

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

FORM 10-K

(Mark one)

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

For the fiscal year ended August 31, 2018

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 001-11038

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of incorporation or organization)

41-0857886
(I.R.S. Employer Identification No.)

4201 Woodland Road
P.O. Box 69
Circle Pines, Minnesota
(Address of principal executive offices)

55014
(Zip Code)

(763) 225-6600
(Registrant's telephone number, including area code)

Securities registered under Section 12(b) of the Act:

Title of each class
Common Stock, par value \$0.02 per share

Name of each exchange on which registered
The Nasdaq Stock Market LLC
(Nasdaq Global Market)

Securities registered under Section 12(g) of the Act:

None

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

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted 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 such files). YES NO

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) 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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether registrant is a shell company (as defined in Rule 12b-2 of the Act). YES NO

The aggregate market value of the registrant's common stock, excluding shares beneficially owned by affiliates, computed by reference to the closing sales price at which the common stock was last sold as of February 28, 2018 (the last business day of the registrant's second fiscal quarter) as reported by the Nasdaq Global Market on that date was \$84.1 million.

As of November 9, 2018, 4,542,177 shares of common stock of the registrant were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Part III of this Annual Report on Form 10-K incorporates by reference information (to the extent specific sections are referred to herein) from the registrant's Proxy Statement for its 2019 Annual Meeting of Stockholders to be held January 18, 2019.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

ANNUAL REPORT ON FORM 10-K
FISCAL YEAR ENDED AUGUST 31, 2018

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This annual report on Form 10-K contains certain 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, and are subject to the safe harbor created by those sections. For more information, see “Part I. Item 1. Business – Forward-Looking Statements.”

As used in this report, references to “NTIC,” the “Company,” “we,” “our” or “us,” unless the context otherwise requires, refer to Northern Technologies International Corporation and its wholly-owned and majority-owned subsidiaries, all of which are consolidated on NTIC’s consolidated financial statements.

As used in this report, references to: (1) “NTIC China” refer to NTIC’s wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd.; (2) “NTI Europe” refer to NTIC’s wholly-owned subsidiary in Germany, NTIC Europe GmbH; (3) “Zerust Mexico” refer to NTIC’s wholly-owned subsidiary in Mexico, ZERUST-EXCOR MEXICO, S. de R.L. de C.V.; (4) “Zerust Brazil” refer to NTIC’s majority-owned Brazilian subsidiary, Zerust Prevenção de Corrosão S.A.; (5) “Natur-Tec India” refer to NTIC’s majority-owned subsidiary in India, Natur-Tec India Private Limited; and (6) “NTI Asean” refer to NTIC’s majority-owned holding company subsidiary, NTI Asean LLC, which is a holding company that holds investments in seven entities that operate in the Association of Southeast Asian Nations (ASEAN) region, including the following countries: Indonesia, South Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand.

NTIC’s consolidated financial statements do not include the accounts of any of its joint ventures. Except as otherwise indicated, references in this report to NTIC’s joint ventures do not include any of NTIC’s wholly-owned or majority-owned subsidiaries.

As used in this report, references to “EXCOR” refer to NTIC’s joint venture in Germany, Excor Korrosionsschutz – Technologien und Produkte GmbH.

As used in this report, references to “Tianjin Zerust” refer to NTIC’s former joint venture in China, Tianjin-Zerust Anticorrosion Co., Ltd.

All trademarks, trade names or service marks referred to in this report are the property of their respective owners.

Item 1. BUSINESS**Overview**

Northern Technologies International Corporation (NTIC) develops and markets proprietary environmentally beneficial products and services in over 60 countries either directly or via a network of subsidiaries, joint ventures, independent distributors and agents. NTIC's primary business is corrosion prevention marketed mainly under the ZERUST® brand. NTIC has been selling its proprietary ZERUST® products and services to the automotive, electronics, electrical, mechanical, military and retail consumer markets for over 40 years, and, more recently, has targeted and expanded into the oil and gas industry. NTIC also markets and sells a portfolio of biobased and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce NTIC's customers' carbon footprint and provide environmentally sound waste disposal options.

NTIC's ZERUST® rust and corrosion inhibiting products include plastic and paper packaging, liquids, coatings, rust removers, cleaners and diffusers, as well as engineered solutions designed specifically for the oil and gas industry. NTIC also offers worldwide on-site technical consulting for rust and corrosion prevention issues. NTIC's technical service consultants work directly with the end users of NTIC's ZERUST® rust and corrosion inhibiting products to analyze their specific needs and develop systems to meet their performance requirements. In North America, NTIC sells its ZERUST® corrosion prevention solutions through a network of independent distributors and agents supported by a direct sales force. Internationally, NTIC sells its ZERUST® corrosion prevention solutions through its wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd. (NTIC China), its majority-owned joint venture holding company for NTIC's joint venture investments in the Association of Southeast Asian Nations (ASEAN) region, NTI Asean LLC (NTI Asean), its majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A. (Zerust Brazil), and its wholly-owned subsidiary in Mexico, ZERUST-EXCOR MEXICO, S. de R.L. de C.V (Zerust Mexico), and joint venture arrangements in North America, Europe and Asia. NTIC also sells products directly to its joint venture partners through its wholly-owned subsidiary in Germany, NTIC Europe GmbH (NTI Europe).

One of NTIC's strategic initiatives is to expand into other markets for its ZERUST® corrosion prevention technologies. Consequently, for the past several years, NTIC has focused significant sales and marketing efforts on the oil and gas industry, as that industry's infrastructure consists primarily of metals that are highly susceptible to corrosion. NTIC believes that its ZERUST® corrosion prevention solutions will minimize maintenance downtime on critical oil and gas industry infrastructure, extend its service life, and reduce the risk of environmental pollution caused to corrosion-related leaks.

NTIC markets and sells its ZERUST® rust and corrosion prevention solutions to customers in the oil and gas industry in several countries either directly, through its subsidiaries, or indirectly, through its joint venture partners and third parties. The sale of ZERUST® corrosion prevention solutions to customers in the oil and gas industry typically involves a very long sales cycle, often including multi-year trial periods with each customer, and then followed by a slow integration process thereafter.

Natur-Tec® biobased and compostable plastics are manufactured using NTIC's patented and/or proprietary technologies and are intended to replace conventional plastics. The Natur-Tec® biopolymer resin compound portfolio includes formulations that have been optimized for a variety of applications including blown-film extrusion, extrusion coating, injection molding, and engineered plastics. These resin compounds are certified to be fully biodegradable in a composting environment and are currently being used to produce finished products including can liners, shopping and grocery bags, lawn and leaf bags, branded apparel packaging bags and accessories, and various foodservice ware items such as disposable cutlery, drinking straws, food-handling gloves and coated paper products. In North America, NTIC markets its Natur-Tec® resin compounds and finished products primarily through a network of regional and national distributors as well as independent agents. NTIC continues to see significant opportunities for finished bioplastic products and, therefore, continues to strengthen and expand its North American distribution network for finished Natur-Tec® bioplastic products. Internationally, NTIC sells its Natur-Tec® resin compounds and finished products both directly and through its wholly-owned subsidiary in China, NTIC Shanghai, its majority-owned subsidiary in India, Natur-Tec India Private Limited (Natur-Tec India), and through distributors and certain joint ventures.

NTIC's Subsidiaries

NTIC has ownership interests in six operating subsidiaries in North America, South America, Europe and Asia. The following table sets forth a list of NTIC's operating subsidiaries as of November 9, 2018, the country in which the subsidiary is organized and NTIC's ownership percentage in each subsidiary:

Subsidiary Name	Country	NTIC Percent (%) Ownership
NTIC (Shanghai) Co., Ltd	China	100%
NTI Asean LLC	United States	60%
Zerust Prevenção de Corrosão S.A.	Brazil	85%
ZERUST-EXCOR MEXICO, S. de R.L. de C.V	Mexico	100%
Natur-Tec India Private Limited	India	75%
NTIC Europe GmbH	Germany	100%

The operating results of these subsidiaries are fully consolidated in NTIC's consolidated financial statements.

NTIC's Joint Venture Network

NTIC participates in a total of 20 active joint venture arrangements located across North America, Europe and Asia. Each of these joint ventures generally manufactures and markets products for the geographic territory to which it is assigned. While most of NTIC's joint ventures exclusively sell rust and corrosion inhibiting products, some of the joint ventures also sell NTIC's Natur-Tec® resin compounds. NTIC has historically funded its investments in joint ventures with cash generated from operations.

The following table sets forth a list of NTIC's operating joint ventures as of November 9, 2018, the country in which the joint venture is organized and NTIC's ownership percentage in each joint venture:

Joint Venture Name	Country	NTIC Percent (%) Ownership
TAIYONIC LTD.	Japan	50%
ACOBAL SAS	France	50%
EXCOR KORROSIONSSCHUTZ – TECHNOLOGIEN UND PRODUKTE GMBH	Germany	50%
ZERUST AB	Sweden	50%
MOSTNIC-ZERUST	Russia	50%
ZERUST OY	Finland	50%
HARITA-NTI LTD	India	50%
ZERUST (U.K.) LTD.	United Kingdom	50%
EXCOR-ZERUST S.R.O.	Czech Republic	50%
EXCOR SP. Z.O.O.	Poland	50%
ZERUST A.Ş.	Turkey	50%
ZERUST CONSUMER PRODUCTS, LLC	United States	50%
ZERUST – DNEPR	Ukraine	50%
KOREA ZERUST CO., LTD.	South Korea ⁽¹⁾	30%
ZERUST-NIC (TAIWAN) CORP.	Taiwan ⁽¹⁾	30%
PT. CHEMINDO – NTIA	Indonesia ⁽¹⁾	30%
ZERUST SPECIALTY TECH CO. LTD.	Thailand ⁽¹⁾	30%
CHONG WAH-NTIA SDN. BHD.	Malaysia ⁽¹⁾	30%
NTIA ZERUST PHILIPPINES, INC.	Philippines ⁽¹⁾	30%
ZERUST SINGAPORE PTE. LTD	Singapore ⁽¹⁾⁽²⁾	60%

(1) Indirect ownership interest through NTI Asean.

(2) NTI Asean owns 100% of this joint venture.

NTIC receives funds from its joint ventures as fees received for services that NTIC provides and as dividend distributions. The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany (EXCOR), NTIC recognizes an agreed upon quarterly fee for services. NTIC recognizes equity income from each joint venture based on the overall profitability of the joint venture. Such profitability is subject to variability from quarter to quarter which, in turn, subjects NTIC's earnings to variability from quarter to quarter. The profits of each joint venture are shared by the respective joint venture owners in accordance with their respective ownership percentages. NTIC typically directly or indirectly owns 50% or less of each of its joint venture entities and thus does not control the decisions of these entities regarding whether to pay dividends and, if paid, what amount is paid in a given year. The payment of a dividend by an entity is determined by a joint vote of the owners and is not at the sole discretion of NTIC.

NTIC accounts for the investments and financial results of its joint ventures in its financial statements utilizing the equity method of accounting.

NTIC considers EXCOR to be individually significant to NTIC's consolidated assets and income, and therefore, provides certain additional information regarding it in the notes to NTIC's consolidated financial statements and in this section of this report.

For more information regarding NTIC's joint ventures and their effect on NTIC's operating results, see NTIC's consolidated financial statements in "Part II, Item 8. Financial Statements and Supplementary Data" and "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of this report.

Products

NTIC derives revenues directly and/or indirectly through its subsidiaries and joint ventures from two reportable business segments based on products sold, customer base and distribution center: ZERUST[®] corrosion prevention solutions and Natur-Tec[®] resin compounds and finished products.

ZERUST[®] Corrosion Prevention Solutions. In fiscal 2018, 80.5% of NTIC's consolidated net sales were derived from developing, manufacturing and marketing ZERUST[®] rust and corrosion inhibiting products and services. NTIC's consolidated net sales in fiscal 2018 included \$41,374,305 in sales of ZERUST[®] rust and corrosion inhibiting products and services, an increase of 26.2% over such sales in fiscal 2017. Corrosion not only damages the appearance of metal products and components but also negatively impacts their mechanical performance. This applies to the rusting of ferrous metals (iron and steel) and the deterioration by oxidation of nonferrous metals (aluminum, copper, brass, etc.). NTIC's ZERUST[®] corrosion prevention solutions include plastic and paper packaging, powders, liquids, coatings, rust removers, cleaners, diffusers and engineered solutions for the oil and gas industry, as well as technical corrosion management and consulting services.

Plastic and Paper Packaging. NTIC's ZERUST® packaging products contain proprietary chemical formulations that continuously release an invisible and odorless, corrosion inhibiting vapor that passivates metal surfaces and thereby inhibits rust and corrosion. The corrosion-inhibiting protection is maintained as long as the metal products to be protected remain enclosed within the ZERUST® packaging. Electron scanning shows that once the contents are removed from the ZERUST® package, the ZERUST® protection dissipates from the contents' surfaces within two hours, leaving a clean, dry and corrosion-free metal component. This mechanism of corrosion protection enables NTIC's customers to easily package metal objects for rust-free shipment and/or long-term storage. Furthermore, by eliminating costly greasing and degreasing processes and/or significantly reducing the use of certain coatings to inhibit corrosion, NTIC's ZERUST® corrosion prevention solutions provide customers significant savings in labor, material and capital expenditures for equipment to apply, remove and dispose of oils and greases, as well as the attendant environmental problems, as compared to traditional methods of corrosion prevention.

NTIC was first to develop the means of infusing volatile corrosion inhibiting chemical systems (VCIs) into polyethylene and polypropylene resins. Combining ZERUST® chemical systems with polyethylene and polypropylene resins permitted NTIC to introduce a line of plastic packaging products in the form of low and high-density polyethylene bags and shroud film, including stretch, shrink, skin and bubble cushioning film, thereby giving packaging engineers an opportunity to ship and store ferrous, nonferrous and mixed-metal products in a clean, dry and corrosion-free condition, with an attendant overall savings in total process costs. In addition to plastic packaging, NTIC has developed additives to imbue kraft paper, corrugated cardboard, solid fiber and chipboard packaging materials with corrosion protection properties. NTIC's ZERUST® plastic and paper packaging products come in various thicknesses, strength enhancements, protection types, shapes and sizes. This product line also includes items such as ZERUST® gun cases, car covers and tool-drawer liners, which are targeted at retail consumers.

Liquids and Coatings. NTIC's corrosion prevention solutions include a line of metal surface treatment liquids and coatings, which are oil, water or bio-solvent based, and are marketed under brand names including Axxatec™, Axxanol™ and Z-Maxx™. These liquids and coatings provide powerful corrosion protection in aggressive environments, such as salt air, high humidity and/or high temperatures. Products are formulated for most metal types and protection levels. For exceptionally harsh environments, customers may choose to use a combination of NTIC's liquids and coatings with ZERUST® plastic and/or paper products to achieve robust corrosion protection during manufacturing, shipping and warehousing stages.

Rust Removers and Cleaners. NTIC also sells rust removal and cleaning products designed to restore rusty parts to a usable condition by replacing labor-intensive, abrasive cleaners that damage surfaces and commonly fail to remove rust from complex metal surfaces like the teeth of small gears under the Axxaclean™ brand name.

Diffusers. NTIC's corrosion prevention solutions include a line of corrosion inhibiting vapor diffusers, such as ZERUST® ActivPak®, ZERUST® ICT® Vapor Capsules, ZERUST® ICT® Plastabs® and ZERUST® ICT® Cor-Tabs®, ZERUST® ICT® Pipe Strip and ZERUST® ICT® Tube Strip. These diffusers are designed to protect metals within enclosures, like switch gearboxes and electronic cabinets, or can be used as added protection to ZERUST® packaging products. Diffusers work by permeating the interior air of an enclosure with an invisible and odorless corrosion inhibiting vapor that protects nearby metal surfaces that are within a specific "radius of protection" for a period of one or two years depending on the model. This invisible and dry protective layer revaporizes upon removal of the capsule from the enclosure, leaving all surfaces clean, dry, residue-free and corrosion-free.

Z-CIS® Technical Services. As an on-going effort to help NTIC's customers improve and control their processes in terms of corrosion management, NTIC markets and offers unique corrosion management and consulting services to target customers. This ZERUST® corrosion inhibition system (known as Z-CIS®) leverages NTIC's global network to dispatch highly-trained technical service engineers to customer sites to solve complex corrosion problems. Several major automotive companies and their automotive parts suppliers have used NTIC's Z-CIS® system.

ZERUST® Corrosion Prevention Solutions Designed Specifically for the Oil and Gas Industry. NTIC has developed proprietary engineered corrosion inhibiting solutions specifically for the mitigation of corrosion of the types of capital assets used in the petroleum and chemical process industries and has targeted the sale of these ZERUST® corrosion solutions to potential customers in the oil and gas industry. NTIC's consolidated net sales in fiscal 2018 included \$3,066,953 in sales made to customers in the oil and gas industry, an increase of 78.3% over such sales in fiscal 2017. This increase is influenced by the increase in crude oil prices that have led to clients spending more money on maintenance projects than in fiscal 2017 as well as the deployment of ZERUST® Zerion products for the protection of new pipelines during construction. Projects in Europe and the Middle East are a small but strategically important part of the sales growth picture. The infrastructure that supports the oil and gas industry is predominantly constructed using metals that are highly susceptible to corrosion. The industrial environment at these facilities usually contains compounds, including sulfides and chlorides, which cause aggressive corrosion. This problem affects pipelines, petroleum storage tanks, spare parts in long-term storage, processing and other critical equipment. In addition to the costs associated with the replacement of parts and structures, maintenance and repairs, and product loss, there are significant economic losses associated with critical infrastructure being down for repair and maintenance. Furthermore, there are also considerable health, safety and environmental risks caused by corrosion that can greatly increase economic losses. NTIC believes that its ZERUST® oil and gas corrosion prevention solutions minimize maintenance downtime on critical oil and gas industry infrastructure, extend the life of such infrastructure and reduce the risk of environmental pollution due to leaks caused by corrosion.

NTIC's rust and corrosion inhibiting products for the oil and gas industry include ZERUST® Flange Savers®, ZERUST® ReCAST-R VCI Dispensers, Zerust ReCAST-SSB solutions and ZERUST® chemicals, including Zerion powders and gels, in addition to many of the standard industrial ZERUST® rust and corrosion inhibiting products previously described.

ZERUST® Flange Savers® are specially designed covers that have been impregnated with a proprietary ZERUST® inhibitor formulation to provide corrosion protection for flanges, valves and welded joints. Oil and gas pipeline segments are connected by flanges and welded joints of varying sizes, designs and materials. These connection points often corrode under aggressive industrial environments and harsh operating conditions, thereby causing costly maintenance, operational and safety problems. ZERUST® Flange Savers® are available in various sizes to accommodate different pipe diameters, pressure ratings and international standards for pipeline valves and flanges.

ZERUST® ReCAST-R VCI Dispensers protect the interior surfaces of aboveground storage tank roofs by delivering proprietary inhibitor formulations into the vapor space between the surface of the product and the tank roof. Certain grades of oil contain sulphur and emit corrosive acid gas vapors that destroy the internal surfaces of aboveground storage tank roofs and their support structures above the stored product. Each system is tailored to a customer's requirements, depending upon specific environmental conditions, product stored, tank diameter and type of metal and can be applied on both new and existing tank roofs.

ZERUST® ReCAST-SSB solutions protect the Soil Side Bottoms (SSB) of aboveground storage tanks through a variety of unique and highly effective delivery systems designed by the Zerust Oil & Gas team to deliver proprietary Zerion FVS corrosion inhibitor to tank bottom spaces that are susceptible to significant corrosion. Tank bottoms are typically made of steel plates which are in direct contact with the foundation surface that may be concrete, sand/soil or asphalt/bitumen. It is typically not possible to protect this underside surface with traditional coatings. Cathodic protection (CP) systems can only provide partial protection, but also have significant limitations that cause failures well ahead of the expected service life of a tank. The ZERUST® solutions provide effective protection even to areas that cannot be addressed with CP. This is an engineered solution where each system is tailored to a customer's requirements depending on factors including the tank foundation design, specific environmental conditions, and tank diameter.

ZERUST® Zerion line of powder-based inhibitor solutions include:

- Zerion FVS is a unique inhibitor blend that is used in both the SSB Solutions and in internal pipeline protection. This “best-in-class” product has been successfully deployed at multiple client sites in the North and South America as well as parts of Asia.
- Zerion FAN-5 is a lower cost inhibitor that is very effective at protecting metals upon contact. It can be used to treat large volumes of water that may be used for hydrotesting. In combination with Zerion FVS, it offers a more complete solution for the protection of pipeline internals.
- AutoFog is a revolutionary product that allows for the quick VCI saturation of large volume spaces without the need for mechanical “fogging” equipment. This rapid self-diffusing capability is good for sealed void spaces, protection of large/complex assets like heat exchangers and heater-treaters.
- Sol-V C-Series is designed to provide corrosion prevention in voids and enclosures especially when there is either stagnant water, or the potential for water seepages and/or accumulation of water over time. ZERUST® Sol-V™ C-Series packaging allows VCIs to release while conserving a Sol-V proprietary blend of soluble corrosion inhibitors (SCIs) until water enters the system. Typical applications of ZERUST® Sol-V™ C-Series packaging include offshore platform leg voids, vessels and tanks mothballed in tropical environments, ship blocks being fabricated in areas of high humidity, piping systems and heat exchangers.

Natur-Tec® Resin Compounds and Finished Products. NTIC manufactures and sells a range of biobased and compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. NTIC’s consolidated net sales in fiscal 2018 included \$10,050,516 in sales of Natur-Tec® resins and finished products, an increase of 48.2% over such sales in fiscal 2017. Market drivers such as volatile petroleum prices, reduced dependence on foreign oil, reduced carbon footprints, and environmentally responsible end-of-life solutions have increased interest in using sustainable, biobased and renewable plant-biomass resources for the manufacture of plastics and industrial products. Plastics that are fully biodegradable in composting or anaerobic digester systems allow the safe and effective conversion of these plastics to carbon dioxide, water and fertilizer at the end of their service life. Increased environmental and sustainability awareness at the corporate and consumer level, improved technical properties and product functionality, as well as recent foreign, state and local governmental regulations banning the use of conventional plastics or mandating the use of certain biodegradable or compostable products, have also fueled this interest in biobased and biodegradable-compostable plastics. The term “bio-plastics” encompasses a broad category of plastics that are either bio-based, which means derived from renewable resources such as corn or cellulosic/plant material or blends thereof, or are engineered to be fully compostable, or both.

Resin Compounds. Natur-Tec® resin compounds are produced by blending commercially available base resins, such as Ecoflex® from BASF, Ingeo® PLA from NatureWorks LLC, with organic and inorganic fillers, and proprietary polymer modifiers and compatibilizers, using NTIC’s proprietary and patented ReX Process. In this process, biodegradable polymers, natural polymers made from renewable, plant-biomass resources, and organic and inorganic materials are reactively blended in the presence of proprietary compatibilizers and polymer modifiers to produce biobased and/or compostable polymer resin formulations that exhibit unique and stable morphology. Natur-Tec® resin compounds are engineered for high performance, ease of processing and reduced cost compared to most other bio-plastic materials and can be processed by converters using conventional plastic manufacturing processes and equipment.

Natur-Tec[®] resin compounds are available in several grades tailored for a variety of applications, such as blown-film extrusion, extrusion coating and injection molding.

Natur-Tec[®] flexible film resin compounds are fully compostable and meet the requirements of international standards for compostable plastics such as ASTM (American Society for Testing and Materials) D6400 (U.S.), EN 13432 (European standards for products and services by European Committee for Standardization) and ISO (International Organization for Standardization) 17088, and are certified as 100% compostable by organizations including the BPI (Biodegradable Products Institute) in the United States and TÜV Austria in Europe. Natur-Tec[®] film resin compounds can be used to produce film for applications, such as bags, including compost bags, lawn and leaf bags, pet waste bags and carry-out bags, agricultural film and consumer and industrial packaging. Natur-Tec[®] film resin compounds are also used to produce bags and covers for branded apparel packaging and to manufacture specialty food service ware items, such as compostable drinking straws, and disposable food-handling gloves.

The Natur-Tec[®] compostable extrusion coating resin compounds are biobased and biodegradable and are designed to replace conventional plastic materials for extrusion coating applications. Natur-Tec[®] extrusion coating resin compounds are manufactured using sustainable and renewable resources, per the ASTM D6866 standard, which allows industry and consumers the opportunity to reduce or neutralize their carbon footprint and are designed to meet the requirements of international standards for compostable plastics, such as ASTM D6400. Natur-Tec[®] extrusion coating resin compounds provide good adhesion to paper, an excellent print surface and good heat seal strength and the coating material is suitable for food contact applications including both hot and cold applications. Natur-Tec[®] extrusion coating resin compounds can be used for coating paper and paperboards for the manufacture of disposable cups, plates and other food service ware items.

The Natur-Tec[®] compostable injection molding resin compounds are biobased and compostable and are designed to replace conventional plastic materials for injection molded plastic applications. Natur-Tec[®] compostable injection molding resin compounds are manufactured using sustainable and renewable resources, per the ASTM D6866 standard and are designed to meet the requirements of international standards for compostable plastics, such as ASTM D6400 and EN 13432. Natur-Tec[®] compostable injection molding resin compounds can be used for injection molded plastic applications, such as cutlery, pens, hangers, containers and packaging. Natur-Tec[®] biobased injection molding resin compounds are made with at least 90% of biobased/renewable resource-based materials per the ASTM D6866 standard and are meant to enhance sustainability by replacing petroleum-based plastics. Natur-Tec[®] biobased injection molding resin compounds exhibit the same properties as conventional plastic materials and can be used in applications, such as automotive components, consumer goods, electronics, medical products, furniture and packaging.

Finished Products. Natur-Tec[®] finished products include totally biodegradable and compostable trash bags, agricultural film and other single-use disposable products, such as compostable cutlery, as well as food and consumer goods packaging that are currently marketed under the Natur-Bag[®] or Natur-Ware[®] brands.

The Natur-Bag[®] product line offers 15 different compostable trash bag sizes, from 3-gallon to 96-gallon. The bags are available in various SKU configurations from retail packs that are sold to the consumer either through retail outlets or through online stores, and industrial case packs that are sold to commercial and industrial customers primarily through wholesalers and distributors. The Natur-Bag[®] products are manufactured from the Natur-Tec[®] flexible film resin compounds and thus are fully biodegradable and compostable.

The Natur-Ware[®] product line consists of biobased and compostable cutlery made from the Natur-Tec[®] compostable injection molding resin compounds. Natur-Ware[®] cutlery can be composted along with food scraps in zero-waste programs.

Both Natur-Bag[®] and Natur-Ware[®] products are fully certified compostable and carry the BPI Compostable logo in the United States and the TÜV Austria OK Compost logo in Europe. Furthermore, these products were also independently tested and approved for use in organic waste diversion systems by Cedar Grove, one of the largest compost operators in the United States.

Sales, Marketing and Distribution

ZERUST[®] Corrosion Prevention Solutions. In the United States, NTIC markets its ZERUST[®] rust and corrosion inhibiting products and services, including its products designed for the oil and gas industry, principally to industrial users in the automotive, electronics, electrical, mechanical, military, retail consumer and oil and gas markets by a direct sales force and through a network of independent distributors, manufacturer's sales representatives and strategic partners. Prior to placing an order, NTIC's technical service consultants work directly with the end users of NTIC's ZERUST[®] products to analyze their specific corrosion prevention needs and develop systems to meet their performance requirements.

Internationally, NTIC has entered into a series of joint ventures with foreign partners (either directly or through a holding company). NTIC receives fees for providing technical support, marketing assistance and other services to its joint ventures based primarily on the net sales of the individual joint ventures in accordance with the terms of the joint venture arrangements. Such services include consulting, legal, insurance, technical and marketing services. In China, NTIC sells its products and services through NTIC China. NTIC has a wholly-owned subsidiary to conduct its business in Mexico.

With respect to the sales and marketing of ZERUST[®] rust and corrosion inhibiting products and services to the oil and gas industry, NTIC uses a combination of direct sales personnel, independent sales agents and its joint venture network. In addition, in an attempt to penetrate the oil and gas industry within certain markets more quickly, NTIC has entered into various agreements with specific organizations that have existing long term relationships with key oil and gas industry clients. NTIC also engages in certain direct marketing activities to build its brand within the oil and gas industry, such as traditional advertising and direct mail campaigns and presence and participation at selected key trade shows and technical forums. NTIC continues to believe the sale of its ZERUST[®] corrosion prevention solutions to customers in the oil and gas industry will involve long sales cycles, likely including multi-year trial periods with each customer and a slow integration process thereafter.

Natur-Tec[®] Resin Compounds and Finished Products. In the United States, NTIC markets its Natur-Tec[®] resin compounds and finished products through a network of national and regional distributors and independent manufacturer's sales representatives and two NTIC direct sales employees as of August 31, 2018. Target customers for Natur-Tec[®] finished products include individual consumers as well as commercial and institutional organizations such as corporations and government agencies, and educational organizations such as universities and school districts. NTIC is also targeting key national and regional retailers utilizing independent sales agents. Target customers for Natur-Tec[®] resin compounds include film extruders and injection molders who would purchase Natur-Tec[®] resin compounds to manufacture and sell their own finished biobased and compostable end products, such as film, bags and cutlery.

Internationally, NTIC uses Natur-Tec India, and its joint ventures and a network of international distributors to market its Natur-Tec[®] resin compounds and finished products. In November 2014, NTIC entered into an agreement with NatureWorks LLC for joint marketing and sales of Ingeo[®] based packaging solutions to customers in India. With Indian government mandates banning the use of non-biodegradable plastics in certain types of food and consumer packaging, NTIC expects the market in India for bioplastic packaging solutions to continue to grow substantially.

Competition

ZERUST® Corrosion Prevention Solutions. While NTIC is unaware of any third parties with which NTIC competes on a worldwide basis with respect to its corrosion prevention solutions, NTIC does compete with several third parties on a regional basis. NTIC evaluates competing rust and corrosion inhibiting products on an ongoing basis. Some of NTIC's competitors are established companies that may have financial, marketing, distribution networks and other resources substantially greater than those of NTIC. As a result, they may be able to adapt more quickly to new or emerging technologies and changes in customer requirements or devote greater resources to the promotion and sale of their products than NTIC. With respect to its rust and corrosion inhibiting products, NTIC competes on the basis of product innovation, quality and reliability, product support, customer service, reputation, as well as price. Some of NTIC's competitors may have achieved significant market acceptance of their competing products and brand recognition. NTIC, however, believes it has an advantage over most of its competitors as a result of NTIC's technical innovation and its value-added services. NTIC attempts to provide its customers with the highest level of technical service and applications engineering in addition to ZERUST® rust and corrosion inhibiting products. Nonetheless, the commoditization of certain of NTIC's ZERUST® rust and corrosion inhibiting products have led and may continue to lead to lower prices and lower margins on such products. In addition, because certain barriers to entry are low, additional competitors may emerge, which likely would lead to the further commoditization of NTIC's rust and corrosion inhibiting products.

