

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 October 3, 2020
- OR
- ☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from _____ to _____

Commission file number 1-05129

MOOG Inc.

(Exact name of registrant as specified in its charter)

New York (State or other jurisdiction of incorporation or organization)	16-0757636 (I.R.S. Employer Identification No.)
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400 Jamison Rd (Address of Principal Executive Offices)	East Aurora, New York	14052-0018 (Zip Code)
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(716) 652-2000
Registrant's telephone number, including area code

(Former name, former address and former fiscal year, if changed since last report)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A common stock	MOG.A	New York Stock Exchange
Class B common stock	MOG.B	New York Stock Exchange

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

Indicate by check mark if the registrant is a well-known 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 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.

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 the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

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

The aggregate market value of the common stock outstanding and held by non-affiliates (as defined in Rule 405 under the Securities Act of 1933) of the registrant, based upon the closing sale price of the common stock on the New York Stock Exchange on March 27, 2020, the last business day of the registrant's most recently completed second fiscal quarter, was approximately \$1,634 million.

The number of shares outstanding of each class of common stock as of November 10, 2020 was:

Class A common stock, 29,356,566 shares

Class B common stock, 2,662,621 shares

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Moog Inc. Proxy Statement for the Annual Meeting of Shareholders to be held on February 9, 2021 ("2020 Proxy") are incorporated by reference into Part III of this Form 10-K.

MOOG_{Inc.}
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Disclosure Regarding Forward-Looking Statements

Information included or incorporated by reference in this report that does not consist of historical facts, including statements accompanied by or containing words such as “may,” “will,” “should,” “believes,” “expects,” “expected,” “intends,” “plans,” “projects,” “approximate,” “estimates,” “predicts,” “potential,” “outlook,” “forecast,” “anticipates,” “presume” and “assume,” are forward-looking statements. Such forward-looking statements are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are not guarantees of future performance and are subject to several factors, risks and uncertainties, the impact or occurrence of which could cause actual results to differ materially from the expected results described in the forward-looking statements. Certain of these factors, risks and uncertainties are discussed in the sections of this report entitled “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” New factors, risks and uncertainties may emerge from time to time that may affect the forward-looking statements made herein. Given these factors, risks and uncertainties, investors should not place undue reliance on forward-looking statements as predictive of future results. We disclaim any obligation to update the forward-looking statements made in this report.

PART I

The Registrant, Moog Inc., a New York corporation formed in 1951, is referred to in this report as “Moog” or in the nominative “we” or the possessive “our.”

Unless otherwise noted or the context otherwise requires, all references to years in this report are to fiscal years.

Item 1.	Business.
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Description of the Business. Moog is a worldwide designer, manufacturer and systems integrator of high performance precision motion and fluid controls and controls systems for a broad range of applications in aerospace and defense and industrial markets. We have three operating segments: Aircraft Controls, Space and Defense Controls and Industrial Systems.

Additional information describing the business and comparative segment revenues, operating profits and related financial information for 2020, 2019 and 2018 are provided in Note 21, Segments, of Item 8, Financial Statements and Supplementary Data of this report.

Distribution. Our sales and marketing organization consists of individuals possessing highly specialized technical expertise. This expertise is required in order to effectively evaluate a customer’s precision control requirements and to facilitate communication between the customer and our engineering staff. Our sales staff is the primary contact with customers. Manufacturers’ representatives are used to cover certain domestic aerospace markets. Distributors are used selectively to cover certain industrial and medical markets.

Industry and Competitive Conditions. We experience considerable competition in our aerospace and defense and industrial markets. We believe that the principal points of competition in our markets are product quality, reliability, price, design and engineering capabilities, product development, conformity to customer specifications, timeliness of delivery, effectiveness of the distribution organization and quality of support after the sale. We believe we compete effectively on all of these bases. Competitors in our three operating segments include:

- Aircraft Controls: Curtiss-Wright, Liebherr, Nabtesco, Parker-Hannifin, Raytheon Technology and Woodward.
- Space and Defense Controls: Aerojet Rocketdyne, Airbus, ATA Engineering, Bradford Engineering, Chess Dynamics, Cobham, Curtiss-Wright, Electro-Miniatures, EBAD, Elbit, EOS, Fulcrum Concepts LLC, Glenair, Honeywell, IHI-Aerospace, JASC, Kearfott, Kollmorgan, Kongsberg, Marotta, Parker-Hannifin, RUAG, Rafael, Raytheon Technologies, PVP Advanced, Sargent Aerospace & Defense, Schleifring, SEAKR, Silent Sentinel, SL Montevideo, SwRI, Vacco, Valcor, ValveTech and Vincorian.
- Industrial Systems: Allied Motion, Baumüller, Atos, Bosch Rexroth, Cardinal Health, Eaton, MTS Systems, Parker-Hannifin, Schleifring, Shinano Kenshi, Smiths Medical, Stemman, Woodward.

Government Contracts. All U.S. Government contracts are subject to termination by the U.S. Government. In 2020, sales under U.S. Government contracts represented 41% of total sales and were primarily within our Aircraft Controls and Space and Defense Controls segments.

Backlog. Our twelve-month backlog represents confirmed orders we believe will be recognized as revenue within the next twelve months. As noted in Item 6, Selected Financial Data of this report, as of October 3, 2020, our twelve-month backlog was \$1.7 billion, an increase of 10% compared to September 28, 2019. See Item 7, Management’s Discussion and Analysis of Financial Condition and Results of Operations of this report for a discussion on the various business drivers and conditions contributing to the twelve-month backlog change.

Raw Materials. Materials, supplies and components are purchased from numerous suppliers. We believe the loss of any one supplier, although potentially disruptive in the short-term, would not materially affect our operations in the long-term.

Working Capital. See the discussion on operating cycle in Note 1, Summary of Significant Accounting Policies, of Item 8, Financial Statements and Supplementary Data of this report.

Seasonality. Our business is generally not seasonal; however, certain products and systems, such as those in the energy market of our Industrial Systems segment, do experience seasonal variations in sales levels.

Patents. We maintain a patent portfolio of issued or pending patents and patent applications worldwide that generally includes the U.S., Europe, China, Japan and India. The portfolio includes patents that relate to electrohydraulic, electromechanical, electronics, hydraulics, components and methods of operation and manufacture as related to motion control and actuation systems. The portfolio also includes patents related to wind turbines, robotics, surveillance/security, vibration control and medical devices. We do not consider any one or more of these patents or patent applications to be material in relation to our business as a whole. The patent portfolio related to certain medical devices is significant to our position in this market as several of these products work exclusively together, and provide us future revenue opportunities.

Research Activities. Research and development activity has been, and continues to be, significant for us. Research and development expense was at least \$110 million in each of the last three years and represented approximately 4% of sales in 2020.

Human Capital Resources. Moog's culture and values, along with its approximately 13,000 employees in almost 30 countries, are the most valuable assets of the Company. These values, which are the foundation of our Company culture, are:

Trust Is A Must
Competence Is King
We Try Harder
We're All In This Together
It's My Job
We Look For Solutions, Not Someone To Blame
Communication Is Crucial
Formality Doesn't Help
We Have To Be Adaptable And Ready To Change
Performance and Commitment Should Be Rewarded
Work Should Be An Enjoyable Experience
Your Personal Life Is Important

In order to ensure we live our values and our culture stays unique and strong, our Board of Directors and executive team put significant focus on our human capital resources. These are some of the key aspects of Moog's human capital strategy:

Employee recruitment

Moog works diligently to attract the best talent from a diverse range of sources in order to meet the current and future demands of our business. We have established relationships with trade schools, world-class universities, professional associations and industry groups to proactively attract talent.

Moog has a strong employee value proposition that leverages our unique culture, collaborative working environment, shared sense of purpose, desire to do the right thing and ground-breaking work to attract talent to our Company. Although we are a successful global business, our people feel like they are amongst friends and can be themselves. We empower them to find new and better ways of doing things and the scale of our business means that careers can develop in exciting and unexpected directions.

