gross profit decreased was due to lower unit sales prices of crucibles due to increased price competition, while costs did not decline proportionately. Also contributing to the decrease in gross profit was lower sales of industrial and refractory products due to the recent world-wide economic contraction resulting in an increase of unabsorbed manufacturing overhead expenses compared to the prior year.

Our Ceradyne Canada subsidiary had negative gross profit for the year ended December 31, 2009 of $1.8 million, a decrease of $3.1 million, from a gross profit of $1.3 million in the prior year. The negative gross profit resulted primarily from significantly lower sales of our Boral® product line and metal matrix composite products to the nuclear industry resulting in under utilized capacity and an increase of unabsorbed manufacturing overhead expenses compared to the prior year.

Our Ceradyne Boron segment, which includes our Ceradyne Boron Products subsidiary, which we acquired on August 31, 2007, and our SemEquip, Inc. subsidiary, which we acquired on August 11, 2008, had gross profit of $4.2 million, an increase of $3.6 million, or 615.8%, from $0.6 million in the prior year. Of this increase in gross margin, $4.6 million was from additional sales of products to the nuclear and semiconductor industries and improved absorption of fixed manufacturing costs. Offsetting this increase at Ceradyne Boron Products was an increase of $1.0 million in negative gross profit from SemEquip, Inc. to a negative $2.6 million gross profit in the year ending December 31, 2009 from a negative $1.6 million in the prior year primarily due to the reporting of a full year of SemEquip's results in 2009 compared to less than five months of results in 2008.

Selling Expenses. Our selling expenses for the year ended December 31, 2009 were $27.2 million, a decrease of $4.0 million, or 13.1%, from $31.2 million in the prior year. Selling expenses, as a percentage of net sales, increased from 4.6% for the year ended December 31, 2008 to 6.8% of net sales for the year ended December 31, 2009. The decrease in selling expenses was due to a reduction in headcount and related personnel and travel expenses. The increase in selling expenses as a percentage of net sales was due to a reduction in net sales that was not fully offset by a proportionate decrease in selling expenses.

General and Administrative Expenses. Our general and administrative expenses for the year ended December 31, 2009 were $38.5 million, a decrease of $5.4 million, or 12.3%, from $43.9 million in the year ended December 31, 2008. General and administrative expenses, as a percentage of net sales, increased from 6.5% for the year ended December 31, 2008 to 9.6% of net sales for the year ended December 31, 2009. The decrease in general and administrative expenses was due to a reduction in headcount and related personnel and travel expenses, and reduced bonuses due to lower pre-tax income in 2009 as compared to 2008. The increase in general and administrative expenses as a percentage of net sales was due to a reduction in net sales that was not fully offset by a proportionate decrease in general and administrative expenses.

Restructuring — Plant Closure and Severance. We recorded pre-tax restructuring and severance charges of $12.9 million for the year ended December 31, 2009. Included in this amount are charges totaling

$10.3 million due to the closing of our manufacturing facility in Bazet, France owned by our ESK Ceramics France subsidiary and $2.7 million of severance charges consisting of headcount reductions in the United States of $1.3 million and $1.4 million in Germany during the year ended December 31, 2009.

In the second quarter of 2009, we made a strategic decision to close this manufacturing plant. During the year ended December 31, 2009, we recognized pre-tax charges of $10.3 million for the closure of the Bazet facility which included severance and related costs, and contract termination costs of $9.6 million, and legal and other closure costs of $0.7 million. We also incurred $1.9 million for accelerated depreciation of fixed assets that is reported in Cost of Goods Sold for the year ended December 31, 2009. The severance charge was recognized as a postemployment benefit as the Company's obligation related to employees' rights to receive compensation for future absences was attributable to employees' services already rendered, the obligation relates to rights that legally vest, payment of the compensation is probable, and the amount could be reasonably estimated based on local statutory requirements.

We made this decision as a cost-cutting measure to eliminate losses that were incurred at this facility due to the recent severe economic contraction. This decision is consistent with our ongoing objective to lower the costs of our manufacturing operations. As a result, ESK Ceramics France reduced its workforce by approximately 97 employees, primarily composed of manufacturing, production and additional support staff at the plant. Affected employees were eligible for a severance package that includes severance pay, continuation of benefits and outplacement services. The plant was completely closed by the end of 2009 calendar year and we anticipate closing the sale of the building during the first half of 2010.

Goodwill Impairment. We are required to test annually whether the estimated fair value of our reporting units is sufficient to support the goodwill assigned to those reporting units; we perform the annual test in the fourth quarter. We are also required to test goodwill for impairment before the annual test if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount, such as a significant adverse change in the business climate. At December 31, 2009, our market capitalization was less than our total stockholders' equity. We consider this decline to be temporary and based on general economic conditions therefore no interim test of goodwill is required. As of December 31, 2009, none of our reporting units were at risk of failing step one of the impairment test.

We incurred a goodwill impairment charge of $3.8 million in the second quarter of 2009 for the goodwill associated with our Ceradyne Canada operating segment. We determined that the demand for our Boral® product line, which was a large part of the revenue of the Ceradyne Canada operating and reporting unit, continued to decline and that this condition required a goodwill impairment test before the annual test for this reporting unit. To complete the test for impairment, we utilized discounted cash flow methodology, which requires the forecasting of cash flows and requires the selection of discount rates. We used available information to make these fair value estimates, including discount rates, commensurate with the risks relevant to our business. Based on the goodwill impairment test performed on the Ceradyne Canada reporting unit, we recorded a $3.8 million impairment charge, which was recognized in the second quarter of 2009.

During the second quarter of 2009, we also conducted a test on the forecasted undiscounted cash flows to determine whether there was impairment on our long lived assets in our Ceradyne Canada reporting unit. Based on the analysis of the forecasted undiscounted cash flows for this reporting unit, we determined that there was no impairment of the long lived assets for the Ceradyne Canada reporting unit.

The valuation methodologies and the underlying financial information that are used to determine fair value require significant judgments to be made by management. These judgments include, but are not limited to, long-term projections of future financial performance, terminal growth rate and the selection of an appropriate discount rate used to calculate the present value of the estimated future cash flows. The long-term projections used in the valuation were developed as a part of our annual budgeting and forecasting process. The discount rate used in the valuation was selected based upon an analysis of comparable companies and included adjustments made to account for our specific attributes such as size and industry.

The test for long-lived asset impairment resulted in no impairment of those assets at December 31, 2009. Additionally, the test for goodwill impairment resulted in no impairment of goodwill at December 31, 2009.

At the time of the completion of our annual goodwill impairment test as of December 31, 2009, we believed that the cash flow projections we used in determining fair value already appropriately reflected our revised forecast of our financial performance for 2010. While the reduction in sales volume to the U.S. government and the recent severe economic downturn has impacted all of our reporting units, we believe that the fundamentals of our businesses remain solid and the long-term outlook for our industry remains strong. Our valuation models assume the restoration of long-term market stability after a near term period of no growth. All reporting units had fair values which exceeded carrying values by at least 23% as of December 31, 2009. Additionally, a 50 basis point increase in the discount rate, a critical assumption in which a minor change can have a significant negative impact on the estimated fair value, would not have resulted in a goodwill impairment charge.

Acquisition Related Charge. We incurred an acquisition-related compensation charge of $9.8 million for the year ended December 31, 2008 associated with a pre-closing commitment by SemEquip, Inc. for incentive compensation for several of its employees and advisors. This $9.8 million charge included $1.7 million of cash paid by Ceradyne at closing, and the balance represents the discounted present value of the portion of the estimated contingent consideration payable as incentive compensation to these employees and advisors over 15 years. During the third quarter of 2009, we revised the estimated future sales and earnings of SemEquip, which caused a $0.8 million reduction in this acquisition liability and a credit to pre-tax earnings for the year ended December 31, 2009.

Research and Development Expenses. Our research and development expenses for the year ended December 31, 2009 were $12.3 million, a decrease of $2.5 million, or 17.1%, from $14.8 million in the prior year. Research and development expenses, as a percentage of net sales, increased from 2.2% for the year ended December 31, 2008 to 3.1% of net sales for the year ended December 31, 2009. The primary reasons for the decrease in research and development expenses were the reduction in headcount and related personnel and travel expenses. The increase in research and development expenses as a percentage of net sales was due to a reduction in net sales that was not fully offset by a proportionate decrease in research and development expenses.

Other Income (Expense). Our net other income and expense for the year ended December 31, 2009 was a net expense of $7.3 million, an increase of $2.6 million, or 56.3%, from $4.7 million of other net expense in the prior year. This increase was primarily caused by a reduction of $3.5 million in interest income on our cash balances and short-term marketable securities because of a substantial decline in interest rates in 2009. This was offset by a reduction of $0.7 million of losses on auction rate securities compared to the losses incurred in 2008 and a gain on an early extinguishment of debt of $1.9 million. Interest expense for the year ended December 31, 2009 was $7.1 million, a decrease of $0.8 million, or 9.6%, from $7.9 million in the prior year because we bought back $27.9 million of the total $121.0 million principal of our convertible bond.

Income before Provision (Benefit) for Income Taxes. Our income before provision for income taxes for the year ended December 31, 2009 was $417,000, a decrease of $160.5 million, or 99.7%, from $160.9 million of income before provision for income taxes in the prior year.

The primary reasons for the decrease in the income before provision for income taxes for the year ended December 31, 2009 were large reductions in sales of body armor due to decreased demand from the U.S. Government, a reduction of sales of industrial products due to the severe economic contraction, unabsorbed manufacturing overhead due to lower production volumes, $12.2 million pre-tax charges for the closure our Bazet, France manufacturing plant, a $3.8 million pre-tax charge for impairment of goodwill at our Ceradyne Canada segment, $2.6 million of severance costs due to reductions in work force in our North America operations and at ESK Ceramics, and a reduction in interest income compared to the prior year because of historically low interest rates. These factors were partially offset by a $0.8 million reduction in acquisition liabilities and a credit of $0.6 million to adjust the amortization of intangibles; both were adjusted based on revised estimates of future sales and earnings at our SemEquip subsidiary.

Our Advanced Ceramic Operations division's income before provision for income taxes for the year ended December 31, 2009 was $22.9 million, a decrease of $122.4 million, or 84.3%, from $145.3 million of income before provision for income taxes in the prior year. The decrease in income before provision for

income taxes for the year ended December 31, 2009 was due primarily to substantially lower sales of body armor, restructuring and severance expenses of $1.1 million due to headcount reductions, unabsorbed manufacturing overhead expenses because of lower volumes of production of body armor and industrial products, and higher scrap rates incurred in the production of body armor.

Our ESK Ceramics subsidiary recorded a loss before provision for income taxes for the year ended December 31, 2009 of $24.9 million, a decrease of $29.1 million, from income before provision for income taxes of $4.2 million in the prior year. The primary causes of the decrease in income before provision for income taxes were substantially reduced industrial sales due to the severe economic contraction and the resultant lower production volumes that caused excess capacity and significant unabsorbed manufacturing expenses, a $12.2 million charge for the closure of our Bazet, France, manufacturing plant; severance expenses in Germany of $1.4 million due to a reduction in work force; and lower sales of ceramic powder for armor applications because of reduced demand for body armor by the U.S. military.

Our Semicon Associates division's income before provision for income taxes for the year ended December 31, 2009 was $0.7 million, a decrease of $0.7 million, or 51.1%, from $1.4 million of income before provision for income taxes in the prior year. The decrease in income before provision for income taxes for the twelve months ended December 31, 2009 was primarily caused by a reduction in the sales of microwave cathode products due to the recent economic contraction.

Our Thermo Materials division's income before provision for income taxes for the year ended December 31, 2009 was $12.8 million, a decrease of $10.9 million, or 45.9%, from $23.7 million of income before provision for income taxes in the prior year. The decrease in income before provision for income taxes was due to lower sales of crucibles caused by a reduction in unit selling prices and a reduction in sales of refractory and industrial products due to the recent economic contraction, when compared to the prior year.

Our Ceradyne Canada subsidiary's loss before provision for income taxes for the year ended December 31, 2009 amounted to $6.9 million, a decrease of $6.9 million, from income before provision for income taxes of $69,000 in the prior year. The decrease in income before provision for income taxes was due to a sharp decrease in demand of our Boral® product line, metal matrix composite products and unabsorbed manufacturing expenses, and a goodwill impairment charge of $3.8 million recorded in the second quarter of 2009.

Our Boron segment's loss before provision for income taxes for the year ended December 31, 2009 was $4.1 million, a decrease of $11.4 million, or 73.6%, from a loss before provision for income taxes of $15.5 million in the prior year. The improvement in the performance of this segment was attributable to the increase of income before provision for income taxes at our Ceradyne Boron Products subsidiary of $3.4 million due to increased sales of nuclear products of $7.4 million and greater absorption of fixed manufacturing expenses. Also contributing to the improved performance of this segment was a credit of $0.6 million to adjust the amortization of intangibles based on revised estimates of sales and earnings. During the year ended December 31, 2008, SemEquip, Inc. incurred an acquisition related charge of $9.8 million compared to a credit of $0.8 million in the year ended December 31, 2009 because of revised estimates.

Income Taxes. For the year ended December 31, 2009, we had a tax benefit of $8.1 million, a decrease of $64.5 million, from $56.4 million of a provision for income taxes in the prior year. Our effective income tax rate for the year ended December 31, 2008 was 35.1%. The tax benefit in 2009 resulted from a reversal of liability for uncertain tax positions as well as the tax benefits from the expenses and losses due to the closure of our Bazet, France manufacturing facility. We also had part of our pre-tax income originating from our operations in China where we did not pay income tax. Income taxes also decreased because pre-tax income was lower in 2009 compared to 2008.

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

Net Sales. Our net sales for the year ended December 31, 2008 were $680.2 million, a decrease of $76.6 million, or 10.1%, from $756.8 million in the prior year.

Our Advanced Ceramic Operations division had net sales for the year ended December 31, 2008 of $450.5 million, a decrease of $136.8 million, or 23.3%, from $587.3 million in the prior year. The primary

reason for this decrease was that shipments of ceramic body and other armor components for defense customers amounted to $409.7 million, a decrease of $141.6 million, or 25.7%, from $551.3 million of net sales in the prior year due to reduced demand from the U.S. Department of Defense. The decrease in armor sales was partially offset by a $6.6 million increase in net sales of our automotive/diesel component product line, including cam rollers, from $11.0 million in 2007 to $17.6 million in 2008. The primary reason for the increase in sales of the automotive/diesel component product line was $5.0 million of shipments of ceramic cam rollers to our North American automotive suppliers because their customers were making forward purchases of the current engine which is being replaced by a new, more expensive engine. The remaining increase of $1.1 million was due to more ceramic cam rollers shipped to European suppliers for use in off-highway engines.

Our ESK Ceramics subsidiary had net sales for the year ended December 31, 2008 of $152.2 million, a decrease of $8.4 million, or 5.2%, from $160.6 million in the prior year. Approximately $11.5 million of the sales in 2008 are attributable to a higher value of the Euro versus the U.S. dollar in 2008 compared to 2007. Sales of industrial products for the year ended December 31, 2008 were $96.9 million, an increase of $4.3 million, or 4.7%, from the $92.6 million in the prior year. On a constant currency basis, sales of industrial products for the year ended December 31, 2008 decreased by $3.0 million. Sales of automotive/diesel products for the year ended December 31, 2008 were $21.8 million, an increase of $1.1 million, or 5.4%, from the $20.7 million in the prior year. On a constant currency basis, sales of automotive/diesel products for the year ended December 31, 2008 decreased by $0.7 million. The decreases in sales on a constant currency basis for industrial and automotive/diesel products were primarily the result of a severe economic contraction in the fourth quarter of 2008. Sales of defense products for the year ended December 31, 2008 were $30.9 million, a decrease of $14.3 million, or 31.7% from the $45.2 million in the prior year. Included in sales of defense products for the year ended December 31, 2008 were inter-segment sales of $28.4 million compared to $40.7 million in the prior year, a decrease of $12.3 million of shipments to our Advanced Ceramic Operations division. The balance of the decrease was due to a reduction in sales of boron carbide powder to third parties in the defense industry for the year ended December 31, 2008, because their sales of ceramic body armor declined. On a constant currency basis, sales of defense products decreased by $16.5 million for the year ended December 31, 2008.

Our Semicon Associates division had net sales for the year ended December 31, 2008 of $8.6 million, an increase of $0.6 million, or 7.3%, from $8.0 million in the prior year. The increase in sales reflects higher shipments of microwave and laser cathodes of $0.9 million; this was partially offset by lower shipments of cathode ray tubes and magnets in 2008 when compared to 2007.

Our Thermo Materials division had net sales for the year ended December 31, 2008 of $80.2 million, an increase of $48.2 million, or 150.3%, from $32.0 million in the prior year. The increase was due in part to the growth of $29.5 million in sales of crucibles used in the manufacture of photovoltaic cells for the solar energy markets, including $24.4 million by our new operation in China. Also contributing to the increase in sales during 2008 was $16.1 million in sales, including inter-company sales, as a result of a full year inclusion of the financial results of Minco, Inc. which we acquired and initially consolidated commencing July 10, 2007. Sales to the defense industry were higher by $2.4 million due to increased demand for ceramic missile radomes.

Our Ceradyne Canada subsidiary had net sales for the year ended December 31, 2008 of $5.2 million, an increase of $1.3 million, or 33.4%, from $3.9 million in the prior year. The increase in sales reflects higher shipments of our Boral® product line to the nuclear industry of $2.5 million. This was partially offset by a $1.2 million reduction in sales of metal matrix composite products.

Our Boron segment which includes our Ceradyne Boron Products subsidiary, which we acquired on August 31, 2007, and our SemEquip, Inc. subsidiary, which we acquired on August 11, 2008 had net sales for the year ended December 31, 2008, of $19.0 million, an increase of $11.2 million, or 144.7%, from $7.8 million in the prior year. The increase in sales was the result of a full year consolidation in 2008 of the Ceradyne Boron Products subsidiary while results in 2007 included net sales for the period from September 1 to December 31, 2007. Also contributing to the increase was the consolidation as of August 11, 2008 of the

results of SemEquip, Inc., which had sales of $0.7 million for the period from August 11 through December 31, 2008.

Gross Profit. Our gross profit for the year ended December 31, 2008 was $265.3 million, a decrease of $40.7 million, or 13.3%, from $306.0 million in the prior year. As a percentage of net sales, gross profit was 39.0% for the year ended December 31, 2008, compared to 40.4% for the prior year. The decrease in gross profit as a percentage of net sales in the year ended December 31, 2008 was the result of lower sales, particularly of body armor, resulting in a poorer sales mix and lower operating leverage resulting in less absorption of manufacturing overhead expenses. The decrease in gross profit was primarily caused by the decrease in body armor and other armor component sales; this resulted in a reduction of $63.4 million of gross profit compared to 2007 results. This decrease was partially offset by gross profit from the increased sales of ceramic crucibles and the full year consolidation in 2008 of operations of our Minco, Inc. and Ceradyne Boron Products subsidiaries, both of which were acquired in 2007.

Our Advanced Ceramic Operations division posted gross profit for the year ended December 31, 2008 of $187.9 million, a decrease of $59.9 million, or 24.2%, from $247.8 million in the prior year. As a percentage of net sales, gross profit was 41.7% for the year ended December 31, 2008, compared to 42.2% for the prior year. The primary reasons for the decrease in gross profit and gross profit as a percentage of net sales were decreased sales of body armor, resulting in poorer sales mix and lower operating leverage causing manufacturing overhead to be under absorbed.

Our ESK Ceramics subsidiary had a gross profit for the year ended December 31, 2008 of $38.2 million, a decrease of $10.2 million, or 21.0%, from $48.4 million for the year ended December 31, 2007. Gross profit as a percentage of net sales was 25.1% in 2008 compared to 30.1% in 2007. The decrease in gross profit and in gross profit as a percentage of net sales in the year ended December 31, 2008 was the result of increased labor and electricity expenses, continued price reductions in our evaporation boat and our functional coating businesses due to competitive forces, and a reduction in higher margin boron carbide powder sales to external customers.

Our Semicon Associates division had gross profit for the year ended December 31, 2008 of $2.6 million, an increase of $0.7 million, or 37.6%, from $1.9 million in the prior year. As a percentage of net sales, gross profit was 30.8% for the year ended December 31, 2008, compared to 24.0% for the prior year. The increase in gross profit and in gross profit as a percentage of net sales in the year ended December 31, 2008 was due primarily to price increases that were successfully passed on to customers of our microwave and laser cathodes products.

Our Thermo Materials division had gross profit for the year ended December 31, 2008 of $32.9 million, an increase of $25.2 million, or 328.9%, from $7.7 million in the prior year. As a percentage of net sales, gross profit was 41.0% for the year ended December 31, 2008, compared to 24.8% for the prior year. The improvements in gross profit and gross profit as a percentage of sales were primarily due to lower sales of fused silica and casting product lines which have lower gross margins and an increase in the sales of crucibles which have higher gross margins. Also contributing to the increase in gross profit was the full year consolidation in 2008 of operations of our Minco, Inc. subsidiary, which was initially consolidated as of July 10, 2007.

Our Ceradyne Canada subsidiary had gross profit for the year ended December 31, 2008 of $1.3 million, an increase of $3.2 million, from a negative gross profit of $1.9 million in the prior year. The increase in gross profit was due to an improved sales mix caused by increased sales of our Boral® product line in 2008 and higher operating leverage.

Our Ceradyne Boron segment, which includes our Ceradyne Boron Products subsidiary, which we acquired on August 31, 2007, and our SemEquip, Inc. subsidiary, which we acquired on August 11, 2008, had gross profit of $0.6 million, a decrease of $2.3 million, or 79.9%, from $2.9 million in the prior year. The decrease was primarily caused by a $1.6 million gross loss from the results of SemEquip, Inc. which were consolidated from August 11, 2008. Our Ceradyne Boron Products subsidiary had gross profit of $2.2 million for the year ended December 31, 2008, a decrease of $0.7 million, or 24.2%, from $2.9 million in the prior

year. Contributing to the decrease were poor manufacturing yields and a decrease in sales of higher margin products to the semiconductor industry when compared to 2007.