With respect to NTIC's corrosion prevention solutions for use in the oil and gas industry, NTIC's primary barrier to entry is a combination of conservatism, complacency, and confidence in old approaches, as well as the complexity of the buying organizations. Some of NTIC's competitors with respect to its traditional ZERUST® rust and corrosion inhibiting products also compete in the oil and gas industry. NTIC also faces competition from new suppliers who provide alternative approaches to corrosion prevention, some of which have a significant market presence and more years of experience and credibility in the oil and gas industry. Original equipment manufacturer (OEM) suppliers to the oil and gas industry present a new market vertical for NTIC's traditional industrial ZERUST® products.

Natur-Tec® Resin Compounds and Finished Products. With respect to NTIC's Natur-Tec® resin compounds and finished products, NTIC competes with several established companies that have been producing and selling similar products for a significantly longer time period, and have significantly more sales, more extensive and effective distribution networks and better brand recognition than NTIC. Most of these companies also have substantially more financial and other resources than NTIC. NTIC competes on the basis of performance, brand awareness, distribution network, product availability, product offering, shelf life, place of manufacture and price. Because of price competition, NTIC's margins on its Natur-Tec® resin compounds and finished products are lower than its margins on its ZERUST® corrosion prevention solutions. NTIC also could face supply constraints for the base resins used to manufacture NTIC's Natur-Tec® resin compounds and finished products since there are a limited number of suppliers of such base resins and limited capacity for their production.

Research and Development

NTIC's research and development activities are directed at improving existing products, developing new products, reducing costs and improving quality assurance through improved testing of NTIC's products. NTIC's internal research and development activities are conducted at its facilities located in Circle Pines, Minnesota; Beachwood, Ohio; and Dresden, Germany under the direction of internationally known scientists and research institutes under exclusive contract to NTIC with respect to the subject of their respective research efforts. EXCOR has established a wholly-owned subsidiary, Excor Korrosionsforschung GmbH, to conduct research into new fields of corrosion inhibiting packaging and the applications engineering of such products in conjunction with NTIC's domestic research and development operations. With respect to NTIC's Natur-Tec® resin compounds and finished products, Ramani Narayan, Ph.D., a current director of NTIC and Distinguished Professor in the Department of Chemical Engineering & Materials Science at Michigan State University, provides his expertise and technical support to NTIC.

NTIC anticipates that it will spend between \$3,200,000 and \$3,600,000 in fiscal 2019 on research and development activities.

Intellectual Property Rights

NTIC's success depends and will continue to depend in part upon its ability to maintain patent and trademark protection for its products and processes, to preserve its proprietary information and trade secrets and to operate without infringing the proprietary rights of third parties. NTIC's policy is to attempt to protect its technology by, among other things, filing patent applications and trademark applications and vigorously preserving the trade secrets covering its technology and other intellectual property rights.

In 1980, NTIC developed and patented the first polyolefin (plastic) based industrial corrosion inhibiting packing material in the world. The U.S. patent granted under this patent application became the most important intellectual property right in NTIC's history. This patent expired in 2000. NTIC has since filed for 12 letters of patents in the United States covering various corrosion inhibiting technologies, systems and applications, and now owns several patents in these areas. These patents, as well as patent applications, have been extended to the countries of strategic relevance to NTIC including, such countries as Australia, Brazil, Canada, China, Europe, Japan, India, Korea, Mexico, Russia, and Taiwan. In addition, EXCOR owns several patents in the area covering various corrosion inhibiting technologies and has also applied for new patents on proprietary new corrosion inhibiting technologies. NTIC is also seeking additional patent protection covering various host materials into which its corrosion inhibiting additives and other protective features can be incorporated, proprietary new process technologies, and chemical formulations outside the area of corrosion protection. NTIC owns several patents outside the area of corrosion protection both in the United States and in countries of strategic relevance to NTIC including the above-noted countries.

In addition to seeking patent protection, NTIC maintains an extensive portfolio of trademarks in countries where NTIC has a presence directly or through its subsidiaries and joint ventures. NTIC continuously pursues new trademark applications of strategic interest worldwide. NTIC owns the following U.S. registered trademarks: NTI®, NTI & Globe Design, ZERUST®, EXCOR®, ICT®, Z-CIS®, COR TAB®, PLASTABS®, NATUR-TEC®, NATUR-TEC & Design®, NATUR-BAG® and NATUR-WARE®, ZERION®, AUTOFOG®, FLANGE SAVER® and ACTIVPAK®. NTIC also has a registered trademark on the use of the Color Yellow with respect to corrosion inhibiting packaging. Furthermore, NTI®, ZERUST®, EXCOR®, the Color Yellow® and NTI ASEAN®, as well as other marks have been registered in the European Union with several new applications pending.

NTIC requires its employees, consultants and advisors having access to its confidential information, including trade secrets, to execute confidentiality agreements upon commencement of their employment or consulting relationships with NTIC. These agreements generally provide that all confidential information NTIC develops or makes known to the individual during the course of the individual's employment or consulting relationship with NTIC must be kept confidential by the individual and not disclosed to any third parties. NTIC also requires all of its employees and consultants who perform research and development for NTIC to execute agreements that generally provide that all inventions developed by these individuals during their employment by or service arrangement with NTIC will fall under NTIC's proprietary intellectual property rights.

Manufacturing

NTIC's ZERUST[®] rust and corrosion inhibiting products are manufactured according to NTIC's specifications primarily by selected independent sub-contractors under trade secrecy agreements and/or license agreements. In addition, NTIC manufactures select ZERUST[®] rust and corrosion inhibiting products, consisting primarily of liquids and powders, in-house at its corporate headquarters location in Circle Pines, Minnesota.

NTIC's Natur-Tec[®] resin compounds and finished products are produced at facilities in India, China, Malaysia and California, USA. NTIC's Natur-Tec[®] resin compounds can be shipped to any manufacturing facility around the world where they then can be converted into finished products, such as a bag or piece of cutlery. NTIC's Natur-Tec[®] finished products are manufactured using NTIC's Natur-Tec[®] resin compounds by selected sub-contractors.

NTIC is ISO 9001 certified with respect to the manufacturing of its products. NTIC believes that the process of ISO 9001 certification serves as an excellent total quality management tool, enabling NTIC to ensure consistency in the performance of its products. In addition, because potential customers may prefer or require manufacturers to have achieved ISO certification, such ISO certifications may provide NTIC with certain competitive advantages.

Availability of Raw Materials

NTIC does not typically carry excess quantities of raw materials because of widespread availability for such materials from various suppliers. However, with respect to its Natur-Tec[®] resin compounds and finished products, there are a limited number of suppliers of the base resins used to manufacture the resin compounds and finished products, and in the past NTIC has experienced some delays in obtaining such base resins. In addition, a few raw materials and purchased parts used in NTIC's rust and corrosion inhibiting products and Natur-Tec[®] finished products are sourced from suppliers who currently serve as NTIC's sole source of supply for these materials and parts. Although NTIC believes it can obtain these raw materials and parts from other sources of supply, an unexpected loss of supply over a short period of time may not allow NTIC time to replace these sources in the ordinary course of business.

Backlog

NTIC had an order backlog of \$1,242,000 as of August 31, 2018, compared to \$668,000 as of August 31, 2017, which was generally across all business units and which these sales will be realized during first quarter of fiscal 2019. These are orders that are held by NTIC pending release instructions from the customers to be used in just-in-time production. Customers generally place orders on an "as needed" basis and expect delivery within a relatively short period of time.

Governmental Regulation

The U.S. Food and Drug Administration (FDA) has indicated to NTIC that it has no objection to the use of ZERUST[®] ICT[®] packaging products in protecting metal food containers and processing equipment. In addition, the manufacture, sale and use of NTIC's Natur-Tec[®] resin compounds and finished products are subject to regulation in the United States by the FDA. The FDA's regulations are concerned with substances used in food packaging materials. Thus, food and beverage containers are in compliance with FDA regulations if the components used in the food and beverage containers are approved by the FDA as indirect food additives for their intended uses and comply with the applicable FDA indirect food additive regulations or are generally recognized as safe for their intended uses and are of suitable purity for those intended uses. NTIC believes that its resin compounds are in compliance with all FDA requirements and do not require further FDA approval prior to the sale of its products.

Employees

As of August 31, 2018, NTIC had 72 full-time employees located in North America, consisting of 28 in sales and marketing, 22 in research and development and lab, 15 in administration and 7 in production. As of August 31, 2018, NTIC's wholly-owned subsidiary in China had 35 full-time employees, its majority-owned subsidiary in Brazil had 20 full-time employees, its majority-owned subsidiary in India had 9 full-time employees, its wholly owned subsidiary in Mexico had no employees and its holding company, NTI Asean, had no full-time employees. There are no unions representing NTIC's employees and NTIC believes that its relations with its employees are good.

Available Information

NTIC is a Delaware corporation that was originally organized as a Minnesota corporation in 1970. NTIC's principal executive office is located at 4201 Woodland Road, Circle Pines, Minnesota 55014, and its telephone number is (763) 225-6600. NTIC's website is located at www.ntic.com. References to NTIC's website addressed in this report are provided as a convenience and as an inactive textual reference only. The information on NTIC's website or any other website is not incorporated by reference into, and not considered a part of, this report.

NTIC makes available, free of charge and through its Internet web site, its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and any amendments to any such reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, as soon as reasonably practicable after NTIC electronically files such material with, or furnishes it to, the Securities and Exchange Commission (SEC). Reports filed with the SEC may be viewed at www.sec.gov.

Forward-Looking Statements

This report on Form 10-K contains not only historical information, but also 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, and are subject to the safe harbor created by those sections. In addition, NTIC or others on NTIC's behalf may make forward-looking statements from time to time in oral presentations, including telephone conferences and/or web casts open to the public, in press releases or reports, on NTIC's Internet web site or otherwise. All statements other than statements of historical facts included in this report or expressed by NTIC orally from time to time that address activities, events or developments that NTIC expects, believes or anticipates will or may occur in the future are forward-looking statements including, in particular, the statements about NTIC's plans, objectives, strategies and prospects regarding, among other things, NTIC's financial condition, results of operations and business, the outcome of contingencies such as legal proceedings and the effect of the liquidation of Tianjin Zerust and the operations of NTIC China. NTIC has identified some of these forward-looking statements in this report with words like "believe," "can," "may," "could," "would," "might," "forecast," "possible," "potential," "project," "will," "should," "expect," "intend," "plan," "predict," "anticipate," "estimate," "approximate," "outlook" or "continue" or the negative of these words or other words and terms of similar meaning. The use of future dates is also an indication of a forward-looking statement. Forward-looking statements may be contained in the notes to NTIC's consolidated financial statements and elsewhere in this report, including under the heading "*Management's Discussion and Analysis of Financial Condition and Results of Operations*."

Forward-looking statements are based on current expectations about future events affecting NTIC and are subject to uncertainties and factors that affect all businesses operating in a global market as well as matters specific to NTIC. These uncertainties and factors are difficult to predict and many of them are beyond NTIC's control. The following are some of the uncertainties and factors known to us that could cause NTIC's actual results to differ materially from what NTIC has anticipated in its forward-looking statements:

- The effect of current worldwide economic conditions and any turmoil and disruption in the global credit and financial markets on NTIC's business;
- The variability in NTIC's sales of ZERUST[®] products and services into oil and gas industry and Natur-Tec[®] products and NTIC's equity income of joint ventures, which variability in sales and equity in income from joint venture in turn, subject NTIC's earnings to quarterly fluctuations;
- Risks associated with NTIC's international operations and exposure to fluctuations in foreign currency exchange rates, import duties and taxes and tariffs;
- The effect of the United Kingdom's process to exit the European Union on NTIC's operating results, including in particular future net sales of NTIC's European and other joint ventures;
- The health of the U.S. automotive industry on NTIC's business;
- NTIC's dependence on the success of its joint ventures and fees and dividend distributions that NTIC receives from them;
- NTIC's relationships with its joint ventures and its ability to maintain those relationships, especially in light of anticipated succession planning issues;
- Fluctuations in the cost and availability of raw materials, including resins and other commodities;
- The success of and risks associated with NTIC's emerging new businesses and products and services, including in particular NTIC's ability and the ability of NTIC's joint ventures to sell ZERUST[®] products and services into oil and gas industry and Natur-Tec[®] products and the often lengthy and extensive sales process involved in selling such products and services;
- NTIC's ability to introduce new products and services that respond to changing market conditions and customer demand;
- Market acceptance of NTIC's existing and new products, especially in light of existing and new competitive products;
- Maturation of certain existing markets for NTIC's ZERUST[®] products and services and NTIC's ability to grow market share and succeed in penetrating other existing and new markets;
- Increased competition, especially with respect to NTIC's ZERUST[®] products and services, and the effect of such competition on NTIC's and its joint ventures' pricing, net sales and margins;
- NTIC's reliance upon and its relationships with its distributors, independent sales representatives and joint ventures;
- NTIC's reliance upon suppliers;
- Oil prices, which may affect sales of NTIC's ZERUST[®] products and services into the oil and gas industry;
- NTIC's operations in China and risks associated therewith, the termination of the joint venture agreements with Tianjin Zerust, and the anticipated liquidation of Tianjin Zerust and the effect of all these events on NTIC's business and future operating results;

- The costs and effects of complying with laws and regulations and changes in tax, fiscal, government and other regulatory policies, including rules relating to environmental, health and safety matters;
- Unforeseen product quality or other problems in the development, production and usage of new and existing products;
- Unforeseen production expenses incurred in connection with new customers and new products;
- Loss of or changes in executive management or key employees;
- Ability of management to manage around unplanned events;
- Pending and future litigation;
- NTIC's reliance on its intellectual property rights and the absence of infringement of the intellectual property rights of others;
- NTIC's ability to maintain effective internal control over financial reporting, especially in light of its joint venture arrangements;
- Changes in applicable laws or regulations and NTIC's failure to comply with applicable laws, rules and regulations;
- Changes in generally accepted accounting principles and the effect of new accounting pronouncements;
- Fluctuations in NTIC's effective tax rate, including from the recently enacted Tax Cuts and Jobs Act;
- Effect of extreme weather conditions on NTIC's operating results; and
- NTIC's reliance upon its management information systems.

For more information regarding these and other uncertainties and factors that could cause NTIC's actual results to differ materially from what NTIC has anticipated in its forward-looking statements or otherwise could materially adversely affect its business, financial condition or operating results, see "*Part I. Item 1A. Risk Factors.*"

All forward-looking statements included in this report are expressly qualified in their entirety by the foregoing cautionary statements. NTIC wishes to caution readers not to place undue reliance on any forward-looking statement that speaks only as of the date made and to recognize that forward-looking statements are predictions of future results, which may not occur as anticipated. Actual results could differ materially from those anticipated in the forward-looking statements and from historical results, due to the uncertainties and factors described above, as well as others that NTIC may consider immaterial or does not anticipate at this time. Although NTIC believes that the expectations reflected in its forward-looking statements are reasonable, NTIC does not know whether its expectations will prove correct. NTIC's expectations reflected in its forward-looking statements can be affected by inaccurate assumptions NTIC might make or by known or unknown uncertainties and factors, including those described above. The risks and uncertainties described above are not exclusive and further information concerning NTIC and its business, including factors that potentially could materially affect its financial results or condition, may emerge from time to time. NTIC assumes no obligation to update, amend or clarify forward-looking statements to reflect actual results or changes in factors or assumptions affecting such forward-looking statements. NTIC advises you, however, to consult any further disclosures NTIC makes on related subjects in its annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K NTIC files with or furnishes to the Securities and Exchange Commission.

Item 1A. RISK FACTORS

The following are the most significant factors known to NTIC that could materially adversely affect its business, operating results or financial condition.

Any weakness in the global economy, and in particular in the United States, Europe and China, and in the automotive industry, may negatively impact NTIC's business, operating results and financial condition.

The U.S. and world economies may suffer from uncertainty, volatility, disruption and other adverse conditions, and those conditions may adversely impact the business community and the financial markets. Adverse economic and financial market conditions may negatively affect NTIC's customers and its markets, and thus negatively impact its business and operating results. For example, weak market conditions could extend the length of NTIC's sales cycle and cause potential customers to delay, defer or decline to make purchases of NTIC's products and services due to uncertainties surrounding the future performance of their businesses, limitations on their capital expenditures due to internal budget constraints, the inability to obtain financing in the capital markets, and the adverse effects of the economy on their business and financial condition. As a result, if economic and financial market conditions continue to be weak or even deteriorate, then NTIC's business, financial condition and operating results, including its ability to grow and expand its business and operations, could be materially and adversely affected.

NTIC's operating results are especially dependent upon the economic health of the economies in the United States, Europe and China. Since a significant portion of NTIC's ZERUST[®] rust and corrosion inhibiting products and services are sold to customers in the automotive industry, adverse economic conditions affecting the automotive industry, in particular, may result in another adverse effect on NTIC's net sales and its other operating results. Accordingly, any weakness in the global economy, and in particular in the United States, Europe and China, and in the automotive industry, may negatively impact NTIC's business, operating results and financial condition.

Changes to trade regulation, quotas, duties or tariffs, caused by the changing U.S. and geopolitical environments or otherwise, may negatively impact NTIC's business, operating results and financial condition.

The U.S. government has taken actions or made proposals that are intended to address trade imbalances, specifically with China, among other countries, which include encouraging increased production in the United States. These actions and proposals have resulted or could result in increased customs duties and the renegotiation of some U.S. trade agreements. NTIC engages in sales outside of the United States. When custom duties are implemented or increased, it also may cause the trading partners of the United States to take actions with respect to U.S. imports in their respective countries. Any changes or potential changes in trade policies in the United States and the potential corresponding actions by other countries in which NTIC does business could adversely and materially affect NTIC's business, results of operations or financial condition.

Global credit and financial markets in the past have experienced disruptions, including diminished liquidity and credit availability and rapid fluctuations in market valuations, which if they happen again, could negatively impact NTIC's business, operating results and financial condition.

Any tightening of the credit and financial markets could negatively impact the ability of companies to borrow money from their existing lenders, obtain credit from other sources or raise financing to fund their operations. This could negatively impact the ability of NTIC's customers and the customers of NTIC's joint ventures to purchase NTIC's products, suppliers' ability to provide NTIC and its joint ventures with materials and components and the ability of NTIC and its joint ventures, distributors and sales representatives to finance operations, if needed, on commercially reasonable terms, or at all. Any or all of these events could negatively impact NTIC's business, operating results and financial condition. Although NTIC maintains allowances for doubtful accounts for estimated losses resulting from the inability of its customers, distributors and joint ventures to make required payments and such losses historically have been within NTIC's expectations and the provisions established, NTIC cannot guarantee that it will continue to experience the same loss rates that it has in the past, especially if there are weaknesses in the worldwide economy. A significant change in the liquidity or financial condition of NTIC's customers, distributors or joint ventures could cause unfavorable trends in NTIC's receivable collections and additional allowances may be required, which could adversely affect NTIC's operating results. In addition, weaknesses in the worldwide economy may adversely impact the ability of suppliers to provide NTIC with materials and components, which could adversely affect NTIC's business and operating results, and it is not known how the recent withdrawal by the United States from the Trans-Pacific Partnership trade agreement may also affect NTIC's suppliers. NTIC is unable to predict the prospects for a global economic recovery, but the longer the duration of such adverse and uncertain economic conditions, the greater the risks NTIC faces in operating its business.

NTIC's liquidity and financial position rely on the receipt of fees for services provided to its joint ventures and dividend distributions from its joint ventures. No assurance can be provided that NTIC will continue to receive such fees and dividend distributions in amounts NTIC historically has received or anticipates receiving.

NTIC conducts business, either directly or indirectly through several joint venture arrangements that operate in North America, Europe and Asia. Each of these joint ventures manufactures, markets and sells finished products in the geographic territory that it is assigned. NTIC's receipt of funds as a result of sales by its joint ventures is dependent upon NTIC's receipt of fees for services that NTIC provides to its joint ventures based primarily on the net sales of the individual joint ventures and NTIC's receipt of dividend distributions from its joint ventures based on the profitability of its joint ventures. NTIC's liquidity and financial position rely on NTIC's receipt of fees for services that NTIC provides to its joint ventures and dividend distributions from its joint ventures. During fiscal 2018, NTIC recognized \$6,142,139 in fees and \$3,697,503 in dividend distributions from its joint ventures. Because NTIC owns 50% or less of each of its joint venture entities, NTIC does not control the decisions of these entities regarding whether to pay dividends and, if paid, how much they should be in any given year. Thus, NTIC cannot guarantee that any of its joint ventures will pay dividends in any given year. The failure of NTIC's joint ventures to declare dividends or the failure of NTIC to receive fees for services provided to joint ventures in amounts typically expected by NTIC could adversely affect NTIC's liquidity and financial position.

Since a significant portion of NTIC's earnings results from NTIC's equity income from joint ventures and since NTIC's equity income from joint ventures varies from quarter to quarter, NTIC's earnings are subject to quarterly fluctuations.

A significant portion of NTIC's earnings results from NTIC's equity income from its joint ventures. NTIC's equity in income from joint ventures consists of NTIC's share of equity in income from its joint ventures based on the overall profitability of the joint ventures. Such profitability varies from quarter to quarter. Since NTIC's management typically receives quarterly joint venture financial information after the completion of each fiscal quarter, it is impossible for NTIC's management to cut costs and expenses to make up for any unanticipated shortfall in NTIC's equity income from joint ventures. Accordingly, the variability in NTIC's equity income from joint ventures, in turn, subjects NTIC's earnings to quarterly fluctuations.

Out of NTIC's joint ventures, NTIC's joint venture in Germany is the most significant in terms of assets and income to NTIC. If sales of NTIC's products and services by this joint venture were to decline significantly or if NTIC's relationships with this joint venture were to deteriorate significantly, NTIC's operating results likely would be adversely affected.

NTIC considers its joint venture in Germany (EXCOR) to be individually significant to NTIC's consolidated assets and income, and therefore, provides certain additional information regarding EXCOR in the notes to NTIC's consolidated financial statements and in certain sections of this report. Of the total equity in income from joint ventures of \$7,527,383 during fiscal 2018, NTIC had equity in income from joint ventures of \$5,549,765 attributable to EXCOR. Of the total fee income for services provided to joint ventures of \$6,142,139 during fiscal 2018, fees of \$900,316 was attributable to EXCOR. Accordingly, if sales of NTIC's products and services by this joint venture were to decline significantly or if NTIC's relationships with this joint venture were to deteriorate significantly such that it terminated or were not motivated to sell NTIC's products and services, NTIC's operating results likely would be adversely affected.

NTIC's international business, which is conducted primarily through its subsidiaries and joint ventures, requires management attention and financial resources and exposes NTIC to difficulties and risks presented by international economic, political, legal, accounting and business factors.

NTIC sells products and services directly, through its wholly-owned and majority-owned subsidiaries, and indirectly via a network of joint ventures, independent distributors, manufacturer's sales representatives and agents in over 60 countries, including countries in North America, South America, Europe, Asia and the Middle East. One of NTIC's strategic objectives is the continued expansion of its international operations. The expansion of NTIC's existing international operations and entry into additional international markets requires management attention and financial resources.

The sale and shipping of products and services across international borders subjects NTIC to extensive U.S. and foreign governmental trade regulations. Compliance with such regulations is costly and exposes NTIC to penalties for non-compliance. Other laws and regulations that can significantly impact NTIC include various anti-bribery laws, including the U.S. Foreign Corrupt Practices Act, laws restricting business with suspected terrorists and anti-boycott laws. Any failure to comply with applicable legal and regulatory obligations could impact NTIC in a variety of ways that include, but are not limited to, significant criminal, civil and administrative penalties, including imprisonment of individuals, fines and penalties, denial of export privileges, seizure of shipments and restrictions on certain business activities. Also, the failure to comply with applicable legal and regulatory obligations could result in the disruption of NTIC's shipping and sales activities.

Several factors, including implications of withdrawal by the U.S. from, or revision to, international trade agreements, foreign policy changes between the U.S. and other countries, weakened international economic conditions or the impact of sovereign debt defaults by certain European countries, could adversely affect our international net sales. Additionally, the expansion of our existing international operations and entry into additional international markets require significant management attention and financial resources. Many of the countries in which NTIC sells its products directly or indirectly through NTIC China, Zerust Brazil, Natur-Tec India, Zerust Mexico, NTI Asean, its joint ventures, distributors, representatives and agents are, to some degree, subject to political, economic and/or social instability. NTIC's international operations expose NTIC and its joint venture partners, distributors, representatives and agents to risks inherent in operating in foreign jurisdictions. These risks include:

- difficulties in managing and staffing international operations and the required infrastructure costs including legal, tax, accounting and information technology;
- the imposition of additional U.S. and foreign governmental controls or regulations, new trade restrictions and restrictions on the activities of foreign agents, representatives and distributors, the imposition of costly and lengthy export licensing requirements and changes in duties and tariffs, license obligations and other non-tariff barriers to trade;
- the imposition of U.S. and/or international sanctions against a country, company, person or entity with whom NTIC does business that would restrict or prohibit continued business with the sanctioned country, company, person or entity;
- pricing pressure that NTIC or its joint ventures, distributors, representatives and agents may experience internationally;
- laws and business practices favoring local companies;
- adverse currency exchange rate fluctuations;
- longer payment cycles and difficulties in enforcing agreements and collecting receivables through certain foreign legal systems;
- national and international conflicts, including foreign policy changes or terrorist acts;
- difficulties in enforcing or defending intellectual property rights;
- multiple, changing and often inconsistent enforcement of laws and regulations; and
- the potential payment of U.S. income taxes on certain earnings of joint ventures upon repatriation.

Furthermore, in June 2016, the United Kingdom held a referendum in which voters approved an exit from the European Union, commonly referred to as "Brexit." As a result of the referendum, negotiations have commenced to determine the future terms of the United Kingdom's relationship with the European Union, including the terms of trade between the United Kingdom and the European Union either during a transitional period or more permanently. Although it is unknown what those terms will be, it is possible that there will be greater restrictions on the movement of goods and people between the United Kingdom and European Union countries and increased regulatory complexities, which could affect NTIC's ability to sell its products in certain European Union countries. Brexit could lead to legal uncertainty and potentially divergent national laws and regulations as the United Kingdom determines which European Union laws to replace or replicate. Brexit could adversely affect European and worldwide economic and market conditions and could contribute to instability in global financial and foreign exchange markets, including volatility in the value of the British pound and Euro. In addition, other European countries may seek to conduct referenda with respect to continuing membership with the European Union. NTIC does not know to what extent these changes will impact its business. Any of these effects of Brexit, and others that NTIC cannot anticipate, could adversely affect its business, operations and financial results.

The operations of NTIC China may be adversely affected by China's evolving economic, political and social conditions.

The results of operations and future prospects of NTIC China may be adversely affected by, among other things, changes in China's political, economic and social conditions, changes in the relationship between China and its western trade partners, changes in policies of the Chinese government, changes in laws and regulations or in the interpretation of existing laws and regulations, changes in foreign exchange regulations, measures that may be introduced to control inflation, such as interest rate increases, and changes in the rates of methods of taxation. In addition, changes in demand could result from increased competition with local Chinese manufacturers who have cost advantages or who may be preferred suppliers for Chinese end users. Also, Chinese commercial laws, regulations and interpretations applicable to non-Chinese owned market participants, such as NTIC China, are continually changing. These laws, regulations and interpretations could impose restrictions on NTIC's and NTIC China's ownership or operations or NTIC's interests in China and could adversely affect NTIC's business, results of operations or financial condition.

Intellectual property rights are difficult to enforce in China, which could harm NTIC's business, results of operations or financial condition.

Chinese commercial law is relatively undeveloped compared with the commercial law in many of NTIC's other major markets and limited protection of intellectual property is available in China as a practical matter. Although NTIC takes precautions in the operation of NTIC China to protect NTIC's intellectual property, any local manufacturer of products that NTIC undertakes in China could subject NTIC to an increased risk that unauthorized parties will be able to copy or otherwise obtain or use NTIC's intellectual property, which could harm NTIC's business. NTIC may also have limited legal recourse in the event it encounters patent or trademark infringers, which could adversely affect NTIC's business, results of operations or financial condition.

Uncertainties with respect to the Chinese legal system may adversely affect the operations of NTIC China.

NTIC China is subject to laws and regulations applicable to foreign investment in China. There are uncertainties regarding the interpretation and enforcement of laws, rules and policies in China. The Chinese legal system is based on written statutes, and prior court decisions have limited precedential value. Because many laws and regulations are relatively new, and the Chinese legal system is still evolving, the interpretations of many laws, regulations and rules are not always uniform. Moreover, the relative inexperience of China's judiciary in many cases creates additional uncertainty as to the outcome of any litigation, and the interpretation of statutes and regulations may be subject to government policies reflecting domestic political agendas. Finally, enforcement of existing laws or contracts based on existing law may be uncertain and sporadic. For the preceding reasons, it may be difficult for NTIC or NTIC China to obtain timely or equitable enforcement of laws ostensibly designed to protect companies like NTIC or NTIC China, which could adversely affect NTIC's business, results of operations or financial condition.

Failure to comply with the U.S. Foreign Corrupt Practices Act could subject NTIC to, among other things, penalties and legal expenses that could harm its reputation and have a material adverse effect on its business, financial condition and results of operations.

NTIC is subject to the U.S. Foreign Corrupt Practices Act, or the FCPA, which generally prohibits covered entities and their intermediaries from engaging in bribery or making other prohibited payments to foreign officials for the purpose of obtaining or retaining business or other benefits. In addition, the FCPA imposes accounting standards and requirements on U.S. publicly-traded corporations and their foreign affiliates, which are intended to prevent the diversion of corporate funds to the payment of bribes and other improper payments, and to prevent the establishment of "off books" slush funds from which such improper payments can be made. NTIC also is subject to similar anticorruption legislation implemented in Europe under the Organization for Economic Co-operation and Development's Convention on Combating Bribery of Foreign Public Officials in International Business Transactions. NTIC and its joint ventures, distributors, independent representatives and agents operate in a number of jurisdictions that pose a high risk of potential violations of the FCPA and other anticorruption laws, based on measurements such as Transparency International's Corruption Perception Index, and NTIC utilizes a number of joint ventures, distributors, independent representatives and agents for whose actions NTIC could be held liable under the FCPA. NTIC informs its personnel, joint ventures, distributors, independent representatives and agents of the requirements of the FCPA and other anticorruption laws, including, but not limited to their reporting requirements. NTIC also has developed and will continue to develop and implement systems for formalizing its contracting processes, performing due diligence on agents and improving its recordkeeping and auditing practices regarding these regulations. However, there is no guarantee that NTIC's employees, joint ventures, distributors, independent representatives or other agents have not or will not engage in conduct undetected by NTIC's processes and for which NTIC might be held responsible under the FCPA or other anticorruption laws.