In 2020, we hired 1,692 new employees at our Company. When we hire talent, they tend to stay at Moog. The average employee has 11 years of service. On October 3, 2020, we employed 12,623 full-time employees.

Diversity, equity and inclusion

Moog aspires to be a diverse, equitable, and inclusive Company where employees are empowered to bring their whole, authentic selves to work every day. At Moog, we believe in the people who work for us. As part of our investment in our people, we make diversity, equity, and inclusion a priority. Our goal is to create a culture where we value, respect, and provide fair treatment and equal opportunities for all employees. By recognizing and celebrating our differences, we cultivate an environment that's the right fit for every person inside of it.

Moog demonstrates diversity, equity, and inclusion at the highest levels of our Company. 33% of the executive team and 29% of our independent directors are female.

Compensation programs and employee benefits

The main objective of Moog's compensation program is to provide a compensation package that will attract, retain, motivate and reward superior employees who must operate in a highly competitive and technologically challenging environment. We seek to do this by linking annual changes in compensation to overall Company performance, as well as each individual's contribution to the results achieved. The emphasis on overall Company performance is intended to align the employee's financial interests with the interests of shareholders. Moog also seeks fairness in total compensation with reference to external comparisons, internal comparisons and the relationship between management and non-management remuneration.

In addition to competitive base salaries, Moog accomplishes this compensation objective through its profit share plan for employees, short-term incentive plan for its senior managers (approximately 400), and long-term incentive plan for its executives (approximately 40). The profit share plan gives a fixed percentage of Moog's net earnings back to its employees on an annual basis. The short-term incentive plan provides a bonus to senior managers based on annual increases to earnings per share and free cash flow conversion. The long-term incentive plan benefits executives and is based on achieving revenue and operating margin targets and stock price appreciation. Moog also recently introduced enhancements to its retirement savings plan that gives employees an industry leading employer match and other employer contributions.

Moog is committed to providing comprehensive benefit options and it is our intention to offer benefits that will allow our employees and their families to live healthier and more secure lives. Some examples of Moog's wide ranging benefits offered are: Medical insurance, prescription drug benefits, dental insurance, vision insurance, hospital indemnity insurance, accident insurance, critical illness insurance, life insurance, disability insurance, health savings accounts, flexible spending accounts, legal insurance, auto/home insurance, identity theft insurance and pet insurance.

Employee well-being

In addition to traditional employee benefits, Moog has a number of innovative initiatives to support the well-being of its employee base. These include: Onsite wellness clinics at our significant locations, online tools that assist employees with their physical and mental health, special events with outside vendors and participants focusing on employee well-being, and much more.

Employee engagement and retention

In 2019, Moog conducted a global employee engagement survey using a leading outside firm that specializes in employee engagement. There were many questions, but the overarching goal of the survey was to determine overall employee engagement through understanding how happy our employees are working at Moog and if our employees would recommend Moog as a great place to work. The results of that survey were an overall engagement score of 74 out of 100, which was two points above the survey providers industry benchmark. While we are happy with this level of employee engagement, we are continuing to try to do better. Our leadership has collected all the feedback, both positive and constructive, and is focusing on making employee-suggested changes to become an even better place to work.

We see our positive employee engagement coming through in high levels of employee retention. For the last five years the average of voluntary attrition has been just above 5% of our workforce. That is a competitive attrition figure and a testament to Moog being a great place to work.

Leadership development and training

At Moog we believe that the best leaders are the ones who come from within. These leaders learn with us, grow with us and reach their potential through challenging job experiences our Company provides and deliberate learning experiences. Moog has carefully designed two leadership development programs to improve the effectiveness of our managers. Our Moog Leadership Program is a two-year program designed to expand, develop, support and sustain high potential leadership throughout the Company. This program accelerates the growth and development of our high potential employees and prepares them for future senior-level roles within the organization. Our Emerging Leadership Program is a nine-month global, cross-group leadership development program. The goal of this program is to accelerate the development of a pool of global, cross-group top talent in order to help meet the demand for important leadership roles throughout our Company. Finally, our leading and coaching people program, which is open to people managers at Moog, is a two-day course and provides the foundational framework for engaging, empowering and coaching employees for optimal performance.

In addition to our leadership development programs, Moog has many other valuable training resources available for employees in order to ensure our people have everything they need to succeed both personally and professionally. Moog facilitates these training opportunities and programs through state-of-the-art learning management systems. Our employees are encouraged to take responsibility for their own development and create learning plans that fit their needs and development goals best.

Succession planning

Each year Moog conducts an extensive talent review across our global enterprise that includes, among other important topics, a review of succession plans for many of our roles. To ensure the long-term continuity of our business, we actively manage the development of talent to fill the roles that are most critical to the on-going success of our Company.

Corporate social and environmental responsibility

Our values, rooted in trust, integrity, and collaboration, lay the foundation for Moog's commitment to corporate social and environmental responsibility. Beyond creating exciting technologies that solve our customers' difficult technical challenges, we believe that to be truly successful, it's crucial that we do our part to improve the world for current and future generations. For us, that means we are committed to: protecting our planet by minimizing our environmental impact; striving to contribute our time, talent and resources to strengthen the communities where we do business; and engaging in ethical practices. We're all in this together - when our local and global communities succeed, we succeed. Moog and its employees live this mantra with countless initiatives focused on supporting our communities both financially and with employee time.

Business ethics

Moog is fully dedicated to conducting ourselves by the letter and in the spirit of the many laws and standards that apply to our business. Ethics are deeply embedded in our values and business processes. The Company regularly re-enforces our commitment to ethics and integrity in employee communications, in our everyday actions and in processes and controls. As a part of our on-going efforts to ensure our employees conduct business with the highest levels of ethics and integrity, Moog has compliance training programs in multiple languages. The Company also maintains two ethics related hotlines, through which individuals can anonymously raise concerns they have about business behavior they do not feel comfortable discussing personally with business operations managers or human resources personnel. The Company's general confidential ethics hotline is administered by internal company counsel designated as Moog's ethics advocate. In addition, we maintain a separate hotline for cases wherein an employee believes that the Company's financial statements are materially misstated as a result of intentional acts or material weaknesses in the systems of internal control. This hotline is administered by the Company's corporate secretary.

Customers. Our principal customers are Original Equipment Manufacturers, or OEMs, and end users for whom we provide aftermarket support. Aerospace and defense OEM customers collectively represented 56% of 2020 sales. The majority of these sales are to a small number of large companies. Due to the long-term nature of many of the programs, many of our relationships with aerospace and defense OEM customers are based on long-term agreements. Our industrial OEM sales, which represented 32% of 2020 sales, are to a wide range of global customers and are normally based on lead times of 90 days or less. We also provide aftermarket support, consisting of spare and replacement parts and repair and overhaul services, for all of our products. Our major aftermarket customers are the U.S. Government and commercial airlines. In 2020, aftermarket sales accounted for 12% of total sales.

Significant customers in our three operating segments include:

- Aircraft Controls: Boeing, Lockheed Martin, Airbus, Northrup Grumman, Raytheon Technologies, Japan Aerospace, General Dynamics, Honeywell, BAE Systems Aerospace, Bombardier and the U.S. Government.
- Space and Defense Controls: Lockheed Martin, Northrup Grumman, Raytheon, Boeing, General Dynamics, Aerojet Rocketdyne, United Launch Alliance, Raytheon Technologies, L3Harris Technologies and the U.S. Government.
- Industrial Systems: McKesson, Phillips Healthcare, CAE, Nutricia, Integrated Medical Systems, Flight Safety, Mitsubishi Hitachi Power Systems TurboChef Technologies, MacArtney and Nestle.

International Operations. Our operations outside the United States are conducted primarily through wholly-owned foreign subsidiaries and are located predominantly in Europe and the Asia-Pacific region. See Note 21, Segments, of Item 8, Financial Statements and Supplementary Data of this report for information regarding sales by geographic area and Exhibit 21 of Item 15, Exhibits and Financial Statement Schedules of this report for a list of subsidiaries. Our international operations are subject to the usual risks inherent in international trade, including currency fluctuations, local government contracting regulations, local governmental restrictions on foreign investment and repatriation of profits, exchange controls, regulation of the import and distribution of foreign goods, as well as changing economic and social conditions in countries in which our operations are conducted.