Selling Expenses. Our selling expenses for the year ended December 31, 2008 were $31.2 million, an increase of $4.3 million, or 16.0%, from $26.9 million in the prior year. Selling expenses, as a percentage of net sales, increased from 3.6% for the year ended December 31, 2007 to 4.6% of net sales for the year ended December 31, 2008. Selling expenses at our ESK Ceramics subsidiary, which constitute a relatively large portion of the total, are denominated in Euros and increase when translated into dollars at lower exchange rates; this caused an increase of $1.5 million in selling expenses in 2008. Other factors contributing to the increase were $2.2 million of additional selling expenses due to the full year consolidation in 2008 of the results of our Ceradyne Boron Products which was initially consolidated commencing September 1, 2007, $0.5 million of additional selling expenses due to the full year consolidation in 2008 of our Minco subsidiary which was initially consolidated commencing July 10, 2007, and $0.7 million of selling expenses due to the inclusion of the results of our recently acquired SemEquip, Inc. subsidiary. These increases were partially offset by a reduction in headcount and related personnel and travel expenses of $0.6 million at our ACO division. The increase in selling expenses as a percentage of net sales was due to a reduction in net sales that was not fully offset by a proportionate decrease in selling expenses.

General and Administrative Expenses. Our general and administrative expenses for the year ended December 31, 2008 were $43.9 million, an increase of $3.1 million, or 7.6%, from $40.8 million in the year ended December 31, 2007. General and administrative expenses, as a percentage of net sales, increased from 5.4% for the year ended December 31, 2007 to 6.5% of net sales for the year ended December 31, 2008. The consolidation of the operations of our Minco, Inc. and Ceradyne Boron Products subsidiaries for all of 2008 and the consolidation of our SemEquip, Inc. subsidiary commencing as of August 11, 2008, contributed $1.8 million to the increase in general and administrative expenses for the year ended December 31, 2008. General and administrative expenses also increased in 2008 due to a $1.5 million increase in professional fees for auditing, tax and information technology consulting services, and due to $0.5 million of additional expenses in connection with the expansion of our business in China. These increases were partially offset by a reduction in bonus payments of $1.5 million as a result of a decrease in pre-tax income in 2008 compared to 2007.

Acquisition Related Charge. We incurred an acquisition-related compensation charge of $9.8 million for the year ended December 31, 2008 associated with a pre-closing commitment by SemEquip, Inc. for incentive compensation for several of its employees and advisors. This $9.8 million charge includes $1.7 million of cash paid by Ceradyne at closing, and the balance represents the discounted present value of the portion of the estimated contingent consideration payable as incentive compensation to these employees and advisors over 15 years. For additional information regarding this acquisition, see Note 3 of Notes to Consolidated Financial Statements commencing at Page F-6 of this report.

Research and Development Expenses. Our research and development expenses for the year ended December 31, 2008 were $14.8 million, a decrease of $2.8 million, or 15.8%, from $17.6 million in the prior year. Research and development expenses, as a percentage of net sales, decreased from 2.3% for the year ended December 31, 2007 to 2.2% of net sales for the year ended December 31, 2008. The primary reasons for these decreases were the reduction in expenses associated with the development of next generation body armor products and the development of combat vehicle armor.

Other Income (Expense). Our net other income and expense for the year ended December 31, 2008 was a net expense of $4.7 million, a decrease of $7.1 million from $2.4 million of net other income in the prior year. There were two principal reasons for this decrease. We earned $4.8 million less interest income on our cash balances and short-term marketable securities because of a substantial decline in interest rates in 2008. We also incurred charges of $5.9 million for impairment due to other than temporary reductions in the value of our investments in auction rate securities. Interest expense for the year ended December 31, 2008 was approximately $7.9 million, an increase of $258,000, or 3.4%, from $7.6 million in the prior year.

Income before Provision for Income Taxes. Our income before provision for income taxes for the year ended December 31, 2008 was $160.9 million, a decrease of $62.2 million, or 27.9%, from $223.1 million in the prior year.

Our Advanced Ceramic Operations division's income before provision for income taxes for the year ended December 31, 2008 was $145.4 million, a decrease of $63.8 million, or 30.5%, from $209.2 million in the prior year. The decrease in income before provision for income taxes for the year ended December 31, 2008 was a result of lower sales of body armor and a decrease in gross margins as a result of a poorer sales mix and lower operating leverage.

Our ESK Ceramics subsidiary's income before provision for income taxes for the year ended December 31, 2008 was $4.2 million, a decrease of $9.2 million, or 68.5%, from $13.4 million in the prior year. The decrease in income before provision for income taxes for the year ended December 31, 2008 was the result of increased labor and electricity expenses, continued price reductions in our evaporation boat and our functional coating businesses due to competitive forces, a reduction in higher margin boron carbide powder sales to external customers and the negative impact of the exchange rate of the Euro when compared to the U.S. dollar.

Our Semicon Associates division's income before provision for income taxes for the year ended December 31, 2008 was $1.4 million, an increase of $246,000, or 21.8%, from $1.1 million in the prior year. The increase in income before provision for income taxes for the year ended December 31, 2008 was a result of higher sales of our microwave and laser cathodes products resulting in improved sales mix and operating leverage.

Our Thermo Materials division's income before provision for income taxes for the year ended December 31, 2008 was $23.7 million, an increase of $21.4 million, or 928.4%, from $2.3 million in the prior year. The increase in income before provision for income taxes for the year ended December 31, 2008 was due to a sales mix change from lower sales of fused silica and casting product lines which have lower gross margins and an increase in the sales of crucibles, primarily in China, and defense products which have higher gross margins. The operations of our Minco, Inc. subsidiary, which were consolidated for all of 2008 compared to only part of 2007, contributed $1.5 million to the increase in income before provision for income taxes for the year ended December 31, 2008 compared to a contribution of $166,000 in the prior year.

Our Ceradyne Canada subsidiary's loss before provision for income taxes improved to $69,000 for the year ended December 31, 2008, from a loss before provision for taxes of $3.0 million in the prior year. The decrease in the loss before provision for income taxes for the year ended December 31, 2008 was due to an improved sales mix caused by increased sales of our Boral® product line in 2008 compared to 2007 and higher operating leverage.

Our Boron segment's loss before provision for income taxes for the year ended December 31, 2008 was $15.5 million, a decrease of $16.2 million from income before provision of income taxes of $0.7 million in the prior year. The decrease was primarily caused by a $13.8 million loss before provision for income taxes incurred by our SemEquip, Inc. subsidiary, which we acquired on August 11, 2008. Included in the loss was a $9.8 million acquisition-related compensation charge associated with a pre-closing commitment by SemEquip, Inc. for incentive compensation for several of its employees and advisors. SemEquip is a late stage development company that incurred operating losses in connection with the development and marketing of "cluster molecules" such as $B_{18}H_{22}$ for use in the ion implantation of boron (B) in the manufacturing of semiconductors. We anticipate that SemEquip will continue to incur operating losses for the next two fiscal years. Additionally, our Boron Products subsidiary incurred a loss before provision for income taxes for the year ended December 31, 2008 of $1.7 million due to a reduction of sales of high margin products to the semiconductor industry as a result of a business contraction in that industry and poor manufacturing yields.

Income Taxes. Our provision for income taxes for the year ended December 31, 2008 was $56.4 million, a decrease of $24.5 million, or 30.3%, from $80.9 million in the prior year. The effective income tax rate for the year ended December 31, 2008 was 35.1% compared to 36.3% in the prior year. The decrease in the effective tax rate from the prior year resulted from a higher proportion of our pre-tax income originating from

our operations in China where we did not pay income tax. Income taxes also decreased because pre-tax income was lower in 2008 compared to 2007.

Liquidity and Capital Resources

We generally have met our operating and capital requirements with cash flow from operating activities and proceeds from the sale of shares of our common stock.

The following table presents selected financial information and statistics as of and for the two years ended December 31, 2009 and 2008 (in thousands):

	2009	2008
Cash and cash equivalents	$122,154	$215,282
Short term investments	117,666	6,140
Accounts receivable, net	53,269	64,631
Inventories, net	100,976	101,017
Working capital	406,207	400,835
Annual operating cash flow	67,773	155,970

During the year ended December 31, 2009, we generated $67.8 million of cash from operations compared to $156.0 million for the year ended December 31, 2008. The $67.8 million of cash flow from operations during 2009 is primarily comprised of net income totaling $8.5 million, with $45.8 million of non cash charges included therein, and a reduction in net operating assets and liabilities, net of assets acquired, of $13.5 million, mostly due to lower revenues during the year. We invested $14.4 million to expand manufacturing capacity in selected product lines and $9.7 million to acquire the assets and business of Diaphorm Technologies LLC, as explained more fully elsewhere. We also used $9.8 million to buy back our stock and $23.2 million to acquire a portion of our outstanding convertible debt, as described more fully below. In an effort to increase yield, as of December 31, 2009 we had invested a net additional $106.0 million in marketable securities as compared to the end of 2008. As a result, our net cash at December 31, 2009 declined by $93.1 million as compared to a $60.2 million increase during the year ended December 31, 2008.

Investing activities consumed $130.6 million of cash during the year ended December 31, 2009. This included $9.7 million for the acquisition of substantially all of the business and assets and all technology and intellectual property related to ballistic combat and non-combat helmets of Diaphorm Technologies, LLC, based in Salem, New Hampshire. We invested $179.2 million for the purchase of marketable securities as we extended the maturities of our investments in an attempt to increase our return. We also spent $14.5 million for the purchase of property, plant and equipment. Included in this amount is $6.6 million for improvements in the production of ceramic crucibles at our China and Atlanta facilities and $2.0 million for the ongoing implementation of our SAP software system. These expenditures for investing activities were partially offset by $73.2 million of proceeds from sales and maturities of marketable securities.

Financing activities during the year ended December 31, 2009 consumed $29.8 million. During the year ended December 31, 2009, we purchased and retired 567,000 shares of our common stock at an aggregate cost of $9.8 million under a stock repurchase program authorized by our Board of Directors. To date, we have purchased and retired a cumulative total of 2,145,237 at an aggregate cost of $54.5 million. We are authorized to repurchase and retire an additional $45.5 million for a total of $100.0 million. We also purchased and retired an aggregate of $27.9 million principal amount of our convertible debt for $23.2 million reducing the outstanding balance of the Notes to $93.1 million. Of the $23.2 million expenditure for the retirement of the debt, $21.8 million is reflected in financing activities and the balance of $1.4 million was attributable to payments of accreted interest on the debt discount and is reflected in cash flows from operating activities. We have $26.8 million remaining of the original $50.0 million authorization by our Board of Directors to repurchase and retire part of the outstanding Notes. The carrying amount of the Notes purchased was $24.1 million and the estimated fair value of the Notes exclusive of the conversion feature was $21.8 million. The difference between the carrying amount of $24.1 million and the estimated fair value of $21.8 million was recognized as a gain of $2.3 million upon early extinguishment of debt, which was partially offset by write off

of associated unamortized debt issuance costs of $392,000, resulting in a net gain of $1.9 million. The difference between the estimated fair value of $21.8 million and the purchase price of $23.2 million was $1.4 million and was charged to additional paid-in capital. In May 2008, the FASB Staff issued new accounting guidance for convertible debt instruments that may be settled in cash upon conversion (including partial cash settlement) which specifies that issuers of such instruments should separately account for the liability and equity components in a manner that will reflect the issuer's nonconvertible debt borrowing rate when interest cost is recognized in subsequent periods.

The negative effect of exchange rates on cash and cash equivalents of $0.5 million during the year ended December 31, 2009 was due to our investment in our German subsidiary, ESK Ceramics, and in our Chinese subsidiary, Ceradyne (Tianjin) Technical Ceramics, Ltd.

Our net cash position increased by $60.2 million during the year ended December 31, 2008, compared to a $141.6 million increase during the year ended December 31, 2007. For the year ended December 31, 2008, cash flow provided by operating activities amounted to $156.0 million. The primary factors contributing to cash flow from operating activities in the year ended December 31, 2008, were net income of $106.8 million, and adjustments of non-cash amounts related to depreciation and amortization of $36.7 million, stock compensation of $3.1 million, and $5.9 million of unrealized losses on auction rate securities. Also contributing to the increase in cash flow from operating activities was a decrease in accounts receivable and other receivables of $21.2 million due to lower sales compared to the previous year, a decrease in production tooling of $2.0 million due to lower production volume, an increase of $9.8 million in other long term liabilities due primarily to the accrual of the pre-acquisition commitment by SemEquip, Inc. to pay incentive compensation to several of its employees and advisors, and an increase of $6.3 million in the accrual for employee benefits at our ESK and Boron Products subsidiaries due to poor investment results during 2008 at their respective pension funds. These contributions to our cash flow from operating activities were offset in part by deferred income taxes of $1.7 million, increased levels of inventories of $6.6 million, an increase of $10.8 million in prepaid expenses due to an increase in tax deposits, and decreases of $13.3 million in accounts payable, $3.3 million in accrued expenses and income taxes payable. Higher levels of inventories were largely caused by a $6.9 increase in raw materials and finished goods inventory in connection with the expansion of our ceramic crucible business in China and in the United States, an increase of $1.8 million at our Boron segment and an increase of $4.7 million in inventory at our ESK subsidiary. ESK experienced rapidly declining sales in the fourth quarter of 2008 and due to long lead times in their production cycle could not reduce their inventory levels quick enough to offset the decline in sales during the quarter. These increases in inventory levels were partially offset by a decrease of $8.9 million in inventories at our ACO division because of a reduction in sales in 2008. Decreases in accounts payable and accrued expenses were caused by lower levels of business activity at our ACO division. Income taxes payable decreased because of lower levels of pre-tax net income in 2008 compared to 2007.

Investing activities consumed $49.5 million of our cash for the year ended December 31, 2008. This included $27.2 million for acquisitions, comprising $23.1 million (net of $2.2 million cash received) for the acquisition of SemEquip, Inc. and $4.1 million for the acquisition certain assets and developed technology related to proprietary technical ceramic bearing patents and intellectual property. We also spent $44.0 million for the purchase of property, plant and equipment. Included in this amount is $7.2 million for additional capacity for the production of ceramic crucibles at our China and Atlanta facilities, an additional $3.6 to support the production of raw materials at our Minco subsidiary that are consumed in the production of the ceramic crucibles, $9.9 million for the purchase of land and buildings to expand our general production capacity at our ESK Ceramics subsidiary's plant in Kempten, Germany, $6.7 million to increase capacity for the fluid handling product line at ESK and $3.0 million for rolling mill equipment to support future growth at our Canada segment. These expenditures were partially offset by $21.7 million of proceeds from sales and maturities of marketable securities.

Financing activities during the year ended December 31, 2008 consumed net cash of $43.6 million. During the year, we purchased and retired 1,578,237 shares of our common stock at an aggregate cost of $44.7 million under a stock repurchase program authorized by our Board of Directors. The negative effect of exchange rates on cash and cash equivalents of $2.7 million during the year ended December 31, 2008 was

due to our investment in our German subsidiary, ESK Ceramics, and in our Chinese subsidiary, Ceradyne (Tianjin) Technical Ceramics., Ltd.

During December 2005, we issued $121.0 million principal amount of 2.875% senior subordinated convertible notes due December 15, 2035. As referenced above, we purchased and retired an aggregate of $27.9 million principal amount of our convertible debt for $23.2 million reducing the outstanding balance of the Notes to $93.1 million. Interest on the notes is payable on December 15 and June 15 of each year, commencing on June 15, 2006. The notes are convertible into 17.1032 shares of our common stock for each $1,000 principal amount of the notes (which represents a conversion price of approximately $58.47 per share), subject to adjustment. The notes are convertible only under certain circumstances, including if the price of our common stock reaches, or the trading price of the notes falls below, specified thresholds, if the notes are called for redemption, if specified corporate transactions or fundamental change occur, or during the 10 trading days prior to maturity of the notes. We may redeem the notes at any time after December 20, 2010, for a price equal to 100% of the principal amount plus accrued and unpaid interest, including contingent interest (as described below), if any, up to but excluding the redemption date.

With respect to each $1,000 principal amount of the notes surrendered for conversion, we will deliver the conversion value to holders as follows: (1) an amount in cash equal to the lesser of (a) the aggregate conversion value of the notes to be converted and (b) $1,000, and (2) if the aggregate conversion value of the notes to be converted is greater than $1,000, an amount in shares or cash equal to such aggregate conversion value in excess of $1,000.

The notes contain put options, which may require us to repurchase in cash all or a portion of the notes on December 15, 2012, December 15, 2015, December 15, 2020, December 15, 2025, and December 15, 2030 at a repurchase price equal to 100% of the principal amount of the notes to be repurchased plus accrued and unpaid interest, including contingent interest (as described below), if any, to but excluding the repurchase date.

We are obligated to pay contingent interest to the holders of the notes during any six-month period from June 15 to December 14 and from December 15 to June 14, commencing with the six-month period beginning December 20, 2010 and ending on June 14, 2011, if the average trading price of the note for the five trading day period ending on the third trading day immediately preceding the first day of the relevant contingent interest period equals $1,200 (120% of the principal amount of a note) or more. The amount of contingent interest payable per note for any relevant contingent interest period shall equal 0.25% per annum of the average trading price of a note for the five trading day period ending on the third trading day immediately preceding the first day of the relevant contingent interest period.

In December 2005, the Company established an unsecured $10.0 million line of credit which expires on December 31, 2010. As of December 31, 2009, there were no outstanding amounts on the line of credit. However, the available line of credit at December 31, 2009 has been reduced by outstanding letters of credit in the aggregate amount of $5.0 million. The interest rate on the credit line is based on the LIBOR rate for a period of one month, plus a margin of 0.6 percent, which equaled 0.9% as of December 31, 2009.

Pursuant to the bank line of credit, the Company is subject to certain covenants, which include, among other things, the maintenance of specified minimum amounts of net income, tangible net worth and quick assets to current liabilities ratio. At December 31, 2009, the Company was not in compliance with the covenant that required minimum annual net income of $10.0 million. The Company received a waiver of this covenant during February 2010. The Company was in compliance with all other covenants at December 31, 2009.

Our cash, cash equivalents and short-term investments totaled $239.8 million at December 31, 2009, compared to $221.4 million at December 31, 2008. At December 31, 2009, we had working capital of $406.2 million, compared to $400.8 million at December 31, 2008. Our cash position includes amounts denominated in foreign currencies, and the repatriation of those cash balances from our ESK Ceramics subsidiary does not result in additional tax costs. We believe that our current cash and cash equivalents on hand and cash available from the sale of short-term investments, cash available from borrowings under our revolving line of credit and cash we expect to generate from operations will be sufficient to finance our

anticipated capital and operating requirements for at least the next 12 months. Our anticipated capital requirements for 2010 primarily relate to normal replacements of equipment and the planned expansion of our manufacturing facilities in China that will cost approximately $34.0 million in total of which we expect to spend approximately $29.4 million will be spent in 2010. To finance the expansion in China, we plan to use cash that we expect our China operations to generate during 2010, we will use approximately $10.0 million of our existing cash balances held in our bank accounts in China, and the balance will be funded from our existing cash balances in the United States. We also may utilize cash, and, to the extent necessary, borrowings from time to time to acquire other businesses, technologies or product lines that complement our current products, enhance our market coverage, technical capabilities or production capacity, or offer growth opportunities. We have no present agreements for any material acquisitions.

Our material contractual obligations and commitments as of December 31, 2009 are as follows (amounts in thousands):

	Payments Due by Period				
	Total	Less than 1 Year	2-3 Years	4-5 Years	After 5 Years
Debt, principal amount	$ 93,100	$ —	$ —	$ —	$ 93,100
Capital lease obligations	55	26	29	—	—
Non-cancelable leases	6,101	3,383	2,207	511	—
Pension benefits	11,093	747	1,749	2,042	6,555
Information technology services	1,652	788	709	155	—
Cash commitments for interest expense	66,689	2,677	5,236	5,236	53,540
Utility contract	12,857	5,140	5,205	2,512	—
Total contractual obligations	$191,547	$12,761	$15,135	$10,456	$153,195

As of December 31, 2009, we have $2.2 million of uncertain tax positions. We are unable to make a reasonable estimate regarding settlement of these uncertain tax positions, and as a result, they have been excluded from the table.

Off-Balance Sheet Arrangements

The only off-balance sheet arrangement is the conversion feature of our 2.875% convertible senior subordinated notes discussed above.

Critical Accounting Policies and Estimates

Management's discussion and analysis of financial condition and results of operations, as well as disclosures included elsewhere in this report are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. Preparing these consolidated financial statements requires our management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues, expenses and related disclosure of contingencies. Management has not determined how reported amounts would differ based on the application of different accounting policies. Management has also not determined the likelihood that materially different amounts could be reported under different conditions or using different assumptions. We believe that the critical accounting policies that most impact the consolidated financial statements are as described below. A summary of our significant accounting policies is included in Note 2 to our consolidated financial statements which begin on page F-6 of this report.

The application of accounting policies requires the use of judgment and estimates. As it relates to the Company, estimates and forecasts are required to determine sales returns and reserves, rebate reserves, allowances for doubtful accounts, reserves for excess and obsolete inventory, investments in unconsolidated affiliates, workers' compensation liabilities, employee benefit related liabilities, income taxes, any temporary

or other than temporary impairment of assets, forecasted transactions to be hedged, litigation reserves and contingencies.

These matters that are subject to judgments and estimation are inherently uncertain, and different amounts could be reported using different assumptions and estimates. Management uses its best estimates and judgments in determining the appropriate amount to reflect in the financial statements, using historical experience and all available information. The Company also uses the assistance of outside experts where appropriate. The Company applies estimation methodologies consistently from year to year.

The Company believes the following are the critical accounting policies which could have the most significant effect on the Company's reported results and require subjective or complex judgments by management.

Sales Recognition. Sales are recorded when all of the following have occurred: an agreement of sale exists, the product has been delivered according to the terms of the sales order and collection is reasonably assured. Management is required to make judgments about whether or not collection is reasonably assured. We may reduce revenue with reserves for sales returns. Allowances, which are recorded at the time revenue is recognized, are based upon historical sales returns. We did not include a sales return provision at December 31, 2009 or 2008 because our historical experience with sales returns leads us to conclude that no allowance for sales returns is necessary.