If NTIC's employees, joint ventures, distributors, third-party sales representatives or other agents are found to have engaged in such practices, NTIC could suffer severe penalties, including criminal and civil penalties, disgorgement and other remedial measures, including further changes or enhancements to its procedures, policies and controls, as well as potential personnel changes and disciplinary actions.

Certain private and foreign companies, including some of NTIC's competitors, are not subject to prohibitions as strict as those under the FCPA or, even if subjected to strict prohibitions, such prohibitions may be laxly enforced in practice. If NTIC's competitors engage in corruption, extortion, bribery, pay-offs, theft or other fraudulent practices, they may receive preferential treatment from personnel of some companies or from government officials, giving NTIC's competitors an advantage in securing business and which would put NTIC at a disadvantage.

Fluctuations in foreign currency exchange rates could result in declines in NTIC's earnings and changes in NTIC's foreign currency translation adjustments.

Because the functional currency of NTIC's foreign operations is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, Indian Rupee, Chinese Renminbi, South Korean Won and the English Pound against the U.S. dollar. NTIC's fees for services provided to its joint ventures and dividend distributions from these foreign entities are paid in foreign currencies; and thus, fluctuations in foreign currency exchange rates could result in declines in NTIC's earnings. Any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Economic uncertainty in developing markets could adversely affect NTIC's revenue and earnings.

NTIC conducts business, or is contemplating expansion, in developing markets with economies that tend to be more volatile than those in the United States and Western Europe. The risk of doing business in developing markets such as China, Brazil, India, Russia, the United Arab Emirates, Mexico and other economically volatile areas could adversely affect NTIC's operations and earnings. Such risks include the financial instability among customers in these regions, political instability, fraud or corruption and other non-economic factors such as irregular trade flows that need to be managed successfully with the help of the local governments. In addition, commercial laws in some developing countries can be vague, inconsistently administered and retroactively applied. If NTIC is deemed not to be in compliance with applicable laws in developing countries where NTIC conducts business, its prospects and business in those countries could be harmed, which could then have a material adverse impact on NTIC's operating results and financial position. NTIC's failure to successfully manage economic, political and other risks relating to doing business in developing countries and economically and politically volatile areas could adversely affect its business.

NTIC faces intense competition in almost all of its product lines, including from competitors that have substantially greater resources than NTIC does. No assurance can be provided that NTIC will be able to compete effectively, which would harm its business and operating results.

NTIC's products are sold in intense competitive markets throughout the world. This intense competition could result in pricing pressures, lower sales, reduced margins and lower market share. The principal competitive factors in NTIC's corrosion prevention solutions markets are pricing, product innovation, quality and reliability, product support, customer service and reputation. Additional competitive factors present in NTIC's bioplastics business are brand awareness, distribution network, product availability, product offering, shelf life and place of manufacture. NTIC often competes with numerous manufacturers, many of which have substantially greater financial, marketing, and other resources than NTIC. As a result, they may be able to adapt more quickly than NTIC to new or emerging technologies, industry trends, and changes in customer requirements, or to devote greater resources to the promotion and sale of their products than NTIC. In addition, competition could increase if new companies enter the markets in which NTIC competes, especially when the barriers to entry are low, which may be true with respect to NTIC's rust and corrosion prevention business, or if existing competitors expand their product lines or intensify efforts within existing product lines. NTIC's current products, products under development and its ability to develop new and improved products may be insufficient to enable NTIC to compete effectively with its competitors. No assurance can be provided that NTIC will be able to compete effectively, which would harm its business and operating results. In particular, NTIC has experienced more intense competition with respect to many of its traditional ZERUST[®] rust and corrosion inhibiting products and services, which has led to decreased pricing and smaller margins for NTIC. Recently, NTIC has experienced lower margins on its contracts with Chinese automotive customers. NTIC anticipates that such intense competition likely will continue and that new competitors may emerge, including plastic extrusion companies, which would continue to adversely affect NTIC's operating results.

NTIC's ZERUST[®] rust and corrosion inhibiting products and services generate a significant portion of NTIC's net sales and the net sales of NTIC's joint ventures. Accordingly, if sales of these products and services were to decline, NTIC's operating results would be adversely affected.

NTIC's ZERUST[®] rust and corrosion inhibiting products and services generate a significant portion of NTIC's net sales and the net sales of NTIC's joint ventures. During fiscal 2018, 80.5% of NTIC's consolidated net sales were derived from sales of ZERUST[®] rust and corrosion inhibiting products and services. While the net sales of NTIC's joint ventures are not included in NTIC's net sales on NTIC's consolidated financial statements, NTIC's receipt of fees for services that NTIC provides to its joint ventures and NTIC's receipt of dividend distributions from its joint ventures is based primarily on the revenues and profitability of the joint ventures. Accordingly, if sales of these products and services were to decline due to increased competition, the introduction of a new disruptive technology or otherwise, NTIC's operating results would be adversely affected.

If NTIC is unable to continue to enhance its existing products and develop and market new products that respond to customer needs and achieve market acceptance, NTIC may experience a decrease in demand for its products, and its business could suffer.

One of NTIC's strategies is to enhance its existing products and develop and market new products that respond to customer needs. NTIC may not be able to compete effectively with its competitors unless NTIC can keep up with existing or new products or alternative technologies in the markets in which it competes. Product development requires significant research and development, financial and other resources. Although in the past NTIC has implemented lean manufacturing and other productivity improvement initiatives to provide investment funding for new products, no assurance can be provided that NTIC will be able to continue to do so in the future. Product improvements and new product introductions also require significant planning, design, development and testing at the technological, product, and manufacturing process levels and NTIC may not be able to timely develop product improvements or new products. NTIC's competitors' new products may beat NTIC's products to market, may be more effective or less expensive than NTIC's products or render NTIC's products obsolete. Any new products that NTIC may develop may not receive market acceptance or otherwise generate any meaningful net sales or profits for NTIC relative to its expectations, based on, among other things, existing and anticipated investments in manufacturing capacity and commitments to fund advertising, marketing, promotional programs, and research and development.

NTIC has invested and intends to continue to invest additional research and development and marketing efforts and resources into the application of its corrosion prevention solutions into the oil and gas industry and the continued launch of its Natur-Tec® resin compounds and finished products. No assurance can be provided, however, that NTIC's investments in these new markets and products will be successful and result in additional revenue to NTIC.

In an effort to increase net sales, NTIC has expanded the marketing of its corrosion prevention solutions into the oil and gas industry and its Natur-Tec® resin compounds and finished products. NTIC expects to continue to invest additional research and development and marketing efforts and resources into these strategic initiatives. No assurance can be provided, however, that such strategic initiatives will be successful or that NTIC will be successful in obtaining additional revenue as a result of them. The introduction of new products into new markets takes significant resources and there can be no assurance that NTIC is dedicating a sufficient amount of resources to ensure the success of these strategic initiatives. The sale of NTIC's ZERUST® rust and corrosion inhibiting products and services into the oil and gas industry, in particular, typically involves a long sales cycle, often including a one- to multi-year trial period with each customer and a slow integration process thereafter. This long sales cycle may cause NTIC's management, stockholders and investors to lose faith in the business opportunities for NTIC's ZERUST® rust and corrosion inhibiting products and services in the oil and gas industry.

The expansion of NTIC's corrosion prevention solutions into the oil and gas industry and the continued launch of NTIC's Natur-Tec® resin compounds and finished products may require additional capital in the future, which may not be available or may be available only on unfavorable terms. In addition, any equity financings may be dilutive to NTIC's stockholders.

The expansion of NTIC's corrosion prevention solutions into the oil and gas industry and the continued launch of NTIC's Natur-Tec® resin compounds and finished products will continue to require resources during fiscal 2019 and beyond. To the extent that NTIC's existing capital, including amounts available under its revolving line of credit, is insufficient to meet these requirements, NTIC may raise additional capital through financings or additional borrowings. Any equity or debt financing, if available at all, may be on terms that are not favorable to NTIC and any equity financings could result in dilution to NTIC's stockholders.

NTIC's strategy of expanding its corrosion prevention solutions into the oil and gas industry and continuing its launch of its Natur-Tec® bioplastics resin compounds and finished products is risky and may not prove to be successful, which could harm NTIC's operating results and financial condition.

NTIC's strategy of expanding its corrosion prevention solutions into the oil and gas industry and continuing its launch of its Natur-Tec® bioplastics resin compounds and finished products, either directly or indirectly through joint ventures and independent distributors and agents, is risky and subject to all of the risks inherent in the establishment of a new business enterprise, including:

- the absence of a significant operating history;
- the lack of commercialized products;
- the lack of market acceptance of new products;
- expected substantial and continual losses for such businesses for the foreseeable future;
- the lack of manufacturing experience and limited marketing experience;
- an expected reliance on third parties for the manufacture and commercialization of some of the products;
- a competitive environment characterized by numerous, well-established and well-capitalized competitors;
- insufficient capital and other resources; and
- reliance on key personnel.

NTIC relies on others for its production and any interruptions of these arrangements could disrupt NTIC's ability to fill its customers' orders.

NTIC utilizes contract manufacturers for a significant portion of its production requirements. The majority of NTIC's manufacturing is conducted in the United States by contract manufacturers that also perform services for numerous other companies. NTIC does not have a guaranteed level of production capacity with any of its contract manufacturers. Qualifying new contract manufacturers is time consuming and might result in unforeseen manufacturing and operations problems. The loss of NTIC's relationships with its contract manufacturers or their inability to conduct their manufacturing and assembly services for NTIC as anticipated in terms of capacity, cost, quality and timeliness could adversely affect NTIC's ability to fill customer orders in accordance with required delivery, quality, and performance requirements, and thus adversely affect NTIC's net sales and other operating results.

NTIC's dependence on manufacturing and logistical services provided by contractors could give rise to product defect or warranty liability.

NTIC uses third party manufacturers to produce the majority of its products. In addition, NTIC relies upon certain contractors for logistical services. Although NTIC's arrangements with its contract manufacturers and contractors may contain provisions for warranty expense reimbursement, NTIC may remain responsible to its customers for warranty service in the event of product defects and could experience an unanticipated product defect or warranty liability. In addition, products defects could harm NTIC's reputation amongst its customers.

NTIC's dependence on key suppliers puts NTIC at risk of interruptions in the availability of its products, which could reduce its net sales and adversely affect its operating results and harm its reputation.

NTIC relies on suppliers for certain raw materials and components used in its products. For reasons of quality assurance, cost effectiveness or availability, NTIC procures certain raw materials and components from sole or limited source suppliers. NTIC generally acquires such raw materials and components through purchase orders placed in the ordinary course of business, and as a result, NTIC does not have a significant inventory of these materials and components and does not have any guaranteed or contractual supply arrangements with many of these suppliers for these materials and components. NTIC's dependence on third-party suppliers involves several risks, including limited control over pricing, availability, quality and delivery schedules, as well as manufacturing yields and costs. Suppliers of such raw materials and components may decide, or be required, for reasons beyond NTIC's control to cease supplying such raw materials and components to NTIC or to raise their prices.

Shortages of raw materials, quality control problems, production capacity constraints or delays by suppliers could negatively affect NTIC's ability to meet its production obligations and result in increased prices for affected parts. Any such shortage, constraint or delay may result in delays in shipments of products or components, which could adversely affect NTIC's net sales and other operating results, and its reputation. From time to time, materials and components used in NTIC's products are subject to allocation because of shortages of these materials and components.

Increases in prices for raw materials and components used in NTIC's products could adversely affect NTIC's operating results.

NTIC uses certain raw materials and components in its products, including in particular plastic resins, which are subject to price increases. Changes to international trade agreements could result in additional tariffs, duties or other charges on raw materials or components we import into the U.S. Increases in prices for raw materials and components used in NTIC's products could adversely affect NTIC's gross margins and other operating results.

The commercial success of NTIC's Natur-Tec[®] resin compounds and finished products depends on the widespread market acceptance of products manufactured with biobased and biodegradable resins.

Although there is a developed market for petroleum-based plastics, the market for "bio-plastics" which are plastics produced with biobased resins, which are derived from renewable resources such as corn or cellulosic/plant material or blends thereof, or plastics that are engineered to be fully biodegradable or both, is still developing. The commercial success of NTIC's Natur-Tec[®] resin compounds and finished products depends on the widespread market acceptance of products manufactured with biobased and biodegradable resins. It is currently difficult to assess or predict with any assurance the potential size, timing and viability of market opportunities for NTIC's Natur-Tec[®] resin compounds and finished products. The traditional plastics market sector is well-established with entrenched competitors with whom NTIC competes. Pricing for traditional plastics has been highly volatile in recent years, which drive, to some extent, the commercial and other support for bioplastics. While NTIC expects to be able to command a premium price for its Natur-Tec[®] resin compounds and finished products, a widening gap in the pricing for bioplastics versus petroleum-based plastics may reduce the size of the addressable market for NTIC's Natur-Tec[®] resin compounds and finished products. In addition, the growth of the market will create some pressure on price for applications today considered commodities, including in particular NTIC's current Natur-Tec[®] finished products.

NTIC's business, properties and products are subject to governmental regulation and taxes, compliance with which may require NTIC to incur expenses or modify its products or operations, and which may expose NTIC to penalties for non-compliance. Governmental regulation also may adversely affect the demand for some of NTIC's products and its operating results.

NTIC's business, properties and products are subject to a wide variety of international, federal, state and local laws, rules, taxes and regulations relating to the protection of the environment, natural resources, and worker health and safety and the use, management, storage, and disposal of hazardous substances, wastes and other regulated materials. These laws, rules and regulations may affect the way NTIC conducts its operations, and the failure to comply with these regulations could lead to fines and other penalties. Because NTIC owns and operates real property, various environmental laws also may impose liability on NTIC for the costs of cleaning up and responding to hazardous substances that may have been released on NTIC's property, including releases unknown to NTIC. These environmental laws and regulations also could require NTIC to pay for environmental remediation and response costs at third-party locations where NTIC disposed of or recycled hazardous substances. NTIC's future costs of complying with the various environmental requirements, as they now exist or may be altered in the future, could adversely affect NTIC's financial condition and operating results. NTIC is also subject to other international, federal and state laws, rules and regulations, the future non-compliance with which may harm NTIC's business or may adversely affect the demand for some of its products. Changes in laws and regulations, including changes in accounting standards and taxation changes, including tax rate changes, new tax laws, revised tax law interpretations, also may adversely affect NTIC's operating results.

U.S. federal income tax reforms could adversely affect NTIC's business, results of operations or financial conditions.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation referred to as the Tax Cuts and Jobs Act (Tax Reform Act). The Tax Reform Act makes broad and complex changes to the U.S. corporate income tax system and includes a Transition Toll Tax (Toll Tax), which is a one-time mandatory deemed repatriation tax on accumulated foreign subsidiaries' previously untaxed foreign earnings. The Toll Tax will be paid over an eight-year period, starting in 2018, and will not accrue interest. The Tax Reform Act also imposed a global intangible low-taxed income tax (GILTI), which is a new tax on certain off-shore earnings at an effective rate of 10.5% for tax years beginning after December 31, 2017 (increasing to 13.125% for tax years beginning after December 31, 2025) with a partial offset for foreign tax credits. NTIC continues to analyze the impact the Tax Reform Act may have on NTIC's business, results of operations or financial conditions. U.S Treasury regulations, administrative interpretations or court decisions interpreting the Tax Reform Act may require changes in NTIC's estimates, which could have a material adverse effect on NTIC's business, results of operations or financial conditions.

Fluctuations in NTIC's effective tax rate could have a significant impact on NTIC's financial position, results of operations or cash flows.

The mix of pre-tax income or loss among the tax jurisdictions in which NTIC operates that have varying tax rates could impact NTIC's effective tax rate. NTIC is subject to income taxes as well as non-income based taxes, in both the United States and various foreign jurisdictions. Judgment is required in determining the worldwide provision for income taxes, other tax liabilities, interest and penalties. Future events could change management's assessment. NTIC operates within multiple taxing jurisdictions and is subject to tax audits in these jurisdictions. These audits can involve complex issues, which may require an extended period of time to resolve. NTIC also has made assumptions about the realization of deferred tax assets. Changes in these assumptions could result in a valuation allowance for these assets. Final determination of tax audits or tax disputes may be different from what is currently reflected by NTIC's income tax provisions and accruals.

NTIC may grow its business through additional joint ventures, subsidiaries, alliances and acquisitions, which could be risky and harm its business.

One of NTIC's growth strategies may be to expand its business by entering into additional joint ventures and alliances and acquiring businesses, technologies and products that complement or augment NTIC's existing products. The benefits of a joint venture, alliance or acquisition may take more time than expected to develop, and NTIC cannot guarantee that any future joint ventures, alliances or acquisitions will in fact produce the intended benefits. In addition, joint ventures, alliances and acquisitions involve a number of risks, including:

- diversion of management's attention;
- difficulties in assimilating the operations and products of a new joint venture or acquired business or in realizing projected efficiencies, cost savings and revenue synergies;
- potential loss of key employees or customers of the new joint venture or acquired business or adverse effects on existing business relationships with suppliers and customers;
- adverse impact on overall profitability if the new joint venture or acquired business does not achieve the financial results projected in NTIC's valuation models;
- reallocation of amounts of capital from other operating initiatives and/or an increase in NTIC's leverage and debt service requirements to pay the joint venture capital contribution or the acquisition purchase price, which could in turn restrict NTIC's ability to access additional capital when needed or to pursue other important elements of NTIC's business strategy;
- inaccurate assessment of undisclosed, contingent or other liabilities or problems and unanticipated costs associated with the new joint venture or acquisition; and
- incorrect estimates made in the accounting for acquisitions, occurrence of non-recurring charges and write-off of significant amounts of goodwill that could adversely affect NTIC's operating results.

NTIC's ability to grow through joint ventures, alliances and acquisitions will depend, in part, on the availability of suitable opportunities at an acceptable cost, NTIC's ability to compete effectively for these opportunities and the availability of capital to complete such transactions.

NTIC relies on its joint ventures, distributors, manufacturer's sales representatives and other agents to market and sell its products.

In addition to its direct sales force, NTIC relies on its joint ventures, distributors, manufacturer's sales representatives and other agents to market and sell its products in the United States and internationally. NTIC's joint ventures, distributors, manufacturer's sales representatives and other agents might terminate their relationship with NTIC or devote insufficient sales efforts to NTIC's products. NTIC does not control its joint ventures, distributors, manufacturer's sales representatives and other agents and they may not be successful in implementing NTIC's marketing plans. NTIC's failure to maintain its existing relationships with these entities, or its failure to recruit and retain additional skilled joint venture partners, distributors, manufacturer's sales representatives and other agents could have an adverse effect on NTIC's operations. It is anticipated that several of NTIC's joint venture partners will retire during the next several years which will require a transition on the part of the joint venture as well as NTIC and could harm NTIC's relationship with the joint venture and NTIC's business.

NTIC may be subject to product liability claims or other claims arising out of the activities of its joint ventures, which could adversely affect NTIC and its business.

While NTIC is not aware of any specific potential risk beyond its initial investment in and any undistributed earnings of each of its joint ventures, there can be no assurance that NTIC will not be subject to lawsuits based on product liability claims or other claims arising out of the activities of its joint ventures. To mitigate the ramifications of such an occurrence, NTIC maintains liability insurance specifically applicable to its ownership positions in its joint venture arrangements in excess of any insurance the joint ventures may maintain. No assurance can be provided, however, that such insurance will be available or adequate in the event of a claim.

The sale of ZERUST[®] rust and corrosion inhibiting products into the oil and gas industry is especially risky in light of the hazards typically associated with such operations and the significant amount of potential liability involved, which could adversely affect NTIC's business if ZERUST[®] rust and corrosion inhibiting products are involved, even if the cause of such events was not related to NTIC's products.

Because NTIC sells its ZERUST[®] rust and corrosion inhibiting products into the oil and gas industry, NTIC is subject to some of the risks and hazards typically associated with such operations, including hazards such as fire, explosion, blowouts, cratering, unplanned gas releases and spills, each of which could be claimed to be attributed to the failure of NTIC's products to perform as anticipated. If such events occur and NTIC's products are involved, NTIC's business and operating results may suffer even if the cause of such events was not related to NTIC's products.

The sale of ZERUST[®] rust and corrosion inhibiting products into the oil and gas industry is somewhat seasonal and dependent upon oil prices.

In the past, NTIC has experienced some seasonality with respect to the sale of its ZERUST[®] rust and corrosion inhibiting products into the oil and gas industry, with sales during parts of the second and third fiscal quarters being adversely affected by winter in the United States. In addition, the sale of NTIC's ZERUST[®] rust and corrosion inhibiting products into the oil and gas industry, particularly in the United States, have been and may continue to be hampered by low global crude oil prices, which NTIC believes constrains capital improvement budgets of its existing and prospective customers and may result in personnel turnover at its oil and gas customers or prospects.

Severe weather could have a material adverse effect on our business.

Our business could be materially and adversely affected by severe weather. Our customers, including in particular our oil and gas customers, may have operations located in parts of the southern United States or other places and may be adversely affected by hurricanes and tropical storms, resulting in reduced demand for our products and services or increased operating costs. Furthermore, our customers and raw material suppliers' operations may be adversely affected by such hurricanes and other extreme or seasonal weather conditions. Adverse weather can also directly impede our own operations. Repercussions of severe weather conditions may include:

- curtailment of services or reduced demand for products;
- weather-related damage to facilities and equipment, resulting in suspension of operations;
- inability to deliver equipment, personnel and products to job sites in accordance with contract schedules or increased transportation or other operating costs; and
- loss of productivity.

These constraints could delay our operations and materially increase our operating and capital costs.

NTIC has limited staffing and will continue to be dependent upon key employees.

NTIC's success is dependent upon the efforts of a small management team and group of employees. NTIC's future success will depend in large part on its ability to retain its key employees and identify, attract and retain other highly qualified managerial, technical, research and development, sales and marketing and customer service personnel when needed. Competition for these individuals may be intense, especially in the markets in which NTIC operates. NTIC may not succeed in identifying, attracting and retaining these personnel. Inadequate performance by any of NTIC's limited staff could have a negative impact on the performance of the company. NTIC's current management, other than its President and Chief Executive Officer, does not have any material stock ownership in NTIC. In addition, none of NTIC's employees have any contractual obligation to maintain his or her employment with NTIC. The loss or interruption of services of any of NTIC's key personnel, including in particular its technical personnel, the inability to identify, attract or retain qualified personnel in the future, delays in hiring qualified personnel, or any employee slowdowns, strikes or similar actions could make it difficult for NTIC to manage its business and meet key objectives, which could harm NTIC's business, financial condition and operating results.

Given NTIC's limited resources, it may not effectively manage its growth.

NTIC's strategy to grow its business, including in particular its ZERUST[®] rust and corrosion inhibiting products for the oil and gas industry and its Natur-Tec[®] bio-plastic resin compounds and finished products, requires significant management time and operational and financial resources. There is no assurance that NTIC has the necessary operational and financial resources to manage its growth. This is especially true as it expands facilities and manufactures its products on a larger commercial scale. In addition, rapid growth in NTIC's headcount and operations may place a significant strain on its management, administrative, operational and financial infrastructure. Failure to adequately manage its growth could have a material and adverse effect on NTIC's business, financial condition and operating results. For example, NTIC's soil side bottom solutions for tanks require implementation teams comprised of both internal NTIC personnel and outside consulting firms. NTIC's failure to expand these implementation teams to service additional customers may limit NTIC's ability to grow this business. In addition, NTIC may not be successful in its strategy to grow its business.

Certain of NTIC's operations are subject to regulation by the U.S. Food and Drug Administration.

The manufacture, sale and use of NTIC's Natur-Tec[®] bio-plastic resin compounds are subject to regulation by the U.S. FDA. The FDA's regulations are concerned with substances used indirectly in food packaging materials, not with specific finished food packaging products. Thus, food and beverage containers are in compliance with FDA regulations if the components used in the food and beverage containers: (i) are approved by the FDA as indirect food additives for their intended uses and comply with the applicable FDA indirect food additive regulations; or (ii) are generally recognized as safe for their intended uses and are of suitable purity for those intended uses. NTIC believes that its Natur-Tec[®] resin compounds comply with all FDA requirements. However, failure to comply with FDA regulations could subject NTIC to administrative, civil or criminal penalties.

NTIC relies on its management information systems for inventory management, distribution and other functions. If these information systems fail to adequately perform these functions or if NTIC experiences an interruption in their operation, NTIC's business and operating results could be adversely affected.

The efficient operation of NTIC's business is dependent on its management information systems. NTIC relies on its management information systems to effectively manage accounting and financial functions; manage order entry, order fulfillment and inventory replenishment processes; and to maintain its research and development data. The failure of management information systems to perform as anticipated could disrupt NTIC's business and product development and could result in decreased sales, causing NTIC's business and operating results to suffer. In addition, NTIC's management information systems are vulnerable to damage or interruption from natural or man-made disasters, terrorist attacks and attacks by computer viruses or hackers, or power loss or computer systems, Internet, telecommunications or data network failure. Any such interruption could adversely affect NTIC's business and operating results.

NTIC's business could be negatively impacted by cyber security threats.

In the ordinary course of NTIC's business, NTIC uses its management information systems to store and access proprietary business information. NTIC faces various cyber security threats, including cyber security attacks to its information technology infrastructure and attempts by others to gain access to its proprietary or sensitive information. The procedures and controls NTIC uses to monitor these threats and mitigate its exposure may not be sufficient to prevent cyber security incidents. The result of these incidents could include disrupted operations, lost opportunities, misstated financial data, liability for stolen assets or information, increased costs arising from the implementation of additional security protective measures, litigation and reputational damage. Any remedial costs or other liabilities related to cyber security incidents may not be fully insured or indemnified by other means.

NTIC's reliance upon patents, trademark laws, trade secrets and contractual provisions to protect its proprietary rights may not be sufficient to protect its intellectual property from others who may sell similar products.

NTIC holds patents relating to various aspects of its products and believes that proprietary technical know-how is critical to many of its products. Proprietary rights relating to NTIC's products are protected from unauthorized use by third parties only to the extent that they are covered by valid and enforceable patents or are maintained in confidence as trade secrets. NTIC cannot be certain that it will be issued any patents from any pending or future patent applications owned by or licensed to NTIC or that the claims allowed under any issued patents will be sufficiently broad to protect its technology. In the absence of patent protection, NTIC may be vulnerable to competitors who attempt to copy NTIC's products or gain access to its trade secrets and know-how. NTIC's competitors may initiate litigation to challenge the validity of NTIC's patents, or they may use their resources to design comparable products that do not infringe NTIC's patents. NTIC may incur substantial costs if its competitors initiate litigation to challenge the validity of its patents or if it initiates any proceedings to protect its proprietary rights and if the outcome of any such litigation is unfavorable to NTIC, its business and operating results could be materially adversely affected.

In addition, NTIC relies substantially on trade secrets and proprietary know-how that it seeks to protect, in part, by confidentiality agreements with its employees, and consultants. These agreements may be breached, and NTIC may not have adequate remedies for any such breach. Even if these confidentiality agreements are not breached, NTIC's trade secrets may otherwise become known or be independently developed by competitors.

NTIC may not achieve its annual financial guidance or projected goals and objectives in the time periods that NTIC anticipates or announces publicly, which could have an adverse effect on NTIC's business and could cause its stock price to decline.

On a quarterly basis, NTIC typically provides projected annual financial information, including its anticipated annual net sales and net earnings. These financial projections are based on management's then-current expectations and typically do not contain any margin of error or cushion for any specific uncertainties, or for the uncertainties inherent in all financial forecasting. The failure to achieve such financial projections could have an adverse effect on NTIC's business, disappoint investors and analysts and cause its stock price to decline.

NTIC also sets goals and objectives for, and makes public statements regarding, the timing of certain accomplishments and milestones regarding its business, such as its progress in selling its ZERUST[®] rust and corrosion inhibiting products and services to customers in the oil and gas industry, the progress and timing of its various field trials with prospective customers in the oil and gas industry, its ability to increase sales of its Natur-Tec[®] resin compounds and finished products, and other developments and milestones. The actual timing of these events can vary dramatically due to a number of factors including without limitation the timing of the receipt of purchase orders, delays or failures in current field trials, the amount of time, effort and resources committed to the sales and marketing of NTIC's products and services by NTIC and its current and potential future distributors and agents and the uncertainties inherent in introducing new products and services. As a result, there can be no assurance that NTIC will succeed in achieving its projected goals and objectives in the time periods that NTIC anticipates or announces publicly. The failure to achieve such projected goals and objectives in the time periods that NTIC anticipates or announces publicly could have an adverse effect on NTIC's business, disappoint investors and analysts and cause its stock price to decline.

NTIC's quarterly results are typically unpredictable and subject to variation.

NTIC's quarterly operating results vary from quarter to quarter for a variety of reasons. For example, NTIC's quarterly sales to joint ventures can be affected by individual orders to joint ventures. Because of the typical size of individual orders to joint ventures and overall size of NTIC's net sales to joint ventures, the timing of one or more orders can affect materially NTIC's quarterly sales to joint ventures and the comparisons to prior year quarters. In addition, because of the typical size of individual orders and overall size of NTIC's net sales derived from sales of Natur-Tec[®] products, the timing of one or more orders can materially affect NTIC's quarterly sales of Natur-Tec[®] products and the comparisons to prior year quarters. Furthermore, since ZERUST[®] products for the oil and gas industry typically carry higher margins than other traditional ZERUST[®] products, the amount of sales of ZERUST[®] products for the oil and gas industry typically affects NTIC's overall margins. Such variability in operating results makes the prediction of NTIC's net sales, earnings and other operating results for each quarter difficult and increases the risk of unanticipated variations in quarterly operating results. NTIC's quarterly results have been and, in the future, may be below the expectations of public market analysts and investors.

NTIC is exposed to risks relating to its evaluation of its internal control over financial reporting as required by Section 404 of the Sarbanes-Oxley Act.

Changing laws, regulations and standards relating to corporate governance and public disclosure, including the Dodd-Frank Wall Street Reform and Consumer Protection Act and the Sarbanes-Oxley Act of 2002 and related and other regulations implemented by the SEC and the Nasdaq Stock Market, are challenging for small publicly-held companies, including NTIC. NTIC's efforts to comply with evolving laws, regulations and standards have resulted in, and are likely to continue to result in, significant general and administrative expenses and a diversion of management time and attention from revenue-generating activities to compliance activities. In particular, NTIC's efforts to comply with Section 404 of the Sarbanes-Oxley Act of 2002 and the related regulations regarding NTIC's assessment of its internal control over financial reporting have required and will continue to require the expenditure of significant financial and managerial resources. Although NTIC's management has concluded that NTIC's internal control over financial reporting was effective as of August 31, 2018, no assurance can be provided that NTIC's management will reach a similar conclusion as of any later date. NTIC's failure to maintain effective internal control over financial reporting may have an adverse effect on its stock price.