Environmental Matters. See the discussion in Note 23, Commitments and Contingencies, of Item 8, Financial Statements and Supplementary Data of this report.

Website Access to Information. Our internet address is www.moog.com. We make our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and, if applicable, amendments to those reports, available on the investor relations portion of our website. The reports are free of charge and are available as soon as reasonably practicable after they are filed with the Securities and Exchange Commission. We have posted our corporate governance guidelines, Board committee charters and code of ethics to the investor relations portion of our website. This information is available in print to any shareholder upon request. All requests for these documents should be made to Moog's Manager of Investor Relations by calling 716-687-4225.

Information about our Executive Officers. Other than the changes noted below, the principal occupations of our executive officers for the past five years have been their employment with us in the same positions they currently hold.

On January 2, 2020, Donald R. Fishback, retired from his position as Chief Financial Officer of the Company.

On January 2, 2020, Jennifer Walter was named Chief Financial Officer. Previously, she was Vice President - Finance, a position she held since January 5, 2018. Prior to that she was Controller and Principal Accounting Officer, a position she held since 2008.

On December 1, 2017, Paul Wilkinson was named Vice President and Chief HR Officer. Previously, he was a Group Vice President and Global HR Director, Aircraft Group.

On August 11, 2015, R. Eric Burghardt was named Vice President and President, Aircraft Group. Previously, he was a Group Vice President and Finance Director. Effective May 3, 2019 he stepped down as President, Aircraft Group.

Executive Officers	Age	Year First Elected Officer
John R. Scannell Director; Chairman of the Board; Chief Executive Officer	57	2006
Jennifer Walter Vice President; Chief Financial Officer	49	2008
Donald R. Fishback Director; Vice President	64	1985
Maureen M. Athoe Vice President	62	2015
R. Eric Burghardt Vice President	61	2015
Patrick J. Roche Vice President	57	2012
Mark J. Trabert Vice President	61	2015
Paul Wilkinson Vice President	40	2017

In addition to the executive officers noted above, Robert J. Olivieri, 70, was elected Secretary in 2014. Mr. Olivieri's principal occupation is partner in the law firm of Hodgson Russ LLP.

Item 1A. Risk Factors.

COVID-19 PANDEMIC RISKS

We face various risks related to health pandemics such as the global COVID-19 pandemic, which may have material adverse consequences on our operations, financial position, cash flows, and those of our customers and suppliers. We face adverse effects related to the global COVID-19 pandemic, including disruption and volatility in the global capital markets, disruption in our global supply chain and a net reduction in our overall manufacturing activities. We would expect the COVID-19 pandemic to adversely affect our operations and financial position if significant portions of our workforce are unable to work effectively due to illness, quarantines, government actions, facility closures, or other restrictions in connection with the COVID-19 pandemic. To-date, substantially all of our operations and production activities in the U.S. and globally have remained operational during the COVID-19 pandemic. Many of our facilities are considered essential activities (including manufacturing for U.S. military contracts and meeting the demand of medical devices and sub-assemblies) and are exempt from closure directives. However, our manufacturing sites are subject to various local and national directives curtailing operations, requiring work from home and social distancing which otherwise could impact the efficiency of our operations. Such directives could change at any time. We continue to monitor the situation, assessing possible implications on our operations, supply chain, liquidity, cash flow and customer orders, and will continue taking actions in an effort to mitigate adverse consequences. Recognizing the unprecedented nature, scale and uncertainty associated with this global health crisis, the duration and extent of the on-going impacts cannot be reasonably estimated at this time.

STRATEGIC RISKS

We operate in highly competitive markets with competitors who may have greater resources than we possess. Many of our products are sold in highly competitive markets. Some of our competitors, especially in our industrial markets and medical markets, are larger, more diversified and have greater financial, marketing, production and research and development resources. Within the aerospace and defense industries, suppliers have consolidated to widen their product offerings and secure long-term sole-source positions. As a result, these competitors may be better able to withstand the effects of periodic economic downturns, including withstanding the current global pandemic, and their program wins could reduce the total number of viable suppliers and increase their market share. Our sales and operating margins will be negatively impacted if our competitors:

- develop products that are superior to our products,
- develop products of comparable quality and performance that are more competitively priced than our products,
- develop more efficient and effective manufacturing methods for their products and services, or
- adapt more quickly than we do to technological innovations or evolving customer requirements.

We believe that the principal points of competition in our markets are product quality, reliability, design and engineering capabilities, price, innovation, conformity to customers' specifications, timeliness of delivery, effectiveness of the distribution organization and quality of support after the sale. Maintaining or improving our competitive position requires continued investment in manufacturing, engineering, quality standards, marketing, customer service and support and our distribution networks. If we do not maintain sufficient resources to make these investments, are not successful in meeting our quality or delivery standards or are not successful in maintaining our competitive position, we could face pricing pressures or loss in market share, causing our operations and financial performance to suffer.

Our new products and technology research and development efforts are substantial and may not be successful which could reduce our sales and earnings. Technologies related to our products have undergone, and in the future may undergo, significant changes. In order to maintain a leadership position in the high-performance, precision controls market in the future, we have incurred, and we expect to continue to incur, expenses associated with research and development activities during the introduction of new products. Our technology has been developed through customer-funded and internally-funded research and development, as well as through business acquisitions. If we fail to predict customers' preferences or fail to provide viable technological solutions, we may experience inefficiencies that could delay or prevent the acceptance of new products or product enhancements. Also, the research and development expenses we incur may exceed our cost estimates and the new products we develop may not generate sales sufficient to offset our costs. Additionally, our competitors may develop technologies and products that have more competitive advantages than ours and render our technology uncompetitive or obsolete.

Our inability to adequately enforce and protect our intellectual property or defend against assertions of infringement could prevent or restrict our ability to compete. Protecting our intellectual property is critical in order to maintain a competitive advantage. We therefore rely on internally developed and acquired patents, trademarks, proprietary knowledge and technologies. Our inability to defend against the unauthorized use of these rights and assets could lead to reputational harm and have an adverse effect on our competitive position and on our results of operations and financial condition. Litigation may be necessary to protect our intellectual property rights or defend against claims of infringement. This litigation could result in significant costs and divert management's focus away from operations.

Our sales and earnings may be affected if we cannot identify, acquire or integrate strategic acquisitions, or as we conduct divestitures. Acquisitions are an element of our growth strategy as we opportunistically resume investments in our businesses. Our historical growth has depended, and our future growth is likely to depend, in part, on our ability to successfully identify, acquire and integrate acquired businesses. We intend to continue to seek additional acquisition opportunities throughout the world, both to expand into new markets and to enhance our position in existing markets. Growth by acquisition involves risk that could adversely affect our financial condition and operating results. We may not know the potential exposure to unanticipated liabilities. Additionally, the expected benefits or synergies might not be fully realized, integrating operations and personnel may be slowed and key employees, suppliers or customers of the acquired business may depart. As a result of our ongoing operational assessment, we may continue to divest assets or businesses if we deem the operations as non-strategic or no longer match the current customer demand. Divestitures could adversely affect our profitability and, under certain circumstances, require us to record impairment charges or a loss as a result of a transaction. In pursuing acquisition opportunities, integrating acquired businesses, or divesting business operations, management's time and attention may be diverted from our core business, while consuming resources and incurring expenses for these activities.

MARKET CONDITION RISKS

The markets we serve are cyclical and sensitive to domestic and foreign economic conditions and events, which may cause our operating results to fluctuate. The markets we serve are sensitive to fluctuations in general business cycles, global pandemics, domestic and foreign governmental tariffs, trade and monetary policies and economic conditions and events. For example, our defense programs are largely contingent on U.S. Department of Defense funding. In addition, our space programs rely on the same governmental funding as well as investment for commercial and exploration activities. Our aerospace programs are dependent on the highly cyclical commercial airline industry, which is driven by changes in fuel prices, fluctuating demand for travel and changing economic conditions. Demand for our industrial products is dependent upon several factors including levels of capital investment, the pace of product innovations and technology upgrades, changing economic conditions, and the current and forecasted price of oil and natural gas. If the global pandemic and related economic uncertainties continue to deteriorate, our operations could be negatively impacted through declines in our sales, profitability and cash flows as a result of lower orders, payment delays and price pressures for our products.