We do not record a warranty reserve on the sale of our products. For our largest product line, body armor, all of which is sold to the U.S. government, each lot of body armor is tested at an independent laboratory and the lot cannot be released for shipment to the U.S. government until positive test results are received by both the U.S. government and us. For our non-body armor sales, we have experienced minimal claims from these types of sales. Additionally, due to the inherent nature, strength, durability and structural properties of ceramics, as well as a rigid quality control program that includes, for some of our customers, having the customer accept quality test results prior to shipment, we do not believe a warranty reserve is necessary.

Accounts Receivable. We review our trade accounts receivables and our estimates of the allowance for doubtful accounts each period. The allowance for doubtful accounts is determined by analyzing specific customer accounts and assessing the risk of uncollectibility based on insolvency, disputes or other collection issues. In addition, we routinely analyze the different aging categories and establish allowances based on the length of time receivables are past due (based on contractual terms). A write-off will occur if the settlement of the account receivable is less than the carrying amount or we ultimately determine the balance will not be collected. The amounts we will ultimately realize could differ materially from the amounts assumed in arriving at the allowance for doubtful accounts in the financial statements included in this report beginning on page F-1.

Inventories. Inventories are valued at the lower of cost (first-in, first-out) or market. The write-down of inventory for obsolete items is based on our estimate of the amount considered obsolete based on specific reviews of inventory items. In estimating the allowance, we rely on our knowledge of the industry as well as our current inventory levels. The amounts we will ultimately realize could differ from the estimated amounts. Inventory costs include the cost of material, labor and manufacturing overhead.

Accounting for Long-Lived Assets. Long-lived assets and intangible assets with definite lives are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Impairment indicators include, among other conditions, cash flow deficits, historic or anticipated declines in revenue or operating profit and adverse legal or regulatory developments. If it is determined that such indicators are present and the review indicates that the assets will not be fully recoverable, based on undiscounted estimated cash flow over the remaining amortization periods, their carrying values are reduced to estimated fair market value. Estimated fair market value is determined primarily using the anticipated cash flow discounted at a rate commensurate with the risk involved. For the purposes of identifying and measuring impairment, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flow are largely independent of the cash flow of other assets and liabilities.

Goodwill and Intangible Assets. Goodwill is not being amortized, but instead is subject to an annual assessment of impairment by applying a fair-value based test. The Company performs an annual impairment test for goodwill as of the fiscal year end in the fourth quarter of each year. Goodwill is allocated to six reporting units, which represent the Company's operating segments. The Company has defined its reporting units and completed the impairment testing of goodwill at the operating segment level. The Company's reporting units are: Advanced Ceramic Operations, Semicon Associates, Thermo Materials, ESK Ceramics, Ceradyne Canada and Boron. The Company compares the fair value of the goodwill to the carrying amount on an annual basis to determine if there is potential impairment. If the fair value of goodwill is less than the carrying value, an impairment loss is recorded to the extent that the fair value of the goodwill is less than the carrying value. Fair value was determined based on discounted cash flows and market multiples for each business unit with significant goodwill. We compared each reporting unit's fair value to its carrying value. The use of discounted cash flows requires that we make various economic, market and business assumptions in developing our internal forecasts, the useful life over which cash flows will occur, and determination of our weighted average cost of capital that reflect our best estimates when performing the annual impairment test. We believe the methods we use to determine these underlying assumptions and estimates are reasonable. However, our assumptions and estimates may differ significantly from actual results, or circumstances could change in the future which may then cause us to later conclude that an impairment exists, or with hindsight, it may appear that we could have understated the extent of impairment based on new information that was unknown at the prior testing date. We may incur a goodwill impairment charge in the future, if for example, the market price of our stock materially declines, if the financial results of our operations deteriorate or other circumstances require an impairment charge. At December 31, 2009, the Company's market capitalization was below its net book value. Based on a control factor that was considered and the discounted cash flows used in management's assessment, an impairment to goodwill was not warranted at December 31, 2009. Intangible assets with definite lives are amortized over their estimated useful lives based on the economic consumption method.

Pension. The Company provides pension benefits to its employees of its subsidiaries of ESK Ceramics and Ceradyne Boron Products. For the pension plans of both subsidiaries, we make several assumptions that are used in calculating the expense and liability of the plans. These key assumptions include the expected long-term rate of return on plan assets and the discount rate. In selecting the expected long-term rate of return on assets, we consider the average future rate of earnings expected on the funds invested or to be invested to provide for the benefits under the pension plans. This includes considering the plans' asset allocations and the expected returns likely to be earned over the life of this plan. A hypothetical 50 basis point change in the expected long-term rate of return on assets would change pension expense by $174,000. The discount rate reflects the estimated rate at which an amount that is invested in a portfolio of high-quality debt instruments would provide the future cash flows necessary to pay benefits when they come due. A hypothetical 50 basis point change in the discount rate would change the pension obligation by approximately $1.9 million. The impact on pension expense from a hypothetical 50 basis point change in the discount rate would not be material. In addition the expense and liabilities of the plan were determined using other assumptions for future experience, such as mortality rates. The actuarial assumptions used by us may differ materially from actual results due to changing market and economic conditions or longer or shorter life spans of the participants. Our actual results could differ materially from those we estimated, which could require us to record a greater amount of pension expense.

Recent Accounting Pronouncements

In December 2007, the FASB issued accounting guidance which establishes principles and requirements for how the acquirer of a business recognizes and measures in its financial statements the identifiable assets acquired, the liabilities assumed, and any noncontrolling interest in the acquiree. The guidance also provides for the recognition and measurement of goodwill acquired in a business combination and determines what information to disclose to enable users of the financial statement to evaluate the nature and financial effects of the business combination. The Company adopted the new guidance on January 1, 2009, which has been applied in the accounting for the acquisition of the assets of Diaphorm Technologies, LLC discussed in Note 3.

In December 2007, the FASB issued guidance which introduces significant changes in the accounting and reporting for business acquisitions and noncontrolling interest ("NCI") in a subsidiary. The new guidance also changes the accounting for and reporting for the deconsolidation of a subsidiary. Companies are required to adopt the new guidance for fiscal years beginning after January 1, 2009. The Company adopted the new guidance on January 1, 2009, which did not have an impact on its financial position, results of operations or cash flows as the Company owns 100% of its subsidiaries and there has been no deconsolidation of a subsidiary after January 1, 2009.

In March 2008, the FASB issued guidance which changes the disclosure requirements for derivative instruments and hedging activities. Entities are required to provide enhanced disclosures about (a) how and why an entity uses derivative instruments, (b) how derivative instruments and related hedged items are accounted for under GAAP, and (c) how derivative instruments and related hedged items affect an entity's financial position, financial performance, and cash flows. The Company adopted this new guidance on January 1, 2009, which did not have an impact on its financial position, results of operations or cash flows as there were no derivative instruments or hedging activities after January 1, 2009.

In June 2008, the FASB issued guidance to determine whether unvested share-based payment awards that contain rights to receive nonforfeitable dividends (whether paid or unpaid) are participating securities, and should be included in the two-class method of computing EPS. The Company adopted this new guidance on January 1, 2009, which did not have an impact on its financial position, results of operations or cash flows as the unvested share-based awards do not contain rights to receive nonforfeitable dividends.

In April 2008, the FASB Staff issued guidance which provides for additional considerations to be used in determining useful lives of intangible assets and requires additional disclosure regarding renewals. The Company adopted this new guidance on January 1, 2009, which did not have a significant impact on its financial position, results of operations or cash flows.

In April 2009, the FASB Staff issued new accounting guidance which the Company adopted on April 1, 2009, as follows:

i.) Guidance for making fair value measurements more consistent with existing GAAP. This new guidance provides additional authoritative principles in determining whether a market is active or inactive, and whether a transaction is distressed. This guidance is applicable to all assets and liabilities (i.e. financial and nonfinancial) and will require enhanced disclosures. The adoption of this new guidance did not have a significant impact on the Company's financial position, results of operations or cash flows.

ii.) Companies are required to provide greater clarity about the credit and noncredit component of an other-than-temporary impairment event and to improve presentation and disclosure of other than temporary impairments in the financial statements. The impact of the adoption of this new guidance is discussed in Note 4.

iii.) This guidance requires new disclosures about fair value of financial instruments in interim as well as in annual financial statements. The Company has adopted this new guidance and has provided the additional disclosures required as discussed in Note 4.

In May 2009, the FASB issued new guidance which establishes general standards for accounting for and disclosure of events that occur after the balance sheet date but before financial statements are available to be issued ("subsequent events"). More specifically, this new guidance sets forth the period after the balance sheet date during which management of a reporting entity should evaluate events or transactions that may occur for potential recognition in the financial statements, identifies the circumstances under which an entity should recognize events or transactions occurring after the balance sheet date in its financial statements and the disclosures that should be made about events or transactions that occur after the balance sheet date. This new guidance provides largely the same framework for the evaluation of subsequent events which previously existed only in auditing literature. The Company has performed an evaluation of subsequent events through February 23, 2010, which is the day the financial statements were issued.

In August 2009, the FASB issued revised authoritative guidance regarding the measurement of liabilities at fair value which provides clarification that in circumstances where a quoted market price in an active market for an identical liability is not available, a reporting entity must measure fair value of the liability using one of the following techniques: 1) the quoted price of the identical liability when traded as an asset; 2) quoted prices for similar liabilities or similar liabilities when traded as assets; or 3) another valuation technique, such as a present value technique or the amount that the reporting entity would pay to transfer the identical liability or would receive to enter into the identical liability. This statement becomes effective for the first reporting period (including interim periods) beginning after issuance, which. The Company adopted this new guidance on October 1, 2009, which did not have an impact on our consolidated financial position, results of operations or cash flows.

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

Interest Rate Risk

Our exposure to market rate risk for changes in interest rates relates primarily to our investment portfolio and our debt. We have not used derivative financial instruments in our investment portfolio. We place our investments with high-quality issuers and, by policy, limit the amount of credit exposure to any one issuer. We protect and preserve our invested funds by limiting default, market and reinvestment risk. Our investments in marketable securities consist primarily of high-grade corporate and government securities with maturities of less than two years. Investments purchased with an original maturity of three months or less are considered cash equivalents. Our long term investments at December 31, 2009, included $20.0 million of auction rate securities, net of a pre-tax temporary impairment charge of $2.5 million against accumulated other comprehensive income and a pre-tax other than temporary impairment charge of $10.9 million against earnings and a $2.3 million charge for realized losses.

The Company's investments in auction rate securities represent interests in insurance securitizations collateralized by pools of residential and commercial mortgages, asset backed securities and other structured credits relating to the credit risk of various bond guarantors that mature at various dates from June 2021 through July 2052. These auction rate securities were intended to provide liquidity via an auction process which is scheduled every 28 days, that resets the applicable interest rate, allowing investors to either roll over their holdings or gain immediate liquidity by selling such interests at par. Interest rates are capped at a floating rate of one month LIBOR plus additional spread ranging from 1.25% to 4.00% depending on prevailing rating. During the second half of the year 2007, through 2008 and through December 31, 2009, the auctions for these securities failed. As a result of current negative conditions in the global credit markets, auctions for our investment in these securities are inactive. Consequently, the investments are not currently liquid through the normal auction process and may be liquidated if a buyer is found outside the auction process. Although the auctions have failed and are currently inactive, the Company continues to receive underlying cash flows in the form of interest income from the investments in auction rate securities. As of December 31, 2009, the fair value of the Company's investments in auction rate securities was below cost by approximately $13.4 million. The fair value of the auction rate securities has been below cost for more than two years.

With respect to our investments in auction rate securities as of December 31, 2008 and December 31, 2009, we categorized the investments into three main categories for analytical purposes which comprised (1) "insurance wrapped" securities, (2) "put right" securities and (3) "credit derivative product company" securities. The insurance wrapped category comprised auction rate securities where the payments are guaranteed by an insurance company, such as a "monoline" financial guaranty insurance company. The put right category comprised an auction rate security that was created to provide capital to the issuer in the event that the issuer exercised the put right. The credit derivative product company category comprised auction rate securities where the issuer is a financial services company that offers credit risk protection of structured financial assets in the form of credit derivatives. The auction rate securities issued by these financial services companies were created as a way to provide collateral for the issuers to use for entering into credit default swaps. For the year ended December 31, 2009, as part of our evaluation as to whether the decline in fair value of the auction rate securities was other-than-temporary, where it was probable that the Company would not collect all contractual cash flows and the remaining balance was not recoverable, we considered factors which

included, but were not limited to, general market conditions, the length of time and extent to which the market value has been less than cost, the financial condition and near-term prospects of the issuer of the securities, and our intent and ability to hold the investment for a period of time to allow for any anticipated recovery in market value. If the decline in fair value is judged to be other than temporary, the cost basis of the individual security is written down to fair value as a new cost basis and the amount of the write-down is included in earnings. The new cost basis is not changed for subsequent recoveries in fair value. Subsequent increases in the fair value of available-for-sale securities are included in other comprehensive income; subsequent decreases in fair value, if not an other-than-temporary impairment, are included in other comprehensive income. Also, due to the illiquid market for the auction rate securities and limited availability of public information on these securities, we engaged a third party investment banking firm to assist us in performing the valuation of the securities. Our valuation analysis used a trinomial discount model where the compilations of future cash flows were priced by summing the present values of the future principal and interest payments. We then forecasted probabilities of default, auction failure, and a successful auction at par or repurchase at par for each period, as well as forecasted recovery rates in default for each of the securities. Finally, we discounted the weighted average cash flow for each period back to present value at the determined discount rate for each of the securities.

Based on the information included in prospectuses and other data compiled for each of the auction rate securities for the year ended December 31, 2009, we determined that the decline in fair values of the put right securities and credit derivative product company securities categories were other-than-temporary. This determination considered the terms of guarantees associated with the securities, the quality of the underlying collateral, external ratings and other relevant available market information compiled with the assistance of the third party investment banking firm. Quantitative data reviewed and analyzed by us also indicated that the cumulative probability of default at some point in the future was 73% for the put right securities and more than 48% for the credit derivative product company securities at the high end of the value range as of December 31, 2009. We believed it was probable that we would collect all contractual cash flows and the carrying value of the securities in the insurance wrapped category as of December 31, 2009 was determined to be recoverable based on the valuation of the securities which considered the terms of certain guarantees, quality of underlying collateral, external ratings and other relevant market information.

For the quarter ended June 30, 2009, we adopted new accounting guidance issued by the FASB Staff on the effective date of April 1, 2009. In accordance with the new guidance, when an other-than-temporary impairment has occurred, the amount of the other-than-temporary impairment recognized in earnings depends on whether an entity intends to sell the security or more likely than not will be required to sell the security before recovery of its amortized cost basis less any current-period credit loss. Based on our evaluation of the auction rate securities as of December 31, 2009, we determined that it was more likely than not that we would be required to sell the put right and credit derivative product company securities before recovery of our amortized cost, accordingly, we recognized other-than-temporary impairment charges for the decline in fair value during the year ended December 31, 2009. Quantitative data compiled with the assistance of our third party investment banking firm also indicated the cumulative probability of default at some point in the future was 66% for the put right securities and more than 36% for the credit derivative product company securities at the high end of the value range as of December 31, 2009.

In addition to the above, during the year ended December 31, 2009, we also recognized an other-than-temporary impairment charge for the credit risk associated with the insurance wrapped securities. In determining whether a credit loss existed, we used our best estimate of the present value of cash flows expected to be collected from the debt security. We then discounted the expected cash flows at the effective interest rate implicit in the security at the date of acquisition. The difference between the present value of the cash flows expected to be collected and amortized cost represented the impairment charge for credit risk. We believe that the carrying value of the securities in the insurance wrapped category, after the adjustment for credit risk, as of December 31, 2009 was determined to be recoverable based on the valuation of the securities which considered the terms of certain guarantees, quality of underlying collateral, external ratings and other relevant market information.

We classify all of our investments as available-for-sale. Available-for-sale securities are carried at fair value, with unrealized gains and losses, net of tax, reported in a separate component of stockholders' equity. Average maturity of our investment portfolio is 648 days; therefore, the movement of interest rates should not have a material impact on our balance sheet or income statement.

At any time, a significant increase/decrease in interest rates will have an impact on the fair market value and interest earnings of our investment portfolio. We do not currently hedge this interest rate exposure. We have performed a sensitivity analysis as of December 31, 2009 and 2008, using a modeling technique that measures the change in the fair values arising from a hypothetical 50 basis points and 100 basis points adverse movement in the levels of interest rates across the entire yield curve, which are representative of historical movements in the Federal Funds Rate with all other variables held constant. The analysis covers our investment and is based on the weighted-average maturity of our investments as of December 31, 2009 and 2008. The sensitivity analysis indicated that a hypothetical 50 basis points adverse movement in interest rates would result in a loss in the fair values of our investment instruments of approximately $0.6 million at December 31, 2009 and approximately $2,500 at December 31, 2008. Similarly a hypothetical 100 basis points adverse movement in interest rates would result in a loss in the fair values of our investments of approximately $1.2 million at December 31, 2009 and approximately $5,000 at December 31, 2008.

Actual maturities may differ from contractual maturities because the issuer of the securities may have the right to repurchase such securities. We classify short-term investments in current assets, as all such investments are available for current operations.

We are not exposed to market risks related to fluctuations in interest rates on our debt as it is fixed rate debt. Consequently, we do not utilize interest rate swaps or other types of derivative financial instruments regarding our debt.

Foreign Currency Fluctuations

We enter into foreign exchange forward contracts to reduce earnings and cash flow volatility associated with foreign exchange rate changes to allow our management team to focus its attention on its core business operations. Accordingly, we enter into contracts which change in value as foreign exchange rates change to economically offset the effect of changes in value of foreign currency assets and liabilities, commitments and anticipated foreign currency denominated sales and operating expenses. We enter into foreign exchange forward contracts in amounts between minimum and maximum anticipated foreign exchange exposures, generally for periods not to exceed one year. These derivative instruments are not designated as accounting hedges.

We measure the financial statements of our foreign subsidiaries using the local currency as the functional currency. Assets and liabilities of these subsidiaries are translated at the exchange rate on the balance sheet date. Revenues, costs and expenses are translated at the rates of exchange prevailing during the year. Translation adjustments resulting from this process are included in stockholders' equity. Gains and losses from foreign currency transactions are included in other income miscellaneous.

ITEM 8. *FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA*

The Consolidated Financial Statements and Supplementary Data commence at page F-1 of this report and an index thereto is included in Part IV, Item 15 of this report.

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

Not applicable.

ITEM 9A. *CONTROLS AND PROCEDURES*

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this report, we carried out an evaluation, under the supervision and with the participation of our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures. Based on this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures (as defined in Rules 13a-15(e) and Rule 15d-15(e) under the Securities Exchange Act of 1934) were effective.

Changes in Internal Control over Financial Reporting

Our management evaluated our internal control over financial reporting and there have been no changes during the fiscal quarter ended December 31, 2009 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2009. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control — Integrated Framework. Based on our assessment, we have concluded that, as of December 31, 2009, our internal control over financial reporting was effective based on those criteria.

Ceradyne's independent registered public accounting firm, PricewaterhouseCoopers LLP, issued a report on the effectiveness of our internal control over financial reporting as of December 31, 2009, which appears herein.

ITEM 9B. *OTHER INFORMATION*

Not applicable.

PART III

ITEM 10. *DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE*

Information in response to this item (except for certain information concerning executive officers included in Part I of this report) is incorporated by reference from the registrant's definitive proxy statement to be filed with the Commission within 120 days after the close of registrant's fiscal year.

ITEM 11. *EXECUTIVE COMPENSATION*

Information in response to this item is incorporated by reference from the registrant's definitive proxy statement to be filed with the Commission within 120 days after the close of registrant's fiscal year.

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

Information in response to this item is incorporated by reference from the registrant's definitive proxy statement to be filed with the Commission within 120 days after the close of registrant's fiscal year.

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

Information in response to this item is incorporated by reference from the registrant's definitive proxy statement to be filed with the Commission within 120 days after the close of registrant's fiscal year.

ITEM 14. *PRINCIPAL ACCOUNTANT FEES AND SERVICES*

Information in response to this item is incorporated by reference from the registrant's definitive proxy statement to be filed with the Commission within 120 days after the close of registrant's fiscal year.

PART IV

ITEM 15. *EXHIBITS AND FINANCIAL STATEMENT SCHEDULES*

(a) List of documents filed as part of this report:

Financial Statements:

	Page
Report of Independent Registered Public Accounting Firm	F-1
Consolidated Balance Sheets at December 31, 2009 and 2008	F-2
Consolidated Statements of Income for the Years Ended December 31, 2009, 2008 and 2007	F-3
Consolidated Statements of Stockholders' Equity for the Years Ended December 31, 2009, 2008 and 2007	F-4
Consolidated Statements of Cash Flows for the Years Ended December 31, 2009, 2008 and 2007	F-5
Notes to Consolidated Financial Statements	F-6

(b) List of Exhibits

Exhibit Number	Description
2.1	Sale and Purchase Agreement dated June 26, 2007, among Ceradyne, Inc., Ceradyne EPB, Inc., EaglePicher Boron, LLC, EaglePicher Technology Holdings, LLC and EaglePicher Corporation. Incorporated herein by reference to Exhibit 2.1 to the Registrant's Form 10-Q Report for the quarter ended June 30, 2007.
3.1	Restated Certificate of Incorporation of Ceradyne, Inc., as filed with the Secretary of State of Delaware on May 25, 1987. Incorporated herein by reference to Exhibit 3.1 to the Registrant's Form 10-Q Report for the quarter ended June 30, 2006.
3.2	Certificate of Amendment of Restated Certificate of Incorporation of Ceradyne, Inc., as filed with the Secretary of State of Delaware on June 8, 2006. Incorporated herein by reference to Exhibit 3.2 to the Registrant's Form 10-Q Report for the quarter ended June 30, 2006.
3.3	Bylaws of Registrant. Incorporated herein by reference to Exhibit 3.3 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2007.
3.4	Amendment to Bylaws of Registrant, adopted April 29, 1996. Incorporated herein by reference to Exhibit 3.4 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2007.
3.5	Amendment to Bylaws of Registrant, adopted December 18, 2007. Incorporated herein by reference to Exhibit 3.5 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2007.
4.1	Indenture dated December 19, 2005, between Ceradyne, Inc. and Union Bank of California, N.A., as Trustee. Incorporated herein by reference to Exhibit 4.1 of Registrant's Form 8-K Current Report dated December 13, 2005, filed with the Commission on December 19, 2005.
4.2	First Supplemental Indenture dated December 19, 2005, between Ceradyne, Inc. and Union Bank of California, N.A., as Trustee. Incorporated herein by reference to Exhibit 4.2 of Registrant's Form 8-K Current Report dated December 13, 2005, filed with the Commission on December 19, 2005.
4.3	Form of 2.875% Senior Subordinated Convertible Note due 2035. Incorporated herein by reference to Exhibit 4.3 of Registrant's Form 8-K Current Report dated December 13, 2005, filed with the Commission on December 19, 2005.
10.1	Intentionally omitted.
10.2	Lease covering premises located at 3169-A Red Hill Avenue, Costa Mesa, California dated October 28, 1985. Incorporated herein by reference to Exhibit 10.30 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1985.
10.3	Lease dated March 31, 1986 covering premises located at 3163 Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.45 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1986.