NTIC's compliance with accounting principles generally accepted in the United States of America and any changes in such principles might adversely affect NTIC's operating results and financial condition. Any requirement to consolidate NTIC's joint ventures could adversely affect NTIC's operating results and financial condition.

If there were a change in accounting rules and NTIC were required to fully consolidate its joint ventures or if NTIC's joint ventures otherwise would be required to be consolidated with NTIC, NTIC and the individual joint venture would incur significant additional costs. In addition, other accounting pronouncements issued in the future could have a material cost associated with NTIC's implementation of such new accounting pronouncements.

NTIC's business is subject to a number of other miscellaneous risks that may adversely affect NTIC's operating results, financial condition or business.

NTIC's business is subject to a number of other miscellaneous risks that may adversely affect NTIC's operating results, financial condition or business, such as natural or man-made disasters, an unexpected loss of supply due to a force majeure event or global pandemics that may result in shortages of raw materials, higher commodity costs, an increase in insurance premiums and other adverse effects on NTIC's business; the continued threat of terrorist acts and war that may result in heightened security and higher costs for import and export shipments of components or finished goods; and the ability of NTIC's management to adapt to unplanned events.

Risks Related to NTIC's Common Stock

The trading volume of NTIC's common stock is typically very low, leaving NTIC's common stock open to risk of high volatility.

The number of shares of NTIC's common stock being traded daily is often very low and on some trading days, there is no trading volume at all. During fiscal 2018, the daily trading volume ranged from zero shares to 47,000 shares. Any NTIC stockholder wishing to sell his, her or its stock may cause a significant fluctuation in the trading price of NTIC's common stock. In addition, low trading volume of a stock increases the possibility that, despite rules against such activity, the price of the stock may be manipulated by persons acting in their own self-interest. NTIC may not have adequate market makers and market making activity to prevent manipulation in its common stock.

The price and trading volume of NTIC's common stock has been, and may continue to be, volatile.

The market price and trading volume of NTIC's common stock price historically has fluctuated over a wide range. During fiscal 2018, the sale price of NTIC's common stock ranged from a low of \$15.75 per share to a high of \$41.90 per share, and the daily trading volume ranged from zero shares to 47,000 shares. It is likely that the price and trading volume of NTIC's common stock will continue to fluctuate in the future. The securities of small capitalization companies, including NTIC, from time to time experience significant price and volume fluctuations, often unrelated to the operating performance of these companies. Securities class action litigation is sometimes brought against a company following periods of volatility in the market price of its securities or for other reasons. NTIC may become the target of similar litigation, especially if NTIC fails to meet its annual projected financial guidance or lower its annual projected financial guidance. Securities litigation, whether with or without merit, could result in substantial costs and divert management's attention and resources, which could harm NTIC's business, financial condition, and operating results, as well as the market price of its common stock.

A large percentage of NTIC's outstanding common stock is held by insiders, and, as a result, the trading market for NTIC's common stock is not as liquid as the stock of other public companies.

As of November 9, 2018, NTIC had 4,542,177 shares of common stock outstanding, of which 21.0% of these outstanding shares were beneficially owned by directors, executive officers, principal stockholders and their respective affiliates. The stock of companies with a substantial amount of stock held by insiders is usually not as liquid as the stock of other public companies where insider ownership is not as concentrated. Thus, the trading market for shares of NTIC's common stock may not be as liquid as the stock of other public companies.

If securities or industry analysts do not publish research or reports about NTIC's business, or if they adversely change their recommendations regarding NTIC's common stock, the market price for NTIC's common stock and trading volume could decline.

The trading market for NTIC's common stock has been influenced by research or reports that industry or securities analysts publish about NTIC or its business. If one or more analysts who cover NTIC downgrade NTIC's common stock, the market price for NTIC's common stock would likely decline. If one or more cease coverage of NTIC or fail to regularly publish reports on NTIC, NTIC could lose visibility in the financial markets, which, in turn, could cause the market price or trading volume for NTIC's common stock to decline.

One of NTIC's principal stockholders beneficially owns a significant percentage of NTIC's outstanding common stock and is affiliated with NTIC's President and Chief Executive Officer and thus may be able to influence matters requiring stockholder approval, including the election of directors, and could discourage or otherwise impede a transaction in which a third party wishes to purchase NTIC's outstanding shares at a premium.

As of November 9, 2018, Inter Alia Holding Company, or Inter Alia, beneficially owned approximately 13.3% of NTIC's outstanding common stock. Inter Alia is an entity partially owned by G. Patrick Lynch, NTIC's President and Chief Executive Officer and a director, as well as two other members of the Lynch family. Mr. Lynch shares voting and dispositive power of shares of NTIC's common stock held by Inter Alia with the other owners. As a result of his share ownership through Inter Alia and his position as President and Chief Executive Officer and a director of NTIC, Mr. Lynch may be able to influence the affairs and actions of NTIC, including matters requiring stockholder approval, such as the election of directors and approval of significant corporate transactions. The interests of Mr. Lynch and Inter Alia may differ from the interests of NTIC's other stockholders. This concentration of ownership may have the effect of delaying, preventing or deterring a change in control of NTIC, could deprive NTIC's stockholders of an opportunity to receive a premium for their common stock as part of a sale or merger of NTIC and may negatively affect the market price of NTIC's common stock. Transactions that could be affected by this concentration of ownership include proxy contests, tender offers, mergers or other purchases of common stock that could give stockholders the opportunity to realize a premium over the then-prevailing market price for shares of NTIC's common stock.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

NTIC’s principal executive offices, production facilities and domestic research and development operations are located at 4201 Woodland Road, Circle Pines, Minnesota 55014. NTIC owns this real estate and building. NTIC also owns real estate and a building in Beachwood, Ohio, which it uses for office, manufacturing, laboratory and warehouse space. Additionally, NTIC has contract warehousing agreements in place in California and Indiana to hold and release stock products to customers. NTIC’s subsidiaries in Brazil, India, Mexico and China all lease office, warehouse and laboratory space. NTIC’s management considers its current properties suitable and adequate for its current and foreseeable needs.

Item 3. LEGAL PROCEEDINGS

On March 23, 2015, NTIC and NTI Asean LLC (NTI Asean) filed a lawsuit in Tianjin No 1 Intermediate People’s Court against two individuals, Tao Meng and Xu Hui, related to breaches of duties and contractual commitments owed to NTI Asean under certain agreements related to NTIC’s former joint venture in China, Tianjin Zerust Anti-Corrosion Technologies Ltd. (Tianjin Zerust). The lawsuit alleges, among other things, that Mr. Tao Meng and Xu Hui have engaged in self-dealing, usurped business opportunities, and received economic benefits that were required to go to Tianjin Zerust. As of August 31, 2018, NTIC is not able to reasonably estimate the amount of any recovery to NTI Asean, if any.

From time to time, NTIC is subject to various ongoing or threatened legal actions and proceedings, including those that arise in the ordinary course of business, which may include employment matters and breach of contract disputes. Such matters are subject to many uncertainties and to outcomes that are not predictable with assurance and that may not be known for extended periods of time. In the opinion of management, the outcome of such routine ongoing litigation is not expected to have a material adverse effect on NTIC’s results of operations or financial condition.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

Item 4A. EXECUTIVE OFFICERS OF THE REGISTRANT

The two individuals named below have been designated by NTIC’s Board of Directors as “executive officers” of NTIC. Their ages and the offices held, as of November 9, 2018, are as follows:

Name	Age	Position with NTIC
G. Patrick Lynch	51	President and Chief Executive Officer
Matthew C. Wolsfeld	44	Chief Financial Officer and Corporate Secretary

G. Patrick Lynch, an employee of NTIC since 1995, has been President since July 2005 and Chief Executive Officer since January 2006 and was appointed a director of NTIC in February 2004. From July 2005 to January 2006, Mr. Lynch served as Chief Operating Officer of NTIC. Mr. Lynch served as President of North American Operations of NTIC from May 2004 to July 2005. Prior to May 2004, Mr. Lynch held various positions with NTIC, including Vice President of Strategic Planning, Corporate Secretary and Project Manager. Mr. Lynch is also an officer and director of Inter Alia Holding Company, a holding company that is a significant stockholder of NTIC. Prior to joining NTIC, Mr. Lynch held positions in sales management for Fuji Electric Co., Ltd. in Tokyo, Japan and programming project management for BMW AG in Munich, Germany. Mr. Lynch received an M.B.A. degree from the University of Michigan Ross School of Business in Ann Arbor, Michigan.

Matthew C. Wolsfeld, an employee of NTIC since February 2001, has been NTIC's Chief Financial Officer since November 2001 and Corporate Secretary since November 2004. Mr. Wolsfeld was Controller of NTIC from May 2001 through November 2001. Prior to joining NTIC, Mr. Wolsfeld held an auditing position with PricewaterhouseCoopers LLP in Minneapolis, Minnesota from 1997 to 2001. Mr. Wolsfeld received a B.A. degree in Accounting from the University of Notre Dame and received his M.B.A. degree at the University of Minnesota, Carlson School of Business. Mr. Wolsfeld is a Certified Public Accountant.

Other corporate officers of NTIC, their ages and the offices held, as of November 9, 2018, are as follows:

Name	Age	Position with NTIC
Vineet R. Dalal	49	Vice President and Director – Global Market Development – Natur-Tec®
Gautam Ramdas	45	Vice President and Director – Global Market Development – Oil & Gas

Vineet R. Dalal, an employee of NTIC since 2004, has served as Vice President and Director – Global Market Development – Natur-Tec® since November 2005. Prior to joining NTIC, Mr. Dalal was a Principal in the Worldwide Product Development Practice of PRTM, a management consultancy to technology-based companies (now part of PricewaterhouseCoopers Management Consulting). In this position, Mr. Dalal consulted to several Fortune 500 companies, in the areas of product strategy, Product Lifecycle Management (PLM) and technology management. Prior to that, Mr. Dalal held positions in program management and design engineering at National Semiconductor Corporation in Santa Clara, California. Mr. Dalal received an M.B.A. degree from the University of Michigan Ross School of Business in Ann Arbor, Michigan. He also holds an M.S. degree in Electrical and Computer Engineering from Oregon State University, and a B.Eng. degree in Electronics Engineering from Karnatak University, India.

Gautam Ramdas, an employee of NTIC since 2005, has served as Vice President and Director – Global Market Development – Oil & Gas since 2005. Prior to joining NTIC, Mr. Ramdas was a Manager in the Strategic Change group of IBM Business Consulting Services. In this position, Mr. Ramdas led consulting engagements at several Fortune 500 companies, in the areas of service strategy, global supplier relationship management and supply chain streamlining. Mr. Ramdas held positions in the E-Commerce and Supply Chain strategy groups at PricewaterhouseCoopers Management Consulting, again providing consulting services for Fortune 500 clients. Prior to management consulting, Mr. Ramdas worked as a program manager and design engineer with Kinhill Engineers in Australia. He has also been involved in the start-up stage of successful small businesses in the United States and in India. Mr. Ramdas received an M.B.A. from the University of Michigan Ross School of Business in Ann Arbor, Michigan. He also holds a bachelor's degree in Mechanical Engineering from the College of Engineering, Guindy (Chennai), India.

PART II

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

Market Information

NTIC’s common stock is listed for trading on the Nasdaq Global Market under the symbol “NTIC.” The following table sets forth the high and low daily sales prices for NTIC’s common stock, as reported by the Nasdaq Global Market, for the fiscal quarter indicated:

	High	Low
Fiscal 2018		
Fourth Quarter	\$ 41.90	\$ 30.61
Third Quarter	33.00	21.41
Second Quarter	27.00	18.31
First Quarter	22.00	15.75
Fiscal 2017		
Fourth Quarter	\$ 18.50	\$ 14.95
Third Quarter	19.30	15.00
Second Quarter	15.85	12.55
First Quarter	14.25	12.50

Dividends

During fiscal 2018, the Company’s Board of Directors declared cash dividends on the following dates in the following amounts to the following holders of the Company’s common stock:

Declaration Date	Amount	Record Date	Payable Date
November 20, 2017	\$0.10	December 8, 2017	December 21, 2017
January 24, 2018	\$0.10	February 8, 2018	February 21, 2018
April 25, 2018	\$0.10	May 9, 2018	May 23, 2018
July 25, 2018	\$0.10	August 8, 2018	August 22, 2018

On October 24, 2018, NTIC’s Board of Directors declared a cash dividend of \$0.12 per share of NTIC’s common stock, payable on November 21, 2018 to stockholders of record on November 7, 2018. Although NTIC’s Board of Directors intends to declare regular quarterly cash dividends going forward, the payment of any future dividends will be determined by NTIC’s Board of Directors in light of conditions then existing, including NTIC’s earnings, financial condition, cash requirements, restrictions in financing agreements, business conditions and other factors.

Number of Record Holders

As of August 31, 2018, there were 167 record holders of NTIC’s common stock. This does not include shares held in “street name” or beneficially owned.

Recent Sales of Unregistered Equity Securities

NTIC did not sell any shares of its common stock or any other equity securities of NTIC that were not registered under the Securities Act of 1933, as amended, during the fourth quarter of fiscal 2018.

Issuer Purchases of Equity Securities

The following table shows NTIC's fourth quarter of fiscal 2018 stock repurchase activity.

Period	Total Number of Shares (or Units) Purchased	Average Price Paid Per Share (or Unit)	Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares (or Units) that May Yet Be Purchased Under the Plans or Programs
June 1, 2018 through June 30, 2018	0	N/A	0	(1)
July 1, 2018 through July 31, 2018	0	N/A	0	(1)
August 1, 2018 through August 31, 2018	0	N/A	0	(1)
Total	0	N/A	0	(1)(2)

- (1) On January 15, 2015, NTIC's Board of Directors authorized the repurchase of up to \$3,000,000 in shares of NTIC common stock through open market purchases or unsolicited or solicited privately negotiated transactions. This program has no expiration date but may be terminated by NTIC's Board of Directors at any time.
- (2) As of August 31, 2018, up to \$2,640,548 in shares of NTIC common stock remained available for repurchase under NTIC's stock repurchase program.

Item 6. SELECTED FINANCIAL DATA

The following tables set forth certain of NTIC's selected consolidated financial data as of the dates and for the years indicated. The selected consolidated financial data was derived from NTIC's consolidated financial statements. The audited consolidated financial statements as of August 31, 2018 and 2017 and for the fiscal years ended August 31, 2018 and 2017 are included elsewhere in this report. The audited consolidated financial statements as of August 31, 2016, 2015 and 2014 and for the fiscal years ended August 31, 2016, 2015 and 2014 are not included in this report. Historical results are not necessarily indicative of the results to be expected for any future period.

	Fiscal Year Ended August 31,				
	2018	2017	2016	2015	2014
Statements of Operations Data:					
Net sales, excluding joint ventures	\$ 48,516,749	\$ 36,346,645	\$ 30,211,660	\$ 27,491,392	\$ 23,601,514
Net sales, to joint ventures	2,908,072	3,222,478	2,721,905	2,831,301	3,224,594
Total net sales	51,424,821	39,569,123	32,933,565	30,322,693	26,826,108
Cost of goods sold	34,165,440	26,316,511	22,320,156	20,555,932	17,803,153
Gross profit	17,259,381	13,252,612	10,613,409	9,766,761	9,022,955
Equity in income from joint ventures	7,527,383	5,898,908	4,743,831	5,936,565	5,920,603
Fees for services provided to joint ventures	6,142,139	5,452,687	5,137,710	5,715,491	8,142,863
Total joint venture operations	13,669,522	11,351,595	9,881,541	11,652,056	14,063,466
Selling expenses	10,886,011	9,283,310	6,255,353	5,820,748	5,221,738
General and administrative expenses	8,500,490	7,807,563	8,232,369	8,399,146	6,801,545
Research and development expenses	3,524,953	2,912,393	4,724,596	4,047,279	4,368,752
Total operating expenses	22,911,454	20,003,266	19,212,318	18,267,173	16,392,035
Operating income	8,017,449	4,600,941	1,282,551	3,151,644	6,694,386
Interest income	99,463	43,539	42,115	34,835	11,617
Interest expense	(17,962)	(20,382)	(13,261)	(20,960)	(47,322)
Impairment on investment at carrying value	—	—	(1,883,668)	—	—
Other income	—	—	—	515	4,393
Income (loss) before income taxes	8,098,950	4,624,098	(572,182)	3,166,034	6,663,074
Income tax expense	876,103	699,519	626,120	648,674	1,124,662
Net income (loss)	7,222,847	3,924,579	(1,198,302)	2,517,360	5,538,412
Net income (loss) attributable to non-controlling interests	521,481	502,453	(330,788)	727,789	1,432,040
Net income (loss) attributable to NTIC	\$ 6,701,366	\$ 3,422,126	\$ (867,514)	\$ 1,789,571	\$ 4,106,372
Net income (loss) attributable to NTIC per common share:					
Basic	\$ 1.48	\$ 0.76	\$ (0.19)	\$ 0.40	\$ 0.92
Diluted	\$ 1.43	\$ 0.75	\$ (0.19)	\$ 0.38	\$ 0.90
Weighted-average common shares assumed outstanding:					
Basic	4,538,838	4,528,611	4,537,504	4,521,788	4,454,836
Diluted	4,685,202	4,577,359	4,537,504	4,649,060	4,579,498
Balance Sheet Data:					
Cash and cash equivalents	\$ 4,163,023	\$ 6,360,201	\$ 3,395,274	\$ 2,623,981	\$ 2,477,017
Available for sale securities	3,300,110	3,766,984	2,243,864	2,027,441	5,519,766
Total current assets	30,567,773	26,067,618	20,942,171	19,275,612	22,319,966
Total assets	63,549,233	56,612,693	51,070,050	51,565,648	54,057,775
Total current liabilities	7,730,182	4,894,617	3,994,102	3,671,841	4,466,655
Non-controlling interests	2,742,310	2,857,448	2,540,973	3,019,702	3,837,257
Total stockholders' equity	53,076,741	48,860,628	44,543,975	44,874,105	45,753,863
Total equity	55,819,051	51,718,076	47,075,948	47,893,807	49,591,120

	Fiscal Year Ended August 31,				
	2018	2017	2016	2015	2014
Other Financial Data:					
Net cash provided by (used in) operating activities	\$ 608,687	\$ 5,735,691	\$ 2,055,607	\$ (755,545)	\$ 7,422,912
Net cash (used in) provided by investing activities	(300,109)	(2,607,915)	(955,240)	1,901,224	7,457,380
Net cash used in by financing activities	(2,372,124)	(226,690)	(270,247)	(874,652)	(1,814,418)
Effect of exchange rate changes on cash and cash equivalents	(133,632)	63,839	(18,826)	(124,064)	11,646

Item 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This Management’s Discussion and Analysis provides material historical and prospective disclosures intended to enable investors and other users to assess NTIC’s financial condition and results of operations. Statements that are not historical are forward-looking and involve risks and uncertainties discussed under the heading “*Part I. Item 1. Business—Forward-Looking Statements*” and under the heading “*Part I. Item 1A. Risk Factors.*” The following discussion of the results of the operations and financial condition of NTIC should be read in conjunction with NTIC’s consolidated financial statements and the related notes thereto included under “*Part II. Item 8. Financial Statements and Supplementary Data.*”

This Management’s Discussion and Analysis is organized in the following major sections:

- **Business Overview.** This section provides a brief overview description of NTIC’s business, focusing in particular on developments during the most recent fiscal year.
- **NTIC’s Subsidiaries and Joint Venture Network.** This section provides a brief overview of NTIC’s subsidiaries and its joint venture network, the joint ventures which are considered individually significant to NTIC’s consolidated assets and income and how NTIC’s joint ventures are accounted for by NTIC.
- **Financial Overview.** This section provides a brief summary of NTIC’s financial results and financial condition for fiscal 2018 compared to 2017.
- **Sales and Expense Components.** This section provides a brief description of the significant line items in NTIC’s consolidated statements of operations.
- **Results of Operations.** This section provides an analysis of the significant line items in NTIC’s consolidated statements of operations.
- **Liquidity and Capital Resources.** This section provides an analysis of NTIC’s liquidity and cash flows and a discussion of NTIC’s financial condition and financial commitments.
- **Inflation and Seasonality.** This section describes the effects of inflation and seasonality, if any, on NTIC’s business and operating results.
- **Market Risk.** This section describes material market risks to which NTIC is subject.
- **Related Party Transactions.** This section describes any material related party transactions to which NTIC is a party.
- **Off-Balance Sheet Arrangements.** This section describes NTIC’s material off-balance sheet arrangements.

- **Critical Accounting Policies and Estimates.** This section discusses NTIC’s critical accounting policies and estimates which require NTIC to exercise subjective or complex judgments in their application. All of NTIC’s significant accounting policies, including its critical accounting estimates, are summarized in Note 1 to NTIC’s consolidated financial statements.
- **Recent Accounting Pronouncements.** This section references Note 2 to NTIC’s consolidated financial statements, which summarizes effect of recently issued accounting pronouncements on NTIC’s results of operations and financial condition.

Business Overview

NTIC develops and markets proprietary environmentally beneficial products and services in over 60 countries either directly or via a network of subsidiaries, joint ventures, independent distributors and agents. NTIC’s primary business is corrosion prevention marketed mainly under the ZERUST® brand. NTIC has been selling its proprietary ZERUST® products and services to the automotive, electronics, electrical, mechanical, military and retail consumer markets for over 40 years, and in recent years, has targeted and expanded into the oil and gas industry. NTIC also markets and sells a portfolio of biobased and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce NTIC’s customers’ carbon footprint and provide environmentally sound waste disposal options.

NTIC’s ZERUST® rust and corrosion inhibiting products include plastic and paper packaging, liquids, coatings, rust removers, cleaners, and diffusers, as well as engineered solutions designed specifically for the oil and gas industry. NTIC also offers worldwide on-site technical consulting for rust and corrosion prevention issues. NTIC’s technical service consultants work directly with the end users of NTIC’s ZERUST® rust and corrosion inhibiting products to analyze their specific needs and develop systems to meet their performance requirements. In North America, NTIC sells its ZERUST® corrosion prevention solutions through a network of independent distributors and agents supported by a direct sales force. Internationally, NTIC sells its ZERUST® corrosion prevention solutions through its wholly-owned subsidiary in China, NTIC (Shanghai) Co., Ltd. (NTIC China), its majority-owned joint venture holding company for NTIC’s joint venture investments in the Association of Southeast Asian Nations (ASEAN) region, NTI Asean LLC (NTI Asean), its majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A. (Zerust Brazil), and its wholly-owned subsidiary in Mexico, ZERUST-EXCOR MEXICO, S. de R.L. de C.V (Zerust Mexico), and joint venture arrangements in North America, Europe and Asia. NTIC also sells products directly to its joint venture partners through its wholly-owned subsidiary in Germany, NTIC Europe GmbH (NTI Europe).

One of NTIC’s strategic initiatives is to expand into and penetrate other markets for its ZERUST® corrosion prevention technologies. Consequently, for the past several years, NTIC has focused significant sales and marketing efforts on the oil and gas industry, as the infrastructure that supports that industry is typically constructed using metals that are highly susceptible to corrosion. NTIC believes that its ZERUST® corrosion prevention solutions will minimize maintenance downtime on critical oil and gas industry infrastructure, extend the life of such infrastructure and reduce the risk of environmental pollution due to corrosion leaks.

NTIC markets and sells its ZERUST® rust and corrosion prevention solutions to customers in the oil and gas industry across several countries either directly, through its subsidiaries or through its joint venture partners and other strategic partners. The sale of ZERUST® corrosion prevention solutions to customers in the oil and gas industry typically involves long sales cycles, often including multi-year trial periods with each customer and a slow integration process thereafter.

Natur-Tec[®] biobased and compostable plastics are manufactured using NTIC's patented and/or proprietary technologies and are intended to replace conventional petroleum-based plastics. The Natur-Tec[®] biopolymer resin compound portfolio includes formulations that have been optimized for a variety of applications including blown-film extrusion, extrusion coating, injection molding, and engineered plastics. These resin compounds are certified to be fully biodegradable in a composting environment and are currently being used to produce finished products including can liners, shopping and grocery bags, lawn and leaf bags, branded apparel packaging bags and accessories, and various foodservice ware items, such as disposable cutlery, drinking straws, food-handling gloves and coated paper products. In North America, NTIC markets its Natur-Tec[®] resin compounds and finished products primarily through a network of regional and national distributors as well as independent agents. NTIC continues to see significant opportunities for finished bioplastic products and, therefore, continues to strengthen and expand its North American distribution network for finished Natur-Tec[®] bioplastic products. Internationally, NTIC sells its Natur-Tec[®] resin compounds and finished products both directly and through its wholly-owned subsidiary in China, NTIC China, its majority-owned subsidiary in India, Natur-Tec India Private Limited (Natur-Tec India), and through distributors and certain joint ventures.

NTIC's Subsidiaries and Joint Venture Network

NTIC has ownership interests in six operating subsidiaries in North America, South America, Europe and Asia. The following table sets forth a list of NTIC's operating subsidiaries as of November 9, 2018, the country in which the subsidiary is organized and NTIC's ownership percentage in each subsidiary:

Subsidiary Name	Country	NTIC Percent (%) Ownership
NTIC (Shanghai) Co., Ltd	China	100%
NTI Asean LLC	United States	60%
Zerust Prevenção de Corrosão S.A.	Brazil	85%
ZERUST-EXCOR MEXICO, S. de R.L. de C.V	Mexico	100%
Natur-Tec India Private Limited	India	75%
NTIC Europe GmbH	Germany	100%

The results of these subsidiaries are fully consolidated in NTIC's consolidated financial statements.

NTIC participates in 20 active joint venture arrangements in North America, Europe and Asia. Each of these joint ventures generally manufactures and markets products in the geographic territory to which it is assigned. While most of NTIC's joint ventures exclusively sell rust and corrosion inhibiting products, some of the joint ventures also sell NTIC's Natur-Tec[®] resin compounds. NTIC has historically funded its investments in joint ventures with cash generated from operations.

NTIC's receives funds from its joint ventures as fees for services that NTIC provides to its joint ventures and as dividend distributions. The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany (EXCOR), NTIC recognizes an agreed upon quarterly fee for such services. NTIC recognizes equity income from each joint venture based on the overall profitability of the joint venture. Such profitability is subject to variability from quarter to quarter which, in turn, subjects NTIC's earnings to variability from quarter to quarter. The profits of each joint venture are shared by the respective joint venture owners in accordance with their respective ownership percentages. NTIC typically directly or indirectly owns 50% or less of each of its joint venture entities and thus does not control the decisions of these entities regarding whether to pay dividends and, if paid, how much they should be in a given year. The payment of a dividend by an entity is determined by a joint vote of the owners and is not at the sole discretion of NTIC.

NTIC accounts for the investments and financial results of its joint ventures in its financial statements utilizing the equity method of accounting.

NTIC considers EXCOR to be individually significant to NTIC's consolidated assets and income, and therefore, provides certain additional information regarding it in the notes to NTIC's consolidated financial statements and in this section of this report.

Financial Overview

NTIC's management, including its chief executive officer who is NTIC's chief operating decision maker, reports and manages NTIC's operations in two reportable business segments based on products sold, customer base and distribution center: ZERUST® products and services and Natur-Tec® products.

NTIC's consolidated net sales increased 30.0% during fiscal 2018 compared to fiscal 2017. This increase was primarily a result of increased demand of ZERUST® rust and corrosion inhibiting packaging products and services and the addition of new customers in North America and China and an increase in sales of Natur-Tec® products.

During fiscal 2018, 80.5% of NTIC's consolidated net sales were derived from sales of ZERUST® products and services, which increased 26.2% to \$41,374,305 during fiscal 2018 compared to \$32,789,283 during fiscal 2017. This increase was due to increased demand of ZERUST® rust and corrosion inhibiting packaging products and services and the addition of new customers in North America and China. NTIC has focused its sales efforts of ZERUST® products and services by strategically targeting customers with specific corrosion issues in new market areas, including the oil and gas industry and other industrial sectors that offer sizable growth opportunities. NTIC's consolidated net sales for fiscal 2018 included \$3,066,953 of sales made to customers in the oil and gas industry compared to \$1,720,162 for fiscal 2017. Overall demand for ZERUST® products and services depends heavily on the overall health of the markets in which NTIC sells its products, including the automotive, oil and gas, agriculture, and mining markets in particular.

During fiscal 2018, 19.5% of NTIC's consolidated net sales were derived from sales of Natur-Tec® products compared to 17.1% during fiscal 2017. Net sales of Natur-Tec® products increased 48.2% to \$10,050,516 during fiscal 2018 compared to fiscal 2017 primarily due to an increase in finished product sales in North America and finished product sales at NTIC's majority owned subsidiary in India, Natur-Tec India Private Limited (Natur-Tec India).

Cost of goods sold as a percentage of net sales decreased slightly to 66.4% during fiscal 2018 compared to 66.5% during fiscal 2017. This decrease was primarily as a result of increased net sales and cost reductions realized on the raw materials associated with NTIC's ZERUST® industrial products.

NTIC's equity in income from joint ventures increased 27.6% to \$7,527,383 during fiscal 2018 compared to \$5,898,908 during fiscal 2017. This increase was primarily due to a corresponding increase in net sales at the joint ventures, which were \$120,060,897 during fiscal 2018, compared to \$101,261,132 during fiscal 2017. The increase in the net sales of NTIC's joint ventures was due primarily to higher sales from existing customers for new and existing products due to increased demand. The increase in net sales of NTIC's joint ventures resulted in a corresponding increase in fees for services provided to joint ventures as such fees are a function of net sales of NTIC's joint ventures.

NTIC's total operating expenses increased \$2,908,188, or 14.5%, to \$22,911,454 during fiscal 2018 compared to \$20,003,266 in fiscal 2017. This increase was primarily due to an increase in NTIC's personnel expenses in North America and China, including an increase in the management bonus accrual of \$1,138,000.

NTIC spent \$3,524,953 in fiscal 2018 in connection with its research and development activities, compared to \$2,912,393 in fiscal 2017. NTIC anticipates that it will spend between \$3,200,000 and \$3,600,000 in fiscal 2019 on research and development activities.

Net income attributable to NTIC increased to \$6,701,366, or \$1.43 per diluted common share, for fiscal 2018 compared to net income of \$3,422,126, or \$0.75 per diluted common share, for fiscal 2017. This increase was primarily the result of the increase in net sales and corresponding gross profit, as well as the increase in income from joint venture operations, partially offset by the increase in operating expenses, as previously described. This increase was partially offset by the impact of the one-time provisional adjustment of \$700,000 related to the Tax Cuts and Jobs Act (Tax Reform Act), as described in more detail below.