We depend heavily on government contracts that may not be fully funded or may be terminated, and the failure to receive funding or the termination of one or more of these contracts could reduce our sales and increase our costs. Sales to the U.S. Government and its prime contractors and subcontractors represent a significant portion of our business. In 2020, sales under U.S. Government contracts represented 41% of our total sales, primarily within Aircraft Controls and Space and Defense Controls. Sales to foreign governments represented 7% of our total sales. Funding for government programs can be structured into a series of individual contracts and depend on annual congressional appropriations, which are cyclical. At times when there are perceived threats to national security, U.S. Defense spending can increase; at other times, defense spending can decrease. Future levels of defense spending beyond 2020 are uncertain and subject to congressional debate and spending prioritization. Any reduction in future Department of Defense spending levels could adversely impact our sales, operating profit and our cash flow. We have resources applied to specific government contracts and if any of those contracts are rescheduled or terminated, we may incur substantial costs redeploying those resources.

The loss of The Boeing Company as a customer or a significant reduction in sales to The Boeing Company could adversely impact our operating results. We provide The Boeing Company, or Boeing, with controls for both military and commercial applications, which totaled 14% of our 2020 sales. Sales to Boeing's commercial airplane group are generally made under long-term supply agreements. Boeing operates in a competitive environment and continues to evaluate the size, scope and cost of their supplier base. We have seen lower commercial aircraft orders from Boeing, as they match their commercial production rates to the reduced global air traffic volume due to the COVID-19 pandemic. A further reduction in sales or the loss of Boeing as a customer could reduce our sales and earnings.

We may not realize the full amounts reflected in our backlog as revenue, which could adversely affect our future revenue and growth prospects. As of October 3, 2020, our total backlog was \$2.6 billion, which represents confirmed orders we believe will be recognized as revenue. There is no assurance that our customers will purchase all the orders represented in our backlog, due in part to governments' abilities to modify, curtail or terminate major programs. Due to the uncertain nature of our contracts with the U.S. Government and other foreign governments, we may not realize revenue from some of the orders that are included in our backlog. A portion of our backlog also relates to commercial aircraft programs as well as industrial programs. The COVID-19 pandemic has drastically reduced air traffic as travel restrictions and social distancing measures were implemented to help control the spread of the virus. The reduced air traffic has applied financial pressures on airlines, which have in turn dramatically reduced flight hours and delayed the purchases of new aircraft in order to preserve cash and liquidity. As Boeing and Airbus match their production rates with the reduced air traffic volume, we may never realize the full amounts included in our commercial backlog. If this occurs, our future revenue and growth prospects may be adversely affected.

OPERATIONAL RISKS

Our business operations may be adversely affected by information systems interruptions, intrusions or new software implementations. We rely extensively on various information technologies throughout our company supporting almost every business activity. In doing so, we store sensitive data including proprietary business information, intellectual property and confidential employee data on servers and databases, some of which are managed and administrated by third parties. Furthermore, we may have access to sensitive, confidential or personal information that may be subject to privacy and security laws and controls. Although we continue to review and enhance our computer systems and cybersecurity controls, information system disruptions, equipment failures or evolving cybersecurity attacks, such as unauthorized access, malicious software and other intrusions, could still occur and may lead to potential data corruption and exposure of proprietary and confidential information. Also as a result of the COVID-19 pandemic, our enablement of employees to work productively from home may increase our risk exposure to cyberattacks. Any information systems intrusion may cause operational stoppages, increased operational costs, fines, penalties and diminished competitive advantages through reputational damages. Additionally, we have and may continue to incur additional costs to comply with our customers' increased cybersecurity protections and standards, including those of the U.S. Government. Prior cyberattacks directed at us have not had a material impact on our financial results. In addition, we have embarked on multi-year business information system transformation and standardization projects. These endeavors will occupy additional resources, may divert attention from other operational activities, may cause our information systems to perform unexpectedly and may increase our risk exposure to cyberattacks. While we are investing significant resources throughout the planning and project management process, unanticipated delays could occur and could adversely affect our financial results.

We may not be able to prevent, or timely detect, issues with our products and our manufacturing processes which may adversely affect our operations and our earnings. We must continuously improve product development and manufacturing processes and systems to ensure we deliver high-quality, technically advanced products. Due to growth in operations, there is a risk our current manufacturing processes and systems are unable to maintain our high-quality and on-time delivery standards for our customers. If we are unable to maintain these standards, we could experience late deliveries and penalties, recalls, increased warranty costs, order cancellations and litigation.

If our subcontractors or suppliers fail to perform their contractual obligations, our prime contract performance and our ability to obtain future business could be materially and adversely impacted. We rely on subcontracts with other companies to perform portions of the service we provide to our customers on many of our contracts. There is a risk that we may have disputes with our subcontractors including disputes regarding the quality and timeliness of work performed by the subcontractor, customer concerns about the subcontractor, our failure to extend existing task orders or issue new task orders under a subcontract or our hiring of personnel of a subcontractor. Failure by our subcontractors to satisfactorily provide on a timely basis the agreed-upon, defect-free supplies, or perform the agreed-upon services, may materially and adversely impact our ability to perform our obligations as the prime contractor. Subcontractor performance deficiencies could result in a customer terminating our contract for default, which could expose us to liability and substantially impair our ability to compete for future orders. In addition, a delay or failure in our ability to obtain components and equipment parts from our suppliers may adversely affect our ability to perform our obligations to our customers.

The failure or misuse of our products may damage our reputation, necessitate a product recall or result in claims against us that exceed our insurance coverage, thereby requiring us to pay significant damages. Defects in the design and manufacture of our products or our subcontractors' products may necessitate a product recall. We include complex system designs and components in our products that could contain errors or defects, particularly when we incorporate new technologies into our products. If any of our products are defective, we could be required to redesign or recall those products, pay substantial damages or warranty claims and face actions by regulatory bodies and government authorities. Such an event could result in significant expenses, delay sales, inflate inventory, cause reputational damage or cause us to withdraw from certain markets. We are also exposed to product liability claims. Many of our products are used in applications where their failure or misuse could result in significant property loss and serious personal injury or death. We carry product liability insurance consistent with industry norms. However, these insurance coverages may not be sufficient to fully cover the payment of any potential claim. A product recall or a product liability claim not covered by insurance could have a material adverse effect on our business, financial condition and results of operations.

FINANCIAL RISKS

We make estimates in accounting for over-time contracts, and changes in these estimates may have significant impacts on our earnings. We have over-time contracts with some of our customers, predominantly in our aerospace and defense markets. We recognize revenue using an input method that uses costs incurred to date to measure progress toward completion ("cost-to-cost"). Changes in these required estimates could have a material adverse effect on sales and profits. Any adjustments are recognized in the period in which the change becomes known using the cumulative catch-up method of accounting. For contracts with anticipated losses at completion, we establish a provision for the entire amount of the estimated remaining loss and charge it against income in the period in which the loss becomes known and can be reasonably estimated. Amounts representing performance incentives, penalties, contract claims or impacts of scope change negotiations are considered in estimating revenues, costs and profits when they can be reliably estimated and realization is considered probable. Due to the substantial judgments involved with this process, our actual results could differ materially or could be settled unfavorably from our estimates. See "Note 2 - Revenue from Contracts with Customers" in Part II of this form 10-K.