Exhibit Number	Description
10.4	Lease dated August 5, 1986 covering premises located at 225 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.46 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1986.
10.5	Short-form Memorandum of Lease Assignment dated December 15, 1986, and Lease dated June 23, 1980, covering premises located at 3449 Church Street, Scottdale, Georgia. Incorporated herein by reference to Exhibit 10.47 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1986.
10.6	Intentionally omitted.
10.7*	Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.31 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1994.
10.8*	Amendment No. 1 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 4.2 to Registrant's Registration Statement on Form S-8 (File No. 33-61675).
10.9	Intentionally omitted.
10.10	Intentionally omitted.
10.11	Amendment No. 2, dated June 5, 1995, to Lease covering premises located at 3169-A Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.33 to the Registrant's Registration Statement on Form S-1 (File No. 33-62345).
10.12	Amendment No. 2, dated June 5, 1995, to Lease dated March 31, 1986 covering premises located at 3163 Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.34 to the Registrant's Registration Statement on Form S-1 (File No. 33-62345).
10.13	Amendment No. 2, dated June 5, 1995, to Lease dated August 5, 1986 covering premises located at 225 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.35 to the Registrant's Registration Statement on Form S-1 (File No. 33-62345).
10.14*	Amendment No. 2 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.36 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1996.
10.15*	Amendment No. 3 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 4.4 to Registrant's Registration Statement on Form S-8 (File No. 333-31679).
10.16*	Amendment No. 4 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.29 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 1998.
10.17*	Amendment No. 5 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.29 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2000.
10.18*	Amendment No. 6 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporate herein by reference to Exhibit 4.7 to the Registrant's Registration Statement on Form S-8 (File No. 333-64094).
10.19	Intentionally omitted.
10.20	Intentionally omitted.
10.21*	Amendment No. 7 to the Ceradyne, Inc. 1994 Stock Incentive Plan. Incorporated herein by referenced to Exhibit 10.34 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2002.
10.22*	Ceradyne, Inc. 2003 Stock Incentive Plan, as Amended and Restated as of April 11, 2005. Incorporated herein by reference to Exhibit 10.1 to the Registrant's Form 8-K Current Report dated May 23, 2005, filed with the Commission on May 26, 2005.
10.23*	Form of Stock Option Agreement for use under the 2003 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.2 to the Registrant's Form 8-K Current Report dated May 23, 2005, filed with the Commission on May 26, 2005.
10.24*	Form of Restricted Stock Unit Award Agreement for use under the 2003 Stock Incentive Plan. Incorporated herein by reference to Exhibit 10.3 to the Registrant's Form 8-K Current Report dated May 23, 2005, filed with the Commission on May 26, 2005.

Exhibit Number	Description
10.25	Lease agreement between California State Teachers' Retirement System, as Landlord and CERADYNE, INC., as tenant. Incorporated herein by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2003.
10.26	Intentionally omitted.
10.27	Intentionally omitted.
10.28	Intentionally omitted.
10.29	Intentionally omitted.
10.30	Intentionally omitted.
10.31	Intentionally omitted.
10.32	Lease dated March 11, 1997 covering premises located at 3159-A Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.32 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.33	Extension No. 2, dated February 2, 2005, to Lease dated March 11, 1997 covering premises located at 3159-A Red Hill Avenue , Costa Mesa, California. Incorporated herein by reference to Exhibit 10.33 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.34	Lease dated January 24, 2001 covering premises located at 3161 Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.34 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.35	Extension No. 1, dated February 2, 2005, to Lease dated January 24, 2001 covering premises located at 3161 Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.35 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.36	Extension No. 4, dated February 2, 2005, to Lease dated March 31, 1986 covering premises located at 3163 Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.36 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.37	Extension No. 4, dated February 2, 2005, to Lease dated October 28, 1985 covering premises located at 3169-A Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.37 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.38	Lease dated October 28, 1985 covering premises located at 3169-B Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.38 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.39	Extension No. 4, dated February 2, 2005, to Lease dated October 28, 1985 covering premises located at 3169-B Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.39 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.40	Extension No. 4, dated February 4, 2005, to Lease dated August 5, 1986 covering premises located at 225 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.40 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.41	Lease dated February 4, 2005, covering premises located at 201 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.41 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.42	Lease dated February 4, 2005, covering premises located at 3159-B Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.42 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.43	Extension No. 1, dated February 7, 2005, to Lease dated March 23, 2004 covering premises located at 235 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.43 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.

Exhibit Number	Description
10.44	Lease dated August 6, 2001 covering premises located at 3165-A Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.44 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.45	Extension No. 1, dated March 9, 2005, to Lease dated August 6, 2001 covering premises located at 3165-A Red Hill Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.45 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.46	Lease dated January 5, 2005 covering premises located at 205 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.46 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
10.47	Extension No. 1, dated July 14, 2005, to Lease dated January 5, 2005, covering premises located at 205 Paularino Avenue, Costa Mesa, California. Incorporated herein by reference to Exhibit 10.47 to the Registrant's Annual Report on Form 10-K for the year ended December 31, 2005.
12.1	Computation of Ratio of Earnings to Fixed Charges.
14.1	Code of Business Conduct and Ethics as amended and restated on March 18, 2008. Incorporated herein by reference to Exhibit 14.1 to the Registrant's Form 8-K Current Report dated March 18, 2008, filed with the Commission on March 24, 2008.
21.1	Subsidiaries of the Registrant.
23.1	Consent of Independent Registered Public Accounting Firm, PricewaterhouseCoopers LLP.
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

* Each of these exhibits constitutes a management contract, compensatory plan, or arrangement.

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CERADYNE, INC.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To Board of Directors and Stockholders of Ceradyne, Inc.

In our opinion, the consolidated financial statements listed in the accompanying index appearing under Part IV, Item 15(a), present fairly, in all material respects, the financial position of Ceradyne, Inc. and its subsidiaries at December 31, 2009 and 2008, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2009 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2009, based on criteria established in *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on these financial statements and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for other-than-temporary impairments in its auction rate securities and the manner in which it accounts for business combinations in 2009. Also, as discussed in Note 4 to the consolidated financial statements, the Company changed the manner in which it accounts for convertible instruments that may be settled in cash upon conversion in 2009.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP
Orange County, California
February 23, 2010

CERADYNE, INC.

CONSOLIDATED BALANCE SHEETS

	December 31, 2009	December 31, 2008
	(In thousands, except for share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$122,154	$215,282
Short term investments	117,666	6,140
Restricted cash	3,130	2,702
Accounts receivable, net of allowances for doubtful accounts of $851 and $686 in 2009 and 2008, respectively	53,269	64,631
Other receivables	11,424	5,316
Inventories, net	100,976	101,017
Production tooling, net	12,006	14,563
Prepaid expenses and other	19,932	24,170
Deferred tax asset	13,796	11,967
Total current assets	454,353	445,788
Property, plant and equipment, net	239,322	251,928
Long term investments	20,019	24,434
Intangible assets, net	89,409	84,384
Goodwill	43,880	45,324
Other assets	2,721	2,669
Total assets	$849,704	$854,527
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 24,683	$ 22,954
Accrued expenses	23,463	21,999
Total current liabilities	48,146	44,953
Long-term debt	82,163	102,631
Employee benefits	21,769	19,088
Other long term liabilities	39,561	41,816
Deferred tax liability	8,348	7,045
Total liabilities	199,987	215,533
Commitments and contingencies (Note 8)		
Stockholders' equity:		
Common Stock, $0.01 par value: 100,000,000 authorized; 25,401,005 and 25,830,374 shares issued and outstanding at December 31, 2009 and 2008, respectively	254	259
Additional paid in capital	157,679	163,291
Retained earnings	470,256	461,741
Accumulated other comprehensive income	21,528	13,703
Total stockholders' equity	649,717	638,994
Total liabilities and stockholders' equity	$849,704	$854,527

The accompanying notes are an integral part of these consolidated statements

CERADYNE, INC.

CONSOLIDATED STATEMENTS OF INCOME

	Years Ended December 31,		
	2009	2008	2007
	(In thousands, except for per share data)		
Net sales	$400,575	$680,197	$756,835
Cost of product sales	298,956	414,885	450,787
Gross profit	101,619	265,312	306,048
Operating expenses:			
Selling	27,151	31,231	26,917
General and administrative	38,492	43,889	40,801
Acquisition related charge (credit)	(768)	9,824	—
Research and development	12,258	14,782	17,552
Restructuring — plant closure and severance	12,924	—	—
Goodwill impairment	3,832	—	—
	93,889	99,726	85,270
Operating income	7,730	165,586	220,778
Other income (expense)			
Interest income	4,091	7,553	12,394
Interest expense	(7,119)	(7,876)	(7,618)
Gain on early extinguishment of debt	1,881	—	—
Loss on auction rate securities	(5,187)	(5,870)	(2,114)
Miscellaneous, net	(979)	1,511	(311)
	(7,313)	(4,682)	2,351
Income before provision for income taxes	417	160,904	223,129
(Benefit) provision for income taxes	(8,098)	56,424	80,946
Net income	$ 8,515	$104,480	$142,183
Net income per common share:			
Basic	$ 0.33	$ 3.95	$ 5.22
Diluted	$ 0.33	$ 3.91	$ 5.13
Shares used in computing per common share amounts:			
Basic	25,684	26,446	27,252
Diluted	25,802	26,689	27,732

The accompanying notes are an integral part of these consolidated statements

CERADYNE, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

	Common Stock			Accumulated Other Comprehensive	Total
	Number of Shares	Amount	Retained Earnings	Income (Loss)	Stockholders' Equity
	(In thousands, except for share data)				
Balance, December 31, 2006	27,119,012	$195,752	$215,078	$11,051	$421,881
Comprehensive income:					
Net income	—	—	142,183	—	142,183
Net unrealized loss on available-for-sale securities	—	—	—	(434)	(434)
Net change in pension liability	—	—	—	1,123	1,123
Cumulative translation adjustment	—	—	—	19,614	19,614
Total comprehensive income	—	—	—	—	162,486
Issuance of common stock	19,204	401	—	—	401
Exercise of stock options	180,314	1,297	—	—	1,297
Tax benefit from exercise of stock options	—	3,301	—	—	3,301
Stock based compensation	—	2,451	—	—	2,451
Balance, December 31, 2007	27,318,530	$203,202	$357,261	$31,354	$591,817
Comprehensive income:					
Net income	—	—	104,480	—	104,480
Net unrealized loss on available-for-sale securities	—	—	—	(5,271)	(5,271)
Net change in pension liability	—	—	—	(3,296)	(3,296)
Cumulative translation adjustment	—	—	—	(9,084)	(9,084)
Total comprehensive income	—	—	—	—	86,829
Issuance of common stock	55,281	809	—	—	809
Repurchases of common stock	(1,578,237)	(44,705)			(44,705)
Exercise of stock options	34,800	366	—	—	366
Tax benefit from exercise of stock options	—	769	—	—	769
Stock based compensation	—	3,109	—	—	3,109
Balance, December 31, 2008	25,830,374	$163,550	$461,741	$13,703	$638,994
Comprehensive income:					
Net income		—	8,515	—	8,515
Net unrealized gain on available-for-sale securities	—	—	—	3,612	3,612
Net change in pension liability	—	—	—	(936)	(936)
Cumulative translation adjustment	—	—	—	5,149	5,149
Total comprehensive income	—	—	—	—	16,340
Impact of repurchase of convertible debt	—	(829)	—	—	(829)
Issuance of common stock	129,131	944	—	—	944
Repurchases of common stock	(567,000)	(9,753)	—	—	(9,753)
Exercise of stock options	8,500	33	—	—	33
Tax benefit from exercise of stock options	—	149	—	—	149
Stock based compensation	—	3,839	—	—	3,839
Balance, December 31, 2009	25,401,005	$157,933	$470,256	$21,528	$649,717

The accompanying notes are an integral part of these consolidated statements

CERADYNE, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31		
	2009	2008	2007
		(In thousands)	
Cash flows from operating activities:			
Net income	$ 8,515	$104,480	$ 142,183
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	35,146	36,668	26,751
Non cash interest expense on convertible debt	3,643	3,883	3,594
Gain on early extinguishment of debt	(1,881)	—	—
Payments of accreted interest on repurchased convertible debt	(2,957)	—	—
Deferred income taxes	(1,572)	(3,136)	(3,620)
Stock compensation	3,839	3,109	2,451
Losses on auction rate securities	5,187	5,870	—
Goodwill impairment	3,832	—	—
Loss on equipment disposal	514	257	908
Changes in operating assets and liabilities, net of assets acquired:			
Accounts receivable, net	12,170	20,830	(1,584)
Other receivables	(5,973)	333	(2,149)
Inventories, net	2,513	(6,623)	(6,270)
Production tooling, net	2,587	2,018	4,473
Prepaid expenses and other	3,731	(10,825)	337
Other assets	—	(427)	(1,154)
Accounts payable and accrued expenses	3,946	(16,285)	(4,624)
Income tax payable	(213)	(232)	(12,754)
Other liabilities	—	114	1,125
Other long term liability	(7,357)	9,667	4,985
Employee benefits	2,103	6,269	(1,066)
Net cash provided by operating activities	67,773	155,970	153,586
Cash flows from investing activities:			
Purchases of property, plant and equipment	(14,534)	(44,047)	(42,245)
Changes in restricted cash	(428)	(42)	(2,660)
Purchases of marketable securities	(179,194)	—	(700,443)
Proceeds from sales and maturities of marketable securities	73,170	21,738	823,499
Acquisition of businesses, net of cash acquired	(9,654)	(27,208)	(99,098)
Proceeds from sale of equipment	72	84	9
Net cash (used in) investing activities	(130,568)	(49,475)	(20,938)
Cash flows from financing activities:			
Proceeds from issuance of common stock for stock plans	—	—	401
Proceeds from issuance of stock due to exercise of stock options	33	366	1,297
Tax benefit due to exercise of stock options	149	769	3,531
Shares repurchased	(9,753)	(44,705)	—
Reduction on long term debt	(20,239)	—	—
Net cash (used in) provided by financing activities	(29,810)	(43,570)	5,229
Effect of exchange rates on cash and cash equivalents	(523)	(2,746)	3,679
(Decrease) increase in cash and cash equivalents	(93,128)	60,179	141,556
Cash and cash equivalents, beginning of period	215,282	155,103	13,547
Cash and cash equivalents, end of period	$ 122,154	$215,282	$ 155,103
Supplemental disclosures of cash flow information:			
Interest paid	$ 2,952	$ 3,484	$ 3,520
Income taxes paid	$ 733	$ 63,545	$ 90,775
Supplemental schedule of non-cash financing activities:			
Fulfillment of 401(k) obligations through the issuance of stock	$ 1,507	$ 1,291	$ 1,085

The accompanying notes are an integral part of these consolidated statements

1. Description of Business

Ceradyne, Inc. ("Ceradyne" or "the Company") develops, manufactures and markets advanced technical ceramic products and components for defense, industrial, automotive/diesel and commercial applications. The Company's expertise in ceramic material science as well as a vertically integrated approach of designing much of its key equipment and controlling the manufacturing process from raw material powders to finished product allows the Company to design and manufacture precision, high quality advanced technical ceramic products to meet demanding customer specifications. The Company markets its products to a broad range of industries in 63 countries. The Company's customers include the U.S. government, prime government contractors and large industrial and commercial manufacturers.

In many high performance applications, products made of advanced technical ceramics meet specifications that similar products made of metals, plastics or traditional ceramics cannot achieve. Advanced technical ceramics can withstand extremely high temperatures, combine hardness with light weight, are highly resistant to corrosion and wear, and often have excellent electrical insulation capabilities, special electronic properties and low friction characteristics.

2. Summary of Significant Accounting Policies

a. Principles of Consolidation and Nature of Operations

The consolidated financial statements include the financial statements of Ceradyne, Inc. (a Delaware Corporation), and its subsidiaries. Ceradyne, Inc. and its subsidiaries are collectively referred to herein as the "Company". All significant intercompany accounts and transactions have been eliminated.

b. Cash and Cash Equivalents

The Company considers all highly liquid investments with an initial maturity of three months or less when purchased to be cash equivalents.

c. Investments

The Company's short term investments consist of marketable securities, primarily high-grade corporate and government securities. The Company's long term investments consist of auction rate securities ("ARS"). The Company classifies its investments as available-for-sale based on the Company's intent.

At December 31, 2009, the Company had no derivative financial instruments.

d. Foreign Exchange Risk Management

The Company measures the financial statements of its foreign subsidiaries using the local currency as the functional currency. Assets and liabilities of these subsidiaries are translated at the exchange rate on the balance sheet date. Revenues, costs and expenses are translated at the rates of exchange prevailing during the year. Translation adjustments resulting from this process are included in stockholders' equity. Net results from foreign currency transactions for the years ended December 31, 2009 and 2008 were a $0.5 million loss and a $1.4 million gain, respectively, and are included in other income, miscellaneous.

e. Accounts Receivable, Net

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The allowance for doubtful accounts is determined by analyzing specific customer accounts and assessing the risk of uncollectibility based on insolvency, disputes or other collection issues. In addition, the Company routinely analyzes the different aging categories and establishes allowances based on the length of time receivables are past due (based on contractual terms). A write-off will occur if the settlement of the account receivable is less

than the carrying amount or the Company ultimately determines the balance will not be collected. We do not have any off-balance-sheet credit exposure related to our customers.

The following are changes in the allowance for doubtful accounts for the years ended December 31, 2009, 2008 and 2007 (in thousands):

	Balance at Beginning of Year	Additions	Write-offs and Recoveries	Balance at End of Year
December 31, 2009	$ 686	$740	$ 575	$851
December 31, 2008	$ 792	$955	$1,061	$686
December 31, 2007	$1,158	$111	$ 477	$792

f. Inventories

Inventories are stated at the lower of cost (determined on a standard cost basis which approximates first-in, first-out (FIFO)) or market. The write-down of inventory for obsolete items is based on management's estimate of the amount considered obsolete based on specific reviews of inventory items. In estimating the write-down, management relies on its knowledge of the industry as well as its current inventory levels. The amounts the Company will ultimately realize could differ from amounts estimated by management. Inventory costs include the cost of material, labor and manufacturing overhead. The following is a summary of inventories, net of reserves, by component (in thousands):

	December 31,	
	2009	2008
Raw materials	$ 12,219	$ 18,377
Work-in-process	46,334	45,180
Finished goods	42,423	37,460
	$100,976	$101,017

g. Production Tooling

The Company's production tooling primarily consists of graphite tooling used in the manufacturing and furnace processes. This tooling is being amortized over three to nine months and is included in the cost of the products produced and expensed through cost of product sales in the income statement.

h. Property, Plant and Equipment, Net

Property, plant and equipment is recorded at cost and consists of the following (in thousands):

	December 31, 2009	December 31, 2008
Land and land improvements	$ 19,320	$ 17,073
Buildings and improvements	100,861	97,234
Machinery and equipment	214,552	202,963
Leasehold improvements	9,473	8,241
Office equipment	29,807	26,175
Construction in progress	6,083	13,469
	380,096	365,155
Accumulated depreciation and amortization	(140,774)	(113,227)
	$ 239,322	$ 251,928

Depreciation and amortization of property, plant and equipment are provided using the straight-line method over the following estimated useful lives:

Buildings and improvements	30 years
Machinery and equipment	3 to 12 years
Office equipment	3 to 5 years
Leasehold improvements	Shorter of 10 years or the term of lease

Maintenance, repairs and minor renewals are charged to expense as incurred. Repairs and maintenance expense approximated $10.9 million, $9.7 million, and $13.2 million in 2009, 2008, and 2007, respectively. Additions and improvements are capitalized. When assets are disposed of, the applicable costs and accumulated depreciation and amortization are removed from the accounts and any resulting gain or loss is included in the results of operations. Depreciation expense was approximately $34.6 million, $31.5 million, and $23.7 million in 2009, 2008, and 2007, respectively.

i. Goodwill and Intangible Assets, Net

Goodwill is not amortized, but instead goodwill and indefinite lived assets are required to be tested for impairment annually and under certain circumstances. The Company performs such testing of goodwill in the fourth quarter of each year at year end, or as events occur or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. The Company has defined its reporting units and completed the impairment testing of goodwill at the operating segment level. The Company's operating segments are reporting units that engage in business activities, for which discrete financial information is available. The Company compares the fair value of the reporting units to the carrying value of the reporting units for goodwill impairment testing. Fair value is determined using a discounted cash flow method and/or prevailing earnings multiples for each reporting unit. The use of discounted cash flows requires the use of various economic, market and business assumptions in developing the Company's internal forecasts, the useful life over which cash flows will occur, and determination of the Company's weighted average cost of capital that reflect the Company's best estimates when performing the annual impairment test. However, the Company's assumptions and estimates may differ significantly from actual results. The Company may recognize a goodwill impairment charge in the future, if for example, the market price of Ceradyne's stock materially declines, if the financial results of its operations deteriorate or other circumstances require an impairment charge. At December 31, 2009, the Company's market capitalization was below its net book value. Based on a control factor that was considered and the discounted cash flows used in management's assessment,

an impairment to goodwill was not warranted at December 31, 2009. Additionally, an increase of 50 basis points in the weighted average cost of capital did not have a significant negative impact on the goodwill impairment assessment. Intangible assets with definite lives are amortized over their estimated useful lives based on the economic consumption method.