NTIC anticipates that its quarterly net income will continue to remain subject to significant volatility primarily due to the financial performance of its subsidiaries and joint ventures and sales of its ZERUST[®] products and services into the oil and gas industry and Natur-Tec[®] bioplastics products, which sales fluctuate more on a quarterly basis than the traditional ZERUST[®] business. NTIC also anticipates that its operating results during the next few quarters will remain volatile primarily as a result of the changes in its Chinese operations.

NTIC's working capital, as defined as current assets less current liabilities, was \$22,837,591 at August 31, 2018, including \$4,163,023, in cash and cash equivalents and \$3,300,110 in available for sale securities, compared to \$21,173,001 at August 31, 2017, including \$6,360,201 in cash and cash equivalents and \$3,766,984 in available for sale securities.

During fiscal 2018, the Company's Board of Directors declared quarterly cash dividends of \$0.10 per share. On October 24, 2018, the Company's Board of Directors announced an increase in the quarterly cash dividend of 20% to \$0.12 per share.

Sales and Expense Components

The following is a description of the primary components of net sales and expenses:

Net Sales, Excluding Joint Ventures. NTIC derives net sales from the sale of its ZERUST[®] products and services and its Natur-Tec[®] products. NTIC sells its ZERUST[®] products and services and its Natur-Tec[®] products either directly, through its subsidiaries or via a network of joint ventures, independent distributors and agents. Net sales, excluding joint ventures represents net sales by NTIC either directly to end users or to distributors worldwide, but not sales to NTIC's joint ventures and not sales by NTIC's joint ventures. NTIC recognizes revenue from the sale of its products when persuasive evidence of an arrangement exists, the product has been delivered, the fee is fixed and determinable and collection of the resulting receivable is reasonably assured, all of which criteria are generally met upon shipment when risk of loss and title passes to the customer or distributor. NTIC records all amounts billed to customers and distributors in a sales transaction related to shipping and handling as sales and records costs related to shipping and handling in cost of goods sold.

Net Sales, To Joint Ventures. Net sales, to joint ventures represents net sales by NTIC to NTIC's joint ventures, but not sales by NTIC either directly to end users or to distributors or sales by NTIC's joint ventures. NTIC's revenue recognition policy for sales to its joint ventures is the same as NTIC's policy for sales to unaffiliated customers. NTIC recognizes revenue from the sale of its products to joint ventures when persuasive evidence of an arrangement exists, the product has been delivered, the fee is fixed and determinable and collection of the resulting receivable is reasonably assured, all of which criteria are generally met upon shipment when risk of loss and title passes to the joint venture.

Cost of Goods Sold. Most of NTIC's products are manufactured by third parties and its cost of goods sold for those products consists primarily of the price invoiced by its third-party vendors. For the portion of products that NTIC manufactures, NTIC's cost of goods sold for those products consists primarily of direct labor, allocated manufacturing overhead, raw materials and components. NTIC's margins on its Natur-Tec[®] resin compounds and finished products are generally smaller than its margins on its ZERUST[®] products and services, and NTIC's margins on its ZERUST[®] products and services sold into the oil and gas industry are generally greater than its margins on its traditional ZERUST[®] products and services.

Equity in Income from Joint Ventures. NTIC's equity in income from joint ventures consists of NTIC's share of equity in income from each joint venture based on the overall profitability of the joint ventures. Such profitability is subject to variability from quarter to quarter which, in turn, subjects NTIC's earnings to variability from quarter to quarter. Traditionally, a portion of the equity income recorded in a given fiscal year is paid to the owners of the joint venture entity during the following fiscal year through a dividend. The payment of a dividend by a joint venture entity is determined by a vote of the joint venture owners and is not at the sole discretion of NTIC. NTIC typically owns only 50% or less of its joint venture entities and thus does not control the decisions of these entities regarding whether to pay dividends and, if paid, how much they should be in a given year.

Fees for Services Provided to Joint Ventures. NTIC provides certain services to its joint ventures including consulting, legal, travel, insurance, technical and marketing services. NTIC receives fees for these services it provides to its joint ventures based primarily on the net sales by NTIC's joint ventures, the latter of which are not included in NTIC's net sales reflected on NTIC's consolidated statements of operations. The fees for services received by NTIC from its joint ventures are generally determined based on either a flat fee or a percentage of net sales by NTIC's joint ventures depending on local laws and tax regulations. With respect to EXCOR, NTIC receives an agreed upon fixed quarterly fee for such services. NTIC records revenue related to fees for services provided to joint ventures when earned, amounts are determinable, and collectability is reasonably assured. Under NTIC's agreements with its joint ventures in which the fees for services is described, fees are earned when the joint venture recognizes the revenue.

Selling Expenses. Selling expenses consist primarily of sales commissions and support costs for NTIC's direct sale and distribution system, and marketing costs.

General and Administrative Expenses. General and administrative expenses consist primarily of salaries and benefits, and other costs for NTIC's executives, accounting, stock-based compensation, finance, legal, information technology and human resources functions.

Research and Development Expenses. Research and development expenses include costs associated with the design, development, market analysis, lab testing and field trials and enhancements of NTIC's products and services. NTIC expenses all costs related to product research and development as incurred. Research and development expenses reflect the net amount after being reduced by reimbursements related to certain research and development contracts. With respect to such research and development contracts, NTIC accrues proceeds received under the contracts and offsets research and development expenses incurred in equal installments over the timelines associated with completion of the contracts' specific objectives and milestones.

Interest Income. Interest income consists of interest earned on investments, which typically consist of investment-grade, interest-bearing securities and money market accounts.

Interest Expense. Interest expense results primarily from interest associated with any borrowings under NTIC's line of credit with PNC Bank, National Association (PNC Bank).

Income Tax Expense. Income tax expense includes federal income taxes, foreign withholding taxes, income tax of consolidated entities in foreign jurisdictions, state income tax and changes to NTIC's deferred tax valuation allowance. NTIC utilizes the liability method of accounting for income taxes which requires an asset and liability approach to financial accounting and reporting for income taxes. Deferred income tax assets and liabilities are computed annually for differences between the financial statement and tax basis of assets and liabilities that will result in taxable or deductible amounts in the future, based on enacted tax laws and rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. NTIC records a tax valuation allowance when it is more likely than not that some portion or all of its deferred tax assets will not be realized. NTIC makes this determination based on all available evidence, including historical data and projections of future results. Income tax expense is the tax payable or refundable for the period plus or minus the change during the period in deferred tax assets and liabilities.

Results of Operations

Fiscal Year 2018 Compared to Fiscal Year 2017

The following table sets forth NTIC's results of operations for fiscal 2018 and fiscal 2017.

	Fiscal 2018	% of Net Sales	Fiscal 2017	% of Net Sales	\$ Change	% Change
Net sales, excluding joint ventures	\$ 48,516,749	94.3%	\$ 36,346,645	91.9%	\$ 12,170,104	33.5%
Net sales, to joint ventures	2,908,072	5.7%	3,222,478	8.1%	(314,406)	(9.8)%
Cost of goods sold	34,165,440	66.4%	26,316,511	66.5%	7,848,929	29.8%
Equity in income from joint ventures	7,527,383	14.6%	5,898,908	14.9%	1,628,475	27.6%
Fees for services provided to joint ventures	6,142,139	11.9%	5,452,687	13.8%	689,452	12.6%
Selling expenses	10,886,011	21.2%	9,283,310	23.5%	1,602,701	17.3%
General and administrative expenses	8,500,490	16.5%	7,807,563	19.7%	692,927	8.9%
Research and development expenses	3,524,953	6.9%	2,912,393	7.4%	612,560	21.0%

Net Sales. NTIC's consolidated net sales increased 30.0% to \$51,424,821 during fiscal 2018 compared to \$39,569,123 during fiscal 2017. NTIC's consolidated net sales to unaffiliated customers excluding NTIC's joint ventures increased 33.5% to \$48,516,749 during fiscal 2018 compared to \$36,346,645 during fiscal 2017. These increases were primarily a result of increased demand from ZERUST[®] products and services and the addition of new customers in North America and China and an increase in sales of Natur-Tec[®] products. Net sales to joint ventures decreased 9.8% to \$2,908,072 in fiscal 2018 compared to fiscal 2017. This decrease was primarily a result of timing differences on various shipments to joint ventures.

The following table sets forth NTIC's net sales by product segment for fiscal 2018 and fiscal 2017:

	Fiscal 2018	Fiscal 2017	\$ Change	% Change
Total ZERUST [®] sales	\$ 41,374,305	\$ 32,789,283	\$ 8,585,022	26.2%
Total Natur-Tec [®] sales	10,050,516	6,779,840	3,270,676	48.2%
Total net sales	\$ 51,424,821	\$ 39,569,123	\$ 11,855,698	30.0%

During fiscal 2018, 80.5% of NTIC's consolidated net sales were derived from sales of ZERUST[®] products and services, which increased 26.2% to \$41,374,305 compared to \$32,789,283 during fiscal 2017. This increase was due to increased demand of ZERUST[®] industrial products and services and the additional of new customers in North America and China and increased demand of ZERUST[®] oil and gas products and services. NTIC has strategically focused its sales efforts for ZERUST[®] products and services on customers with sizeable corrosion problems in industry sectors that offer sizable growth opportunities, including the oil and gas sector. Overall demand for ZERUST[®] products and services depends heavily on the overall health of the market segments to which NTIC sells its products, including the automotive, oil and gas, agriculture, and mining markets in particular.

The following table sets forth NTIC's net sales of ZERUST[®] products for fiscal 2018 and fiscal 2017:

	Fiscal 2018	Fiscal 2017	\$ Change	% Change
ZERUST [®] industrial net sales	\$ 35,399,280	\$ 27,846,643	\$ 7,552,637	27.1%
ZERUST [®] joint venture net sales	2,908,072	3,222,478	(314,406)	(9.8)%
ZERUST [®] oil & gas net sales	3,066,953	1,720,162	1,346,791	78.3%
Total ZERUST [®] net sales	<u>\$ 41,374,305</u>	<u>\$ 32,789,283</u>	<u>\$ 8,585,022</u>	<u>26.2%</u>

Demand for ZERUST[®] oil and gas products around the world depends primarily on market acceptance and the reach of NTIC's distribution network. Because of the typical size of individual orders and overall size of NTIC's net sales derived from sales of oil and gas products, the timing of one or more orders can materially affect NTIC's quarterly sales compared to prior fiscal year quarters. NTIC anticipates that its sales of ZERUST[®] products and services into the oil and gas industry will continue to remain volatile from quarter to quarter as sales are recognized due to the average order size and the timing of sales, as well as oil prices.

During fiscal 2018, 19.5% of NTIC's consolidated net sales were derived from sales of Natur-Tec[®] products, compared to 17.1% during fiscal 2017. Sales of Natur-Tec[®] products increased 48.2% to \$10,050,516 during fiscal 2018 compared to \$6,779,840 during fiscal 2017. This increase was primarily due to an increase in finished product sales in North America and finished products sales at NTIC's majority-owned subsidiary in India, Natur-Tec India.

Cost of Goods Sold. Cost of goods sold increased 29.8% in fiscal 2018 compared to fiscal 2017 primarily as a result of the increase in net sales as described above. Cost of goods sold as a percentage of net sales decreased slightly to 66.4% during fiscal 2018 compared to 66.5% during fiscal 2017, primarily due to product mix and the different gross profits realized on different products.

Equity in Income from Joint Ventures. NTIC's equity in income from joint ventures increased 27.6% to \$7,527,383 during fiscal 2018 compared to \$5,898,908 during fiscal 2017. This increase was primarily a result of improved profitability at the joint ventures. Of the total equity in income from joint ventures, NTIC had equity in income from joint ventures of \$5,549,765 attributable to EXCOR during fiscal 2018 compared to \$4,185,988 attributable to EXCOR during fiscal 2017. NTIC had equity in income of all other joint ventures of \$1,977,618 during fiscal 2018 compared to \$1,712,920 during fiscal 2017.

Fees for Services Provided to Joint Ventures. NTIC recognized fee income for services provided to joint ventures of \$6,142,139 during fiscal 2018 compared to \$5,452,687 during fiscal 2017, representing an increase of 12.6% or \$689,452. Fee income for services provided to joint ventures is traditionally a function of the sales made by NTIC's joint ventures. Total net sales of NTIC's joint ventures increased \$18,799,765 during fiscal 2018 compared to \$101,261,132 during fiscal 2017, representing an increase of 18.6%. Net sales of NTIC's joint ventures are not included in NTIC's product sales and are not included in NTIC's consolidated financial statements. Of the total fee income for services provided to joint ventures, fees of \$900,316 were attributable to EXCOR during fiscal 2018 compared to \$838,627 attributable to EXCOR during fiscal 2017.

Selling Expenses. NTIC's selling expenses increased 17.3% in fiscal 2018 compared to fiscal 2017 due primarily to increases in operating expenses associated with ZERUST[®] sales efforts, consisting primarily of selling and personnel expense. Selling expenses as a percentage of net sales decreased to 21.2% for fiscal 2018 compared to 23.5% in fiscal 2017 primarily due to the significant increase in net sales, partially offset by the increase in selling expenses, as previously described.

General and Administrative Expenses. NTIC's general and administrative expenses increased 8.9% in fiscal 2018 compared to fiscal 2017 primarily due to an increase in compensation expense and an increase in operating expenses at NTIC China. As a percentage of net sales, general and administrative expenses decreased to 16.5% for fiscal 2018 from 19.7% for fiscal 2017. This decrease was due primarily to the significant increase in net sales, partially offset by the increase in general and administrative expenses as previously described.

Research and Development Expenses. NTIC's research and development expenses increased 21.0% in fiscal 2018 compared to fiscal 2017 due primarily to increased research and development activities associated with the development of new products during the current fiscal year period.

Interest Income. NTIC's interest income increased to \$99,463 in fiscal 2018 compared to \$43,539 in fiscal 2017 due to increased levels of invested cash.

Interest Expense. NTIC's interest expense decreased to \$17,962 in fiscal 2018 compared to \$20,382 in fiscal 2017.

Income Before Income Tax Expense. NTIC incurred income before income tax expense equal to \$8,098,950 for fiscal 2018 compared to income before income tax expense of \$4,624,098 for fiscal 2017.

Income Tax Expense. Income tax expense was \$876,103 during fiscal 2018 compared to \$699,519 during fiscal 2017 for an effective tax rate of 10.8% and 15.1%, respectively. NTIC's annual effective income tax rate during fiscal 2018 and 2017 was lower than the statutory rate primarily due to NTIC's equity in income of joint ventures being recognized based on after-tax earnings of these entities.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act. The Tax Reform Act makes broad and complex changes to the U.S. tax code that has affected the Company's fiscal year ending August 31 2018, including, but not limited to, reducing the U.S. federal corporate tax rate from 35% to 21% effective January 1, 2018, generally eliminating U.S. federal income taxes on dividends received from foreign subsidiaries and joint ventures after December 31, 2017, and imposing a one-time deemed repatriation tax on certain unremitted earnings of foreign subsidiaries and joint ventures. The Company is subject to a blended U.S. tax rate of 25.7% for the fiscal year ending August 31, 2018 as a result of the reduction of the U.S. federal corporate tax rate from 35% to 21% effective January 1, 2018.

The Tax Reform Act resulted in an increase in income tax expense of \$632,523 recognized during fiscal 2018 due to the re-measurement of the Company's net deferred tax assets to reflect the reduction in the U.S. corporate income tax rate.

Net Income Attributable to NTIC. Net income attributable to NTIC increased to \$6,701,366, or \$1.43, per diluted common share, for fiscal 2018 compared to \$3,422,126, or \$0.75, per diluted common share, for fiscal 2017, an increase of \$3,279,240 or \$0.68 per diluted share. This increase was primarily the result of the increases in net sales and corresponding gross profit, as well as the increases in income from joint venture operations, partially offset by the increase in operating expenses. The increase was also partially offset by the significant impact of the one-time provisional adjustment of \$700,000 related to the Tax Reform Act. The impact from the enactment of the Tax Reform Act was driven by the provisional re-measurement of deferred tax assets and liabilities, which resulted in a non-cash discrete tax charge of \$700,000 during fiscal 2018.

Other Comprehensive Income - Foreign Currency Translations Adjustment. The changes in the foreign currency translations adjustment was due to the fluctuation of the U.S. dollar compared to the Euro and other foreign currencies during fiscal 2018 compared to fiscal 2017.

Liquidity and Capital Resources

Sources of Cash and Working Capital. As of August 31, 2018, NTIC's working capital was \$22,837,591, including \$4,163,023 in cash and cash equivalents and \$3,300,110 in available for sale securities, compared to working capital of \$21,173,001, including \$6,360,201 in cash and cash equivalents as of August 31, 2017 and \$3,766,984 in available for sale securities.

As of August 31, 2018, NTIC had a revolving line of credit with PNC Bank of \$3,000,000, with no amounts outstanding.

NTIC believes that a combination of its existing cash and cash equivalents, available for sale securities, forecasted cash flows from future operations, anticipated distributions of earnings, anticipated fees to NTIC for services provided to its joint ventures, and funds available through existing or anticipated financing arrangements, will be adequate to fund its existing operations, investments in new or existing joint ventures or subsidiaries, capital expenditures, debt repayments, cash dividends and any stock repurchases for at least the next 12 months. During fiscal 2019, NTIC expects to continue to invest in NTIC China, Zerust Mexico, NTI Europe, research and development and in marketing efforts and resources into the application of its corrosion prevention technology into the oil and gas industry and its Natur-Tec[®] bio-plastics business, although the amounts of these various investments are not known at this time. In order to take advantage of such new product and market opportunities to expand its business and increase its revenues, NTIC may decide to finance such opportunities by borrowing under its revolving line of credit or raising additional financing through the issuance of debt or equity securities. There is no assurance that any financing transaction will be available on terms acceptable to NTIC or at all, or that any financing transaction will not be dilutive to NTIC's current stockholders.

NTIC traditionally has used the cash generated from its operations, distributions of earnings from joint ventures and fees for services provided to its joint ventures to fund NTIC's new technology investments and capital contributions to new and existing subsidiaries and joint ventures. NTIC's joint ventures traditionally have operated with little or no debt and have been self-financed with minimal initial capital investment and minimal additional capital investment from their respective owners. Therefore, NTIC believes there is limited exposure by NTIC's joint ventures that could materially impact their respective operations and/or liquidity.

Uses of Cash and Cash Flow. Net cash provided by operating activities during fiscal 2018 was \$608,687, which resulted primarily from NTIC's net income, dividends received from joint ventures, and increases in accounts payable, accrued liabilities, depreciation and amortization, partially offset by NTIC's equity in income from joint ventures, increases in trade receivables excluding joint ventures, inventories, and prepaid expenses and other. Net cash provided by operating activities during fiscal 2017 was \$5,735,691, which resulted principally from dividends received from NTIC's joint ventures, net income, an increase in accounts payable and depreciation and amortization, partially offset by NTIC's equity in income from joint ventures and an increase in trade receivables.

NTIC's cash flows from operations are impacted by significant changes in certain components of NTIC's working capital, including inventory turnover and changes in receivables. NTIC considers internal and external factors when assessing the use of its available working capital, specifically when determining inventory levels and credit terms of customers. Key internal factors include existing inventory levels, stock reorder points, customer forecasts and customer requested payment terms, and key external factors include the availability of primary raw materials and sub-contractor production lead times. NTIC's typical contractual terms for trade receivables excluding joint ventures are traditionally 30 days and for trade receivables from its joint ventures are 90 days. Before extending unsecured credit to customers, excluding NTIC's joint ventures, NTIC reviews customers' credit histories and will establish an allowance for uncollectible accounts based upon factors surrounding the credit risk of specific customers and other information. Accounts receivable over 30 days are considered past due for most customers. NTIC does not accrue interest on past due accounts receivable. If accounts receivable in excess of the provided allowance are determined uncollectible, they are charged to selling expense in the period that determination is made. Accounts receivable are deemed uncollectible based on NTIC exhausting reasonable efforts to collect. NTIC's typical contractual terms for receivables for services provided to its joint ventures are 90 days. NTIC records receivables for services provided to its joint ventures on an accrual basis, unless circumstances exist that make the collection of the balance uncertain in which case the fee income will be recorded on a cash basis until there is consistency in payments. This determination is handled on a case by case basis.

NTIC experienced an increase in trade receivables as of August 31, 2018 compared to August 31, 2017. Trade receivables excluding joint ventures as of August 31, 2018 increased \$4,077,477 compared to August 31, 2017, primarily related to longer collection terms in India and China and the increase in overall sales in all territories. Outstanding trade receivables excluding joint ventures balances as of August 31, 2018 increased 15 days to an average of 75 days from balances outstanding from these customers as of August 31, 2017. Outstanding trade receivables from joint ventures as of August 31, 2018 increased \$69,754 compared to August 31, 2017 primarily due to the timing of payments. Outstanding balances from trade receivables from joint ventures decreased as of August 31, 2018 by an average of 17 days from an average of 96 days from balances outstanding from these customers compared to August 31, 2017. The average days outstanding of trade receivables from joint ventures as of August 31, 2018 were primarily due to the receivables balances at NTIC's joint ventures in South Korea and Thailand.

Outstanding receivables for services provided to joint ventures as of August 31, 2018 increased \$54,311 compared to August 31, 2017 and decreased by an average of 7 days from fees receivable outstanding as of August 31, 2018 to an average of 80 days compared to August 31, 2017.

Net cash used in investing activities during fiscal 2018 was \$300,109, which was primarily the result of additions to property and equipment and additions to patents, partially offset by proceeds from the sale of available for sale securities. Net cash used in investing activities during fiscal 2017 was \$2,607,915, which was primarily the result of cash used in the purchase of available for sale securities, additions to property and equipment, and additions to patents.

Net cash used in financing activities for fiscal 2018 was \$2,372,124, which resulted from dividends paid on NTIC common stock and a dividend paid by a consolidated subsidiary to a non-controlling interest, partially offset by proceeds from stock option exercises and purchases under NTIC's employee stock purchase plan. Net cash used in financing activities for fiscal 2017 was \$226,690, which resulted from a dividend paid to a non-controlling interest and the repurchase of common stock, partially offset by proceeds from NTIC's employee stock purchase plan and stock option exercises.

Share Repurchase Plan. On January 15, 2015, NTIC's Board of Directors authorized the repurchase of up to \$3,000,000 in shares of NTIC common stock through open market purchases or unsolicited or solicited privately negotiated transactions. This program has no expiration date but may be terminated by NTIC's Board of Directors at any time. As of August 31, 2018, up to \$2,640,548 in shares of NTIC common stock remained available for repurchase under NTIC's stock repurchase program.

Cash Dividends. During fiscal 2018, the Company's Board of Directors declared cash dividends on the following dates in the following amounts to the following holders of the Company's common stock:

Declaration Date	Amount	Record Date	Payable Date
November 20, 2017	\$0.10	December 8, 2017	December 21, 2017
January 24, 2018	\$0.10	February 8, 2018	February 21, 2018
April 25, 2018	\$0.10	May 9, 2018	May 23, 2018
July 25, 2018	\$0.10	August 8, 2018	August 22, 2018

On October 24, 2018, NTIC's Board of Directors declared a cash dividend of \$0.12 per share of NTIC's common stock, payable on November 21, 2018 to stockholders of record on November 7, 2018. Although NTIC's Board of Directors intends to declare regular quarterly cash dividends going forward, the payment of any future dividends will be determined by NTIC's Board of Directors in light of conditions then existing, including NTIC's earnings, financial condition, cash requirements, restrictions in financing agreements, business conditions and other factors.

Capital Expenditures and Commitments. NTIC spent \$680,502 on capital expenditures during fiscal 2018, which related primarily to the purchase of new equipment. NTIC expects to spend an aggregate of approximately \$600,000 to \$900,000 on capital expenditures during fiscal 2019, which it expects will relate primarily to the purchase of new equipment.

Contractual Obligations. Set forth below is information concerning NTIC's known contractual obligations as of August 31, 2018 that are fixed and determinable by year starting with the twelve months ending August 31, 2019.

Contractual Obligations	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
Rent obligations	\$ 214,460	\$ 131,840	\$ 79,166	\$ 3,454	\$ -0-
Total	\$ 214,460	\$ 131,840	\$ 79,166	\$ 3,454	\$ -0-

Inflation and Seasonality

Inflation in the United States and abroad historically has had little effect on NTIC. Although NTIC's business historically has not been seasonal, NTIC believes there is now some seasonality in its business.

Market Risk

NTIC is exposed to some market risk stemming from changes in foreign currency exchange rates, commodity prices and interest rates.

Because the functional currency of NTIC's foreign operations and investments in its foreign joint ventures is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, Indian Rupee, Chinese Renminbi, South Korean Won and the English Pound against the U.S. Dollar. NTIC's fees for services provided to joint ventures and dividend distributions from these foreign entities are paid in foreign currencies and thus fluctuations in foreign currency exchange rates could result in declines in NTIC's reported net income. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Some raw materials used in NTIC's products are exposed to commodity price changes. The primary commodity price exposures are with a variety of plastic resins.

At the option of NTIC, outstanding advances under NTIC's \$3,000,000 revolving line of credit with PNC Bank bear interest at either (a) an annual rate based on LIBOR plus 2.15% for the applicable LIBOR interest period selected by NTIC or (b) at the rate publicly announced by PNC Bank from time to time as its prime rate, and thus may subject NTIC to some market risk on interest rates. As of August 31, 2018, NTIC had no borrowings under the line of credit.

Related Party Transactions

Since NTIC's joint ventures are considered related parties, NTIC recorded sales to its joint ventures as a separate line item on the face of NTIC's consolidated statements of operations and recorded fees for services provided to its joint ventures as separate line items on the face of NTIC's consolidated statements of operations. NTIC also records as separate line items trade receivables from joint ventures, receivables for fees for services provided to joint ventures and NTIC's investments in joint ventures on its consolidated balance sheets.

NTIC established its joint venture network approximately 30 years ago as a method to increase its worldwide distribution network for ZERUST[®] rust and corrosion inhibiting products and services. NTIC participates, either directly or indirectly, in 20 active joint venture arrangements in North America, Europe and Asia. Each of these joint ventures generally manufactures and markets finished products in the geographic territory to which it is assigned. NTIC's joint venture partners are knowledgeable in the applicable environmental, labor, tax and other requisite regulations and laws of the respective foreign countries in which they operate, as well as the local customs and business practices. NTIC's revenue recognition policy for sales to its joint ventures is the same as its policy for sales to unaffiliated customers.

The fees for services provided to joint ventures are determined based on either a flat fee or a percentage of sales depending on local laws and tax regulations. With respect to NTIC's joint venture in Germany, EXCOR, NTIC recognizes an agreed upon quarterly fee for such services. NTIC records revenue related to fees for services provided to joint ventures when earned, amounts are determinable, and collectability is reasonably assured. Under NTIC's agreements with its joint ventures, fee amounts are earned when product is shipped from joint venture facilities. NTIC reviews the financial situation of each joint venture to assist in the likelihood of collections on amounts earned. From time to time, NTIC elects to account for such fees on a cash basis for certain joint ventures when uncertainty exists surrounding the collections of such fees, there are no fees being accounted for in this manner at present. The expenses incurred in support of its joint ventures are direct expenses that NTIC incurs related to its joint ventures and include such items as employee compensation and benefit expenses, travel expense, insurance, consulting expense, legal expense and lab supplies and testing expense.

See Note 13 to NTIC's consolidated financial statements for other related party transaction disclosures.

Off-Balance Sheet Arrangements

NTIC does not have any relationships with unconsolidated entities or financial partnerships, such as entities often referred to as structured finance or special purpose entities, which would have been established for the purpose of facilitating off-balance sheet financial arrangements. As such, NTIC is not materially exposed to any financing, liquidity, market or credit risk that could arise if NTIC had engaged in such arrangements.

Critical Accounting Policies and Estimates

The preparation of NTIC's consolidated financial statements requires management to make estimates and judgments that affect the reported amount of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. The Securities and Exchange Commission has defined a company's most critical accounting policies as those that are most important to the portrayal of its financial condition and results of operations, and which require the company to make its most difficult and subjective judgments, often as a result of the need to make estimates of matters that are inherently uncertain. Based on this definition, NTIC has identified the following critical accounting policies. Although NTIC believes that its estimates and assumptions are reasonable, they are based upon information available when they are made. Actual results may differ significantly from these estimates under different assumptions or conditions.

Principles of Consolidation

NTIC evaluates its voting and variable interests in entities on a qualitative and quantitative basis. NTIC consolidates entities in which it concludes it has the power to direct the activities that most significantly impact an entity's economic success and has the obligation to absorb losses or the right to receive benefits that could be significant to the entity. All such relationships are evaluated on an ongoing basis. The consolidated financial statements include the accounts of Northern Technologies International Corporation, its wholly-owned subsidiaries, Northern Technologies Holding Company, LLC, NTIC (Shanghai) Co., Ltd., NTIC Europe GmbH and ZERUST-EXCOR MEXICO, S. de R.L. de C.V, and NTIC's majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A., NTIC's majority-owned holding company, NTI Asean LLC, and NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited. NTIC's consolidated financial statements do not include the accounts of any of its joint ventures.

Investments in Joint Ventures and Recoverability of Investments in Joint Ventures

NTIC's investments in its joint ventures are accounted for using the equity method. NTIC assesses its joint ventures for impairment on an annual basis as of August 31 of each year as part of its fiscal year end analysis. In addition to the annual review for impairment, NTIC reviews the operating results of each joint venture on a quarterly basis in comparison to its historical operating results and its accrual for fees for services provided to joint ventures. If the operating results of a joint venture do not meet NTIC's financial performance expectations, an additional evaluation is performed on the joint venture. In addition to the annual assessments for impairment, non-periodic assessments for impairment may occur if cash remittances are less than accrued balances, a joint venture's management requests capital or other events occur suggesting anything other than temporary decline in value. If an investment were determined to be impaired, then a reserve would be created to reflect the impairment on the financial results of NTIC. NTIC's evaluation of its investments in joint ventures requires NTIC to make assumptions about future cash flows of its joint ventures. These assumptions require significant judgment and actual results may differ from assumed or estimated amounts.

Investment at Carrying Value

If NTIC is no longer able to exercise significant influence over operating and financial policy of a joint venture previously accounted for under the equity method, it maintains the investment at the carrying value as of the date that significant influence no longer exists and discontinues accruing the proportionate earnings or losses of the investment.

Investments are considered to be impaired when a decline in fair value is judged to be other-than-temporary. Fair value is calculated based on publicly available market information or other estimates determined by management. NTIC employs a systematic methodology on a quarterly basis that considers available quantitative and qualitative evidence in evaluating potential impairment of its investments. If the cost of an investment exceeds its fair value, NTIC evaluates, among other factors, general market conditions, credit quality of debt instrument issuers, the duration and extent to which the fair value is less than cost, and for equity securities, its intent and ability to hold, or plans to sell, the investment. NTIC also considers specific adverse conditions related to the financial health of and business outlook for the investee, including industry and sector performance, changes in technology, and operational and financing cash flow factors. Once a decline in fair value is determined to be other-than-temporary, an impairment charge is recorded to other income (expense) and a new cost basis in the investment is established.