We enter into fixed-price contracts, which could subject us to losses if we have cost overruns. In 2020, fixed-price contracts represented 89% of our sales that were accounted for using the cost-to-cost method. On fixed-price contracts, we agree to perform the scope of work specified in the contract for a predetermined price. Depending on the fixed price negotiated, these contracts may provide us with an opportunity to achieve higher profits based on the relationship between our total contract costs and the contract's fixed price. However, we bear the risk that increased or unexpected costs may reduce our profit or cause us to incur a loss on the contract, which would reduce our net earnings. Contract loss reserves are most commonly associated with fixed-price contracts that involve the design and development of innovative control systems to meet the customer's specifications.

Our indebtedness and restrictive covenants under our credit facilities could limit our operational and financial flexibility. We have incurred significant indebtedness, and may incur additional debt as we opportunistically resume investments for operations, research and development, capital expenditures and acquisitions in a measured and balanced way. Our ability to make interest and scheduled principal payments and operate within the restrictive covenants could be adversely impacted by changes in the availability, terms and cost of capital, changes in interest rates or changes in our credit ratings or our outlook. These changes could increase our cost of business, limiting our ability to meet operational and capital needs, react to changes in market conditions and to pursue acquisition opportunities, thereby placing us at a competitive disadvantage.

The phase out of LIBOR may negatively impact our debt agreements and financial position, results of operations and liquidity. In July 2017, the United Kingdom's Financial Conduct Authority announced that it intends to phase out LIBOR by the end of 2021. It is unclear whether new methods of calculating LIBOR will be established or whether different benchmark rates used to price indebtedness will develop. If LIBOR ceases to exist, we may need to renegotiate our revolving credit facility and our securitization facility, both of which extend beyond 2021 and utilize LIBOR as a factor in determining the interest rate. In doing so, we may be negatively impacted by the renegotiated terms and costs of indebtedness. In addition, the overall financial markets may be disrupted as a result of the phase out or replacement of LIBOR, which could have an adverse effect on our cost of capital and our financial position. We continue to monitor the LIBOR transition and will work to minimize any impact.

Significant changes in discount rates, rates of return on pension assets, mortality tables and other factors could adversely affect our earnings and equity and increase our pension funding requirements. Pension costs and obligations are determined using actual results as well as actuarial valuations that involve several assumptions. The most critical assumptions are the discount rate, the long-term expected return on assets and mortality tables. Other assumptions include salary increases and retirement age. Some of these assumptions, such as the discount rate and return on pension assets, are reflective of economic conditions and largely out of our control. Despite our largest pension plan being fully funded, changes in the pension assumptions could adversely affect our earnings, equity and funding requirements.

A write-off of all or part of our goodwill or other intangible assets could adversely affect our operating results and net worth. Goodwill and other intangible assets are a substantial portion of our assets. At October 3, 2020, goodwill was \$822 million and other intangible assets were \$85 million of our total assets of \$3.2 billion. Our goodwill and other intangible assets may increase in the future since our growth strategy includes acquisitions. However, we may have to write off all or part of our goodwill or other intangible assets if their value becomes impaired. Although this write-off would be a non-cash charge, it could reduce our earnings and our financial condition significantly. We review whether goodwill or other intangible assets have been impaired annually, or more frequently, if there have been changes in circumstances or conditions.

Unforeseen exposure to additional income tax liabilities may affect our operating results. Our distribution of taxable income is subject to domestic and, as a result of our significant manufacturing and sales presence in foreign countries, foreign tax jurisdictions. Our effective tax rate and earnings may be affected by shifts in our mix of earnings in countries with varying statutory tax rates, changes in the valuation of deferred tax assets and outcomes of any audits performed on previous tax returns. Additionally, any alterations to tax regulations or interpretations could have significant impacts on our effective tax rates and on our deferred tax assets and liabilities.

LEGAL AND COMPLIANCE RISKS

Contracting on government programs is subject to significant regulation, including rules related to bidding, billing and accounting standards, and any false claims or non-compliance could subject us to fines, penalties or possible debarment. We are subject to risks associated with government program contracting, including substantial civil and criminal fines and penalties. These fines and penalties could be imposed for failing to follow procurement integrity and bidding rules, employing improper billing practices or otherwise failing to follow cost accounting standards, receiving or paying kickbacks or filing false claims. We have been, and expect to continue to be, subjected to audits and investigations by U.S. and foreign government agencies and authorities. The failure to comply with the terms of our government contracts could harm our business reputation. It could also result in our progress payments being withheld or our suspension or debarment from future government contracts, which could have a material effect on our operational and financial results.

Our operations in foreign countries expose us to political and currency risks and adverse changes in local legal and regulatory environments. We have significant manufacturing and sales operations in foreign countries. In addition, our domestic operations sell to foreign customers. Our financial results may be adversely affected by fluctuations in foreign currencies and by the translation of the financial statements of our foreign subsidiaries from local currencies into U.S. dollars. We expect international operations and export sales to contribute to our earnings for the foreseeable future. Both the sales from international operations and export sales are subject in varying degrees to risks inherent in doing business outside of the United States. Such risks include the possibility of unfavorable circumstances arising from host country laws or regulations including privacy laws protecting personal data, changes in tariff and trade barriers and import or export licensing requirements. See "Note 21 - Segments" in Part II of this form 10-K.

Government regulations could limit our ability to sell our products outside the United States and otherwise adversely affect our business. Our failure to obtain, or fully adhere to the limitations contained in the requisite licenses, meet registration standards or comply with other government export regulations would hinder our ability to generate revenues from the sale of our products outside the United States. In addition, the U.S. Government has established and, from time to time, revises sanctions that restrict or prohibit U.S. companies and their subsidiaries from doing business with certain foreign countries, entities and individuals. The absence of comparable restrictions on competitors in other countries may adversely affect our competitive position. In order to sell our products in European Union countries, we must satisfy certain technical requirements. If we are unable to comply with those requirements with respect to a significant quantity of our products, our sales in Europe would be restricted. Doing business internationally also subjects us to numerous U.S. and foreign laws and regulations, including regulations relating to import-export control, technology transfer restrictions, anti-bribery, privacy regulations and anti-boycott provisions. From time to time, we may file voluntary disclosure reports with the U.S. Department of State and the Department of Commerce regarding certain violations of U.S. export laws and regulations discovered by us in the course of our business activities, employee training or internal reviews and audits. To date, our voluntary disclosures have not resulted in a fine, penalty, or export privilege denial or restriction that has materially impacted our financial condition or ability to export. Our failure, or failure by an authorized agent or representative that is attributable to us, to comply with these laws and regulations could result in administrative, civil or criminal liabilities. In the extreme case, these failures could result in financial penalties, suspension or debarment from government contracts or suspension of our export privileges, which could have a material adverse effect on us. See "Note 21 - Segments" in Part II of this form 10-K.

We are involved in various legal proceedings, the outcome of which may be unfavorable to us. Our business may be adversely impacted by the outcome of legal proceedings and other contingencies that cannot be predicted with certainty. We estimate loss contingencies and establish reserves based on our assessment where liability is deemed probable and reasonably estimable given the facts and circumstances known to us at a particular point in time. Subsequent developments may affect our assessment and estimates of the loss contingencies recognized as liabilities.

Our operations are subject to environmental laws, and complying with those laws may cause us to incur significant costs. Our operations and facilities are subject to numerous stringent environmental laws and regulations. Although we believe that we are in material compliance with these laws and regulations, future changes in these laws, regulations or interpretations of them, or changes in the nature of our operations may require us to make significant capital expenditures to ensure compliance. We have been and are currently involved in environmental remediation activities. The cost of these activities may become significant depending on the discovery of additional environmental exposures at sites that we currently own or operate, at sites that we formerly owned or operated, or at sites to which we have sent hazardous substances or wastes for treatment, recycling or disposal.

GENERAL RISKS

The United Kingdom's decision to exit the European Union may result in short-term and long-term adverse impacts on our results of operations. In January 2020, the United Kingdom officially left the European Union and is in a transition period until December 2020. The resulting outcome of the United Kingdom's decision could adversely affect our business and our results of operations. In 2020, our United Kingdom operations represented approximately 7% of our consolidated net sales across all three segments. In the short-term, the results of the negotiated terms could create volatility in the currency exchange rate of the British Pound, which would negatively impact our financial results. In the longer term, any impact from Brexit on our United Kingdom operations will depend on the outcome of yet-to-be negotiated tariff, trade, regulatory and other matters. While we have established cross-segment teams and adopted measures to mitigate the potential risks within the current uncertain environment, such measures may negatively impact our operations and our financial results.