Goodwill Impairment

During the second quarter of 2009, the Company determined that the demand for its Boral® product line, which was a large part of the revenue of the Ceradyne Canada operating and reporting unit, continued to decline due to competitive market forces causing a decline in demand for this product line and that this condition required a goodwill impairment test before the annual test for this reporting unit. To complete the test for impairment, the Company utilized several valuation techniques in making the determination, including a discounted cash flow methodology, which requires the forecasting of cash flows and requires the selection of discount rates. Management used available information to make these fair value estimates, including discount rates, commensurate with the risks relevant to the Company's business. Based on the goodwill impairment test performed on the Ceradyne Canada reporting unit, the Company recorded a $3.8 million impairment charge, which was recognized during the second quarter of 2009.

During the second quarter of 2009, the Company also conducted a test on the forecasted undiscounted cash flows to determine whether there was an impairment of its long lived assets in the Ceradyne Canada reporting unit. Based on the analysis of the forecasted undiscounted cash flows for this reporting unit, the Company determined that there was no impairment of the long lived assets for the Ceradyne Canada reporting unit.

The valuation methodologies and the underlying financial information that are used to determine fair value require significant judgments to be made by management. These judgments include, but are not limited to, long-term projections of future financial performance, terminal growth rate and the selection of an appropriate discount rate used to calculate the present value of the estimated future cash flows. The long-term projections used in the valuation were developed as a part of the Company's annual budgeting and forecasting process. The discount rate used in the valuation was selected based upon an analysis of comparable companies and included adjustments made to account for the Company's specific attributes such as size and industry. As of December 31, 2009, none of the Company's reporting units were at risk of failing step one of the impairment test.

The roll forward of the goodwill balance by segment for the years ended December 31, 2009 and 2008 is as follows (in thousands):

	ACO	Semicon	Thermo	ESK	Canada	Boron	Total
Balance at December 31, 2007	$2,608	$603	$11,378	$10,176	$ 3,832	$18,251	$46,848
Accumulated impairment losses	—	—	—	—	—	—	—
Translation and other	—	—	(1,047)	(477)	—	—	(1,524)
Balance at December 31, 2008	2,608	603	10,331	9,699	3,832	18,251	45,324
Accumulated impairment losses	—	—	—	—	—	—	—
Acquisition of Diaphorm Technologies	2,100	—	—	—	—	—	2,100
Translation and other	—	—	—	288	—	—	288
Goodwill impairment	—	—	—	—	(3,832)	—	(3,832)
Balance at December 31, 2009	$4,708	$603	$10,331	$ 9,987	$ —	$18,251	$43,880

The components of intangibles assets were as follows (in thousands):

	December 31, 2009			December 31, 2008		
	Gross Amount	Accumulated Amortization	Net Amount	Gross Amount	Accumulated Amortization	Net Amount
Amortizing Intangible Assets						
Backlog	$ 1,864	$ 1,864	$ —	$ 1,795	$ 1,795	$ —
Developed technology	50,752	4,378	46,374	42,489	3,106	39,383
Tradename	1,110	445	665	1,110	302	808
Customer Relationships	47,604	7,671	39,933	46,604	4,465	42,139
Non-compete agreement	500	500	—	500	500	—
Non-amortizing tradename	2,437	—	2,437	2,054	—	2,054
Total	$104,267	$14,858	$89,409	$94,552	$10,168	$84,384

Amortization of definite-lived intangible assets will be approximately $6,996 in 2010, $6,941 in 2011, $7,388 in 2012, $8,342 in 2013 and $9,868 in 2014. Amortization expense was $4,749 in 2009, $5,176 in 2008 and $3,131 in 2007.

All of the intangible assets were acquired in the years 2004 through 2009 (see Note 3).

The estimated useful lives for intangible assets are:

Identified Intangible Asset	Estimated Useful Life in Years or Months
Developed technology	10 years — 12.5 years
Tradename	10 years
Customer relationships	10 years — 12.5 years
Backlog	1 month — 3 months
Non-compete agreement	15 months

j. Sales Recognition

Sales are recorded when all of the following have occurred: an agreement of sale exists, the price is fixed and determinable, the product has been delivered according to the terms of the sales order and collection is reasonably assured. Management is required to make judgments about whether or not collection is reasonably assured. The Company reduces revenue with allowances for sales returns. Allowances for sales returns, which are recorded at the time revenue is recognized, are based upon historical sales returns which are minimal and immaterial. There were no allowances for sales returns as of December 31, 2009 and 2008 since the Company typically does not experience a material amount of sales returns from year to year because most of its products are produced and sold on a made to order basis. Therefore, as of December 31, 2009 and 2008, the Company did not anticipate any material sales returns for products shipped to customers.

The Company does not record a warranty reserve on the sale of its products. For its largest product line, body armor, all of which is sold to the U.S. Government, each lot of body armor is tested at an independent laboratory and the lot cannot be released for shipment to the U.S. Government until positive test results are received by both the U.S. Government and the Company. For its non-body armor sales, the Company has experienced minimal claims from these types of sales.

Additionally, due to the inherent nature, strength, durability and structural properties of ceramics, as well as a rigid quality control program that includes, for some of our customers, having the customer accept quality test results prior to shipment, management does not believe a warranty reserve is necessary.

k. Net Income Per Share

Basic net income per share is computed by dividing income available to common stockholders by the weighted average number of common shares outstanding. Diluted net income per share is computed by dividing income available to common stockholders by the weighted average number of common shares outstanding plus the effect of any dilutive stock options and restricted stock units using the treasury stock method and the net share settlement method for the convertible debt.

The following is a summary of the number of shares entering into the computation of net income per common and common equivalent share:

	December 31,		
	2009	2008	2007
Weighted average number of shares outstanding	25,683,963	26,445,785	27,252,448
Dilutive stock options	118,281	217,972	285,427
Dilutive restricted stock units	—	25,434	39,853
Dilutive convertible note shares	—	—	154,274
Number of shares used in dilutive computation	25,802,244	26,689,191	27,732,002

Excluded for the above calculation are 363,924 potential shares from restricted stock units that are anti-dilutive.

l. Accounting for Long-Lived Assets

Long-lived assets and intangible assets with definite lives are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Impairment indicators include, among other conditions, cash flow deficits, historic or anticipated declines in revenue or operating profit and adverse legal or regulatory developments. If it is determined that such indicators are present and the review indicates that the assets will not be fully recoverable, based on undiscounted estimated cash flows over the remaining amortization periods, their carrying values are reduced to estimated fair market value. Estimated fair market value is determined primarily using the anticipated cash flows discounted at a rate commensurate with the risk involved. For the purposes of identifying and measuring impairment, long-lived assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities.

m. Use of Estimates

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

n. Research and Development

Costs associated with research and development were $12.3 million, $14.8 million and $17.6 million for years ended December 31, 2009, 2008 and 2007, respectively. In addition, the Company historically has and continues to engage in application engineering and internally funded research to improve and reduce the cost to manufacture existing products, which is reflected in cost of sales, and to develop new products which is expensed to research and development.

o. Income Taxes

The Company accounts for income taxes using the asset and liability approach. Under this approach, deferred taxes are determined based on the differences between the financial statements and the tax bases using rates as enacted in tax laws. A valuation allowance is established if it is "more likely than not" that all or a portion of the deferred tax asset will not be realized. The Company also has a liability for uncertain tax positions which must meet a more likely than not recognition threshold at the end of each reporting period.

p. Share-Based Compensation

The Company recognizes compensation expense for all share-based payment awards made to employees and directors, including employee stock options, based on estimated fair values on the grant date, over the requisite vesting period.

The Company followed the simplified method to establish the beginning balance as of January 1, 2006 of the additional paid-in capital pool ("APIC pool") related to the tax effects of employee share-based compensation, and uses this method to determine the subsequent impact on the APIC pool and Consolidated Statements of Cash Flows of the tax effects of employee share-based compensation awards.

q. Comprehensive Income

Comprehensive income encompasses all changes in equity other than those arising from transactions with stockholders, and consists of net income, currency translation adjustments, pension liability changes and unrealized net gains and losses on investments classified as available-for-sale. As of December 31, 2009 and 2008, accumulated other comprehensive income is as follows (in thousands):

	December 31,	
	2009	2008
Unrealized gain (loss) on available-for-sale-securities, net	$(1,991)	$(5,911)
Net change in pension liability	(4,059)	(3,124)
Cumulative translation adjustment	27,578	22,738
	$21,528	$13,703

r. Fair Value Measurements

On January 1, 2008, the Company adopted the new framework for measuring fair value under GAAP, and expanded its disclosures about fair value measurements as it relates to recurring and non-recurring financial assets and liabilities. This new framework addresses how companies should measure fair value when they are required to use a fair value measure for recognition or disclosure purposes under GAAP. On January 1, 2009, the Company adopted these new recognition and disclosure requirements for nonfinancial assets and nonfinancial liabilities that are recognized or disclosed at fair value in the financial statements on a nonrecurring basis in accordance with GAAP. The adoption in 2009 did not have a significant impact on the financial statements.

The new fair value framework requires that assets and liabilities carried at fair value be classified and disclosed in one of the following three categories:

Level 1: quoted market prices in active markets for identical assets and liabilities

Level 2: observable market based inputs or unobservable inputs that are corroborated by market data

Level 3: unobservable inputs that are not corroborated by market data

The carrying value of cash and cash equivalents, accounts receivable and trade payables approximates the fair value due to their short-term maturities.

For recognition purposes, on a recurring basis, the Company measures available for sale short-term and long-term investments at fair value. Short-term investments had an aggregate fair value of $117.7 million at December 31, 2009 and $6.1 million at December 31, 2008. The fair value of these investments is determined using quoted prices in active markets. Long-term investments, comprising auction rate securities, had an aggregate fair value of $20.0 million at December 31, 2009 and $24.4 million at December 31, 2008.

On April 1, 2009, the Company adopted new recognition principles for additional guidance to provide greater clarity about the credit and noncredit component of an other-than-temporary impairment event. Adoption of the new recognition principles resulted in a pre-tax other-than-temporary impairment charges totaling $2.9 million in 2009. This other-than-temporary impairment adjustment related to the credit risk component of certain auction rate securities which were previously recognized in other comprehensive income prior to the adoption of the new recognition principles. During the first quarter of 2009, the Company recognized pre-tax charges of $104,000 due to other-than-temporary reductions in the value of its investments in auction rate securities. In the fourth quarter of 2009, the Company also recorded a realized loss on the sale of auction rate securities of $2.3 million. Total losses from auction rate securities were $5.2 million in 2009, $5.9 million in 2008 and $2.1 million in 2007. The Company also recognized a pre-tax temporary gain of $6.1 million in 2009 and pre-tax temporary charges of $7.8 million in 2008 and $0.8 million in 2007 against other comprehensive income due to temporary changes in the value of its investments in auction rate securities.

Cumulatively to date, the Company has incurred $13.2 million in pre-tax losses from its investments in auction rate securities and pre-tax temporary impairment charges against other comprehensive income of $2.5 million. The Company's investments in auction rate securities represent interests in insurance securitizations collateralized by pools of residential and commercial mortgages, asset backed securities and other structured credits relating to the credit risk of various bond guarantors that mature at various dates from June 2021 through July 2052. These auction rate securities were intended to provide liquidity via an auction process which is scheduled every 28 days, that resets the applicable interest rate, allowing investors to either roll over their holdings or gain immediate liquidity by selling such interests at par. Interest rates are capped at a floating rate of one month LIBOR plus additional spread ranging from 1.25% to 4.00% depending on prevailing rating. During the second half of the year 2007, through 2009, the auctions for these securities failed. As a result of current negative conditions in the global credit markets, auctions for the Company's investment in these securities failed to settle on their respective settlement dates. Consequently, the investments are not currently liquid through the normal auction process and may be liquidated if a buyer is found outside the auction process. Although the auctions have failed and are currently inactive, the Company continues to receive underlying cash flows in the form of interest income from the investments in auction rate securities. As of December 31, 2009, the fair value of the Company's investments in auction rate securities was below cost by approximately $13.4 million. The fair value of the auction rate securities has been below cost for more than one year.

Prior to June 30, 2008, the Company was able to determine the fair value of its investments in auction rate securities using a market approach valuation technique based on Level 2 inputs that did not require significant adjustment. Since June 30, 2008, the market demand for auction rate securities has declined significantly due to the complexity of these instruments, the difficulty of determining the values of some of the underlying assets, declines in the issuer's credit quality and disruptions in the credit markets. At December 31, 2009, the Company determined that the market for its investments in auction rate securities and for similar securities was not active since there were few observable or recent transactions for these securities or similar securities. The Company's investments in auction rate securities were classified within Level 3 of the fair value hierarchy because the Company determined that significant adjustments using unobservable inputs were required to determine fair value as of December 31, 2009.

An auction rate security is a type of structured financial instrument where its fair value can be estimated based on a valuation technique that includes the present value of future cash flows (principal and interest payments), review of the underlying collateral and considers relevant probability weighted and risk adjusted observable inputs and minimizes the use of unobservable inputs. Probability weighted inputs included the following:

- Probability of earning maximum rate until maturity
- Probability of passing auction at some point in the future
- Probability of default at some point in the future (with appropriate loss severity assumptions)

The Company determined that the appropriate risk-free discount rate (before risk adjustments) used to discount the contractual cash flows of its auction rate securities ranged from 0.6% to 5.1%, based on the term structure of the auction rate security. Liquidity risk premiums are used to adjust the risk-free discount rate for each auction rate security to reflect uncertainty and observed volatility of the current market environment. This risk of nonperformance has been captured within the probability of default and loss severity assumptions noted above. The risk-adjusted discount rate, which incorporates liquidity risk, appropriately reflects the Company's estimate of the assumptions that market participants would use (including probability weighted inputs noted above) to estimate the selling price of the asset at the measurement date.

In determining whether the decline in value of the ARS investments was other-than-temporary, the Company considered several factors including, but not limited to, the following: (1) the reasons for the decline in value (credit event, interest related or market fluctuations); (2) the Company's ability and intent to hold the investments for a sufficient period of time to allow for recovery of value; (3) whether the decline is substantial; and (4) the historical and anticipated duration of the events causing the decline in value. The evaluation for other-than-temporary impairments is a quantitative and qualitative process, which is subject to various risks and uncertainties. The risks and uncertainties include changes in the credit quality of the securities, changes in liquidity as a result of normal market mechanisms or issuer calls of the securities, and the effects of changes in interest rates.

At December 31, 2009, the Company had no derivative financial instruments.

Assets measured at fair value on a recurring basis include the following as of December 31, 2009 and 2008 (in thousands):

	Fair Value Measurements at December 31, 2009 Using			
	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Carrying Value at December 31, 2009
		(In thousands)		
Cash and cash equivalents (including restricted cash)	$125,284	$ —	$ —	$125,284
Short term investments	117,666	—	—	117,666
Long term investments	—	—	20,019	20,019
Assets held by defined benefit pension plans	—	6,857	—	6,857
Other long-term financial asset	$ 1,962	$ —	$ —	$ 1,962

	Fair Value Measurements at December 31, 2008 Using			
	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total Carrying Value at December 31, 2008
	(In thousands)			
Cash and cash equivalents (including restricted cash)	$217,984	$ —	$ —	$217,984
Short term investments	6,140	—	—	6,140
Long term investments	—	—	24,434	24,434
Assets held by defined benefit pension plans	—	6,447	—	6,447
Other long-term financial asset	$ 1,355	$ —	$ —	$ 1,355

Activity in long term investments (Level 3) was as follows (in thousands):

	Year Ended December 31,	
	2009	2008
Balance at beginning of year	$24,434	$38,089
Sale of auction rate securities	(5,320)	—
Realized loss included in net earnings	(2,280)	—
Unrealized loss included in net earnings	(2,907)	(5,870)
Unrealized gain (loss) included in other comprehensive income	6,092	(7,785)
Balance at end of year	$20,019	$24,434

Additionally, on a nonrecurring basis, the Company uses fair value measures when analyzing asset impairment. Long-lived tangible assets and definite-lived intangible assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If it is determined such indicators are present and the review indicates that the assets will not be fully recoverable, based on undiscounted estimated cash flows over the remaining amortization periods, their carrying values are reduced to estimated fair value. Estimated fair value is determined primarily using the anticipated cash flows discounted at a rate commensurate with the risk involved. During the fourth quarter of each year, the Company evaluates goodwill and indefinite-lived intangibles for impairment using the income and other valuation approaches. The income approach is a valuation technique under which estimated future cash flows are discounted to their present value to calculate fair value. When analyzing indefinite-lived intangibles for impairment, the Company uses a relief from royalty method which calculates the cost savings associated with owning rather than licensing the intangible asset, applying an assumed royalty rate within the Company's discounted cash flow calculation.

The Company is also required to test goodwill for impairment before the annual test if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount, such as a significant adverse change in the business climate. Goodwill in the Ceradyne Canada reporting unit segment with a carrying amount of $3.8 million was written down in full as there was no implied fair value as of June 30, 2009, the effective date of the impairment test, resulting in an impairment charge of $3.8 million, which was included in earnings during the second quarter of 2009.

For disclosure purposes, the Company is required to measure the fair value of outstanding debt on a recurring basis. The fair value of outstanding debt is determined using quoted prices in active markets. Long-

term debt is reported at amortized cost. The fair value of long-term debt, based on quoted market prices, was $87.5 million at December 31, 2009 and $83.2 million at December 31, 2008. The carrying value of the Company's unused line of credit is considered to approximate fair market value, as the interest rates of these instruments are based predominantly on variable reference rates.

The carrying value of accounts receivable and trade payables approximates the fair value due to their short-term maturities.

s. Recent Accounting Pronouncements

In December 2007, the FASB issued accounting guidance which establishes principles and requirements for how the acquirer of a business recognizes and measures in its financial statements the identifiable assets acquired, the liabilities assumed, and any noncontrolling interest in the acquiree. The guidance also provides for the recognition and measurement of goodwill acquired in a business combination and determines what information to disclose to enable users of the financial statement to evaluate the nature and financial effects of the business combination. The Company adopted the new guidance on January 1, 2009, which has been applied in the accounting for the acquisition of the assets of Diaphorm Technologies, LLC discussed in Note 3.

In December 2007, the FASB issued guidance which introduces significant changes in the accounting and reporting for business acquisitions and noncontrolling interest ("NCI") in a subsidiary. The new guidance also changes the accounting for and reporting for the deconsolidation of a subsidiary. Companies are required to adopt the new guidance for fiscal years beginning after January 1, 2009. The Company adopted the new guidance on January 1, 2009 which did not have an impact on its financial position, results of operations or cash flows as the Company owns 100% of its subsidiaries and there has been no deconsolidation of a subsidiary after January 1, 2009.

In March 2008, the FASB issued guidance which changes the disclosure requirements for derivative instruments and hedging activities. Entities are required to provide enhanced disclosures about (a) how and why an entity uses derivative instruments, (b) how derivative instruments and related hedged items are accounted for under GAAP, and (c) how derivative instruments and related hedged items affect an entity's financial position, financial performance, and cash flows. The Company adopted this new guidance on January 1, 2009, which did not have an impact on its financial position, results of operations or cash flows as there were no derivative instruments or hedging activities after January 1, 2009.

In June 2008, the FASB issued guidance to determine whether unvested share-based payment awards that contain rights to receive nonforfeitable dividends (whether paid or unpaid) are participating securities, and should be included in the two-class method of computing EPS. The Company adopted this new guidance on January 1, 2009, which did not have an impact on its financial position, results of operations or cash flows as the unvested share-based awards do not contain rights to receive nonforfeitable dividends.

In April 2008, the FASB Staff issued guidance which provides for additional considerations to be used in determining useful lives of intangible assets and requires additional disclosure regarding renewals. The Company adopted this new guidance on January 1, 2009, which did not have a significant impact on its financial position, results of operations or cash flows.

In April 2009, the FASB Staff issued new accounting guidance which the Company adopted on April 1, 2009, as follows:

i.) Guidance for making fair value measurements more consistent with existing GAAP. This new guidance provides additional authoritative principles in determining whether a market is active or inactive, and whether a transaction is distressed. This guidance is applicable to all assets and liabilities (i.e.

financial and nonfinancial) and will require enhanced disclosures. The adoption of this new guidance did not have a significant impact on the Company's financial position, results of operations or cash flows.

ii.) Companies are required to provide greater clarity about the credit and noncredit component of an other-than-temporary impairment event and to improve presentation and disclosure of other than temporary impairments in the financial statements. The impact of the adoption of this new guidance is discussed in Note 4.

iii.) This guidance requires new disclosures about fair value of financial instruments in interim as well as in annual financial statements. The Company has adopted this new guidance and has provided the additional disclosures required as discussed in Note 4.

In May 2009, the FASB issued new guidance which establishes general standards for accounting for and disclosure of events that occur after the balance sheet date but before financial statements are available to be issued ("subsequent events"). More specifically, this new guidance sets forth the period after the balance sheet date during which management of a reporting entity should evaluate events or transactions that may occur for potential recognition in the financial statements, identifies the circumstances under which an entity should recognize events or transactions occurring after the balance sheet date in its financial statements and the disclosures that should be made about events or transactions that occur after the balance sheet date. This new guidance provides largely the same framework for the evaluation of subsequent events which previously existed only in auditing literature. The Company has performed an evaluation of subsequent events through February 23, 2010, which is the day the financial statements were issued.