Revenue Recognition

NTIC recognizes revenue from the sale of its products when persuasive evidence of an arrangement exists, the product has been delivered, the price is fixed and determinable and collection of the resulting receivable is reasonably assured. These criteria are met at the time of shipment when risk of loss and title pass to the customer, distributor or joint venture entity.

With respect to recording revenue related to fees earned for services provided to NTIC's joint ventures, NTIC recognizes revenue related to support of joint ventures when earned, amounts are determinable and collectability is reasonably assured. The support and services NTIC provides its joint ventures include consulting, travel, insurance, technical and marketing services to existing joint ventures, legal fees incurred in the establishment of new joint ventures, registration and promotion and legal defense of worldwide trademarks, and legal fees incurred in connection with the filing of patent applications. NTIC receives fees for these services it provides to its joint ventures based primarily on the net sales by NTIC's joint ventures. The fees for support services received by NTIC from its joint ventures are generally determined based on either a flat fee or a percentage of net sales by NTIC's joint ventures depending on local laws and tax regulations. Under NTIC's agreements with its joint ventures, amounts are earned when product is shipped from joint venture facilities. NTIC reviews the financial situation of each of its joint ventures to assist in the likelihood of collections on amounts earned. NTIC elects to account for these fees on a cash basis for certain joint ventures when uncertainty exists surrounding the collections of such fees.

Accounts Receivable

Trade receivables arise from sales of NTIC's products and services to NTIC's joint ventures and to unaffiliated customers. Trade receivables from joint ventures arise from sales NTIC makes to its joint ventures of products and the essential additives required to make ZERUST[®] industrial corrosion inhibiting products functional. Receivables for services to NTIC's joint ventures are contractually based primarily on a percentage of the sales of the joint ventures and are intended to compensate NTIC for services NTIC provides to its joint ventures, including consulting, legal, travel, insurance, technical and marketing services.

Payment terms for NTIC's unaffiliated customers are determined based on credit risk and vary by customer. NTIC typically offers standard payments terms to unaffiliated customers of net 30 days. Payment terms for NTIC's joint ventures also are determined based on credit risk; however, additional consideration also is given to the individual joint venture due to the transportation time associated with ocean delivery of most products and certain other factors. NTIC typically offers payment terms to joint ventures of net 90 days. NTIC does not accrue interest on past due accounts receivable. NTIC reviews the credit histories of its customers, including its joint ventures, before extending unsecured credit. NTIC values accounts and notes receivable, net of an allowance for doubtful accounts. Each quarter, NTIC prepares an analysis of its ability to collect outstanding receivables that provides a basis for an allowance estimate for doubtful accounts. In doing so, NTIC evaluates the age of its receivables, past collection history, current financial conditions of key customers and its joint ventures, and economic conditions. Based on this evaluation, NTIC establishes a reserve for specific accounts and notes receivable that it believes are uncollectible, as well as an estimate of uncollectible receivables not specifically known. Deterioration in the financial condition of any key customer or joint venture or a significant slowdown in the economy could have a material negative impact on NTIC's ability to collect a portion or all of the accounts and notes receivable. NTIC believes that an analysis of historical trends and its current knowledge of potential collection problems provide NTIC with sufficient information to establish a reasonable estimate for an allowance for doubtful accounts. However, since NTIC cannot predict with certainty future changes in the financial stability of its customers or joint ventures, NTIC's actual future losses from uncollectible accounts may differ from its estimates. In the event NTIC determined that a smaller or larger uncollectible accounts reserve is appropriate, NTIC would record a credit or charge to selling expense in the period that it made such a determination.

Recoverability of Long-Lived Assets

NTIC reviews its long-lived assets whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable and determines potential impairment by comparing the carrying value of the assets with expected net cash flows expected to be provided by operating activities of the business or related products. If the sum of the expected undiscounted future net cash flows were less than the carrying value, NTIC would determine whether an impairment loss should be recognized. An impairment loss would be measured by comparing the amount by which the carrying value exceeds the fair value of the asset.

Foreign Currency Translation (Accumulated Other Comprehensive Income)

The functional currency of each international joint venture and subsidiary is the applicable local currency. The translation of the applicable foreign currencies into U.S. dollars is performed for balance sheet accounts using exchange rates in effect at the balance sheet date and for revenue and expense accounts using an average monthly exchange rate. Translation gains or losses are reported as an element of accumulated other comprehensive income.

NTIC (excluding NTIC China, Zerust Brazil, Natur-Tec India, NTI Asean, Zerust Mexico, NTI Europe and its joint ventures) conducts all foreign transactions based on the U.S. dollar. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change the equity in income from joint ventures reflected in NTIC's consolidated statements of operations.

Stock-Based Compensation

NTIC recognizes compensation cost relating to share-based payment transactions, including grants of employee stock options and transactions under NTIC's employee stock purchase plan in its consolidated financial statements. That cost is measured based on the fair value of the equity or liability instruments issued. NTIC measures the cost of employee services received in exchange for stock options or other stock-based awards based on the grant-date fair value of the award, and recognizes the cost over the period the employee is required to provide services for the award.

Inventory Valuation

NTIC's inventories consist primarily of production materials and finished goods. NTIC purchases production materials and finished goods based on forecasted demand and records inventory at the lower of cost or market. Cost is determined by the first-in, first-out (FIFO) method. Management regularly assesses inventory valuation based on current and forecasted usage, demand and pricing, shelf life, customer inventory-related contractual obligations and other considerations. If actual results differ from management estimates with respect to the actual or projected selling of inventories at amounts less than their carrying amounts, NTIC would adjust its inventory balances accordingly.

Recent Accounting Pronouncements

See Note 2 to NTIC's consolidated financial statements for a discussion of recent accounting pronouncements.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

NTIC is exposed to some market risk stemming from changes in foreign currency exchange rates, commodity prices and interest rates.

Because the functional currency of NTIC's foreign operations and investments in its foreign joint ventures is the applicable local currency, NTIC is exposed to foreign currency exchange rate risk arising from transactions in the normal course of business. NTIC's principal exchange rate exposure is with the Euro, the Japanese Yen, Indian Rupee, Chinese Renminbi, South Korean Won and the English Pound against the U.S. Dollar. NTIC's fees for services provided to joint ventures and dividend distributions from these foreign entities are paid in foreign currencies and thus fluctuations in foreign currency exchange rates could result in declines in NTIC's reported net income. Since NTIC's investments in its joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates would be reflected as a foreign currency translation adjustment and would not change NTIC's equity in income from joint ventures reflected in its consolidated statements of operations. NTIC does not hedge against its foreign currency exchange rate risk.

Some raw materials used in NTIC's products are exposed to commodity price changes. The primary commodity price exposures are with a variety of plastic resins.

At the option of NTIC, outstanding advances under NTIC's \$3,000,000 revolving line of credit with PNC Bank bear interest at either (a) an annual rate based on LIBOR plus 2.15% for the applicable LIBOR interest period selected by NTIC or (b) at the rate publicly announced by PNC Bank from time to time as its prime rate, and thus may subject NTIC to some market risk on interest rates. As of August 31, 2018, NTIC had no borrowings under the line of credit.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

The following items are included herein:

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<u>Report of Independent Registered Public Accounting Firm</u>	<u>55</u>
<u>Consolidated Balance Sheets as of August 31, 2018 and 2017</u>	<u>57</u>
<u>Consolidated Statements of Operations for the years ended August 31, 2018 and 2017</u>	<u>58</u>
<u>Consolidated Statements of Comprehensive Income for the years ended August 31, 2018 and 2017</u>	<u>59</u>
<u>Consolidated Statements of Equity for the years ended August 31, 2018 and 2017</u>	<u>60</u>
<u>Consolidated Statements of Cash Flows for the years ended August 31, 2018 and 2017</u>	<u>61</u>
<u>Notes to Consolidated Financial Statements</u>	<u>62-83</u>

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders, Audit Committee and Board of Directors
Northern Technologies International Corporation and Subsidiaries
Circle Pines, Minnesota

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Northern Technologies International Corporation and Subsidiaries (the "Company") as of August 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, equity, and cash flows, for each of the two years in the period ended August 31, 2018, and the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of August 31, 2018, based on criteria established in *Internal Control – Integrated Framework: (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of August 31, 2018 and 2017, and the results of its operations and its cash flows for each of the two years in the period ended August 31, 2018, 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 August 31, 2018, based on criteria established in *Internal Control – Integrated Framework: (2013)* issued by COSO.

Basis for Opinions

The Company's management is responsible for these consolidated 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 the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. 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.

Definition and Limitations of Internal Control Over Financial Reporting

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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/ Baker Tilly Virchow Krause, LLP

We have served as the Company's auditor since 2004.

Minneapolis, Minnesota
November 13, 2018

**NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS - AUGUST 31, 2018 AND 2017**

	<u>August 31, 2018</u>	<u>August 31, 2017</u>
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 4,163,023	\$ 6,360,201
Available for sale securities	3,300,110	3,766,984
Receivables:		
Trade excluding joint ventures, less allowance for doubtful accounts of \$50,000 as of August 31, 2018 and \$40,000 at August 31, 2017	9,920,108	5,912,631
Trade joint ventures	761,506	691,752
Fees for services provided to joint ventures	1,357,255	1,302,944
Income taxes	273,333	137,256
Inventories	9,130,861	7,456,552
Prepaid expenses	1,661,577	439,298
Total current assets	<u>30,567,773</u>	<u>26,067,618</u>
PROPERTY AND EQUIPMENT, NET	<u>7,168,826</u>	<u>7,359,662</u>
OTHER ASSETS:		
Investments in joint ventures	22,950,995	20,035,074
Deferred income taxes	1,551,536	1,756,565
Patents and trademarks, net	1,156,257	1,322,089
Other	153,849	71,685
Total other assets	<u>25,812,637</u>	<u>23,185,413</u>
Total assets	<u>\$ 63,549,236</u>	<u>\$ 56,612,693</u>
LIABILITIES AND EQUITY		
CURRENT LIABILITIES:		
Accounts payable	\$ 3,905,034	\$ 2,676,610
Income taxes payable	70,892	—
Accrued liabilities:		
Payroll and related benefits	2,747,303	1,540,386
Other	1,006,953	677,621
Total current liabilities	<u>7,730,182</u>	<u>4,894,617</u>
COMMITMENTS AND CONTINGENCIES (Note 15)		
EQUITY:		
Preferred stock, no par value; authorized 10,000 shares; none issued and outstanding	—	—
Common stock, \$0.02 par value per share; authorized 15,000,000 shares as of August 31, 2018 and 10,000,000 shares as of August 31, 2017; issued and outstanding 4,541,303 and 4,535,018, respectively	90,826	90,700
Additional paid-in capital	14,619,777	14,163,509
Retained earnings	41,963,341	37,077,483
Accumulated other comprehensive loss	(3,597,199)	(2,471,064)
Stockholders' equity	<u>53,076,745</u>	<u>48,860,628</u>
Non-controlling interests	2,742,309	2,857,448
Total equity	<u>55,819,054</u>	<u>51,718,076</u>
Total liabilities and equity	<u>\$ 63,549,236</u>	<u>\$ 56,612,693</u>

See notes to consolidated financial statements.

**NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF OPERATIONS
YEARS ENDED AUGUST 31, 2018 AND 2017**

	<u>2018</u>	<u>2017</u>
NET SALES:		
Net sales, excluding joint ventures	\$ 48,516,749	\$ 36,346,645
Net sales, to joint ventures	2,908,072	3,222,478
Total net sales	51,424,821	39,569,123
Cost of goods sold	34,165,440	26,316,511
Gross profit	17,259,381	13,252,612
JOINT VENTURE OPERATIONS:		
Equity in income from joint ventures	7,527,383	5,898,908
Fees for services provided to joint ventures	6,142,139	5,452,687
Total joint venture operations	13,669,522	11,351,595
OPERATING EXPENSES:		
Selling expenses	10,886,011	9,283,310
General and administrative expenses	8,500,490	7,807,563
Research and development expenses	3,524,953	2,912,393
Total operating expenses	22,911,454	20,003,266
OPERATING INCOME	8,017,449	4,600,941
INTEREST INCOME	99,463	43,539
INTEREST EXPENSE	(17,962)	(20,382)
INCOME BEFORE INCOME TAX EXPENSE	8,098,950	4,624,098
INCOME TAX EXPENSE	876,103	699,519
NET INCOME	7,222,847	3,924,579
NET INCOME ATTRIBUTABLE TO NON-CONTROLLING INTERESTS	521,481	502,453
NET INCOME ATTRIBUTABLE TO NTIC	\$ 6,701,366	\$ 3,422,126
NET INCOME ATTRIBUTABLE TO NTIC PER COMMON SHARE:		
Basic	\$ 1.48	\$ 0.76
Diluted	\$ 1.43	\$ 0.75
WEIGHTED AVERAGE COMMON SHARES		
ASSUMED OUTSTANDING:		
Basic	4,538,838	4,528,611
Diluted	4,685,202	4,577,359
CASH DIVIDENDS DECLARED PER COMMON SHARE	\$ 0.40	\$ 0.00

See notes to consolidated financial statements.

**NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
YEARS ENDED AUGUST 31, 2018 AND 2017**

	<u>2018</u>	<u>2017</u>
NET INCOME	\$ 7,222,847	\$ 3,924,579
OTHER COMPREHENSIVE INCOME (LOSS) – FOREIGN CURRENCY TRANSLATION ADJUSTMENT	(1,162,755)	552,575
COMPREHENSIVE INCOME	6,060,092	4,477,154
COMPREHENSIVE INCOME ATTRIBUTABLE TO NON-CONTROLLING INTERESTS	484,861	516,475
COMPREHENSIVE INCOME ATTRIBUTABLE TO NTIC	<u>\$ 5,575,231</u>	<u>\$ 3,960,679</u>

See notes to consolidated financial statements.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF EQUITY
YEARS ENDED AUGUST 31, 2018 AND 2017

	STOCKHOLDERS' EQUITY						
	Common Stock		Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Non- Controlling Interests	Total Equity
	Shares	Amount					
BALANCE AT AUGUST 31, 2016	4,533,416	\$ 90,668	\$ 13,798,567	\$ 33,655,357	\$ (3,009,617)	\$ 2,540,973	\$ 47,075,948
Repurchase of common stock	(14,525)	(291)	(195,934)	—	—	—	(196,225)
Stock options exercised	12,000	240	122,759	—	—	—	122,999
Stock issued for employee stock purchase plan	4,127	83	46,453	—	—	—	46,536
Stock option expense	—	—	391,664	—	—	—	391,664
Dividend received by non- controlling interest	—	—	—	—	—	(200,000)	(200,000)
Comprehensive income	—	—	—	3,422,126	538,553	516,475	4,477,154
BALANCE AT AUGUST 31, 2017	4,535,018	90,700	14,163,509	37,077,483	(2,471,064)	2,857,448	51,718,076
Stock options exercised	4,410	88	15,345	—	—	—	15,433
Stock issued for employee stock purchase plan	1,875	38	27,913	—	—	—	27,951
Stock option expense	—	—	413,010	—	—	—	413,010
Dividends paid to shareholders	—	—	—	(1,815,508)	—	—	(1,815,508)
Dividend received by non- controlling interest	—	—	—	—	—	(600,000)	(600,000)
Comprehensive income	—	—	—	6,701,366	(1,126,135)	484,861	6,060,092
BALANCE AT AUGUST 31, 2018	4,541,303	\$ 90,826	\$ 14,619,777	\$ 41,963,341	\$ (3,597,199)	\$ 2,742,309	\$ 55,819,054

See notes to consolidated financial statements.

**NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION
AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED AUGUST 31, 2018 AND 2017**

	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	\$ 7,222,847	\$ 3,924,579
Adjustments to reconcile net income to net cash provided by operating activities:		
Stock-based compensation	413,010	391,664
Depreciation expense	853,555	787,111
Amortization expense	252,312	119,033
Equity in income from joint ventures	(7,527,383)	(5,898,908)
Dividends received from joint ventures	3,697,503	6,377,054
Gain (loss) on disposal of property and equipment	(10,723)	50,000
Deferred income taxes	186,808	(117,298)
Changes in current assets and liabilities:		
Receivables:		
Trade, excluding joint ventures	(4,372,619)	(1,092,187)
Trade, joint ventures	(69,754)	100,151
Fees for services provided to joint ventures	(54,311)	103,643
Income taxes	(191,090)	90,926
Inventories	(1,909,253)	305,268
Prepaid expenses and other	(1,317,269)	8,454
Accounts payable	1,641,132	(129,371)
Income tax payable	73,546	(27,297)
Accrued liabilities	1,720,376	742,869
Net cash provided by operating activities	<u>608,687</u>	<u>5,735,691</u>
CASH FLOWS FROM INVESTING ACTIVITIES:		
Additions to property and equipment	(680,502)	(922,270)
Purchase of available for sale securities	(1,518,596)	(3,000,000)
Proceeds from the sale of available for sale securities	1,985,470	1,476,880
Additions to patents	(86,481)	(162,525)
Net cash used in investing activities	<u>(300,109)</u>	<u>(2,607,915)</u>
CASH FLOWS FROM FINANCING ACTIVITIES:		
Dividend received by non-controlling interest	(600,000)	(200,000)
Repurchase of common stock	—	(196,225)
Dividends paid on NTIC common stock	(1,815,508)	—
Proceeds from employee stock purchase plan	27,951	46,536
Proceeds from exercise of stock options	15,433	122,999
Net cash used in financing activities	<u>(2,372,124)</u>	<u>(226,690)</u>
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	<u>(133,632)</u>	<u>63,841</u>
NET INCREASE IN CASH AND CASH EQUIVALENTS	<u>(2,197,178)</u>	<u>2,964,927</u>
CASH AND CASH EQUIVALENTS AT BEGINNING OF YEAR	<u>6,360,201</u>	<u>3,395,274</u>
CASH AND CASH EQUIVALENTS AT END OF YEAR	<u>\$ 4,163,023</u>	<u>\$ 6,360,201</u>

See notes to consolidated financial statements.

1. NATURE OF BUSINESS AND SIGNIFICANT ACCOUNTING POLICIES

Nature of Business – Northern Technologies International Corporation and Subsidiaries (the Company) develop and market proprietary environmentally beneficial products and services in over 60 countries either directly or via a network of joint ventures, independent distributors and agents. The Company's primary business is corrosion prevention marketed mainly under the ZERUST® brand. The Company has been selling its proprietary ZERUST® rust and corrosion inhibiting products and services to the automotive, electronics, electrical, mechanical, military and retail consumer markets for over 40 years, and more recently, has targeted and expanded into the oil and gas industry. The Company also sells a portfolio of biobased and certified compostable (fully biodegradable) polymer resin compounds and finished products under the Natur-Tec® brand. These products are intended to reduce the Company's customers' carbon footprint and provide environmentally sound disposal options. The Company's two operating segments are ZERUST and Natur-Tec.

The Company participates, either directly or indirectly, in 20 active joint venture arrangements in North America, Europe and Asia. Each of these joint ventures generally manufactures and markets products in the geographic territory to which it is assigned. While most of the Company's joint ventures exclusively sell rust and corrosion inhibiting products, some of the joint ventures also sell the Company's Natur-Tec® resin compounds and finished products. The profits of joint ventures are shared by the respective joint venture owners in accordance with their respective ownership percentages. The Company typically owns 50% or less of its joint venture entities and does not control the decisions of these entities, including dividend declaration or amount in any given year.

The Company has evaluated events occurring after the date of the consolidated financial statements for events requiring recording or disclosure in the financial statements.

Principles of Consolidation - NTIC evaluates its voting and variable interests in entities on a qualitative and quantitative basis. NTIC consolidates entities in which it concludes it has the power to direct the activities that most significantly impact an entity's economic success and has the obligation to absorb losses or the right to receive benefits that could be significant to the entity. The consolidated financial statements include the accounts of Northern Technologies International Corporation, its wholly-owned subsidiaries, Northern Technologies Holding Company, LLC, NTIC (Shanghai) Co., Ltd. (NTIC China), ZERUST-EXCOR MEXICO, S. de R.L. de C.V (Zerust Mexico), NTIC Europe GmbH (NTI Europe), and, NTIC's majority-owned subsidiary in India, Natur-Tec India Private Limited (Natur-Tec India), NTIC's majority-owned subsidiary in Brazil, Zerust Prevenção de Corrosão S.A. (Zerust Brazil) and NTIC's majority-owned holding company, NTI Asean LLC (NTI Asean). NTIC's consolidated financial statements do not include the accounts of any of its joint ventures.

Non-Controlling Interests – The Company owns 90% of Natur-Tec India, 85% of Zerust Brazil and 60% of NTI Asean. The remaining ownership is accounted for as non-controlling interests and reported as part of equity in the consolidated financial statements. The Company allocates gains and losses to the non-controlling interest even when such allocation might result in a deficit balance, reducing the losses attributed to the controlling interest, changes in ownership interests are treated as equity transactions if the Company maintains control.

Net Sales –The Company includes net sales to its joint ventures and net sales to unaffiliated customers as separate line items on its consolidated statements of operations. There are no sales originating from the Company’s joint ventures included in the amount, as the Company’s investments in its joint ventures are accounted for using the equity method.

Revenue Recognition – The Company recognizes revenue from the sale of its products when persuasive evidence of an arrangement exists, the product has been delivered, the price is fixed and determinable and collection of the resulting receivable is reasonably assured. These criteria are met when risk of loss and title pass to the customer, distributor or joint venture entity. Sales and use taxes charged to customers are reported on a net basis.

Trade Receivable – Payment terms for the Company’s unaffiliated customers are determined based on credit risk and vary by customer. The Company typically offers standard payment terms to unaffiliated customers of net 30 days. The Company does not accrue interest on past due accounts receivable. The Company reviews the credit histories of its customers before extending unsecured credit. The Company presents accounts and notes receivable, net of an allowance for doubtful accounts. Each quarter, the Company prepares an analysis of its ability to collect outstanding receivables that provides a basis for an allowance estimate for doubtful accounts. In doing so, the Company evaluates the age of its receivables, past collection history, current financial conditions of key customers and its joint ventures, and economic conditions. Based on this evaluation, the Company establishes a reserve for specific accounts and notes receivable that it believes are uncollectible, as well as an estimate of uncollectible receivables not specifically known. The Company believes that an analysis of historical trends and its current knowledge of potential collection problems provide the Company with sufficient information to establish a reasonable estimate for an allowance for doubtful accounts. In the event the Company determines that a smaller or larger uncollectible accounts reserve is appropriate; the Company records a credit or charge to selling expense in the period that it made such determination. Accounts receivable have been reduced by an allowance for uncollectible accounts of \$50,000 as of August 31, 2018 and \$40,000 as of August 31, 2017. Accounts are considered past due based on terms agreed upon between the Company and the customer. Accounts receivable are written-off only after all collection attempts have failed and are based on individual credit evaluation and specific circumstances of the customer.

Trade Receivables from Joint Ventures – Trade receivables from joint ventures arise from sales of products the Company makes to its joint ventures. Payment terms for the Company’s joint ventures also are determined based on credit risk; however, additional consideration also is given to the individual joint venture due to the transportation time associated with ocean delivery of most products and certain other factors. Generally, accounts receivable from the Company’s joint ventures unpaid after 90 days are considered past due. The Company does not accrue interest on past due balances. The Company periodically reviews amounts due from its joint ventures for collectability and based on past experience and continuous review of the balances due, determined an allowance for doubtful accounts related to its joint venture receivables is not necessary as of August 31, 2018 or 2017.

Fees for Services Provided to Joint Ventures – The Company provides services to its joint ventures including consulting, legal, travel, insurance, technical and marketing services. The Company receives fees for the services it provides to its joint ventures. The fees for services received by the Company from its joint ventures are generally based on either a flat fee or a percentage of net sales by the Company’s joint ventures depending on local laws and tax regulations. The Company recognizes revenues related to fees for services provided to its joint ventures when earned, amounts are determinable, and collectability is reasonably assured. Under the Company’s agreements with its joint ventures, amounts are earned when product is shipped from joint venture facilities. The Company reviews the financial situation of each of its joint ventures to assist in the likelihood of collections on amounts earned. The Company accounts for these fees on a cash basis if uncertainty exists surrounding the collection of such fees.

Cash and Cash Equivalents - The Company includes as cash and cash equivalents highly liquid, short-term investments with maturity of three months or less when purchased, which are readily convertible into known amounts of cash. The Company maintains its cash in high quality financial institutions. The balances, at times, may exceed federally insured limits.

Available for Sale Securities – Available for sale securities are recorded at fair value. Unrealized holding gains and losses on available for sale securities are excluded from earnings.

Inventories - Inventories are recorded at the lower of cost (first-in, first-out basis) or net realizable value.

Property and Depreciation - Property and equipment are stated at cost. Depreciation is computed using the straight-line method based on the estimated service lives of the various assets as follows:

Buildings and improvements (years)	5	-	30
Machinery and equipment (years)	3	-	10

Patents and Trademarks – Patents and Trademarks, including acquisition costs, are stated at cost, less accumulated amortization. Amortization is computed using the straight-line method over the estimated useful lives of the respective assets. Upon retirement, the cost of assets disposed, and the related accumulated amortization are removed from the accounts and any resulting gain or loss is credited or charged to operations.

Investments in Joint Ventures - Investments in the Company’s joint ventures are accounted for using the equity method. Under the equity method, investments are initially recorded at cost and are adjusted for dividends, distributed and undistributed earnings and losses, changes in foreign currency exchange rates and additional investments. In the event the Company’s share of joint venture’s cumulative losses exceeds the Company’s investment balance, the balance is reported at zero value until proportionate income exceeds the losses. The Company assesses its joint ventures for impairment on an annual basis as of August 31 of each year as part of its fiscal year end analysis. In addition to the annual review for impairment, the Company reviews the operating results of each joint venture on a quarterly basis in comparison to its historical operating results and its accrual of fees for services provided to joint ventures. If the operating results of a joint venture do not meet financial performance expectations, an additional evaluation is performed on the joint venture. The Company’s evaluation of its investments in joint ventures requires the Company to make assumptions about future cash flows of its joint ventures. These assumptions require significant judgment and actual results may differ from assumed or estimated amounts. All investments in joint ventures have positive equity as of August 31, 2018 and 2017. The Company considers any of its joint ventures to be significant and discloses entity specific financial information if the joint venture’s income or assets make up more than 20% of the Company’s total assets or income.

The Company classifies distributions received from its joint ventures based on the nature of the distributions, generally, as a return on its investment in operating activities on the consolidated statements of cash flows.

If the Company is no longer able to exercise significant influence over operating and financial policy of a joint venture previously accounted for under the equity method, it maintains the investment at the carrying value as of the date that significant influence no longer exists and discontinues accruing the proportionate earnings or losses of the investment.

Investments are considered to be impaired when a decline in fair value is judged to be other-than-temporary. Fair value is calculated based on publicly available market information or other estimates determined by management. The Company employs a systematic methodology on a quarterly basis that considers available quantitative and qualitative evidence in evaluating potential impairment of our investments. If the cost of an investment exceeds its fair value, the Company evaluates, among other factors, general market conditions, credit quality, the duration and extent to which the fair value is less than cost, and for equity securities, the Company’s intent and ability to hold, or plans to sell, the investment. The Company also considers specific adverse conditions related to the financial health of and business outlook for the investee, including industry and sector performance, changes in technology, and operational and financing cash flow factors. Once a decline in fair value is determined to be other-than-temporary, an impairment charge is recorded to other income (expense) and a new cost basis in the investment is established.

Recoverability of Long-Lived Assets - The Company reviews its long-lived assets whenever events or changes in circumstances indicate the carrying amount of the assets may not be recoverable. The Company determines potential impairment by comparing the carrying value of the assets with expected net cash flows expected to be provided by operating activities of the business or related products. If the sum of the expected undiscounted future net cash flows is less than the carrying value, the Company evaluates if an impairment loss should be recognized. An impairment loss is measured by comparing the amount by which the carrying value exceeds the fair value of the asset.

Income Taxes - The Company utilizes the asset and liability method of accounting for income taxes which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the consolidated financial statements. Deferred income tax assets and liabilities are determined based on the differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in operations in the period that includes the enactment date.

The Company records net deferred tax assets to the extent the Company believes these assets will more likely than not be realized. In making such a determination, the Company considers all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax-planning strategies, and results of recent operations. In the event the Company determines that it would be able to realize its deferred income tax assets in the future in excess of their net recorded amount, the Company makes an adjustment to the deferred tax asset valuation allowance, which would reduce the provision for income taxes.

The Company records uncertain tax positions on the basis of a two-step process whereby the Company determines whether it is more likely than not that the tax positions will be sustained based on the technical merits of the position and those tax positions that meet the more-likely-than-not recognition threshold. The Company recognizes the largest amount of tax benefit that is greater than 50 percent likely to be realized upon ultimate settlement with the related tax authority.

Foreign Currency Translation (Accumulated Other Comprehensive Income (Loss)) - The functional currency of NTIC China, Zerust Brazil, Natur-Tec India, Zerust Mexico, NTI Europe and each unconsolidated international joint venture is the applicable local currency. The translation of the applicable foreign currencies into U.S. dollars is performed for balance sheet accounts using exchange rates in effect at the balance sheet date and for revenue and expense accounts using an average monthly exchange rate. Translation gains or losses are reported as an element of other comprehensive income (loss).

The Company (excluding NTIC China, Zerust Brazil, Natur-Tec India, NTI Asean, Zerust Mexico, NTI Europe and its joint ventures) conducts all foreign transactions based on the U.S. dollar. Since investments in joint ventures are accounted for using the equity method, any changes in foreign currency exchange rates are reflected as a foreign currency translation adjustment and does not change the equity in income from joint ventures reflected in the Company's consolidated statements of operations.

Fair Value of Financial Instruments – The carrying value of cash and cash equivalents, available for sale securities, short-term accounts and notes receivable, notes payable, trade accounts payables, and other accrued expenses approximate fair value because of the short maturity of those instruments.

Shipping and Handling - The Company records all amounts billed to customers in a sales transaction related to shipping and handling as sales. The Company records costs related to shipping and handling in cost of goods sold.

Research and Development - The Company expenses all costs related to product research and development as incurred.

Common Stock – The Company issues authorized but unissued shares of common stock upon the exercise of stock options.

Stock-Based Compensation – The Company recognizes compensation cost relating to share-based payment transactions, including grants of employee stock options and transactions under the Company’s employee stock purchase plan, in its consolidated financial statements. That cost is measured based on the fair value of the equity or liability instruments issued. The Company measures the cost of employee services received in exchange for stock options and other stock-based awards based on the grant-date fair value of the award, and recognizes the cost over the period the employee is required to provide services for the award (generally the vesting term).