Escalating tariffs, restrictions on imports or other trade barriers between the United States and various countries may impact our results of operations. Uncertainty remains with respect to trade policies, treaties, government regulations and tariffs between the United States and other countries, both where we source products and where we have large customers. The current U.S. administration has called for substantial changes to U.S. foreign trade policy including imposing greater restrictions on international trade with significant increases in tariffs on goods imported into the U.S. In the near-term, we expect these tariffs will negatively impact our costs to in-source materials, primarily from China, which could negatively impact our operating results. In the longer-term, these tariffs may negatively impact customer order volume if the resulting higher prices for aircraft restrict future orders. The potential loss of orders would negatively impact our financial results including lower sales, operating profits and cash flow.

Future terror attacks, war, natural disasters or other catastrophic events beyond our control could negatively impact our business. Terror attacks, war or other civil disturbances, natural disasters and other catastrophic events could lead to economic instability and decreased demand for commercial products, which could negatively impact our business, financial condition, results of operations and cash flows. From time to time, terrorist attacks worldwide have caused instability in global financial markets and the aviation industry. Also, our facilities and suppliers are located throughout the world and could be subject to damage from fires, floods, earthquakes or other natural or man-made disasters. Although we carry third party property insurance covering these and other risks, our inability to meet customers' schedules as a result of a catastrophe may result in the loss of customers or significantly increase costs, including penalty claims under customer contracts.

Our performance could suffer if we cannot maintain our culture as well as attract, retain and engage our employees. We believe our culture is our strongest asset and is the foundation of our business. Our culture focuses on trust, respect, collaboration, confidence and empowerment. Our strong culture allows us to recruit and retain top-level talent. Focusing on talent in the organization is one of our three company-wide initiatives, along with lean and innovation. We believe our employees and experienced leadership group are competitive advantages, as the best people, over time, produce the best results. If we are unable to carry these values forward by not attracting the most talented candidates, by not retaining and engaging our employees, or by not investing in their talent and personal development, our operational and financial performances could suffer.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

On October 3, 2020, we occupied 5,549,000 square feet of space, distributed by segment as follows:

	Square Feet		Total
	Owned	Leased	
Aircraft Controls	1,475,000	359,000	1,834,000
Space and Defense Controls	912,000	424,000	1,336,000
Industrial Systems	1,709,000	650,000	2,359,000
Corporate Headquarters	20,000	—	20,000
Total	4,116,000	1,433,000	5,549,000

We have principal manufacturing facilities in the United States and countries throughout the world in the following locations:

- Aircraft Controls - U.S., Philippines and United Kingdom.
- Space and Defense Controls - U.S., United Kingdom and Ireland.
- Industrial Systems - U.S., Germany, Czech Republic, Italy, Costa Rica, China, United Kingdom, Netherlands, Luxembourg, Philippines, Japan, Canada, India and Lithuania.

Our corporate headquarters is located in East Aurora, New York.

We believe that our properties have been adequately maintained and are generally in good condition. Operating leases for our properties expire at various times from 2021 through 2057. Upon the expiration of our current leases, we believe that we will be able to either secure renewal terms or enter into leases for alternative locations at market terms.

Item 3. Legal Proceedings.

From time to time, we are involved in legal proceedings. We are not a party to any pending legal proceedings that management believes will result in a material adverse effect on our financial condition, results of operations or cash flows.

Item 4. Mine Safety Disclosures.

Not applicable.

PART II

Item 5. Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities.

Our two classes of common shares, Class A common stock and Class B common stock, are traded on the New York Stock Exchange ("NYSE") under the ticker symbols MOG.A and MOG.B.

The number of shareholders of record of Class A common stock and Class B common stock was 603 and 720, respectively, as of November 10, 2020.

The following table summarizes our purchases of our common stock for the quarter ended October 3, 2020.

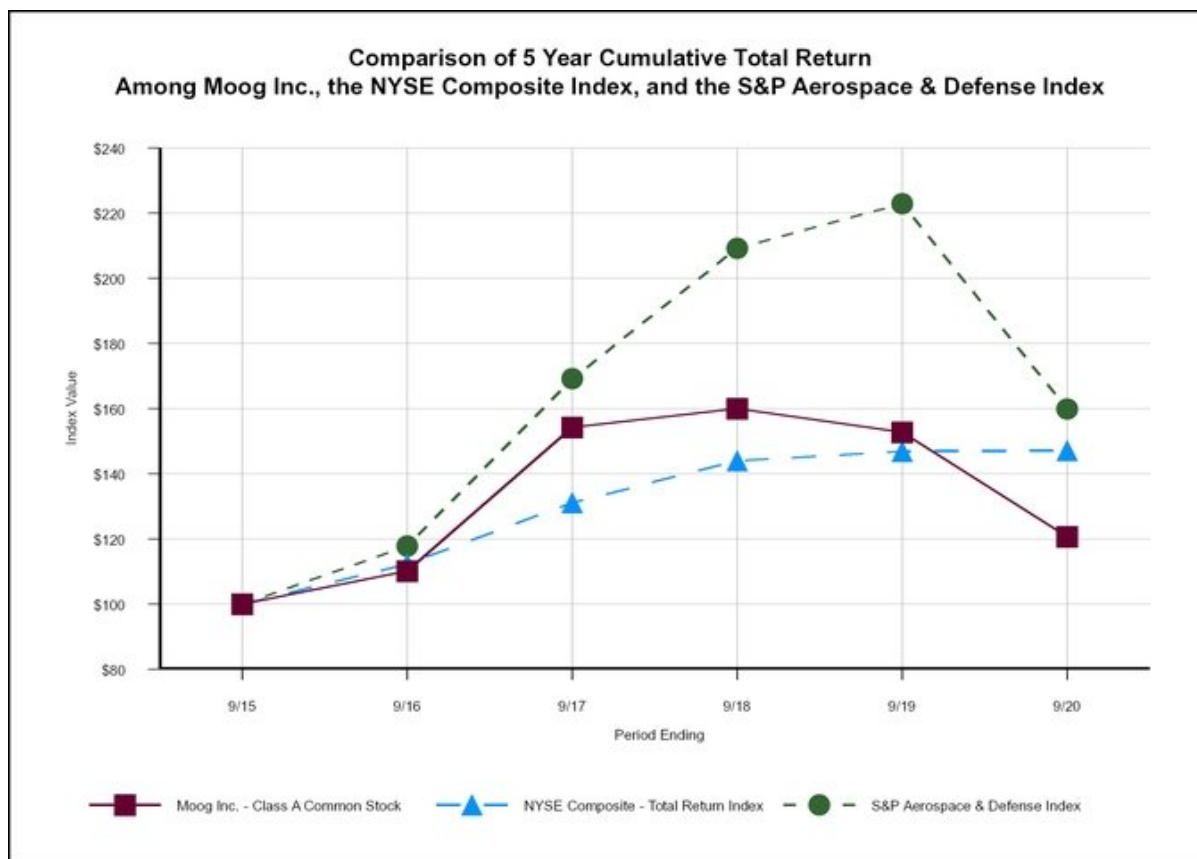
Issuer Purchases of Equity Securities

Period	(a) Total Number of Shares Purchased (1)(2)	(b) Average Price Paid Per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs (3)	(d) Maximum Number (or Approx. Dollar Value) of Shares that May Yet Be Purchased Under Plans or Programs (3)
June 28, 2020 - August 1, 2020	83,866	\$ 52.92	—	765,320
August 2, 2020 - August 29, 2020	225,524	60.66	224,456	540,864
August 30, 2020 - October 3, 2020	380,305	61.93	374,673	166,191
Total	689,695	\$ 60.42	599,129	166,191