In August 2009, the FASB issued revised authoritative guidance regarding the measurement of liabilities at fair value which provides clarification that in circumstances where a quoted market price in an active market for an identical liability is not available, a reporting entity must measure fair value of the liability using one of the following techniques: 1) the quoted price of the identical liability when traded as an asset; 2) quoted prices for similar liabilities or similar liabilities when traded as assets; or 3) another valuation technique, such as a present value technique or the amount that the reporting entity would pay to transfer the identical liability or would receive to enter into the identical liability. This statement becomes effective for the first reporting period (including interim periods) beginning after issuance, which. The Company adopted this new guidance on October 1, 2009, which did not have an impact on our consolidated financial position, results of operations or cash flows.

3. Acquisitions

Acquisition of Assets of Diaphorm Technologies, LLC

On June 1, 2009, the Company acquired substantially all of the business and assets and all technology and intellectual property related to ballistic combat and non-combat helmets of Diaphorm Technologies, LLC ("Diaphorm"), based in Salem, New Hampshire. The purchase price consisted of $9.7 million in cash paid at closing, the assumption of $274,000 of liabilities, plus contingent consideration not to exceed $10 million over the next 5 years based upon performance milestones and revenues achieved during that period from Diaphorm's existing products and new products developed using Diaphorm technology. The Company accrued contingent purchase consideration of $5.1 million based on probability weighted expected future cash flows. The Company used a portion of its existing cash for the payment made at closing. The Company also incurred transaction and related costs of approximately $340,000 which were expensed in 2009. Contingent consideration of $1.0 million was earned and paid in September 2009.

The acquisition has been accounted for under the purchase method of accounting. Under this method, assets acquired and liabilities assumed are recorded at the date of acquisition at their respective fair values.

The total purchase price of the Diaphorm acquisition was as follows (in thousands):

Cash consideration paid at closing	$ 9,654
Accrued contingent purchase consideration	5,100
Total purchase price	$14,754

The above purchase price has been allocated based on the fair values of assets acquired and liabilities assumed.

The purchase price has been allocated as follows (in thousands):

Accounts receivable, net	$ 466
Inventories	1,602
Other current assets	221
Property, plant and equipment	1,225
Intangible assets	9,414
Goodwill	2,100
Accounts payable and other liabilities	(274)
	$14,754

The purchase price allocation is based on a fair market valuation of acquired intangible assets, inventory and property, plant and equipment. Of the $9.4 million of acquired intangible assets, $8.4 million was assigned to developed technology rights that have a useful life of approximately 10 years and $1.0 million was assigned to customer relationships with a useful life of approximately 10 years. The amounts assigned to intangible assets were based on management's estimate of the fair value. Developed technology rights recorded in connection with the acquisition of Diaphorm's assets were established as intangible assets as the underlying technologies are legally protected by patents covering its proprietary ballistic helmets. The developed technology rights are both transferable and separable from the acquired assets.

Identification and allocation of value to the identified intangible assets was based on the purchase method of accounting. The fair value of the identified intangible assets was estimated by performing a discounted cash flow analysis using the "income" approach. This method includes a forecast of direct revenues and costs associated with the respective intangible assets and charges for economic returns on tangible and intangible assets utilized in cash flow generation. Net cash flows attributable to the identified intangible assets are discounted to their present value at a rate commensurate with the perceived risk. The projected cash flow assumptions considered contractual relationships, customer attrition, eventual development of new technologies and market competition.

The estimates of expected useful lives take into consideration the effects of competition, regulatory changes and possible obsolescence. The useful lives of technology rights were based on the number of years in which net cash flows have been projected. The useful lives of customer relationships were estimated based upon the length of the contracts currently in place and probability-based estimates of contract renewals in the future.

Assumptions used in forecasting cash flows for each of the identified intangible assets included consideration of Diaphorm's historical operating margins and performance of comparable publicly traded entities; number of customers and Diaphorm market share; contractual and non-contractual relationships with large customers and patents held.

The goodwill resulting from the Diaphorm acquisition is included with the ACO segment and resulted primarily from intellectual property acquired. Goodwill will not be amortized but is subject to an ongoing assessment for impairment. The goodwill from the Diaphorm acquisition is tax deductible.

The historical results of the operations acquired from Diaphorm were not material to the Company's consolidated results of operations in current and prior periods.

Acquisition of SemEquip, Inc.

On August 11, 2008, the Company completed the acquisition of SemEquip, Inc. ("SemEquip") pursuant to a merger of SemEquip with a wholly-owned subsidiary of Ceradyne. SemEquip is a leader in the development of cluster ion implantation sub-systems and advanced ion source materials for the manufacture of logic and memory chips. SemEquip's technologies enable the utilization of cluster beam ion implantation for manufacturing advanced integrated circuits at low cost and high throughput rates. Ceradyne paid $25.0 million in cash at closing, of which $1.7 million was distributed as incentive compensation to several SemEquip employees and advisors as described below, and incurred direct transaction fees and expenses of $2.0 million. Ceradyne used a portion of its existing cash to make these payments. In addition, Ceradyne will pay contingent consideration of up to $100.0 million in cash during the 15-year period following completion of the merger based upon revenues achieved over that period by SemEquip. The $1.7 million portion of the closing date consideration paid to SemEquip employees and advisors and a portion of the contingent consideration to be paid by Ceradyne over 15 years relates to a pre-closing commitment by SemEquip to pay incentive compensation to several of its employees and advisors. This incentive compensation will not increase the total consideration Ceradyne will pay for the acquisition, but it required Ceradyne to record a $9.8 million pre-tax compensation charge during the year ended December 31, 2008. The liability for the contingent incentive compensation is reevaluated each reporting period. Accordingly, the Company reduced the liability and recognized a corresponding non-cash credit of $0.8 million in the Consolidated Statements of Income during the year ended December 31, 2009. The net fair value of assets acquired and liabilities assumed exceeded the total amount of the purchase price paid. As the Company may be required to pay contingent consideration in the future, the Company accrued an additional $25.2 million of purchase consideration to represent the difference between the net fair value of assets acquired and liabilities assumed and the purchase price paid.

The acquisition has been accounted for under the purchase method of accounting. Under the purchase method of accounting, the assets acquired and liabilities assumed are recorded at the date of acquisition at their respective fair values.

The total purchase price of the SemEquip acquisition was as follows (in thousands):

Cash consideration paid to SemEquip stockholders	$23,315
Accrued purchase consideration	25,235
Direct transaction fees and expenses	1,970
Total purchase price	$50,520

The above purchase price has been allocated based on the fair values of assets acquired and liabilities assumed.

The purchase price has been allocated as follows (in thousands):

Cash	$ 2,192
Inventories	3,574
Accounts receivable, net	446
Other current assets	276
Property, plant and equipment	1,071
Intangible assets	48,189
Accounts payable and other liabilities	(3,685)
Non-current deferred tax liability, net	(1,543)
Net assets acquired	$50,520

The non-current deferred tax liability was recorded net of the tax benefit associated with net operating loss carryforwards of SemEquip that were generated prior to the acquisition date (see Note 6).

Of the $48.2 million of acquired intangible assets, $26.9 million was assigned to developed technology rights that have a useful life of approximately 10 years and $21.3 million was assigned to customer relationships with a useful life of approximately 10 years. The amounts assigned to intangible assets were based on management's estimate of the fair value. Developed technology rights recorded in connection with the acquisition of SemEquip were established as intangible assets as the underlying technologies are legally protected by patents covering the alternative ion implantation process using "cluster boron" technology. The developed technology rights are both transferable and separable from the acquired entity.

Identification and allocation of value to the identified intangible assets was based on the purchase method of accounting. The fair value of the identified intangible assets was estimated by performing a discounted cash flow analysis using the "income" approach. This method includes a forecast of direct revenues and costs associated with the respective intangible assets and charges for economic returns on tangible and intangible assets utilized in cash flow generation. Net cash flows attributable to the identified intangible assets are discounted to their present value at a rate commensurate with the perceived risk. The projected cash flow assumptions considered contractual relationships, customer attrition, eventual development of new technologies and market competition.

The estimates of expected useful lives take into consideration the effects of competition, regulatory changes and possible obsolescence. The useful lives of technology rights were based on the number of years in which net cash flows have been projected. The useful lives of customer relationships were estimated based upon the length of the contracts currently in place and probability-based estimates of contract renewals in the future.

Assumptions used in forecasting cash flows for each of the identified intangible assets included consideration of the following:

- SemEquip historical operating margins and performance of comparable publicly traded entities
- Number of customers and SemEquip market share
- Contractual and non-contractual relationships with large customers, and
- Patents held

The results of operations of SemEquip have been included in the accompanying consolidated statements of operations from the acquisition date. The following unaudited pro forma information assumes the SemEquip acquisition occurred at the beginning of each period presented below. Accordingly, pro forma adjustments have been included in the information below for disclosure purposes only. These unaudited pro forma results have

been prepared for informational purposes only and do not purport to represent what the results of operations would have been had the SemEquip acquisition occurred as of the date indicated, nor of future results of operations. The unaudited pro forma results for the years ended December 31, 2008 and 2007 were as follows (amounts in table in thousands, except per share data):

	2008	2007
Net Sales	$682,978	$760,642
Net income(1)	$100,639	$127,467
Basic income per share	$ 3.81	$ 4.68
Diluted income per share	$ 3.77	$ 4.60

(1) The unaudited pro forma information for the years ended December 31, 2008 and 2007 includes the $9.8 million pre-tax acquisition related compensation charge associated with a pre-closing commitment by SemEquip to pay incentive compensation to several of its employees and advisors, which has been recognized in the Company's historical results of operations for these periods. The unaudited pro forma information for the years ended December 31, 2008 and 2007 include pro forma adjustments to reflect pre-tax increase in amortization expense of $398,000 and $0.7 million, respectively, related to management's estimate of the fair value of intangible assets acquired in the SemEquip acquisition.

Asset Purchase — Proprietary Technical Ceramic Bearing Technology

In June 2008, the Company completed the purchase of certain assets and developed technology related to proprietary technical ceramic bearings. These patented bearings are used for "downhole" oil drilling and for coal bed methane pumps and steam assisted oil extraction pumps. The purchase price was approximately $3.9 million in cash, which included $115,000 of transaction costs. The Company paid an additional $250,000 in consideration during November 2008 conditioned upon the relocation of certain key employees. In addition, the Company will make future payments of (1) up to an additional $2.0 million if certain revenue milestones are achieved, and (2) a royalty of three percent of net sales of these bearings for the life of the acquired patents. The Company considers this acquisition to be immaterial.

The acquisition has been accounted for under the purchase method of accounting. The following table summarizes the components of the purchase price (in thousands):

Cash	$4,000
Transaction costs	115
Total purchase price	$4,115
Fair value of assets acquired:	
Fixed assets	$ 29
Customer relationships	120
Developed technology	3,966
Total fair value of assets acquired	$4,115

The Company considers this acquisition to be immaterial for disclosure of pro forma financial information.

Acquisition of Minco, Inc.

On July 10, 2007, the Company completed the acquisition of Minco, Inc. ("Minco") based in Midway, Tennessee, pursuant to a Sale and Purchase Agreement of the same date. Minco's results from operations are included in the Company's Consolidated Statements of Income from the date of acquisition.

The purchase price was approximately $28.1 million in cash, which included $216,000 of transaction costs.

Minco is a key supplier of raw materials to Ceradyne's Thermo Materials division. Minco was founded in 1977 to manufacture and market fused silica powders for a wide range of industrial applications. Minco's fusing process, which is the basis of its entire product line, is based on its proprietary technology.

The acquisition has been accounted for under the purchase method of accounting. The following table summarizes the components of the purchase price (in thousands):

Cash	$27,905
Transaction costs	216
Total purchase price	$28,121
Fair value of assets acquired and liabilities assumed:	
Cash	$ 332
Accounts receivable, net	2,503
Inventory	3,301
Property, plant and equipment	7,114
Other assets	1,473
Assumed liabilities	(1,892)
Deferred taxes	(3,741)
Backlog	110
Developed technology	1,510
Tradename	650
Customer relationships	6,210
Non-compete	500
Goodwill	10,051
	$28,121

The goodwill resulting from the Minco acquisition is included with the Thermo Materials segment. Goodwill will not be amortized but is subject to an ongoing assessment for impairment. The goodwill from the Minco acquisition is not tax deductible.

The estimated useful lives for Minco's intangible assets are as follows:

Identified Intangible Asset	Estimated Useful Life in Years or Months
Developed technology	10 years
Tradename	10 years
Customer relationships	10 years
Backlog	1 month
Non-compete agreement	15 months

The Company considers this acquisition to be immaterial for disclosure of pro forma financial information.

Acquisition of EaglePicher Boron LLC

On August 31, 2007, the Company completed the purchase of EaglePicher Boron LLC. ("EP Boron") located in Quapaw, Oklahoma pursuant to a Sale and Purchase Agreement dated June 27, 2007. EP Boron was

renamed Boron Products, LLC and is doing business as Ceradyne Boron Products. Their results from operations are included in the Company's Consolidated Statements of Income from the date of acquisition.

The purchase price was approximately $71.3 million in cash which included $1.7 million of transaction costs.

EP Boron was established in the early 1970's to produce the boron isotope ^{10}B. This isotope is a strong neutron absorber and is used for both nuclear waste containment and nuclear power plant neutron radiation control. EP Boron also produces complementary chemical isotopes used in the normal operation and control of nuclear power plants. Ceradyne anticipates that this acquisition will further strengthen its entry into the nuclear waste containment and other nuclear power plant related ceramic materials markets.

The acquisition has been accounted for under the purchase method of accounting. The following table summarizes the components of the purchase price (in thousands):

Cash	$69,600
Transaction costs	1,709
Total purchase price	$71,309
Fair value of assets acquired and liabilities assumed:	
Accounts receivable, net	$ 2,811
Inventory	6,375
Property, plant and equipment	23,636
Other assets	61
Assumed liabilities	(1,505)
Backlog	1,110
Developed technology	2,280
Customer relationships	18,290
Goodwill	18,251
	$71,309

The intangible asset balance for each acquisition will be allocated between identifiable intangible assets and remaining goodwill. The goodwill from this acquisition is tax deductible over 15 years.

The estimated useful lives for Ceradyne Boron Products' intangible assets are as follows:

Identified Intangible Asset	Estimated Useful Life in Years or Months
Developed technology	12.5 years
Customer relationships	12.5 years
Backlog	3 months

The Company considers this acquisition to be immaterial for disclosure of pro forma financial information.

4. Debt and Bank Borrowing Arrangements; Convertible Note and Common Stock Offerings

During December 2005, the Company completed a public offering of 2,070,000 shares of common stock at a price to the public of $43.31 per share. The Company received net proceeds of approximately $84.6 million from this offering after deducting offering expenses and underwriting discounts of $5.0 million. Concurrent with the common stock offering, during December 2005, the Company issued $121.0 million of 2.875% senior subordinated convertible notes ("Notes") due December 15, 2035.

During the year ended December 31, 2009, the Company purchased an aggregate of $27.9 million principal amount of the Notes on the open market at a purchase price of $23.2 million. The carrying amount of the Notes purchased was $24.1 million and the estimated fair value of the Notes exclusive of the conversion feature was $21.8 million. The difference between the carrying amount of $24.1 million and the estimated fair value of $21.8 million was recognized as a gain of $2.3 million upon early extinguishment of debt, which was partially offset by write off of associated unamortized debt issuance costs of $392,000, resulting in a net gain of $1.9 million. The difference between the estimated fair value of $21.8 million and the purchase price of $23.2 million was $1.4 million and was charged to additional paid-in capital. The Company has $26.8 million remaining of the original $50.0 million authorization to repurchase and retire part of the outstanding Notes. Cash flow from operating activities in the statement of cash flows for the year ended December 31, 2009 includes $3.0 million of the purchase price that was attributable to the payment of accreted interest on the convertible debt discount and the remaining $20.2 million is presented as repayments of convertible debt in cash flow from financing activities.

In May 2008, the FASB Staff issued new accounting guidance for convertible debt instruments that may be settled in cash upon conversion (including partial cash settlement) which specifies that issuers of such instruments should separately account for the liability and equity components in a manner that will reflect the issuer's nonconvertible debt borrowing rate when interest cost is recognized in subsequent periods. The Company adopted this new guidance as of January 1, 2009, and the adoption impacted the historical accounting for the Notes, which resulted in the following retrospective changes in long-term debt, debt issuance costs (included in other noncurrent assets), deferred tax liability, additional paid in capital and retained earnings (in thousands):

	Net Increase (Decrease)				
	Long-Term Debt	Debt Issuance Costs	Deferred Tax Liability	Additional Paid In Capital	Retained Earnings
Allocation of long term debt proceeds and issuance costs to equity component on issuance date	$(29,261)	$(1,018)	$11,015	$17,228	$ —
Cumulative retrospective impact from amortization of discount on liability component and debt issuance costs	3,414	204	(1,252)	—	(1,958)
Cumulative retrospective impact at January 1, 2007	(25,847)	(814)	9,763	17,228	(1,958)
Retrospective impact from amortization of discount on liability component and debt issuance costs during the year	3,595	182	(1,331)	—	(2,082)
Cumulative retrospective impact at December 31, 2007	(22,252)	(632)	8,432	17,228	(4,040)
Retrospective impact from amortization of discount on liability component and debt issuance costs during the year	3,883	163	(1,450)	—	(2,270)
Cumulative retrospective impact at December 31, 2008	$(18,369)	$ (469)	$ 6,982	$17,228	$(6,310)

The adoption of the new accounting guidance also resulted in increased interest expense of approximately $3.7 million in 2008 and $3.4 million in 2007, and decreased net income by $2.3 million in 2008 and $2.1 million in 2007. The retrospective impact to earnings per share was a decrease of $0.09 in 2008 and $0.08 in 2007. As a result of the adoption of the accounting guidance for convertible debt, interest expense for

the year ended December 31, 2009 includes non-cash interest expense from amortization of the discount on the liability component of $3.6 million and amortization of debt issuance costs of $399,000 which reduced net income by $4.0 million and earnings per share by $0.10.

As of December 31, 2009 and 2008, long-term debt and the equity component (recorded in additional paid in capital, net of income tax benefit), determined in accordance with the new accounting guidance for convertible debt, comprised the following (in thousands):

	December 31, 2009	December 31, 2008
Long-term debt		
Principal amount	$ 93,100	$121,000
Unamortized discount	(10,937)	(18,369)
Net carrying amount	$ 82,163	$102,631
Equity component, net of income tax benefit	$ 16,399	$ 17,228

The discount on the liability component of long-term debt is being amortized using the effective interest method based on an annual effective rate of 7.5%, which represented the market interest rate for similar debt without a conversion option on the issuance date, through December 2012, which coincides with the first date that holders of the Notes can exercise their put option as discussed below. The amount of interest expense recognized relating to both the contractual interest coupon and the amortization of the discount on the liability component was $6.7 million, $7.4 million and $7.1 million for the years ended December 31, 2009, 2008 and 2007, respectively.

Interest on the Notes is payable on December 15 and June 15 of each year, commencing on June 15, 2006. The Notes are convertible into 17.1032 shares of Ceradyne's common stock for each $1,000 principal amount of the Notes (which represents a conversion price of approximately $58.47 per share), subject to adjustment. The Notes are convertible only under certain circumstances, including if the price of the Company's common stock reaches specified thresholds, if the Notes are called for redemption, if specified corporate transactions or fundamental changes occur, or during the 10 trading days prior to maturity of the Notes. The Company may redeem the Notes at any time after December 20, 2010, for a price equal to 100% of the principal amount plus accrued and unpaid interest, including contingent interest (as described below), if any, up to but excluding the redemption date. As of December 31, 2009 the principal amount of the Notes exceeded the hypothetical if-converted value as the conversion price was higher than the average market price of the Company's common stock.

With respect to each $1,000 principal amount of the Notes surrendered for conversion, the Company will deliver the conversion value to holders as follows: (1) an amount in cash equal to the lesser of (a) the aggregate conversion value of the Notes to be converted and (b) $1,000, and (2) if the aggregate conversion value of the Notes to be converted is greater than $1,000, an amount in shares or cash equal to such aggregate conversion value in excess of $1,000.

The Notes contain put options, which may require the Company to repurchase in cash all or a portion of the Notes on December 15, 2012, December 15, 2015, December 15, 2020, December 15, 2025, and December 15, 2030 at a repurchase price equal to 100% of the principal amount of the Notes to be repurchased plus accrued and unpaid interest, including contingent interest (as described below), if any, up to but excluding the repurchase date.

The Company is obligated to pay contingent interest to the holders of the Notes during any six-month period from June 15 to December 14 and from December 15 to June 14, commencing with the six-month period beginning December 20, 2010 and ending on June 14, 2011, if the average trading price of the note for the five trading day period ending on the third trading day immediately preceding the first day of the relevant

contingent interest period equals $1,200 (120% of the principal amount of a note) or more. The amount of contingent interest payable per note for any relevant contingent interest period shall equal 0.25% per annum of the average trading price of a note for the five trading day period ending on the third trading day immediately preceding the first day of the relevant contingent interest period. This contingent interest payment feature represents an embedded derivative. However, based on the de minimus value associated with this feature, no value has been assigned at issuance or at December 31, 2009.

On or prior to the maturity date of the Notes, upon the occurrence of a fundamental change, under certain circumstances, the Company will provide for a make whole amount by increasing, for the time period described herein, the conversion rate by a number of additional shares for any conversion of the Notes in connection with such fundamental change transactions. The amount of additional shares will be determined based on the price paid per share of Ceradyne's common stock in the transaction constituting a fundamental change and the effective date of such transaction. This make whole premium feature represents an embedded derivative. Since this feature has no measurable impact on the fair value of the Notes and no separate trading market exists for this derivative, the value of the embedded derivative was determined to be de minimus. Accordingly, no value has been assigned at issuance or at December 31, 2009.

The Company utilizes a convertible bond pricing model and a probability weighted valuation model, as applicable, to determine the fair values of the embedded derivatives noted above.

In December 2005, the Company established an unsecured $10.0 million line of credit which expires on December 31, 2010. As of December 31, 2009, there were no outstanding amounts on the line of credit. However, the available line of credit at December 31, 2009 has been reduced by outstanding letters of credit in the aggregate amount of $5.0 million. The interest rate on the credit line is based on the LIBOR rate for a period of one month, plus a margin of 0.6 percent, which equaled 0.9% as of December 31, 2009.