Subsequent Events – The Company has evaluated events occurring after the date of the consolidated financial statements for events requiring disclosure in the consolidated financial statements.

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

2. ACCOUNTING PRONOUNCEMENTS

New Accounting Pronouncements Adopted

In July 2015, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2015-11, “*Inventory*,” which modifies the subsequent measurement of inventories recorded under a first-in-first-out or average cost method. Under the new standard, such inventories are required to be measured at the lower of cost and net realizable value. The Company has adopted this new standard in the first quarter of fiscal 2018 on a prospective basis. The adoption of this standard did not have a material impact on the Company’s consolidated financial statements.

In March 2016, the FASB issued ASU No. 2016-07, “*Investments - Equity Method and Joint Ventures (Topic 323): Simplifying the Transition to the Equity Method of Accounting*.” Among other things, the amendments in ASU 2016-07 eliminate the requirement that when an investment qualifies for use of the equity method as a result of an increase in the level of ownership interest or degree of influence, an investor must adjust the investment, results of operations, and retained earnings retroactively on a step-by-step basis as if the equity method had been in effect during all previous periods that the investment had been held. The amendments require that the equity method investor add the cost of acquiring the additional interest in the investee to the current basis of the investor’s previously held interest and adopt the equity method of accounting as of the date the investment becomes qualified for equity method accounting. Therefore, upon qualifying for the equity method of accounting, no retroactive adjustment of the investment is required. The amendments require that an entity that has an available-for-sale equity security that becomes qualified for the equity method of accounting recognize through earnings the unrealized holding gain or loss in accumulated other comprehensive income at the date the investment becomes qualified for use of the equity method. The Company adopted this new standard in the first quarter of fiscal 2018 on a prospective basis. The adoption of this standard did not have a material impact on the Company’s consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, *Stock Compensation, (Topic 718)*, which is intended to simplify several aspects of the accounting for share-based payment award transactions. The Company adopted this new guidance in the first quarter of fiscal 2018. The adoption of this guidance did not have a material effect on the Company's consolidated financial statements.

Recently Issued Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board (FASB) issued guidance creating Accounting Standards Codification (ASC) Section 606, *Revenue from Contracts with Customers*, which establishes a comprehensive new model for the recognition of revenue from contracts with customers. This model is based on the core principle that revenue should be recognized to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The Company has performed a review of the requirements of the new guidance and has identified which of its revenue streams will be within the scope of ASC 606. The Company has applied the five-step model of the new standard to a selection of contracts within each of its revenue streams and has compared the results to its current accounting practices. The Company is expecting to utilize the modified retrospective transition method of adoption. The Company is continuing to work through the remaining steps of the adoption plan to facilitate adoption effective September 1, 2018. As part of this, the Company is assessing changes that might be necessary to information technology systems, processes, and internal controls to capture new data and address changes in financial reporting. The Company will be revising its revenue recognition accounting policy and expanding revenue disclosures to reflect the requirements of ASC 606, which include disclosures related to the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. Additionally, qualitative and quantitative disclosures are required about customer contracts, significant judgments and assets recognized from the costs to obtain or fulfill a contract. Based on its assessment to date, the Company does not expect the adoption of this standard to have a material impact on the way it recognizes revenue.

During February 2016, the FASB issued ASU No. 2016-02, *Leases*. ASU No. 2016-02 was issued to increase transparency and comparability among organizations by recognizing all lease transactions (with terms more than 12 months) on the balance sheet as a lease liability and a right-of-use asset (as defined). ASU No. 2016-02 is effective for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years, with earlier application permitted. Upon adoption, the lessee will apply the new standard retrospectively to all periods presented or retrospectively using a cumulative effect adjustment in the year of adoption. The guidance will be effective for the Company's first quarter of fiscal 2020. The Company is currently assessing the effect that ASU No. 2016-02 will have on its consolidated financial statements.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows, Classification of Certain Cash Receipts and Cash Payments*. ASU No. 2016-15 eliminates the diversity in practice related to the classification of certain cash receipts and payments for debt prepayments or extinguishment costs, the maturing of a zero-coupon bond, the settlement of contingent liabilities arising from a business combination, proceeds from insurance settlements, distributions from certain equity method investees and beneficial interests obtained in a financial asset securitization. ASU No. 2016-15 designates the appropriate cash flow classification, including requirements to allocate certain components of these cash receipts and payments among operating, investing and financing activities. The guidance is effective for fiscal years beginning after December 15, 2017. Early adoption is permitted. The Company is currently evaluating the effects of adopting ASU No. 2016-15 on its consolidated financial statements.

In February 2018, the FASB issued ASU No. 2018-02, *Income Statement – Reporting Comprehensive Income (Topic 220) Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which will allow a reclassification from accumulated other comprehensive income to retained earnings for the tax effects resulting from the Tax Cuts and Jobs Act (Tax Reform Act) that are stranded in accumulated other comprehensive income. This standard also requires certain disclosures about stranded tax effects. ASU No. 2018-02, however, does not change the underlying guidance that requires that the effect of a change in tax laws or rates be included in income from continuing operations. ASU No. 2018-02 will be effective for the Company’s fiscal year 2020, with the option for early adoption at any time prior to the effective date. It must be applied either in the period of adoption or retrospectively to each period in which the effect of the change in the U.S. federal corporate income tax rate in the Tax Reform Act is recognized. The Company is currently assessing the impact this new accounting guidance will have on its consolidated financial statements.

In December 2017, the Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin (SAB) No. 118 (as further clarified by FASB ASU No. 2018-05, *Income Taxes (Topic 740): “Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 118”*) to provide guidance for companies that may not have completed their accounting for the income tax effects of the Tax Reform Act in the period of enactment, which is the period that includes December 22, 2017. SAB No. 118 provides for a provisional one-year measurement period for entities to finalize their accounting for certain income tax effects related to the Tax Reform Act. SAB No. 118 provides guidance where: (i) the accounting for the income tax effect of the Tax Reform Act is complete and reported in the Tax Reform Act’s enactment period, (ii) the accounting for the income tax effect of the Tax Reform Act is incomplete and reported as provisional amounts based on reasonable estimates (to the extent determinable) subject to adjustments during a limited measurement period until complete, and (iii) accounting for the income tax effect of the Tax Reform Act is not reasonably estimable (no related provisional amounts are reported in the enactment period) and entities would continue to apply accounting based on tax law provisions in effect prior to the Tax Reform Act enactment until provisional amounts are reasonably estimable. SAB No. 118 requires disclosure of the reasons for incomplete accounting additional information or analysis needed, among other relevant information (see Note 14 - Income Taxes).

Although there are several other new accounting pronouncements issued or proposed by the FASB, which the Company has adopted or will adopt, as applicable, the Company does not believe any of these accounting pronouncements has had or will have a material impact on the Company’s consolidated financial position or operating results.

3. INVENTORIES

Inventories consisted of the following:

	<u>August 31, 2018</u>	<u>August 31, 2017</u>
Production materials	\$ 1,824,489	\$ 1,746,916
Finished goods	7,306,372	5,709,636
	<u>\$ 9,130,861</u>	<u>\$ 7,456,552</u>

4. PROPERTY AND EQUIPMENT, NET

Property and equipment, net consisted of the following:

	<u>August 31, 2018</u>	<u>August 31, 2017</u>
Land	\$ 310,365	\$ 310,365
Buildings and improvements	6,927,484	6,847,177
Machinery and equipment	4,680,072	4,171,387
	<u>11,917,921</u>	<u>11,328,929</u>
Less accumulated depreciation	(4,749,095)	(3,969,267)
	<u>\$ 7,168,826</u>	<u>\$ 7,359,662</u>

5. PATENTS AND TRADEMARKS, NET

Patents and trademarks, net consisted of the following:

	<u>August 31, 2018</u>	<u>August 31, 2017</u>
Patents and trademarks	\$ 2,824,440	\$ 2,737,959
Less accumulated amortization	(1,668,183)	(1,415,870)
	<u>\$ 1,156,257</u>	<u>\$ 1,322,089</u>

Patent and trademark costs are amortized over seven years. Costs incurred related to patents and trademarks are capitalized until filed and approved, at which time the amounts capitalized to date are amortized and any further costs, including maintenance costs, are expensed as incurred. Amortization expense was \$252,313 and \$119,033 for the years ended August 31, 2018 and 2017, respectively. Amortization expense is estimated to approximate \$260,000 in each of the next five fiscal years.

6. INVESTMENTS IN JOINT VENTURES

The consolidated financial statements of the Company's foreign joint ventures are initially prepared using the accounting principles accepted in the respective joint ventures' countries of domicile. Amounts related to foreign joint ventures reported in the below tables and the accompanying consolidated financial statements have subsequently been adjusted to conform with accounting principles generally accepted in the United States of America in all material respects. All material profits recorded that remain on the balance sheet on sales from the Company to its joint ventures and from joint ventures to other joint ventures have been eliminated for financial reporting purposes.

Financial information from the audited and unaudited financial statements of the Company's joint ventures in Germany, Excor Korrosionsschutz – Technologien und Produkte GmbH (EXCOR) and all the Company's other joint ventures, are summarized as follows:

	As of August 31, 2018		
	Total	EXCOR	All Other
Current assets	\$ 58,086,747	\$ 27,354,788	\$ 30,731,959
Total assets	62,803,261	30,033,750	32,769,511
Current liabilities	15,991,886	4,535,954	11,455,932
Noncurrent liabilities	403,653	—	403,653
Joint ventures' equity	46,407,722	25,497,796	20,909,926
Northern Technologies International Corporation's share of joint ventures' equity	22,950,995	12,748,899	10,195,263
Northern Technologies International Corporation's share of joint ventures' undistributed earnings	\$ 20,921,783	\$ 12,717,994	\$ 8,203,789

	Fiscal Year Ended August 31, 2018		
	Total	EXCOR	All Other
Net sales	\$ 120,060,897	\$ 47,537,949	\$ 72,522,948
Gross profit	53,348,459	25,584,666	27,763,793
Net income	15,300,276	11,095,523	4,204,753
Northern Technologies International Corporation's share of equity in income of joint ventures	7,527,383	5,549,765	1,977,618
Northern Technologies International Corporation's dividends received from joint ventures	\$ 3,697,503	\$ 2,357,544	\$ 1,339,959

	As of August 31, 2017		
	Total	EXCOR	All Other
Current assets	\$ 51,518,210	\$ 22,142,514	\$ 29,375,696
Total assets	55,633,891	24,301,194	31,332,697
Current liabilities	15,118,074	4,469,567	10,648,507
Noncurrent liabilities	181,210	—	181,210
Joint ventures' equity	40,334,607	19,831,627	20,502,980
Northern Technologies International Corporation's share of joint ventures' equity	20,035,074	9,915,816	10,119,258
Northern Technologies International Corporation's share of joint ventures' undistributed earnings	\$ 17,960,860	\$ 9,884,911	\$ 8,075,949

	Fiscal Year Ended August 31, 2017		
	Total	EXCOR	All Other
Net sales	\$ 101,261,132	\$ 39,849,757	\$ 61,411,375
Gross profit	44,861,300	21,133,632	23,727,668
Net income	11,839,933	8,369,728	3,470,205
Northern Technologies International Corporation's share of equity in income of joint ventures	5,898,908	4,185,988	1,712,920
Northern Technologies International Corporation's dividends received from joint ventures	\$ 6,377,054	\$ 5,379,062	\$ 997,992

The Company did not make any joint venture investments during fiscal 2018 or fiscal 2017.

7. CORPORATE DEBT

The Company has a revolving line of credit with PNC Bank, National Association (PNC Bank) of \$3,000,000. No amounts were outstanding under the line of credit as of both August 31, 2018 and 2017. At the option of the Company, outstanding advances under the line of credit bear interest at either (a) an annual rate based on LIBOR plus 2.15% for the applicable LIBOR interest period selected by the Company or (b) at the rate publicly announced by PNC Bank from time to time as its prime rate. The line of credit matures on January 7, 2019.

The line of credit is governed under a loan agreement. The loan agreement contains standard covenants, including affirmative financial covenants, such as the maintenance of a minimum fixed charge coverage ratio, and negative covenants, which, among other things, limit the incurrence of additional indebtedness, loans and equity investments, disposition of assets, mergers and consolidations and other matters customarily restricted in such agreements. Under the loan agreement, the Company is subject to a minimum fixed charge coverage ratio of 1.10:1.00. As of August 31, 2018, the Company was in compliance with all debt covenants.

The revolving credit facility allows the Company to request that PNC Bank issue letters of credit up to \$1,200,000. The Company did not have any letters of credit reserved against the available letters of credit balance as of August 31, 2018 and 2017 with PNC Bank. The availability of advances under the line of credit are reduced by the face amount of any letter of credit issued and outstanding (whether or not drawn) under the revolving credit facility.

As of August 31, 2018, the Company had \$88,831 of letters of credit with JP Morgan Chase Bank that are performance based and set to expire between 2020 and 2022.

8. STOCKHOLDERS' EQUITY

During fiscal 2018, the Company's Board of Directors declared cash dividends on the following dates in the following amounts to the following holders of the Company's common stock:

Declaration Date	Amount	Record Date	Payable Date
November 20, 2017	\$0.10	December 8, 2017	December 21, 2017
January 24, 2018	\$0.10	February 8, 2018	February 21, 2018
April 25, 2018	\$0.10	May 9, 2018	May 23, 2018
July 25, 2018	\$0.10	August 8, 2018	August 22, 2018

On January 15, 2015, the Company's Board of Directors authorized the repurchase of up to \$3,000,000 in shares of common stock through open market purchases or unsolicited or solicited privately negotiated transactions. This program has no expiration date but may be terminated by the Company's Board of Directors at any time. As of August 31, 2018, up to \$2,640,548 in shares of common stock remained available for repurchase under the stock repurchase program.

During fiscal 2018, the Company did not repurchase or retire any shares of its common stock.

During fiscal 2018, stock options to purchase an aggregate of 6,407 shares of common stock were exercised at a weighted average exercise price of \$11.59 per share, some of the shares were cashless exercises, the resulting net shares issued were 4,410.

During fiscal 2017, the Company repurchased and retired 14,525 shares of its common stock at an average price of \$13.51 per share. During fiscal 2017, stock options to purchase an aggregate of 12,000 shares of common stock at an exercise price of \$10.25 per share were exercised.

The Company granted stock options under the 2007 Plan to purchase an aggregate of 56,677 shares of its common stock to various employees and directors during fiscal 2017. The weighted average per share exercise price of the stock options is \$13.40, which was equal to the fair market value of the Company's common stock on the date of grant.

The Company held its 2018 Annual Meeting of Stockholders (2018 Annual Meeting) on January 12, 2018. At the 2018 Annual Meeting, a proposal to approve an amendment to the Company's Restated Certificate of Incorporation to increase the Company's authorized shares of common stock from 10,000,000 to 15,000,000 (Share Increase Amendment) was approved by the Company's stockholders by the required vote. The Share Increase Amendment was filed with the Office of the Secretary of State of the State of Delaware on January 16, 2018 and it became effective the same day. In determining that the Share Increase Amendment was approved by the required vote, votes cast by brokers, banks or other nominees without instruction from the beneficial owners of certain of our outstanding shares were counted in favor of the proposal in accordance with the rules of the New York Stock Exchange that govern how brokers may cast such votes. Because a disclosure in the definitive proxy statement for the 2018 Annual Meeting, which was filed on Schedule 14A with the Securities and Exchange Commission (SEC) on November 27, 2017 (2018 Proxy Statement), anticipated that brokers would not have discretion to vote for the proposal to approve the Share Increase Amendment, a question has been raised as to the validity of the vote taken on the proposal to approve the Share Increase Amendment. The Company believes that the Share Increase Amendment was properly approved and is effective. However, because the description of the authority of brokers to vote on proposals without instruction in the 2018 Proxy Statement may create some uncertainty as to the effect of the vote obtained at the 2018 Annual Meeting and out of an abundance of caution, the Company intends to ask its stockholders at either a special meeting or the next annual meeting of the Company's stockholders to ratify the filing and effectiveness of the Share Increase Amendment pursuant to Delaware law in order to eliminate any uncertainty related to the effectiveness of the Share Increase Amendment. The Company has not issued, or reserved for issuance, and will not issue, or reserve for issuance, any of the additional 5,000,000 authorized shares as part of the Share Increase Amendment unless the vote at the special or annual meeting of the Company's stockholders is in favor of the ratification of the Share Increase Amendment.

9. NET INCOME PER COMMON SHARE

Basic net income per common share is computed by dividing net income by the weighted average number of common shares outstanding. Diluted net income per share assumes the exercise of stock options using the treasury stock method, if dilutive.

The following is a reconciliation of the earnings per share computation:

Numerator:	August 31, 2018	August 31, 2017
Net income attributable to NTIC	\$ 6,701,366	\$ 3,422,126
Denominator:		
Basic-weighted shares outstanding	4,538,838	4,528,611
Weighted shares assumed upon exercise of stock options	146,364	48,748
Diluted – weighted shares outstanding	<u>4,685,202</u>	<u>4,577,359</u>
Basic earnings per share:	\$ 1.48	\$ 0.76
Diluted earnings per share:	\$ 1.43	\$ 0.75

The dilutive impact summarized above relates to the periods when the average market price of Company stock exceeded the exercise price of the potentially dilutive option securities granted. Earnings per common share were based on the weighted average number of common shares outstanding during the periods when computing the basic earnings per share. When dilutive, stock options are included as equivalents using the treasury stock market method when computing the diluted earnings per share. There were no shares excluded from the computation of diluted income per share as of August 31, 2018. Excluded from the computation of diluted earnings per share as of August 31, 2017 were options outstanding to purchase 48,067 shares of common stock.

10. STOCK-BASED COMPENSATION

The Company has two stock-based compensation plans under which stock options and other stock-based awards have been granted, the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan (the 2007 Plan) and the Northern Technologies International Corporation Employee Stock Purchase Plan (the ESPP). The Compensation Committee of the Board of Directors and the Board of Directors administer these plans.

The 2007 Plan provides for the grant of incentive stock options, non-statutory stock options, stock appreciation rights, restricted stock, stock unit awards, performance awards and stock bonuses to eligible recipients to enable the Company and its subsidiaries to attract and retain qualified individuals through opportunities for equity participation in the Company, and to reward those individuals who contribute to the achievement of the Company's economic objectives. Subject to adjustment as provided in the 2007 Plan, up to a maximum of 800,000 shares of the Company's common stock are issuable under the 2007 Plan. Options granted under the 2007 Plan generally have a term of ten years and become exercisable over a three- or four-year period beginning on the one-year anniversary of the date of grant. Options are granted at per share exercise prices equal to the market value of the Company's common stock on the date of grant. The Company issues new shares upon the exercise of options. As of August 31, 2018, only stock options and stock bonuses had been granted under the 2007 Plan.

The maximum number of shares of common stock of the Company available for issuance under the ESPP is 100,000 shares, subject to adjustment as provided in the ESPP. The ESPP provides for six-month offering periods beginning on September 1 and March 1 of each year. The purchase price of the shares is 90% of the lower of the fair market value of common stock at the beginning or end of the offering period. This discount may not exceed the maximum discount rate permitted for plans of this type under Section 423 of the Internal Revenue Code of 1986, as amended. The ESPP is compensatory for financial reporting purposes. The Company issued 985 and 1,098 shares on March 1, 2018 and 2017, and 890 and 3,029 shares on September 1, 2017 and 2016, respectively, under the ESPP.

The fair value of option grants is determined at date of grant, using the Black-Scholes option pricing model with the assumptions listed below. The volatility factor used in the Black-Scholes option pricing model is based on historical stock price fluctuations and the risk-free interest rate is based on U.S. treasury rates appropriate for the expected term. Dividend yield and expected volatility are estimated using historical amounts that are anticipated to be consistent with current values. Expected life of the option is based on the life of the option agreements. Based on these valuations, the Company recognized compensation expense of \$413,010 and \$391,664 during fiscal 2018 and fiscal 2017, respectively, related to the options that vested during such time. As of August 31, 2018, the total compensation cost for non-vested options not yet recognized in the Company's consolidated statements of operations was \$219,135. Stock-based compensation expense of \$153,901 and \$65,234 is expected to be recognized during fiscal 2019 and 2020, respectively, based on outstanding options as of August 31, 2018. Future option grants will impact the compensation expense recognized. Stock-based compensation expense is included in general and administrative expense on the consolidated statements of operations.

The fair value of each option grant is estimated on the grant date using the Black-Scholes option pricing model with the following assumptions and results for the grants:

	August 31, 2018	August 31, 2017
Dividend yield	2.18%	0.00%
Expected volatility	45.9%	46.0%
Expected life of option (years)	10	10
Weighted average risk-free interest rate	1.87%	1.63%

Stock option activity during the periods indicated is as follows:

	Number of Shares (#)	Weighted Average Exercise Price	Aggregate Intrinsic Value
Outstanding at August 31, 2016	283,181	\$ 13.95	
Options granted	56,677	13.40	
Options exercised	(12,000)	10.25	
Options terminated	(20,000)	15.21	
Outstanding at August 31, 2017	307,858	13.93	
Options granted	47,252	18.35	
Options exercised	(6,407)	11.59	
Options terminated	—	—	
Outstanding at August 31, 2018	<u>348,703</u>	<u>\$ 14.57</u>	\$ 7,737,763
Exercisable at August 31, 2018	<u>267,850</u>	<u>\$ 13.97</u>	\$ 6,007,547

The weighted average per share fair value of options granted during fiscal 2018 and fiscal 2017 was \$7.75 and \$7.69, respectively. The weighted average remaining contractual life of the options outstanding and exercisable options outstanding as of August 31, 2018 and 2017 was 6.27 years and 5.60 years, respectively.

11. SEGMENT AND GEOGRAPHIC INFORMATION

Segment Information

The Company's chief operating decision maker (CODM) is its Chief Executive Officer. The Company's business is organized into two reportable segments: ZERUST[®] and Natur-Tec[®]. The Company has been selling its proprietary ZERUST[®] rust and corrosion inhibiting products and services to the automotive, electronics, electrical, mechanical, military and retail consumer markets for over 40 years, and more recently, has targeted and expanded into the oil and gas industry. The Company also sells a portfolio of bio-based and compostable (fully biodegradable) polymer resins and finished products under the Natur-Tec[®] brand.

The following tables present the Company's business segment information in fiscal 2018 and fiscal 2017:

	Fiscal 2018	Fiscal 2017
ZERUST [®] net sales	\$ 41,374,305	\$ 32,789,283
Natur-Tec [®] net sales	10,050,516	6,779,840
Total net sales	<u>\$ 51,424,821</u>	<u>\$ 39,569,123</u>

The following table sets forth the Company's cost of goods sold for fiscal 2018 and fiscal 2017 by segment:

	Fiscal 2018	Fiscal 2017
Direct cost of goods sold		
ZERUST®	\$ 24,326,493	\$ 18,996,264
Natur-Tec®	7,303,439	4,925,061
Indirect cost of goods sold	2,535,508	2,395,186
Total net cost of goods sold	\$ 34,165,440	\$ 26,316,511

The Company utilizes product net sales and direct and indirect cost of goods sold for each product in reviewing the financial performance of a product type. Further allocation of Company expenses or assets, aside from amounts presented in the tables above, is not utilized in evaluating product performance, nor does such allocation occur for internal financial reporting.

Sales to the Company's joint ventures are included in the foregoing geographic and segment information, however, sales by the Company's joint ventures to other parties are not included. The foregoing geographic and segment information represents only sales and cost of goods sold recognized directly by the Company.

All joint venture operations including equity in income, fees for services and related dividends are related to ZERUST® products and services.

Geographic Information

Net sales by geographic location were as follows:

	Fiscal Year Ended August 31,	
	2018	2017
Inside the U.S.A. to unaffiliated customers	\$ 25,301,243	\$ 21,787,694
Outside the U.S.A. to:		
Joint ventures in which the Company is a shareholder directly and indirectly	2,908,072	3,222,478
Unaffiliated customers	23,215,506	14,558,951
	\$ 51,424,821	\$ 39,569,123

Net sales by geographic location are based on the location of the customer.

Fees for services provided to joint ventures by geographic location as a percentage of total fees for services provided to joint ventures during fiscal 2018 and fiscal 2017, respectively, were as follows:

	Fiscal 2018	Fiscal 2017
Germany	\$ 900,316	\$ 838,628
Poland	775,319	661,226
Japan	759,418	641,699
Sweden	600,336	472,819
France	532,565	410,842
Thailand	429,319	448,013
Czech	377,844	314,834
South Korea	370,171	376,002
India	365,018	322,677
United Kingdom	352,585	295,761
Finland	320,501	292,225
Other	358,747	377,961
	\$ 6,142,139	\$ 5,452,687

Sales to the Company's joint ventures are included in the foregoing segment and geographic information; however, sales by the Company's joint ventures to other parties are not included. The foregoing segment and geographic information represents only sales and cost of goods sold recognized directly by the Company.

See Note 6 for additional details on geographical information regarding equity in income from joint ventures.

The geographical distribution of total long-lived assets and net sales is as follows:

	At August 31, 2018	At August 31, 2017
China	\$ 205,490	\$ 228,458
Brazil	71,677	54,646
Germany	7,058	14,171
India	22,220	14,712
United States	6,862,381	7,047,675
Total long-lived assets	<u>\$ 7,168,826</u>	<u>\$ 7,359,662</u>

	Fiscal Year Ended August 31, 2018	Fiscal Year Ended August 31, 2017
China	\$ 12,507,039	\$ 7,225,659
Brazil	3,093,697	2,394,730
India	3,052,741	1,816,929
Other	7,470,101	6,344,111
United States	25,301,243	21,787,694
Total net sales	<u>\$ 51,424,821</u>	<u>\$ 39,569,123</u>

Long-lived assets located in China, Brazil, Germany and India consist of property and equipment. These assets are periodically reviewed to assure the net realizable value from the estimated future production based on forecasted sales exceeds the carrying value of the assets.

Sales to the Company's joint ventures are included in the foregoing segment and geographic information; however, sales by the Company's joint ventures to other parties are not included. The foregoing segment and geographic information represents only sales recognized directly by the Company and sold in that geographic territory.

All joint venture operations including equity in income, fees for services and related dividends are related to ZERUST[®] products and services.

12. RETIREMENT PLAN

The Company has a 401(k) employee savings plan. Employees who meet certain age and service requirements may elect to contribute up to 15% of their salaries. The Company typically contributes the lesser of 50% of the participant's contributions or 3.5% of the employee's salary. The Company recognized expense for the savings plan of \$219,379 and \$202,559 for fiscal 2018 and fiscal 2017, respectively.

13. RELATED PARTY TRANSACTIONS

During fiscal 2018 and fiscal 2017, the Company made consulting payments of \$144,000 and \$137,666, respectively, to Bioplastic Polymers LLC, an entity owned by Ramani Narayan, Ph.D., a director of the Company, and paid royalties of \$0 and \$10,136, respectively, based on net sales of the Company's bioplastics products.

14. INCOME TAXES

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act, or Tax Reform Act. The Tax Reform Act makes broad and complex changes to the U.S. tax code that will affect the Company's fiscal year ending August 31 2018, including, but not limited to, reducing the U.S. federal corporate tax rate from 35% to 21% effective January 1, 2018, generally eliminating U.S. federal income taxes on dividends received from foreign subsidiaries and joint ventures after December 31, 2017, and imposing a one-time deemed repatriation tax on certain unremitted earnings of foreign subsidiaries and joint ventures. The Company is subject to a blended U.S. federal tax rate of 25.7% for the fiscal year ending August 31, 2018 as a result of the reduction of the U.S. federal corporate tax rate from 35% to 21% effective January 1, 2018.

The Company recognized provisional amounts for certain income tax effects of the Tax Reform Act in its 2018 interim consolidated financial statements for the period ended February 28, 2018 in accordance with SAB No. 118, which provides SEC staff guidance for the application of ASC Topic 740, *Income Taxes*, in the reporting period in which the Tax Reform Act was signed into law. SAB No. 118 provides a one-year measurement period beginning with the period of enactment of the Tax Reform Act during which the Company can record adjustments to the provisional amounts previously recorded. Accordingly, the Company's deferred tax assets and liabilities were re-measured to reflect the reduction in the U.S. corporate income tax rate from 35% to 21% effective January 1, 2018 resulting in provisional income tax expense of \$700,000, and a corresponding decrease of \$700,000 in net deferred tax assets recognized during the year ended August 31, 2018.

In addition, the Company calculated a provisional deemed repatriation tax of \$489,000, which the Company expects to fully offset with foreign tax credit carryforwards for which the Company had not previously recognized a tax benefit, resulting in no change in income tax expense for the year ended August 31, 2018.

The Company completed its accounting for the income tax effects of the Tax Reform Act during the three months ended August 31, 2018. For fiscal 2018, the Company recorded tax expense of \$632,523 due to the re-measurement of the Company's net deferred tax assets to reflect the reduction in the U.S. corporate income tax rate which included income tax expense of \$700,000 recognized during the interim period ended February 28, 2018, and a tax benefit of \$67,477 recorded upon completion of the accounting for the income tax effects of the Tax Reform Act during the three months ended August 31, 2018. The re-measurement of the Company's net deferred tax assets to reflect the reduction in the U.S. corporate income tax rate increased the Company's fiscal 2018 effective tax rate by approximately 7.8%.

In addition, the Company completed its accounting for the deemed repatriation tax during the year ended August 31, 2018. The Company recognized deemed repatriation tax of \$604,000 for fiscal 2018, which was fully offset with foreign tax credit carryforwards for which the Company had not previously recognized a tax benefit, resulting in no change to income tax expense for fiscal 2018 due to the utilization of foreign tax credit carryforwards.