- (1) Reflects purchases by the Moog Inc. Stock Employee Compensation Trust Agreement ("SECT") of shares of Class B common stock from the Moog Inc. Retirement Savings Plan ("RSP") and the Employee Stock Purchase Plan ("ESPP") as follows: 7,610 shares at \$53.16 per share during July; 984 shares at \$57.57 per share during August and 1,113 shares at \$64.02 per share during September. In connection with the issuance of shares to the Employee Stock Purchase Plan ("ESPP"), we purchased 76,256 Class B shares at \$52.90 per share from the SECT during July.
- (2) In connection with the exercise of equity-based compensation awards, we accept delivery of shares to pay for the exercise price and withhold shares for tax withholding obligations. We accepted delivery of 84 shares at \$58.73 per share in August and 4,519 shares at \$64.55 per share in September in connection with the exercise of equity-based awards.
- (3) The Board of Directors has authorized a share repurchase program. This program has been amended from time to time to authorize additional repurchases up to an aggregate 13 million common shares. The program permits the purchase of shares of Class A or Class B common stock in open market or privately negotiated transactions at the discretion of management. In August, we purchased 224,456 Class A shares at an average price of \$60.68. In September, we purchased 374,673 Class A shares at an average price of \$61.90. The purchases identified with notes (1) and (2) in column (a) are not included in this program.

Performance Graph

The following graph and tables show the performance of the Company's Class A common stock compared to the NYSE Composite-Total Return Index and the S&P Aerospace & Defense Index for a \$100 investment made on September 30, 2015, including reinvestment of any dividends.



	9/15	9/16	9/17	9/18	9/19	9/20
Moog Inc. - Class A Common Stock	\$ 100.00	\$ 110.12	\$ 154.30	\$ 159.99	\$ 152.78	\$ 120.79
NYSE Composite - Total Return Index	100.00	112.35	131.16	144.02	146.94	147.15
S&P Aerospace & Defense Index	100.00	117.87	169.18	209.29	222.91	159.87

Item 6. Selected Financial Data.

For a more detailed discussion of 2018 through 2020, refer to Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations of this report and Item 8, Financial Statements and Supplementary Data of this report.

(dollars in thousands, except per share data)	2020	2019	2018	2017	2016
RESULTS FROM OPERATIONS					
Net sales	\$ 2,884,554	\$ 2,904,663	\$ 2,709,468	\$ 2,497,524	\$ 2,411,937
Net earnings	9,205	174,548	95,240	143,157	126,745
Net earnings per share					
Basic	\$ 0.28	\$ 5.01	\$ 2.67	\$ 3.99	\$ 3.49
Diluted	\$ 0.28	\$ 4.96	\$ 2.64	\$ 3.95	\$ 3.47
Dividends declared per share	\$ 0.75	\$ 1.00	\$ 0.50	\$ —	\$ —
Weighted-average shares outstanding					
Basic	33,257,684	34,854,614	35,661,638	35,852,448	36,277,445
Diluted	33,437,801	35,178,968	36,052,307	36,230,043	36,529,344
FINANCIAL POSITION					
Cash and cash equivalents	\$ 84,583	\$ 89,702	\$ 125,584	\$ 368,073	\$ 325,128
Working capital	902,933	901,315	797,919	997,005	938,295
Total assets	3,225,831	3,114,237	2,964,048	3,090,592	3,004,974
Indebtedness - total	930,332	833,233	862,824	957,037	1,006,393
Shareholders' equity	1,243,083	1,322,481	1,224,986	1,214,304	988,411
Shareholders' equity per common share outstanding	\$ 38.65	\$ 38.12	\$ 35.20	\$ 33.94	\$ 27.56
SUPPLEMENTAL FINANCIAL DATA					
Capital expenditures	\$ 88,284	\$ 118,422	\$ 94,517	\$ 75,798	\$ 67,208
Depreciation and amortization	86,972	85,260	88,572	90,167	98,732
Research and development	110,865	126,453	129,838	144,157	147,336
Total backlog	2,555,129	2,232,605	n/a	n/a	n/a
Twelve-month backlog	1,658,344	1,502,028	1,481,230	1,211,797	1,224,878
RATIOS					
Net return on sales	0.3%	6.0%	3.5%	5.7%	5.3%
Return on shareholders' equity	0.7%	13.4%	7.7%	13.4%	12.6%
Current ratio	2.3	2.2	2.2	2.6	2.6
Net debt to capitalization	40%	36%	38%	33%	41%

Notes and definitions for the above table:

- All periods include the effects of our share repurchase program. See the Consolidated Statements of Shareholders' Equity and Consolidated Statements of Cash Flow at Item 8, Financial Statements and Supplementary Data of this report.
- All periods include the effects of acquisitions and divestitures. See Note 3, Acquisitions and Divestitures, at Item 8, Financial Statements and Supplementary Data of this report.
- 2020 includes long-lived asset impairment charges and the effect of a pension settlement in our qualified U.S. defined benefit pension plan. See the Consolidated Statements of Earnings, Note 1, Summary of Significant Accounting Policies and Note 14, Employee Benefit Plans, at Item 8, Financial Statements and Supplementary Data of this report.
- 2017 to 2020 includes the retrospective application of a change in accounting method for the determination of the market-related value of assets for a class of assets within our U.S. defined benefit pension plan. See Note 1, Summary of Significant Accounting Policies, at Item 8, Financial Statements and Supplementary Data of this report.
- Net earnings and net earnings per share represents amounts attributable to common shareholders.
- Twelve-month backlog is defined as confirmed orders we believe will be recognized as revenue within the next twelve months.
- Net debt to capitalization is computed as net debt (total debt less cash and cash equivalents) divided by capitalization (the sum of net debt and shareholders' equity).

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

OVERVIEW

We are a worldwide designer, manufacturer and systems integrator of high performance precision motion and fluid controls and control systems for a broad range of applications in aerospace and defense and industrial markets.

Within the aerospace and defense market, our products and systems include:

- Defense market - primary and secondary flight controls for military aircraft, stabilization and automatic ammunition loading controls for armored combat vehicles, tactical and strategic missile steering controls and gun aiming controls.
- Commercial aircraft market - primary and secondary flight controls for commercial aircraft.
- Space market - satellite positioning controls and thrust vector controls for space launch vehicles.

In the industrial market, our products are used in a wide range of applications including:

- Industrial automation market - components and systems for injection and blow molding machinery, heavy industry applications for steel and aluminum production, metal forming presses, flight simulation motion control systems and material and automotive structural and fatigue testing systems.
- Medical market - components and systems for enteral clinical nutrition and infusion therapy pumps, CT scan medical equipment, ultrasonic sensors and surgical handpieces and sleep apnea equipment.
- Energy market - control and safety components for steam and gas power generation turbines and oil and gas exploration components and systems.

We operate under three segments, Aircraft Controls, Space and Defense Controls and Industrial Systems. Our principal manufacturing facilities are located in the United States, Philippines, United Kingdom, Germany, Czech Republic, Italy, Costa Rica, China, Netherlands, Luxembourg, Japan, Canada, India and Lithuania.

Under ASC 606, 65% of revenue was recognized over time for the year ended October 3, 2020, using the cost-to-cost method of accounting. The over-time method of revenue recognition is predominantly used in Aircraft Controls and Space and Defense Controls. We use this method for U.S. Government contracts and repair and overhaul arrangements as we are creating or enhancing assets that the customer controls. In addition, many of our large commercial contracts qualify for over-time accounting as our performance does not create an asset with an alternative use and we have an enforceable right to payment for performance completed to date.

For the year ended October 3, 2020, 35% of revenue was recognized at the point in time control transferred to the customer. This method of revenue recognition is used most frequently in Industrial Systems. We use this method for commercial contracts in which the asset being created has an alternative use. We determine the point in time control transfers to the customer by weighing the five indicators provided by ASC 606. When control has transferred to the customer, profit is generated as cost of sales is recorded and as revenue is recognized.