Pursuant to the bank line of credit, the Company is subject to certain covenants, which include, among other things, the maintenance of specified minimum amounts of net income, tangible net worth and quick assets to current liabilities ratio. At December 31, 2009, the Company was not in compliance with the covenant that required minimum annual net income of $10.0 million. During February 2010, the Company received a waiver for the calculation of the covenant at December 31, 2009. The Company was in compliance with all other covenants at December 31, 2009.

5. Financial Instruments

Foreign Exchange Risk Management

The Company enters into foreign exchange forward contracts to reduce earnings and cash flow volatility associated with foreign exchange rate changes to allow management to focus its attention on its core business operations. Accordingly, the Company enters into contracts which change in value as foreign exchange rates change to economically offset the effect of changes in value of foreign currency assets and liabilities, commitments and anticipated foreign currency denominated sales and operating expenses. The Company enters into foreign exchange forward contracts in amounts between minimum and maximum anticipated foreign exchange exposures, generally for periods not to exceed one year. These derivative instruments are not designated as accounting hedges. As of December 31, 2009 and 2008, the Company did not have any outstanding forward exchange contracts.

6. Income Taxes

The provision (benefit) for income taxes comprised the following for each of the years ended December 31 (in thousands):

	2009	2008	2007
Current, domestic	$(5,995)	$59,303	$79,406
Current, foreign	(531)	229	4,897
Current, total	(6,526)	59,532	84,303
Deferred, domestic	1,904	(3,041)	(2,316)
Deferred, foreign	(3,476)	(67)	(1,041)
Deferred, total	(1,572)	(3,108)	(3,357)
(Benefit) provision for income taxes	$(8,098)	$56,424	$80,946

The components of the Company's deferred tax asset (liability) as of December 31, 2009 and 2008 are as follows (in thousands):

	December 31,	
	2009	2008
Deferred tax asset:		
Inventory	$ 7,360	$ 6,806
Vacation accrual	835	950
Bad debt allowance	313	199
Employee compensation	2,157	1,615
State taxes	—	1,992
Foreign taxes	4,558	1,011
Other	464	476
Total current deferred tax asset, before valuation allowance	15,687	13,049
Valuation allowance	(873)	(467)
Current deferred tax asset, net of valuation allowance	$ 14,814	$ 12,582
Current deferred tax (liability):		
State taxes	(495)	—
Prepaid expenses	(523)	(615)
Total current deferred tax (liability):	(1,018)	(615)
Net current deferred tax asset	$ 13,796	$ 11,967

	December 31, 2009	December 31, 2008
Non current deferred tax assets:		
Deferred compensation	$ 2,909	$ 2,906
Employee compensation	1,610	1,355
Acquisition related compensation	2.913	4,012
State taxes	650	558
Net operating loss carryforwards	19,063	18,842
Research credits	2,773	2,091
Unrealized investment loss	5,438	6,605
Pension liability	2,034	1,889
Capital loss carryforward	913	—
Foreign tax credit carryforward and other	289	771
Valuation allowance	(4,492)	(2,222)
Non current deferred tax assets, net of valuation allowance	34,100	36,807
Non current deferred tax (liabilities):		
Depreciation and amortization	(11,191)	(10,821)
Fixed asset step up	—	(962)
Intangible asset step up	(20,552)	(24,382)
Convertible debt	(6,002)	(6,981)
Other	(4,703)	(706)
Total non current deferred tax (liabilities)	(42,448)	(43,852)
Net non current deferred tax (liability)	$ (8,348)	$ (7,045)

The Company had net operating loss ("NOL") carryforwards at December 31, 2009, of $42.8 million and $40.4 million for federal and state income tax purposes, respectively. These NOL carryforwards were primarily attributable to the acquisition of SemEquip, Inc. in August 2008. They are subject to potential utilization restrictions on an annual basis as a result of the ownership change. The NOL carryforwards will begin to expire in 2021 if not utilized.

At December 31, 2009, the Company had approximately $1.2 million and $1.6 million in federal and state research and development credit carryforwards, respectively, which will begin to expire in 2016. These credits were attributable to the acquisition of SemEquip, Inc. These credits are subject to potential utilization restrictions on an annual basis as a result of the ownership change.

At December 31, 2009, the Company had a valuation allowance of $5.4 million for state NOLs and state research credits as the ultimate utilization of these items were less than "more likely than not". The valuation allowance increased by $2.7 million during 2009 primarily due the continuing operating losses from SemEquip, Inc. which reduced the likelihood that the state NOLs and state research credits would be utilized.

The effective income tax rate for the years ended December 31, 2009, 2008 and 2007 differs from the Federal statutory income tax rate due to the following items (in thousands):

	December 31,		
	2009	2008	2007
Income before taxes, domestic	$ 24,178	$136,801	$212,284
Income (loss) before taxes, foreign	(23,761)	24,103	10,845
Income before taxes, total	$ 417	$160,904	$223,129
Provision for income taxes at federal statutory rate (35)%	146	56,317	78,095
State income taxes, net of federal benefit	(3,572)	4,575	9,331
Non deductible items	242	247	584
Worthless stock deduction	(410)	—	—
Foreign tax provision (credits)	(1,059)	(564)	(502)
Manufacturing deduction	—	(2,882)	(4,147)
Foreign earnings not taxed at federal rate	(2,031)	(5,583)	—
Contingency reserve	(3,697)	—	—
SemEquip NOL adjustment	(392)	—	—
Valuation allowance	2,675	—	—
Other	—	4,314	(2,415)
Provision (benefit) for income taxes	(8,098)	$ 56,424	$ 80,946

The exercise of stock options and vesting of restricted stock units result in a tax benefit when the tax deduction exceeds share-based compensation expense recognized under generally accepted accounting principles and is recorded as a reduction of taxes payable with corresponding increase to the additional paid-in capital account. Conversely, a tax shortfall occurs when the share-based compensation expense recognized under generally accounting principles exceeds the associated tax deduction and is recorded as an increase of income taxes payable with a corresponding reduction to the additional paid-in capital account as the Company has accumulated sufficient tax benefits in the past. Tax benefits of $149,000, $0.8 million and $3.3 million were recognized for the years ended December 31, 2009, 2008 and 2007, respectively.

The Company's effective tax rate considers the impact of undistributed earnings of subsidiary companies outside of the U.S. The Company does not provide for U.S. federal income taxes or tax benefits on the undistributed earnings or losses of its international subsidiaries because such earnings are reinvested and, in the opinion of management, will continue to be reinvested indefinitely. As of December 31, 2009, the Company had not provided federal income taxes on earnings of approximately $23.3 million from its international subsidiaries. Should these earnings be distributed in the form of dividends or otherwise, the Company would be subject to both U.S. income taxes and withholding taxes in various international jurisdictions. These taxes would be partially offset by U.S. foreign tax credits. Determination of the related amount of unrecognized deferred U.S. income taxes is not practicable because of the complexities associated with this hypothetical calculation. However, from time to time and to the extent that the Company can repatriate overseas earnings on a tax-free basis, the Company's foreign subsidiaries will pay dividends to the U.S. Material changes in the Company's working capital and long-term investment requirements could impact the decisions made by management with respect to the level and source of future remittances and, as a result, the Company's effective tax rate.

Effective January 1, 2008, the Company was granted an income tax holiday for its manufacturing facility in China. The tax holiday allows for tax-free operations through December 31, 2009, followed by operations

at a reduced income tax rate of 12.5% on the profits generated in 2010 through 2012, with a return to the full statutory rate of 25% for periods thereafter. As a result of the tax holiday in China, income tax expense was reduced by approximately $2.3 million and $3.5 million in 2009 and 2008, respectively, with a corresponding earnings per share impact of approximately $0.09 and $0.13 in 2009 and 2008, respectively.

The Company recorded a liability for unrecognized tax benefits ("UTBs") at December 31, 2009, 2008 and 2007. A reconciliation of the beginning and ending amount of UTBs is as follows (in thousands):

	2009	2008	2007
Balance at January 1,	$ 7,227	$4,556	$ 6,178
Additions based on tax positions related to the current year	777	676	494
Additions for tax positions of prior years	—	2,724	—
Reductions for settlements with taxing authorities	(1,675)	—	—
Reductions of tax positions of prior years	(4,512)	(729)	(2,116)
Balance at December 31,	$ 1,817	$7,227	$ 4,556

It is the Company's policy to classify accrued interest and penalties as part of the income tax provision. The Company reversed $2.4 million of interest expense related to UTBs for the year ended December 31, 2009 and recognized $1.2 million of interest expense for the year ended December 31, 2008. The accrued interest on the UTBs at December 31, 2009 and December 31, 2008 was $0.2 million and $1.9 million, respectively. It is anticipated that any change in the above UTBs will impact the effective tax rate. At December 31, 2009, the 2008 and 2009 years are open and subject to potential examination in one or more jurisdictions. The Company has settled federal income tax examinations for the 2005 through 2007 tax years and a state income tax examination for the tax years 2003 through 2005. The Company expects the federal income tax examination for the 2008 tax year to commence in early 2010. The Company does not expect any significant release of UTBs within the next twelve months.

7. Employee Retirement and Other Benefit Plans

Supplemental Retirement Plan

In December 1988, the Board of Directors of the Company approved the adoption of a supplemental retirement plan, the Ceradyne SMART 401(k) Plan (the Plan), in which substantially all employees are eligible to participate after completing 90 days of employment. Participation in the Plan is voluntary. An employee may elect to contribute up to the maximum deferred tax amount of $16,500 in 2009 as a basic contribution. The Company may contribute any amount which the Board of Directors annually determines appropriate. Company contributions fully vest and are non-forfeitable after the participant has completed five years of service. The Company's related contributions for the years ended December 31, 2009, 2008 and 2007 were $1.3 million, $1.5 million and $1.3 million, respectively.

Pension and Other Postretirement Benefit Plans

The Company has defined benefit pension and benefit plans for employees in its ESK Ceramics and Ceradyne Boron Products subsidiaries. The overfunded or underfunded status of the defined benefit pension and benefit plans are recognized as an asset or liability in the statement of financial position and changes in that funded status in the year in which the changes occur are recognized through other comprehensive income.

German Pension and Benefit Plans

The Company provides pension benefits to the employees of its ESK Ceramics subsidiary in Germany and France. These pension benefits are rendered for the time after the retirement of the employees by

payments into legally independent pension and relief facilities. They are generally based on length of service, wage level and position in the company. The direct and indirect obligations comprise obligations for pensions that are already paid currently and expectations for those pensions payable in the future. The Company has four separate plans in Germany: a) Pensionskasse — Old; b) Pensionskasse — New; c) Additional Compensation Plan; and d) Deferred Compensation plan. For financial accounting purposes, the Additional and Deferred Compensation Plans are accounted for as single-employer defined benefit plans, Pensionskasse — Old is a multiemployer defined benefit plan and the Pensionskasse — New is a defined contribution plan.

The measurement date for the Company's pension plan assets and obligations, including Pensionskasse — Old, is December 31. Assumed discount rates and rates of increase in remuneration used in calculating the projected benefit obligation together with long-term rates of return on plan assets vary according to the economic conditions of Germany, where the pension plans are situated.

As noted above the Pensionskasse — Old is a multi employer defined benefit pension plan. ESK Ceramics is one of numerous employers who participate in the plan. Therefore, the Company has recognized as net pension benefit cost the required contribution for the period. However, due to the current development of the financial markets and the overall decrease of the return on pension plan assets, the pension facility ("WACKER-Pensionskasse") requested a one-off payment in 2008 from its members to further ensure its risk-bearing capacity and in addition requested that future pension adjustments from 2009 onwards have to be paid by the employers. Management believes, based on the bylaws of WACKER-Pensionskasse and its expected future performance, that this obligation will exist only for a limited period of time. The projected benefit obligation for those future pension adjustments which management believes the Company will have to pay was accrued as an additional liability.

The accumulated benefit obligations and projected benefit obligations are computed utilizing the same methods and assumptions as those used in the Additional and Deferred Compensation Plans noted above and are solely based on the ESK Ceramics employees participating in the plan. However, the assets of the plan are allocated based upon the relative percentage of the projected benefit obligation to the total for all participating employers. The long-term asset structure of the Pensionskasse is determined significantly by asset-liability-studies conducted regularly calculating an optimal investment portfolio based on the known business in force and the actuarial assumptions. Input parameters are assumed risk and return rates as well as specific correlation samples of the respective asset categories. The priority objective of the asset allocation is to achieve a rate of return compensating the benefit commitments within the limits of a justifiable risk and volatility. The operative investment policy has to conform to legal requirements (insurance control and investment law) as well as to internal investment guidelines and restrictions. The use of derivatives is permitted within the legally allowed scope. The expected overall rate of return is based on numerous factors like the portfolio selection and the anticipated long-term rate of return of the respective asset categories determined by the Black-Litterman Market Equilibrium Model. The expected long-term rate of return therewith is approximated to long-term historical averages, future expectations are also covered by the Black-Litterman Model. In certain cases assumptions in expected long-term rates of return are modified marginally by the responsible manager of the WACKER Pensionskasse in order to consider personal experience and different medium-term market expectations respectively. The projected benefit obligations for the pension plan "continuation of payments in case of death" were $55,554 and $55,489 for the years ended December 31, 2009 and 2008, respectively.

The Pensionskasse — New covers all German employees with membership as of January 1, 2005. Contributions and costs are determined as 2.0 percent of each covered employee's salary and totalled $134,346 in 2009, $165,982 in 2008, and $110,116 in 2007.

Components of net periodic benefit costs under the Additional and Deferred Compensation Plans for the years ended December 31, 2009, 2008 and 2007 were as follows (in thousands):

	2009	2008	2007
Service cost	$ (592)	$(437)	$(463)
Interest cost	(681)	(490)	(400)
Amortization	(88)	—	(60)
Net periodic benefit cost	$(1,361)	$(927)	$(923)

The weighted-average assumptions used to determine net periodic benefit cost were as follows:

	2009	2008	2007
Discount rate	6.25%	5.75%	5.75%
Rate of long-term compensation increase	3.00%	2.50%	2.50%

The funded status and components of the change in benefit obligations of the Additional and Deferred Compensation Plans for December 31, 2009 and 2008 were as follows (in thousands):

	2009	2008
Funded status at end of year:		
Projected benefit obligation	$(14,657)	$(11,032)
Assets at fair value	—	—
Funded status	$(14,657)	$(11,032)
Net amounts recognized in consolidated balance sheet:		
Current liabilities	$ (154)	$ (106)
Non-current liabilities	$(14,503)	$(10,926)
Change in projected benefit obligation:		
Projected benefit obligation at beginning of year	$(11,032)	$ (8,503)
Foreign currency exchange rate changes	(439)	568
Service costs	(592)	(437)
Interest costs	(681)	(490)
Actuarial gains (losses)	(2,061)	(2,280)
Benefits paid	148	110
Projected benefit obligation at end of year	$(14,657)	$(11,032)
Accumulated benefit obligation	$(13,222)	$(10,173)

The weighted-average assumptions used to determine pension benefit obligations were as follows:

	2009	2008
Discount rate	5.40%	6.25%
Rate of long-term compensation increase	3.00%	3.00%

Components of the related tax effects for each component of other comprehensive income follows related to the Additional and Deferred Compensation Plans for December 31, 2009 and 2008 are as follows (in thousands):

	2009		
	Before-Tax Amount	Tax (Expense) or Benefit	Net-of-Tax Amount
Accumulated other comprehensive (loss) income at beginning of year	$(1,875)	$ 530	$(1,345)
Net actuarial (loss) gain arising during current year	(2,061)	604	(1,457)
Amortization of actuarial gain	88	(26)	62
Foreign currency effect	(108)	52	(56)
Accumulated other comprehensive (loss) income at end of year(1)	$(3,956)	$1,160	$(2,796)

(1) Approximately $173 of net actuarial loss included in accumulated other comprehensive loss will be amortized into income in 2010.

	2008		
	Before-Tax Amount	Tax (Expense) or Benefit	Net-of-Tax Amount
Accumulated other comprehensive income (loss) at beginning of year	$ 362	$(134)	$ 228
Amortization of actuarial gain	(2,280)	670	(1,610)
Foreign currency effect	43	(6)	37
Accumulated other comprehensive (loss) income at end of year(1)	$(1,875)	$ 530	$(1,345)

The Company expects to contribute to its defined benefit plans in 2010 (in thousands):

Pensionkasse — old	$1,310
Additional compensation	1,257
Deferred compensation	226
Total contributions expected in 2010	$2,793

The following estimated future benefit payments are expected to be paid in the years indicated (in thousands):

2010	$ 154
2011	243
2012	310
2013	344
2014	418
2015 — 2019	2,829

Assumed discount rates and rates of increase in remuneration used in calculating the projected benefit obligation together with long-term rates of return on plan assets vary according to the economic conditions of

Germany in which pension plans are situated. The discount rate is typically changed at least annually. The interest rate used is comparable to long-term corporate bonds with an AA rating.

Ceradyne Boron Products Pension Plans

The Company provides pension benefits to employees in its Ceradyne Boron Products subsidiary. The plans cover employees who meet specified eligibility requirements. The measurement date for the Company's pension plan assets and obligations is December 31. The plans became obligations of the Company as a result of the acquisition of Ceradyne Boron Products on August 31, 2007 (refer to Note 3). The 2007 information presented below is for the period September 1, 2007 through December 31, 2007.

The Company expects to make a contribution at least as great as the minimum required by the IRS funding rules to the plan during the upcoming year. Funding requirements for subsequent years are uncertain and will significantly depend on the assumptions used to calculate plan funding levels, the actual return on plan assets, changes in the employee groups covered by the plan, and any legislative or regulatory changes affecting plan funding requirements. For tax planning, financial planning, cash flow management or cost reduction purposes the Company may increase, accelerate, decrease or delay contributions to the plan to the extent permitted by law.

Components of the net periodic pension (benefit) for the years ended December 31, 2009, 2008 and 2007 were as follows (in thousands):

	2009	2008	2007
Service costs	$ 86	$ 110	$ 39
Interest costs	513	510	183
Amortization of actuarial loss	202		
Expected return on assets	(490)	(697)	(235)
Net periodic pension (benefit)	$ 311	$ (77)	$ (13)

The weighted-average assumptions used to determine net periodic benefit costs were as follows:

	2009	2008	2007
Discount rate	5.74%	5.92%	6.17%
Rate of long-term compensation increase	4.00%	4.00%	4.00%
Expected return on plan assets	8.00%	8.00%	8.00%

The funded status and components of the change in benefit obligations and changes in plan assets for the years ended December 31, 2009 and 2008 were as follows (in thousands):

	2009	2008
Funded status at end of year:		
Projected benefit obligation	$ 9,088	$ 9,210
Assets at fair value	6,857	6,446
Funded status	$(2,231)	$(2,764)
Net amount recorded in consolidated balance sheet:		
Noncurrent liabilities	$(2,231)	$(2,764)
Change in projected benefit obligation:		
Benefit obligation at beginning of period	$(9,210)	$(8,963)
Service costs	(86)	(110)
Interest costs	(513)	(510)
Actuarial gains (losses)	108	(146)
Benefits paid	613	519
Projected benefit obligation at end of year	$(9,088)	$(9,210)
Changes in plan assets:		
Fair value of plan assets at beginning of period	$ 6,447	$ 8,947
Actual return (loss) on plan assets	1,022	(1,981)
Benefits paid	(612)	(519)
Fair value of plan assets at end of year	$ 6,857	$ 6,447

The fair value of plan assets was determined based on observable inputs (Level 2) using the net asset value of the investment funds. The net asset value represents price per share and is calculated by dividing the total value of all securities in the portfolio, less any liabilities, by the number of fund shares outstanding. Plan assets as of December 31 2009 and 2008 comprised the following:

	2009	2008
Investment fund — equity securities	$ 4,461	$ 4,244
Investment fund — fixed income securities	2,396	2,203
Fair value of plan assets at end of year	$ 6,857	$ 6,447
Accumulated benefit obligation at end of year	$(9,082)	$(9,188)

The weighted-average assumptions used to determine pension benefit obligation were as follows:

	2009	2008
Discount rate	5.75%	5.74%
Rate of long-term compensation increase	3.00%	4.00%

Components of the related tax effects for each component of other comprehensive income follows related to the plan for the years ended December 31, 2009 and 2008 are as follows (in thousands):

	2009		
	Before-Tax Amount	Tax (Expense) or Benefit	Net-of-Tax Amount
Accumulated other comprehensive income (loss) at beginning of year	$(2,915)	$1,136	$(1,779)
Net actuarial gain arising during current year	843	(329)	514
Accumulated other comprehensive income (loss) at end of year(1)	$(2,072)	$ 807	$(1,265)

(1) Approximately $116 of actuarial net loss included in accumulated other comprehensive loss will be amortized into income in 2010.

	2008		
	Before-Tax Amount	Tax (Expense) or Benefit	Net-of-Tax Amount
Accumulated other comprehensive income (loss) at beginning of year	$ (91)	$ 35	$ (56)
Net actuarial gain arising during current year	(2,824)	1,101	(1,723)
Accumulated other comprehensive income (loss) at end of year	$(2,915)	$1,136	$(1,779)

The change in unrecognized net gain/loss is one measure of the degree to which important assumptions have coincided with actual experience. The company changes important assumptions whenever changing conditions warrant. The discount rate and the expected long term return on plan asset assumptions are assessed annually. Other material assumptions include the compensation increase rates, rates of employee termination, and rates of participant mortality. The discount rate was determined by projecting the plan's expected future benefit payments as defined for the projected benefit obligation, discounting those expected payments using a theoretical zero-coupon spot yield curve derived from a universe of high-quality bonds as of the measurement date, and solving for the single equivalent discount rate that resulted in the same projected benefit obligation. The expected return on plan assets was determined based on historical and expected future returns of the various asset classes, using the target allocations as follows: equity securities (65%), debt securities (25%) and other (10%). The plan's investment policy includes a mandate to diversify assets and invest in a variety of asset classes to achieve that goal. The plan's assets are currently invested in a variety of funds representing most standard equity and debt security classes. While no significant changes in the asset allocation are expected during the coming year, the Company may make changes at any time.