The provision for income taxes for the fiscal years ended August 31, 2018 and 2017 approximates the following:

	Fiscal Year Ended August 31,	
	2018	2017
Current:		
Federal	\$ —	\$ —
State	1,000	62,000
Foreign	671,000	754,000
	<u>672,000</u>	<u>816,000</u>
Deferred:		
Federal	477,000	(135,000)
State	24,000	(9,000)
Foreign	(297,000)	28,000
	<u>204,000</u>	<u>(116,000)</u>
	<u>\$ 876,000</u>	<u>\$ 700,000</u>

Reconciliations of the expected federal income tax at the statutory rate (25.7% in fiscal 2018 and 35% in fiscal 2017) with the provisions for income taxes for the fiscal years ended August 31, 2018 and 2017 are as follows:

	Fiscal Year Ended August 31,	
	2018	2017
Tax computed at statutory rates	\$ 2,081,000	\$ 1,591,000
State income tax, net of federal benefit	25,000	53,000
Tax effect on equity in income of international joint ventures	(1,903,000)	(1,998,000)
Tax effect on dividends received from joint ventures and investment at carrying value	—	3,159,000
Tax effect of foreign operations	101,000	841,000
Deemed repatriation	4,011,000	—
Foreign tax credit	(3,783,000)	(3,680,000)
Research and development credit	(10,000)	(212,000)
Valuation allowance	(173,000)	989,000
Stock based compensation	57,000	81,000
Non-controlling interest	(103,000)	(143,000)
Deferred rate change	633,000	—
Other	(60,000)	19,000
	<u>\$ 876,000</u>	<u>\$ 700,000</u>

The Company has not provided U.S. income taxes or foreign withholding taxes with respect to its portion of the cumulative undistributed earnings of certain foreign subsidiaries and joint ventures that are essentially permanent in duration. The Tax Reform Act generally eliminated U.S. federal income taxes on dividends received from the Company's foreign subsidiaries and joint ventures after December 31, 2017. However, the Company will still be subject to foreign withholding taxes upon repatriation of any undistributed earnings that are not essentially permanent in duration. The Company recorded tax expense of \$79,000 and \$3,000 during fiscal 2018 and fiscal 2017, respectively, representing foreign withholding taxes to be paid with respect to the portion of the cumulative undistributed earnings of foreign subsidiaries and joint ventures that the Company determined were not essentially permanent in duration.

The Company measures deferred tax assets and liabilities using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. The tax effect of the temporary differences and tax carryforwards comprising the net deferred taxes shown on the consolidated balance sheets as of August 31, 2018 and 2017 are as follows:

	August 31,	
	2018	2017
Accrued compensation	\$ 430,600	\$ 310,300
Inventory costs	58,900	87,000
Accrued joint venture expenses	—	15,200
Other accrued expenses	63,700	74,000
Goodwill and other intangible assets	695,800	1,317,700
Stock-based compensation	197,500	241,600
Foreign tax credit carryforward	5,789,600	6,105,700
Other credit and loss carryforwards	3,241,200	3,473,100
Total deferred tax assets	<u>10,477,300</u>	<u>11,624,600</u>
Valuation allowance	(8,654,500)	(9,578,700)
Total deferred tax assets after valuation allowance	<u>1,822,800</u>	<u>2,045,900</u>
Property and equipment	(124,600)	(206,000)
Other	(146,200)	(83,300)
Total deferred tax liabilities	<u>(270,800)</u>	<u>(289,300)</u>
Net deferred tax assets	<u>\$ 1,552,000</u>	<u>\$ 1,756,600</u>

As of August 31, 2018, the Company had foreign tax credit carryforwards of approximately \$5,789,600 which will begin to expire if not utilized prior to August 31, 2021. In addition, the Company had federal and state tax credit carryforwards of \$2,865,000 as of August 31, 2018 which begin to expire in fiscal 2019. These federal and state tax credit carryforwards consist primarily of federal and Minnesota research and development credit carryforwards. The Company also has foreign net operating loss carryforwards of \$376,100 as of August 31, 2018, which will begin to expire in fiscal 2021.

As of August 31, 2018, the Company has recorded a valuation allowance of \$5,789,600 with respect to the foreign tax credit carryforwards. In addition, the Company has recorded a valuation allowance of \$2,864,900 with respect to federal and state tax credit carryforwards.

As of August 31, 2017, the Company had recorded a valuation allowance of \$6,105,700 with respect to the foreign tax credit carryforwards. In addition, the Company had recorded a valuation allowance of \$2,855,100 with respect to federal and state tax credit carryforwards and had recorded a valuation allowance of \$618,000 with respect to its foreign net operating loss carryforwards.

The Company records a tax valuation allowance to reduce deferred tax assets to the amount expected to be realized when it is more likely than not that some portion or all its deferred tax assets will not be realized. The Company determined based on all available evidence, including historical data and projections of future results, that it is more likely than not that all its deferred tax assets, except for its foreign tax credit carryforward and federal and Minnesota research and development credit carryforwards will be fully realized. The Company determined that its deferred tax asset related to foreign tax credit carryforwards will not be realized due to insufficient foreign source taxable income within the carryforward period and the fact that for ordering purposes the foreign tax credit carryforwards are not allowed to be utilized until after any current year foreign tax credits are utilized. In addition, based on historical data and future projections, the Company determined that it is more likely than not that its deferred tax asset related to federal and Minnesota research and development credit carryforwards will not be realized due to insufficient federal and Minnesota taxable income within the carryforward period after considering the foreign tax credit usage.

The following is a tabular reconciliation of the total amounts of unrecognized tax benefits:

	Fiscal Year Ended August 31,	
	2018	2017
Gross unrecognized tax benefits – beginning balance	\$ 250,000	\$ 238,000
Gross decreases - prior period tax positions	(12,000)	(4,000)
Gross increases – current period tax positions	4,000	16,000
Gross unrecognized tax benefits – ending balance	<u>\$ 242,000</u>	<u>\$ 250,000</u>

The entire amount of unrecognized tax benefits would affect the effective tax rate if recognized. It is not expected that the amount of unrecognized tax benefits will change significantly in the next 12 months.

The Company recognizes interest and penalties related to unrecognized tax benefits as a component of the Company’s income tax provision. Accrued interest and penalties are included within the related tax liability line in the consolidated balance sheet. There was no liability for the payment of interest and penalties as of both August 31, 2018 and August 31, 2017.

The Company is subject to taxation in the United States and various states and foreign jurisdictions. With few exceptions, as of August 31, 2018, the Company is no longer subject to federal, state, local, or foreign examinations by tax authorities for years prior to August 31, 2015.

15. COMMITMENTS AND CONTINGENCIES

On August 31, 2018, the Compensation Committee of the Board of Directors of the Company approved the material terms of an annual bonus plan for the Company’s executive officers as well as certain officers and employees for the fiscal year ending August 31, 2019. For fiscal 2019 as in past years, the total amount available under the bonus plan for all plan participants, including executive officers, is dependent upon the Company’s earnings before interest, taxes and other income, as adjusted to take into account amounts to be paid under the bonus plan and certain other adjustments (Adjusted EBITOI). Each plan participant’s percentage of the overall bonus pool is based upon the number of plan participants, the individual’s annual base salary and the individual’s position and level of responsibility within the company. In the case of each of the Company’s executive officer participants, 75% of the amount of their individual bonus payout will be determined based upon the Company’s actual EBITOI for fiscal 2019 compared to a pre-established target EBITOI for fiscal 2019 and 25% of the payout will be determined based upon such executive officer’s achievement of certain pre-established individual performance objectives. The payment of bonuses under the plan are discretionary and may be paid to executive officer participants in both cash and shares of NTIC common stock, the exact amount and percentages will be determined by the Company’s Board of Directors, upon recommendation of the Compensation Committee, after the completion of the Company’s consolidated financial statements for fiscal 2019.

On August 26, 2017, the Compensation Committee of the Board of Directors of the Company approved the material terms of an annual bonus plan for the Company's executive officers as well as certain officers and employees for the fiscal year ending August 31, 2018.

Accrued bonuses as of August 31, 2018 and 2017 were \$2,153,000 and \$1,015,000, respectively.

Three joint ventures (consisting of the Company's joint ventures in South Korea, Thailand and India) accounted for 74.1% of the Company's trade joint venture receivables as of August 31, 2018, and three joint ventures (consisting of the Company's joint ventures in South Korea, India and Thailand) accounted for 60.7% of the Company's trade joint venture receivables as of August 31, 2017.

On March 23, 2015, NTIC and NTI Asean LLC, a majority-owned subsidiary of NTIC, filed a lawsuit in Tianjin No 1 Intermediate People's Court against two individuals, Tao Meng and Xu Hui, related to breaches of duties and contractual commitments owed to NTI Asean under certain agreements related to NTIC's former joint venture in China, Tianjin Zerust Anti-Corrosion Technologies Ltd. The lawsuit alleges, among other things, that Mr. Tao Meng and Xu Hui have engaged in self-dealing, usurped business opportunities, and received economic benefits that were required to go to Tianjin Zerust. At this point it is too early in the lawsuit to reasonably estimate the amount of any recovery to NTI Asean.

From time to time, the Company is subject to various other claims and legal actions in the ordinary course of its business. The Company records a liability in its consolidated financial statements for costs related to claims, including future legal costs, settlements and judgments, where the Company has assessed that a loss is probable and an amount could be reasonably estimated. If the reasonable estimate of a probable loss is a range, the Company records the most probable estimate of the loss or the minimum amount when no amount within the range is a better estimate than any other amount. The Company discloses a contingent liability even if the liability is not probable or the amount is not estimable, or both, if there is a reasonable possibility that material loss may be have been incurred. In the opinion of management, as of August 31, 2018, the amount of liability, if any, with respect to these matters, individually or in the aggregate, will not materially affect the Company's consolidated results of operations, financial position or cash flows.

The Company has leases for office and warehouse space in the United States of America, China, India, Germany and Brazil with monthly rents ranging from \$576 to \$9,729, which expire at various dates through August 31, 2022. Future minimum rents due under these leases are as follows for each of the next five years ended August 31:

Fiscal 2019	\$	131,840
Fiscal 2020		66,762
Fiscal 2021		12,404
Fiscal 2022		3,454
	\$	<u>214,460</u>

16. STATEMENTS OF CASH FLOWS

Supplemental disclosures of cash flow information consist of:

	Fiscal Year Ended	
	August 31,	
	2018	2017
Cash paid during the year for income tax	\$ 876,103	\$ 699,519
Cash paid during the year for interest	17,962	20,382

17. FAIR VALUE MEASUREMENTS

The Company follows the authoritative guidance on fair value measurements and disclosures with respect to assets and liabilities that are measured at fair value on both a recurring and non-recurring basis. Under this guidance, fair value is defined as the exit price, or the amount that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants as of the measurement date. The authoritative guidance also establishes a hierarchy for inputs used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs market participants would use in valuing the asset or liability, developed based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the factors market participants would use in valuing the asset or liability developed based upon the best information available in the circumstances. The categorization of financial assets and financial liabilities within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement.

The hierarchy is broken down into three levels defined as follows:

Level 1 - Inputs are quoted prices in active markets for identical assets or liabilities.

Level 2 - Inputs include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, and inputs (other than quoted prices) that are observable for the asset or liability, either directly or indirectly.

Level 3 - Inputs are unobservable for the asset or liability.

See the section below titled Valuation Techniques for further discussion of how the Company determines fair value for investments.

Assets and Liabilities That Are Measured at Fair Value on a Recurring Basis

Assets and liabilities that are measured at fair value on a recurring basis primarily relate to marketable equity securities. These items are marked-to-market at each reporting period.

The following tables provide information by level for assets and liabilities that are measured at fair value on a recurring basis:

	Fair value as of August 31, 2018	Fair Value Measurements Using Inputs Considered as		
		Level 1	Level 2	Level 3
Available for sale securities	\$ 3,300,110	\$ 3,300,110	\$ —	\$ —

	Fair value as of August 31, 2017	Fair Value Measurements Using Inputs Considered as		
		Level 1	Level 2	Level 3
Available for sale securities	\$ 3,766,984	\$ 3,766,984	\$ —	\$ —

Valuation Techniques

Financial assets that are classified as Level 1 securities include cash equivalents and available for sale securities. These are valued using quoted market prices in an active market.

The Company reviews the fair value hierarchy classification on a quarterly basis. Changes in the ability to observe valuation inputs may result in a reclassification of levels for certain securities within the fair value hierarchy. The Company’s policy is to recognize transfers into and out of levels within the fair value hierarchy at the end of the fiscal quarter in which the actual event or change in circumstances that caused the transfer occurs. There were no transfers between Level 1, Level 2, or Level 3 during the fiscal years ended August 31, 2018 or August 31, 2017. When a determination is made to classify an asset or liability within Level 3, the determination is based upon the significance of the unobservable inputs to the overall fair value measurement.

18. SUBSEQUENT EVENT

On October 24, 2018, NTIC’s Board of Directors declared a cash dividend of \$0.12 per share of NTIC’s common stock, payable on November 21, 2018 to stockholders of record on November 7, 2018.

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

None

Item 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

NTIC maintains disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) that are designed to provide reasonable assurance that information required to be disclosed by NTIC in the reports it files or submits under the Securities Exchange Act of 1934, as amended, is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms and that such information is accumulated and communicated to NTIC's management, including NTIC's principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. NTIC's management evaluated, with the participation of its Chief Executive Officer and its Chief Financial Officer, the effectiveness of the design and operation of NTIC's disclosure controls and procedures as of the end of the period covered in this report. Based on that evaluation, NTIC's Chief Executive Officer and Chief Financial Officer concluded that NTIC's disclosure controls and procedures were effective as of the end of such period to provide reasonable assurance that information required to be disclosed in the reports that NTIC files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to NTIC's management, including NTIC's Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

NTIC's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Under the supervision and with the participation of NTIC's Chief Executive Officer and Chief Financial Officer, NTIC's management conducted an evaluation of the effectiveness of NTIC's internal control over financial reporting based on the framework in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on that evaluation, NTIC's management concluded that NTIC's internal control over financial reporting was effective as of August 31, 2018.

The report of Baker Tilly Virchow Krause, LLP, NTIC's independent registered public accounting firm, regarding the effectiveness of NTIC's internal control over financial reporting is included in this report in "Part II. Item 8, Financial Statements and Supplementary Data" under "Report of Independent Registered Public Accounting Firm."

Changes in Internal Control over Financial Reporting

There was no change in NTIC's internal control over financial reporting that occurred during the quarter ended August 31, 2018 that has materially affected or is reasonably likely to materially affect NTIC's internal control over financial reporting.

Item 9B. OTHER INFORMATION

Not applicable.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Directors

The information in the “Proposal One – Election of Directors” section of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Executive Officers

Information concerning NTIC’s executive officers and officers is included in this annual report on Form 10-K under Item 4A of Part I under the heading “Executive Officers of the Registrant.”

Section 16(a) Beneficial Ownership Reporting Compliance

The information in the “Stock Ownership—Section 16(a) Beneficial Ownership Reporting Compliance” section of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Code of Ethics

NTIC has adopted a code of ethics that applies to its principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions, as well as other employees and NTIC’s directors and meets the requirements of the SEC and the Nasdaq Global Market. A copy of NTIC’s Code of Ethics is filed as an exhibit to this report. NTIC intends to satisfy the disclosure requirements of Item 5.05 of Form 8-K regarding amendments to or waivers from any provision of its code of ethics by posting such information on its corporate website at www.ntic.com.

Changes to Nomination Procedures

During the fourth quarter of fiscal 2018, NTIC made no material changes to the procedures by which stockholders may recommend nominees to NTIC’s Board of Directors, as described in NTIC’s most recent proxy statement.

Audit Committee Matters

The information in the “Corporate Governance—Audit Committee” section of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Item 11. EXECUTIVE COMPENSATION

The information in the “Director Compensation” and “Executive Compensation” sections of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

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

Stock Ownership

The information in the “Stock Ownership—Beneficial Ownership of Significant Stockholders and Management” section of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Securities Authorized for Issuance under Equity Compensation Plans

The following table summarizes outstanding options and other awards under NTIC’s equity compensation plans as of August 31, 2018. NTIC’s equity compensation plans as of August 31, 2018 were the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan and the Northern Technologies International Corporation Employee Stock Purchase Plan. Except for automatic annual grants of \$50,000 in options to purchase shares of NTIC common stock to NTIC’s directors in consideration for their services as directors of NTIC, an automatic annual grant of \$10,000 in options to purchase shares of NTIC common stock to NTIC’s Chairman of the Board in consideration for his services as Chairman on the first day of each fiscal year and automatic initial pro rata grants of \$50,000 in options to purchase shares of NTIC common stock to NTIC’s new directors in consideration for their services as directors of NTIC, options and other awards granted in the future under the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan or the new Northern Technologies International Corporation 2019 Stock Incentive Plan, if approved by NTIC’s stockholders, are within the discretion of the Board of Directors and the Compensation Committee of the Board of Directors and therefore cannot be ascertained at this time.

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (excluding securities reflected in column (a))
Equity compensation plans approved by security holders	348,703(1)(2)	\$ 14.55	188,044(3)
Equity compensation plans not approved by security holders	—	—	—
Total	348,703(1)(2)	\$ 14.55	188,044(3)

- (1) Amount includes shares of NTIC common stock issuable upon the exercise of stock options outstanding as of August 31, 2018 under the Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan.
- (2) Excludes employee stock purchase rights accruing under the Northern Technologies International Corporation Employee Stock Purchase Plan. Under such plan, each eligible employee may purchase up to 2,000 shares of NTIC common stock at semi-annual intervals on February 28th or 29th (as the case may be) and August 31st each year at a purchase price per share equal to 90% of the lower of (i) the closing sales price per share of NTIC common stock on the first day of the offering period or (ii) the closing sales price per share of NTIC common stock on the last day of the offering period.
- (3) Amount includes 140,417 shares remaining available at August 31, 2018 for future issuance under Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan and 47,627 shares available at August 31, 2018 for future issuance under the Northern Technologies International Corporation Employee Stock Purchase Plan.

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

The information in the “Related Person Relationships and Transactions” and “Corporate Governance—Director Independence” sections of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information in the “Proposal Three—Ratification of Selection of Independent Registered Public Accounting Firm—Audit, Audit-Related, Tax and Other Fees” and “Proposal Three—Ratification of Selection of Independent Registered Public Accounting Firm—Audit Committee Pre-Approval Policies and Procedures” sections of NTIC’s definitive proxy statement to be filed with the Securities and Exchange Commission with respect to NTIC’s next annual meeting of stockholders, which involves the election of directors, is incorporated in this annual report on Form 10-K by reference.

PART IV

Item 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

Financial Statements

NTIC's consolidated financial statements are included in Item 8 of Part III of this report.

Financial Statement Schedules

All financial statement schedules are omitted because they are inapplicable since NTIC is a smaller reporting company.

Exhibits

The exhibits being filed or furnished with this report are listed below. Each management contract or compensatory plan or arrangement required to be filed as an exhibit to this report is asterisked below.

A copy of any exhibits listed or referred to herein will be furnished at a reasonable cost to any person who is a stockholder upon receipt from any such person of a written request for any such exhibit. Such request should be sent to: Mr. Matthew Wolsfeld, Corporate Secretary, Northern Technologies International Corporation, 4201 Woodland Road, P.O. Box 69, Circle Pines, Minnesota 55014 Attn: Stockholder Information.

Item No.	Item	Method of Filing
3.1	Restated Certificate of Incorporation of Northern Technologies International Corporation	Incorporated by reference to Exhibit 3.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 28, 2009 (File No. 001-11038)
3.2	Certificate of Amendment to the Restated Certificate of Incorporation of Northern Technologies International Corporation dated January 16, 2018	Incorporated by reference to Exhibit 3.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 16, 2018 (File No. 001-11038)
3.3	Amended and Restated Bylaws of Northern Technologies International Corporation	Incorporated by reference to Exhibit 3.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on November 24, 2008 (File No. 001-11038)
4.1	Specimen Stock Certificate Representing Common Stock of Northern Technologies International Corporation	Incorporated by reference to Exhibit 4.1 to NTIC's Registration Statement on Form 10 (File No. 001-19331) (Filed on paper - hyperlink is not required pursuant to Rule 105 of Regulation S-T)
10.1	Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)

Item No.	Item	Method of Filing
10.2	Form of Incentive Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.3	Form of Non-Statutory Stock Option Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.3 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.4	Form of Restricted Stock Agreement for Northern Technologies International Corporation Amended and Restated 2007 Stock Incentive Plan*	Incorporated by reference to Exhibit 10.4 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 24, 2011 (File No. 001-11038)
10.5	Northern Technologies International Corporation Employee Stock Purchase Plan*	Incorporated by reference to Exhibit 10.11 to NTIC's Annual Report on Form 10-KSB for the fiscal year ended August 31, 2006 (File No. 001-11038)
10.6	Material Terms of Northern Technologies International Corporation Annual Bonus Plan*	Incorporated by reference to Exhibit 10.6 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2015 (File No. 001-11038)
10.7	Form of Indemnification Agreement between Northern Technologies International Corporation and its Directors and Officers*	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on November 24, 2008 (File No. 001-11038)
10.8	Agreement dated as of May 25, 2009 between Northern Technologies International Corporation and Sunggyu Lee, Ph.D.*	Incorporated by reference to Exhibit 10.2 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended May 31, 2009 (File No. 001-11038)
10.9	Description of Non-Employee Director Compensation Arrangements*	Filed herewith
10.10	Executive Employment Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and G. Patrick Lynch*	Incorporated by reference to Exhibit 10.13 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.11	Confidential Information, Inventions Assignment, Noncompetition and Non-Solicitation Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and G. Patrick Lynch*	Incorporated by reference to Exhibit 10.14 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)

Item No.	Item	Method of Filing
10.12	Executive Employment Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and Matthew C. Wolsfeld*	Incorporated by reference to Exhibit 10.15 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.13	Confidential Information, Inventions Assignment, Noncompetition and Non-Solicitation Agreement dated as of November 18, 2011 between Northern Technologies International Corporation and Matthew C. Wolsfeld*	Incorporated by reference to Exhibit 10.16 to NTIC's Annual Report on Form 10-K for the fiscal year ended August 31, 2011 (File No. 001-11038)
10.14	Amended and Restated Committed Line of Credit Note dated as of January 10, 2011 issued by Northern Technologies International Corporation to PNC Bank, National Association	Incorporated by reference to Exhibit 10.2 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 12, 2011 (File No. 001-11038)
10.15	Loan Agreement dated as of January 10, 2011 between Northern Technologies International Corporation and PNC Bank, National Association	Incorporated by reference to Exhibit 10.6 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on January 12, 2011 (File No. 001-11038)
10.16	Waiver and First Amendment to Loan Documents dated as of January 10, 2012 between Northern Technologies International Corporation and PNC Bank, National Association	Incorporated by reference to Exhibit 10.6 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2011 (File No. 001-11038)
10.17	Waiver and Second Amendment to Loan Documents dated December 11, 2012 between Northern Technologies International Corporation and PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2012 (File No. 001-11038)
10.18	Letter dated December 31, 2013 to Northern Technologies International Corporation from PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 28, 2014 (File No. 001-11038)
10.19	Letter dated January 8, 2015 to Northern Technologies International Corporation from PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 28, 2015 (File No. 001-11038)
10.20	Amendment to Loan Documents dated January 6, 2016 by and between Northern Technologies International Corporation from PNC Bank, National Association	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended February 29, 2016 (File No. 001-11038)
10.21	Letter Agreement effective as of January 11, 2017 between PNC Bank, National Association and Northern Technologies International Corporation	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2016 (File No. 001-11038)

Item No.	Item	Method of Filing
10.22	Letter Agreement effective as of January 5, 2018 between PNC Bank, National Association and Northern Technologies International Corporation	Incorporated by reference to Exhibit 10.1 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2017 (File No. 001-11038)
10.23	Purchase and Sale Agreement dated as of July 14, 2014 between Northern Technologies International Corporation and Glen Willow Holdings, LLC	Incorporated by reference to Exhibit 10.1 to NTIC's Current Report on Form 8-K as filed with the Securities and Exchange Commission on July 15, 2014 (File No. 001-11038)
10.24	Consulting Agreement dated January 11, 2017 by and among Northern Technologies International Corporation, BioPlastic Polymers LLC, and Ramani Narayan, Ph.D.	Incorporated by reference to Exhibit 10.2 to NTIC's Quarterly Report on Form 10-Q for the fiscal quarter ended November 30, 2016 (File No. 001-11038)
14.1	Code of Ethics	Incorporated by reference to Exhibit 14.1 to NTIC's Annual Report on Form 10-KSB for the fiscal year ended August 31, 2004 (File No. 001-11038)
21.1	Subsidiaries of the Registrant	Filed herewith
23.1	Consent of Baker Tilly Virchow Krause, LLP	Filed herewith
31.1	Certification of President and Chief Executive Officer Pursuant to SEC Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
31.2	Certification of Chief Financial Officer Pursuant to SEC Rule 13a-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
32.1	Certification of President and Chief Executive Officer Pursuant to Rule 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Furnished herewith
32.2	Certification of Chief Financial Officer Pursuant to Rule 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002	Furnished herewith
101	The following materials from Northern Technologies International Corporation's Annual Report on Form 10-K for the fiscal year ended August 31, 2018, formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Comprehensive Income (Loss), (iv) the Consolidated Statements of Equity, (v) the Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements	Filed herewith

* A management contract or compensatory plan or arrangement.

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.

NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

November 13, 2018

By: /s/ G. Patrick Lynch
G. Patrick Lynch
President and Chief Executive Officer

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 on the dates and in the capacities indicated.

<u>Name</u>	<u>Title</u>	<u>Date</u>
<u>/s/ G. Patrick Lynch</u> G. Patrick Lynch	President and Chief Executive Officer and Director (principal executive officer)	November 13, 2018
<u>/s/ Matthew C. Wolsfeld, CPA</u> Matthew C. Wolsfeld, CPA	Chief Financial Officer and Corporate Secretary (principal financial and accounting officer)	November 13, 2018
<u>/s/ Richard J. Nigon</u> Richard J. Nigon	Chairman of the Board	November 13, 2018
<u>/s/ Barbara D. Colwell</u> Barbara D. Colwell	Director	November 13, 2018
<u>/s/ Soo Keong Koh</u> Soo Keong Koh	Director	November 13, 2018
<u>/s/ Sunggyu Lee, Ph.D.</u> Sunggyu Lee, Ph.D.	Director	November 13, 2018
<u>/s/ Ramani Narayan, Ph. D.</u> Ramani Narayan, Ph.D.	Director	November 13, 2018
<u>/s/ Konstantin von Falkenhausen</u> Konstantin von Falkenhausen	Director	November 13, 2018



NORTHERN TECHNOLOGIES INTERNATIONAL CORPORATION

NON-EMPLOYEE DIRECTOR COMPENSATION PROGRAM

This document describes the compensation to be provided to the non-employee directors of Northern Technologies International Corporation (the "Company"). This program was most recently approved by the Board of Directors of the Company on August 31, 2018.

Cash Compensation

The Company's non-employee director cash compensation consists of annual cash retainers, to be paid to each non-employee director and an additional annual cash retainer to be paid to the Chairman of the Board and each Chair and member of a Board committee, and per meeting fees.

The following table sets forth the annual cash retainers to be paid to each non-employee director and the additional annual cash retainer to be paid to the Chairman of the Board and each Chair and member of a Board committee:

Description	Annual Cash Retainer
Non-Employee Director	\$ 25,000
Chairman of the Board	15,000
Audit Committee Chair	5,000
Audit Committee Member (including Chair)	4,500
Compensation Committee Chair	4,000
Compensation Committee Member (including Chair)	3,000
Nominating and Corporate Governance Committee Chair	2,000
Nominating and Corporate Governance Committee Member (including Chair)	3,000

The annual cash retainers will be paid on a quarterly basis in arrears within 30 days of the end of each calendar quarter. For example, the retainers for the first calendar quarter covering the period from January 1 through March 31 will be paid within 30 days of March 31.

Each of non-employee director also will receive \$1,000 for each Board, Board committee and strategy review meeting attended. No director, however, will earn more than \$1,000 per day in Board, Board committee and strategy review meeting fees.

Equity-Based Compensation

Annual Option Grants. Each non-employee director, other than a director who will not stand for re-election at the next annual meeting of stockholders, will be automatically granted a ten-year non-qualified option to purchase \$50,000 in shares of our common stock on the first day of each fiscal year in consideration for his or her service as a director of NTIC and the Chairman of the Board will be automatically granted an additional ten-year non-qualified option to purchase \$10,000 in shares of our common stock on the first day of each fiscal year in consideration for his or her services as Chairman.

Initial Option Grants. Each new non-employee director will be automatically granted a ten-year non-qualified option to purchase a pro rata portion of \$50,000 shares of our common stock calculated by dividing the number of months remaining in the fiscal year at the time of election or appointment by 12 on the date the director is first elected or appointed as a director of NTIC.

The number of shares of common stock underlying the options will be determined based on the grant date fair value of the options. Each option will become exercisable in full on the one-year anniversary of the grant date. The exercise price of such options will be equal to the fair market value of a share of our common stock on the grant date.

Expense Reimbursement

All non-employee directors are reimbursed for travel expenses for attending meetings and other miscellaneous out-of-pocket expenses incurred in performing their Board functions.

SUBSIDIARIES OF THE REGISTRANT

Name of Subsidiary	State or Other Jurisdiction of Incorporation or Organization	Ownership Interest	Names Under Which Subsidiary Does Business
NTI ASEAN LLC	Delaware	60%	Same
Northern Technologies Holding Company, LLC	Delaware	100%	Same
Natur-Tec India Prívate Limited	India	75%	Same
Zerust Prevenção de Corrosão S.A.	Brazil	85%	Same
NTIC (Shanghai) Co., Ltd.	China	100%	Same
ZERUST-EXCOR MEXICO, S. de R.L. de C.V	Mexico	100%	Same
NTIC Europe GmbH	Germany	100%	Same

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statements on Form S-8 (File Nos. 333-140244, 333-140245 and 333-171828) of Northern Technologies International Corporation and Subsidiaries of our report dated November 13, 2018, relating to the consolidated financial statements, and the effectiveness of Northern Technologies International Corporation and Subsidiaries' internal control over financial reporting, which appears on page 55 of this annual report on Form 10-K for the fiscal year ended August 31, 2018.

/s/ Baker Tilly Virchow Krause, LLP

Minneapolis, Minnesota
November 13, 2018

CERTIFICATION PURSUANT TO SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, G. Patrick Lynch, certify that:

1. I have reviewed this annual report on Form 10-K of Northern Technologies International Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and:
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 13, 2018



G. Patrick Lynch
President and Chief Executive Officer
(principal executive officer)

CERTIFICATION PURSUANT TO SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, Matthew C. Wolsfeld, certify that:

1. I have reviewed this annual report on Form 10-K of Northern Technologies International Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 13, 2018

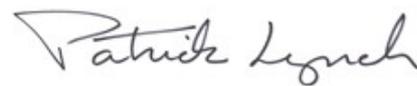


Matthew C. Wolsfeld, CPA
Chief Financial Officer and Corporate Secretary
(principal financial officer)

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT
TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Northern Technologies International Corporation (the "Company") on Form 10-K for the period ending August 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, G. Patrick Lynch, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge and belief:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.



G. Patrick Lynch
President and Chief Executive Officer
(principal executive officer)

Circle Pines, Minnesota
November 13, 2018

**CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT
TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report of Northern Technologies International Corporation (the "Company") on Form 10-K for the period ending August 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Matthew C. Wolsfeld, Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to the best of my knowledge and belief:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.



Matthew C. Wolsfeld, CPA
Chief Financial Officer and Corporate Secretary
(principal financial officer and principal
accounting officer)

Circle Pines, Minnesota
November 13, 2018