The following estimated future benefit payments are expected to be paid in the years indicated (in thousands):

2010	$ 593
2011	608
2012	588
2013	602
2014	678
2015 — 2019	3,726

8. Commitments and Contingencies

a. Operating Lease Obligations

The Company leases certain of its manufacturing facilities under noncancelable operating leases expiring at various dates through December 2014. The Company incurred rental expense under these leases of $3.3 million, $3.0 million and $2.7 million for the years ended 2009, 2008 and 2007, respectively. The approximate minimum rental commitments required under existing noncancelable leases as of December 31, 2009 are as follows (in thousands):

2010	$3,383
2011	1,472
2012	735
2013	339
2014	145
Thereafter	27
	$6,101

b. Legal Proceedings

Daniel Vargas, Jr. v. Ceradyne, Inc., Orange County Superior Court, Civil Action No. 07CC01232:

A class action lawsuit was filed on March 23, 2007, in the California Superior Court for Orange County, in which it was asserted that the representative plaintiff, a former Ceradyne employee, and the putative class members, were not paid overtime at an appropriate overtime rate. The complaint alleged that the purportedly affected employees should have had their regular rate of pay for purposes of calculating overtime adjusted to reflect the payment of a bonus to them for the four years preceding the filing of the complaint, up to the present time. The complaint further alleged that a waiting time penalty should be assessed for the failure to timely pay the correct overtime payment. Ceradyne filed an answer denying the material allegations of the complaint. The motion for class certification was heard on November 13, 2008 and class certification was granted. On January 6, 2009, the court entered an order certifying the class. Ceradyne contends that the lawsuit is without merit on the basis that the bonuses that have been paid are discretionary and not of the type that are subject to inclusion in the regular hourly rate for purposes of calculating overtime. After a request for review by the Court of Appeal of the decision to grant class certification, a day-long mediation before a third-party neutral mediator, and an evaluation of the cost of litigation and the financial exposure in the case, Ceradyne agreed to provide a settlement fund of $1.25 million to resolve all issues in the litigation. The settlement specifically states that neither party is admitting to liability or lack thereof. Ceradyne believed that based upon the cost of further defense and the exposure in the case, it was best to settle the matter. On January 8, 2010, the Court has granted final approval of the settlement. The settlement funds will be paid to a third party administrator on or before March 18, 2010.

On October 21, 2009, Ceradyne made a settlement offer in relation to a claim pertaining to ballistic tests of armored wing assemblies. Ceradyne established a reserve of $1.0 million for this matter as of September 30, 2009.

9. Disclosure About Segments of Enterprise and Related Information

The Company serves its markets and manages its business through six operating segments, each of which has its own manufacturing facilities and administrative and selling functions. The Company's Advanced Ceramic Operations, with operations located in Costa Mesa and Irvine, California, Lexington, Kentucky, Wixom, Michigan, Salem, New Hampshire, Mountain Green, Utah and Bangalore, India primarily produces

armor, orthodontic products, diesel engine parts, components for semiconductor equipment, and houses the Company's SRBSN research and development activities. The Company's cathode development and production are handled through its Semicon Associates division located in Lexington, Kentucky. Fused silica products, including missile radomes and crucibles for photovoltaic solar cell applications are produced at the Company's Thermo Materials division located in Scottdale and Clarkston, Georgia. The Company's manufacturing facility in Tianjin, China manufactures fused silica crucibles, and is part of the Thermo Materials operating segment. Minco, Inc., which Ceradyne acquired in July 2007, also is included in the Thermo Materials operating segment. Minco, located in Midway, Tennessee, manufactures fused silica, which is a primary raw material used in products manufactured by our Thermo Materials division. The Company's ESK Ceramics subsidiary is located in Kempten, Germany. This subsidiary produces ceramic powders, including boron carbide powder for ceramic body armor, evaporation boats for metallization, functional and frictional coatings utilized in the automotive and textile industries, high performance pump seals, fluid handling, refactory products and ceramic powders used in cosmetics. The Company's Ceradyne Canada subsidiary acquired certain assets in June 2006, including a building, equipment and technology, related to the production of structural neutron absorbing materials for use in the storage of spent nuclear rods. The building and operations of Ceradyne Canada are located in Chicoutimi, Quebec, Canada. The Company added a sixth operating segment in August 2007, when it acquired EaglePicher Boron, LLC. The Company has changed the name of this subsidiary to Boron Products, LLC and does business as Ceradyne Boron Products. Boron Products owns certain assets, including approximately 155 acres and several buildings, equipment and technology, related to the production of the boron isotope ^{10}B. This isotope is a strong neutron absorber and is used for both nuclear waste containment and nuclear power plant neutron radiation control. Boron Products also produces complementary chemical isotopes used in the normal operation and control of nuclear power plants. SemEquip, Inc., which the Company acquired in August 2008, develops and markets cluster ion implantation sub-systems and advanced ion source materials for the manufacture of logic and memory semiconductor chips. SemEquip is included in the Boron Products operating segment.

The U.S. government and government agencies collectively represented approximately 40.8% of our net sales in 2009, 54.1% in 2008 and 71.6% in 2007. As of December 31, 2009 and 2008, there were no other external customers that accounted for 10% or more of our revenue.

SEGMENT INFORMATION FOR THE YEARS ENDED DECEMBER 31, 2009, 2008 AND 2007

	2009	2008	2007
	(Amounts in thousands)		
Revenue			
ACO	$214,074	$450,452	$587,279
ESK Ceramics	105,117	152,238	160,623
Semicon Associates	7,677	8,551	7,970
Thermo Materials	66,116	80,158	32,025
Ceradyne Canada	1,664	5,222	3,916
Boron	27,287	19,007	7,766
Inter-segment elimination	(21,360)	(35,431)	(42,744)
Total revenue from external customers	$400,575	$680,197	$756,835
Depreciation and Amortization			
ACO	$ 10,036	$ 10,523	$ 9,328
ESK Ceramics	11,686	13,144	10,630

	2009	2008	2007
	(Amounts in thousands)		
Semicon Associates	353	423	346
Thermo Materials	4,878	5,497	3,061
Ceradyne Canada	1,339	1,043	732
Boron	6,854	6,038	2,654
Total	$ 35,146	$ 36,668	$ 26,751
Segment Income before Provision for Income Taxes			
ACO	$ 22,855	$145,339	$209,267
ESK Ceramics	(24,897)	4,214	13,373
Semicon Associates	674	1,377	1,131
Thermo Materials	12,825	23,694	2,304
Ceradyne Canada	(6,926)	(69)	(3,041)
Boron	(4,092)	(15,508)	727
Inter-segment elimination	(22)	1,857	(632)
Total	$ 417	$160,904	$223,129
Segment Assets			
ACO	$401,496	$384,346	$409,612
ESK Ceramics	207,733	226,626	209,384
Semicon Associates	5,370	5,939	5,682
Thermo Materials	105,332	96,163	67,465
Ceradyne Canada	17,489	21,667	20,480
Boron	112,284	119,786	70,031
Total	$849,704	$854,527	$782,654
Expenditures for PP&E			
ACO	$ 4,680	$ 5,150	$ 8,174
ESK Ceramics	426	22,079	17,384
Semicon Associates	200	371	396
Thermo Materials	7,952	12,635	14,696
Ceradyne Canada	140	3,381	1,528
Boron	1,136	431	67
Total	$ 14,534	$ 44,047	$ 42,245

SEGMENT INFORMATION FOR THE YEARS ENDED DECEMBER 31, 2009, 2008 AND 2007

	2009	2008	2007
Percentage of U.S. net sales from external customers			
ACO	52%	63%	75%
ESK Ceramics	3%	2%	2%
Semicon Associates	1%	1%	1%
Thermo Materials	6%	4%	2%
Ceradyne Canada	0%	1%	1%
Boron	4%	2%	1%
Total percentage of U.S. net sales from external customers	66%	73%	82%
Percentage of foreign net sales from external customers			
ACO	2%	3%	2%
ESK Ceramics	20%	16%	14%
Semicon Associates	0%	0%	0%
Thermo Materials	9%	7%	2%
Ceradyne Canada	0%	0%	0%
Boron	3%	1%	0%
Total percentage of foreign net sales from external customers	34%	27%	18%
Percentage of total net sales from external customers			
ACO	54%	66%	77%
ESK Ceramics	23%	18%	16%
Semicon Associates	1%	1%	1%
Thermo Materials	15%	11%	4%
Ceradyne Canada	0%	1%	1%
Boron	7%	3%	1%
Total percentage of net sales from external customers	100%	100%	100%

The following is revenue by product line for Advanced Ceramic Operations for the years ended (amounts in thousands):

	December 31,		
	2009	2008	2007
Armor	$189,028	$410,649	$551,301
Automotive	5,006	17,604	10,961
Orthodontics	9,487	9,977	10,603
Industrial	10,553	12,222	14,414
	$214,074	$450,452	$587,279

10. Share Based Compensation

Share-based compensation expense is based on the value of the portion of share-based payment awards that is ultimately expected to vest. Guidance for share-based compensation requires forfeitures to be estimated

at the time of grant in order to estimate the amount of share-based awards that will ultimately vest. The forfeiture rate is based on historical rates. Share-based compensation expense recognized in the Company's Consolidated Statements of Income for the years ended December 31, 2009, December 31, 2008 and December 31, 2007 includes (i) compensation expense for share-based payment awards granted prior to, but not yet vested as of January 1, 2006, based on the grant-date fair value estimated in accordance with the guidance for share-based compensation and (ii) compensation expense for the share-based payment awards granted subsequent to December 31, 2005, based on the grant date fair value estimated in accordance with guidance for share-based compensation. As share-based compensation expense recognized in the Consolidated Statement of Income for the years ended December 31, 2009, December 31, 2008 and December 31, 2007 is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures.

The Company maintains the 1994 Stock Incentive Plan and 2003 Stock Incentive Plan. The Company was authorized to grant options for up to 2,362,500 shares under its 1994 Stock Incentive Plan. The Company has granted options for 2,691,225 shares and has had cancellations of 396,911 shares through December 31, 2009. There are no remaining stock options available to grant under this plan. The options granted under this plan generally became exercisable over a five-year period for incentive stock options and six months for nonqualified stock options and have a maximum term of ten years.

The 2003 Stock Incentive Plan was amended in 2005 to allow the issuance of Restricted Stock Units (the "Units") to eligible employees and non-employee directors. The Units are payable in shares of the Company's common stock upon vesting. For directors, the Units vest annually over three years on the anniversary date of their issuance. For officers and employees, the Units vest annually over five years on the anniversary date of their issuance.

The Company may grant options and Units for up to 1,125,000 shares under the 2003 Stock Incentive Plan. The Company has granted options for 475,125 shares and Units for 593,826 shares under this plan through December 31, 2009. There have been cancellations of 99,375 shares associated with this plan through December 31, 2009. The options under this plan have a life of ten years.

During the years ended December 31, 2009 and 2008, the Company issued Units to certain directors, officers and employees with weighted average grant date fair values and Units issued as indicated in the table below. Pursuant to guidance of share-based compensation, the Company records compensation expense for the amount of the grant date fair value on a straight line basis over the vesting period. The Company incurred charges associated with the vesting of the Units of $3.6 million for the year ended December 31, 2009, $2.7 million for the year ended December 31, 2008, and $1.7 million for the year ended December 31, 2007.

Share-based compensation expense reduced the Company's results of operations as follows (in thousands, except per share amounts):

	2009	2008	2007
Share-based compensation expense recognized:			
General and administrative, options	$ 214	$ 438	$ 710
General and administrative, Units	3,624	2,671	1,741
Related deferred income tax benefit	(1,529)	(1,094)	(890)
Decrease in net income	$ 2,309	$ 2,015	$1,561
Decrease in basic earnings per share	$ 0.09	$ 0.08	$ 0.06
Decrease in diluted earnings per share	$ 0.09	$ 0.08	$ 0.06

The amounts above include the impact of recognizing compensation expense related to non-qualified stock options.

As of December 31, 2009, there was $0.5 million of total unrecognized compensation cost related to 6,000 non-vested outstanding stock options, with a weighted average value of $19.24 per share. The unrecognized expense is anticipated to be recognized on a straight-line basis over a weighted average period of 0.3 years. In addition, the aggregate intrinsic value of stock options exercised was $127,000 and $0.8 million for the years ended December 31, 2009 and 2008, respectively.

As of December 31, 2009, there was approximately $9.4 million of total unrecognized compensation cost related to non-vested Units granted under the 2003 Stock Incentive Plan. That cost is expected to be recognized over a weighted average period of 3.2 years.

The following is a summary of stock option activity:

	2009		2008		2007	
	Number of Options	Weighted Average Exercise Price	Number of Options	Weighted Average Exercise Price	Number of Options	Weighted Average Exercise Price
Outstanding, beginning of year	462,900	$12.22	497,325	$12.04	677,370	$11.41
Options granted	—	$ —	$ —	$ —	—	$ —
Options exercised	(8,500)	$ 3.96	(30,675)	$ 9.04	(159,495)	$ 8.15
Options cancelled	—	$ —	(3,750)	$15.05	(20,550)	$21.50
Outstanding, end of year	454,400	$12.37	462,900	$12.22	497,325	$12.04
Exercisable, end of year	448,400	$12.28	437,025	$11.71	429,600	$10.83

The following is a summary of Unit activity:

	2009		2008		2007	
	Units	Weighted Average Grant Fair Value	Units	Weighted Average Grant Fair Value	Units	Weighted Average Grant Fair Value
Outstanding, beginning of year	271,264	$45.90	149,759	$52.94	137,100	$41.13
Granted	198,350	$19.35	168,076	$40.54	72,850	$66.06
Vested	(82,340)	$41.57	(40,671)	$49.09	(31,791)	$41.47
Forfeited	(23,350)	$44.98	(5,900)	$49.08	(28,400)	$42.39
Non-vested Units at end of year	363,924	$32.47	271,264	$45.90	149,759	$52.94

The following table summarizes information regarding options outstanding and options exercisable at December 31, 2009:

	Outstanding				Exercisable			
Range of Exercise Prices	Number of Options	Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Aggregate Intrinsic Value (000s)	Number of Options	Average Remaining Contractual Life (Years)	Weighted Average Exercise Price	Aggregate Intrinsic Value (000s)
$2.98 - $4.58	206,375	2.08	$ 4.12	$3,117	206,375	2.08	$ 4.12	$3,117
$10.53 - $16.89	122,025	3.70	$16.89	$ 284	122,025	3.70	$16.89	$ 284
$18.80 - $24.07	126,000	4.72	$21.51	$ 6	120,000	4.69	$21.63	$ 4
	454,400	3.25	$12.37	$3,407	448,400	3.22	$12.28	$3,405

The following table summarizes information regarding Units outstanding at December 31, 2009:

	Outstanding		
Range of Grant Prices	Number of Units	Average Remaining Contractual Life (Years)	Weighted Average Grant Fair Value
$16.53 - $22.68	193,150	3.63	$19.64
$37.41 - $39.43	80,084	3.22	$38.60
$42.28 - $45.70	44,900	3.13	$44.51
$52.47 - $62.07	25,520	1.71	$58.87
$66.35 - $81.18	20,270	2.17	$70.56
	363,924	3.26	$32.47

The Black-Scholes option valuation model was developed for use in estimating the fair value of traded options that have no vesting restrictions and are fully transferable. In addition, option valuation models require the input of highly subjective assumptions, including the expected stock price volatility. The Company's options have characteristics significantly different from those of traded options, and changes in the subjective input assumptions can materially affect the fair value estimate.

The Company calculates expected volatility based on historical data of the Company's common stock. The risk-free interest rate assumption is based upon an observed interest rate appropriate for the term of the Company's employee stock options. The dividend yield assumption is based on the Company's intent not to issue a dividend under its dividend policy. The expected holding period assumption was estimated based on historical experience.

12. Restructuring — Plant Closure and Severance

In May 2009, the Company announced that, in accordance with the French legal process, its ESK Ceramics France subsidiary ("ESK France") is presenting to the local employees' representatives a plan for closing its manufacturing plant in Bazet, France. The plant was closed in December 2009 and, as a result, ESK France reduced its workforce by 97 employees, primarily composed of manufacturing, production and additional support staff at the plant. This action was implemented as a cost-cutting measure to eliminate losses that were incurred at this facility due to the recent severe economic contraction and is consistent with Ceradyne's ongoing objective to lower the costs of its manufacturing operations. This manufacturing facility was an 88,000 square foot building owned by ESK France that has been used to support the production of various industrial ceramic products. We transferred production of these products to our German subsidiary, ESK Ceramics GmbH & Co. KG ("ESK Ceramics") in Kempten, Germany. Affected employees were eligible for a severance package that included severance pay, continuation of benefits and outplacement services. Pre-tax charges relating to this corporate restructuring also included accelerated depreciation of fixed assets and various other costs to close the plant.

ESK Ceramics recorded pre-tax charges totaling $12.2 million in connection for the Bazet restructuring and plant closure, which comprised $10.3 million for severance, termination of contracts and other shutdown costs that was reported as Restructuring — plant closure and severance in Operating Expenses and $1.9 million for accelerated depreciation of fixed assets that was reported in Cost of Goods Sold in the year ended December 31, 2009. The severance charge was recognized as a postemployment benefit as the Company's obligation related to employees' rights to receive compensation for future absences was attributable to employees' services already rendered, the obligation relates to rights that legally vest, payment of the compensation is probable, and the amount could be reasonably estimated based on local statutory

requirements. The Company also incurred other severance costs in connection with headcount reductions in the United States and Germany of $2.7 million during the year ended December 31, 2009.

Activities in the restructuring charges accrual balances during the year ended December 31, 2009 were as follows (in thousands):

	Costs Incurred	Cash Payments	Non-Cash Adjustments	Balance at December 31, 2009
Severance, retention bonuses and other one-time termination benefits	$12,090	$(7,039)	$474	$5,525
Termination of redundant supplier contracts	107	—	3	110
Legal fees and other shutdown costs	727	(121)	2	608
	$12,924	$(7,160)	$479	$6,243

13. Quarterly Financial Information (unaudited)

The results by quarter for 2009 and 2008 (amounts in thousands except per share data):

Quarter Ending

	March 31, 2008	June 30, 2008	September 30, 2008	December 31, 2008
Net sales	$188,537	$184,975	$167,746	$138,939
Gross profit	71,529	75,561	66,664	51,558
Net income	32,351	32,641	18,819	20,669
Basic income per share	$ 1.19	$ 1.24	$ 0.72	$ 0.79
Diluted income per share	$ 1.18	$ 1.23	$ 0.71	$ 0.79

Quarter Ending

	March 31, 2009	June 30, 2009	September 30, 2009	December 31, 2009
Net sales	$99,772	$ 95,267	$107,954	$97,582
Gross profit	23,587	23,064	28,625	26,343
Net income (loss)	708	(11,210)	4,936	14,081
Basic income (loss) per share	$ .03	$ (0.44)	$ 0.19	$ 0.55
Diluted income (loss) per share	$ .03	$ (0.44)	$ 0.19	$ 0.55

SIGNATURES

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

CERADYNE, INC.

By: /s/ JOEL P. MOSKOWITZ
Joel P. Moskowitz
Chief Executive Officer

February 23, 2010

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

/s/ JOEL P. MOSKOWITZ Joel P. Moskowitz	Chairman of the Board, Chief Executive Officer, President and Director (Principal Executive Officer)	February 23, 2010
/s/ JERROLD J. PELLIZZON Jerrold J. Pellizzon	Chief Financial Officer (Principal Financial and Accounting Officer)	February 23, 2010
/s/ RICHARD A. ALLIEGRO Richard A. Alliegro	Director	February 23, 2010
/s/ FRANK EDELSTEIN Frank Edelstein	Director	February 23, 2010
/s/ RICHARD A. KERTSON Richard A. Kertson	Director	February 23, 2010
/s/ WILLIAM C. LACOURSE William C. LaCourse	Director	February 23, 2010
/s/ MILTON L. LOHR Milton L. Lohr	Director	February 23, 2010

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COMPANY DIRECTORY

Directors

Joel P. Moskowitz	*Chairman of the Board, Chief Executive Officer and President*
Richard A. Alliegro	*Ceramic Technology Consultant*
Frank Edelstein	*Independent Consultant*
Richard A. Kertson	*Former CFO of Varco International, Inc.*
William C. LaCourse	*Kruson Distinguished Professor, NYS College of Ceramics, Alfred University*
Milton L. Lohr	*Business and Defense Consultant*

Management

Joel P. Moskowitz	*Chairman of the Board, Chief Executive Officer and President*
Thomas A. Cole	*Vice President Business Development*
Thomas Juengling, Ph.D.	*Vice President, and President of ESK Ceramics*
Marc A. King	*President Ceradyne Armor Systems, Inc.*
Michael A. Kraft	*Vice President Nuclear and Semiconductor Business Units*
Bruce Lockhart	*Vice President, and President of Ceradyne Thermo Materials*
Jerrold J. Pellizzon	*Chief Financial Officer and Corporate Secretary*
David P. Reed	*Vice President, and President of North American Operations*
Jeffrey J. Waldal	*Vice President, and President of Semicon Associates, a Ceradyne Company*

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New York, NY 10038-4667

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Ceradyne Bearing Technologies
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▼ **Boron:**

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▼ **Ceradyne Thermo Materials:**

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Clarkston, GA 30021

780 Park North Blvd.
Clarkston, GA 30021

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510 Midway Circle
Midway, TN 37809-3706

Ceradyne Tianjin Technical Ceramics
No. 4737 Dongjiang Road
Tianjin Tanggu Marine Hi-Tech Development Area
Tianjin, China, 300451

▼ *ESK Ceramics*
Max-Schaidhauf-Strasse 25
87437 Kempten, Germany

▼ *Semicon Associates, a Ceradyne Company*
695 Laco Drive
Lexington, KY 40510

▼ *Denotes reporting segment*

Annual Meeting

The annual stockholders' meeting will be held at the Radisson Hotel, 4545 MacArthur Blvd., Newport Beach, CA 92660 on Tuesday, June 8, 2010, at 10:00 A.M.

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