We concentrate on providing our customers with products designed and manufactured to the highest quality standards. Our technical experts work collaboratively around the world, delivering capabilities for mission-critical solutions. These core operational principles are necessary as our products are applied in demanding applications, "When Performance Really Matters®." By capitalizing on these core foundational strengths, we believe we have achieved a leadership position in the high performance, precision controls market. Additionally, these strengths yield a broad control product portfolio, across a diverse base of customers and end markets.

By focusing on customer intimacy and commitment to solving our customers' most demanding technical problems, we have been able to expand our control product franchise to multiple markets; organically growing from a high-performance components manufacturer to a high-performance systems designer, manufacturer and systems integrator. In addition, we continue expanding our content positions on our current platforms, seeking to be the dominant supplier in the niche markets we serve. We also look for innovation in all aspects of our business, employing new technologies to improve productivity and operational performance.

Our fundamental long-term strategies to achieve our goals center around talent, lean and innovation and include:

- a strong leadership team that has positioned the Company for growth,
- utilizing our global capabilities and strong engineering heritage to innovate,
- maintaining our technological excellence by solving our customers' most demanding technical problems in applications "When Performance Really Matters®,"
- continuing to invest in talent development to strengthen employee performance, and
- maximizing customer value by implementing lean enterprise principles.

These activities will help us achieve our financial objective of increasing shareholder value with sustainable competitive advantages across our segments. In doing so, we expect to maintain a balanced, diversified portfolio in terms of markets served, product applications, customer base and geographic presence.

We focus on improving shareholder value through strategic revenue growth, both acquired and organic, through improving operating efficiencies and manufacturing initiatives and through utilizing low cost manufacturing facilities without compromising quality. Historically, we have taken a balanced approach to capital deployment in order to maximize shareholder returns over the long-term. Our activities have included strategic acquisitions, share buybacks and dividend payments. In the current COVID-19 environment, we have shifted our capital deployment strategies from a long-term perspective that balances growth and capital returns with one that focuses on liquidity and leverage in the near-term. Our immediate financial focus will continue to revolve around cash preservation and cost management, while opportunistically resuming investments in a measured and balanced way. We are committed to ensuring that we have adequate liquidity during this crisis, protecting the long-term health of the Company and emerging financially strong and ready to capitalize on opportunities once this environment stabilizes.

Acquisitions, Divestitures and Equity Method Investments

All of our acquisitions are accounted for under the purchase method and, accordingly, the operating results for the acquired companies are included in the Consolidated Statements of Earnings from the respective dates of acquisition. Under purchase accounting, we record assets and liabilities at fair value and such amounts are reflected in the respective captions on the Consolidated Balance Sheets. The purchase price described for each acquisition below is net of any cash acquired, includes debt issued or assumed and the fair value of contingent consideration.

On November 28, 2019, we acquired Gesellschaft für Antriebstechnik mbH and GAT Inc. (GAT), headquartered in Geisenheim, Germany for a purchase price of \$54 million, net of acquired cash. GAT designs and manufactures high-end fluid rotating unions and slip rings. This operation is included in our Industrial Systems segment.

In the first quarter of 2020, we sold a non-core business of our Industrial Systems segment for \$2 million in net consideration and recorded a minimal gain in other income.

In 2019, we sold a non-core business of our Industrial Systems segment for \$4 million in cash and recorded a gain in other income of \$3 million.

CRITICAL ACCOUNTING POLICIES

Our financial statements and accompanying notes are prepared in accordance with U.S. generally accepted accounting principles. The preparation of these consolidated financial statements requires us to make estimates, assumptions and judgments that affect the amounts reported. These estimates, assumptions and judgments are affected by our application of accounting policies, which are discussed in Note 1, Summary of Significant Accounting Policies, of Item 8, Financial Statements and Supplementary Data of this report. We believe the accounting policies discussed below are the most critical in understanding and evaluating our financial results. These critical accounting policies have been reviewed with the Audit Committee of our Board of Directors.

Revenue Recognition on Over-Time Contracts

We recognize revenue from contracts with customers using the five-step model prescribed in ASC 606. For contracts that qualify for over time treatment, we recognize revenue as control of the promised goods or services is being transferred to the customer. Revenue recognized over time for the year ended October 3, 2020 was 65% of total revenue. The cost-to-cost method of accounting as determined by the ratio of cumulative costs incurred to date to estimated total contract costs at completion, multiplied by the total estimated contract revenue, less cumulative revenue recognized in prior periods. We believe this is an appropriate measure of progress toward satisfaction of performance obligations as this measure most accurately depicts the progress of our work and transfer of control to our customers. Changes in estimates affecting sales, costs and profits are recognized in the period in which the change becomes known using the cumulative catch-up method of accounting. Revenue and cost estimates for substantially all over-time contract performance obligations are reviewed and updated quarterly. For additional discussion on revenue recognition, see Note 2, Revenue from Contracts with Customers, of Item 8, Financial Statements and Supplementary Data, of this report.

Contract Reserves

At October 3, 2020, we had contract reserves of \$72 million. Contract reserves are comprised of contract loss reserves, recall reserves, and contract-related reserves. Contract loss reserves are recorded for open contracts where it is anticipated that contract costs will be greater than contract income and are determined considering all direct and indirect contract costs, exclusive of any selling, general or administrative cost allocations that are treated as period expenses. In accordance with ASC 606, we calculate contract losses at the contract level, versus the performance obligation level. Recall reserves are recorded when additional work is needed on completed products for them to meet contract specifications. Contract-related reserves are recorded for other reasons, such as delivery issues outside of the ordinary scope of the contract. For all three types of reserves, a provision for the entire amount of the loss is charged against income in the period in which the loss becomes known and can be reasonably estimated by management.

Reserves for Inventory Valuation

At October 3, 2020, we had net inventories of \$623 million, or 39% of current assets. Reserves for inventory were \$153 million, or 20% of gross inventories. Inventories are stated at the lower of cost or net realizable value with cost determined primarily on the first-in, first-out method of valuation.

We record valuation reserves to provide for slow-moving or obsolete inventory by principally using a formula-based method that increases the valuation reserve as the inventory ages. We also take specific circumstances into consideration. We consider overall inventory levels in relation to firm customer backlog in addition to forecasted demand including aftermarket sales. Changes in these and other factors, such as low demand and technological obsolescence, could cause us to increase our reserves for inventory valuation, which would negatively impact our gross margin. As we record provisions within cost of sales to increase inventory valuation reserves, we establish a new, lower cost basis for the inventory.

Reviews for Impairment of Goodwill

At October 3, 2020, we had \$822 million of goodwill, or 25% of total assets. We test goodwill for impairment for each of our reporting units at least annually, during our fourth quarter, and whenever events occur or circumstances change, such as changes in the business climate, poor indicators of operating performance or the sale or disposition of a significant portion of a reporting unit. We also test goodwill for impairment when there is a change in reporting units.

We identify our reporting units by assessing whether the components of our operating segments constitute businesses for which discrete financial information is available and segment management regularly reviews the operating results of those components. We aggregate certain components based upon an evaluation of the facts and circumstances, including the nature of products and services and the extent of shared assets and resources. As a result, we have four reporting units.

Companies may perform a qualitative assessment as the initial step in the annual goodwill impairment testing process for all or selected reporting units. Companies are also allowed to bypass the qualitative analysis and perform a quantitative analysis if desired. Economic uncertainties and the length of time from the calculation of a baseline fair value are factors that we consider in determining whether to perform a quantitative test.

When we evaluate the potential for goodwill impairment using a qualitative assessment, we consider factors including, but not limited to, macroeconomic conditions, industry conditions, the competitive environment, changes in the market for our products and services, regulatory and political developments, entity specific factors such as strategy and changes in key personnel and overall financial performance. If, after completing this assessment, it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying value, we proceed to a quantitative two-step impairment test.

Quantitative testing first requires a comparison of the fair value of each reporting unit to its carrying value. We principally use the discounted cash flow method to estimate the fair value of our reporting units. The discounted cash flow method incorporates various assumptions, the most significant being projected revenue growth rates, operating margins and cash flows, the terminal growth rate and the discount rate. Management projects revenue growth rates, operating margins and cash flows based on each reporting unit's current business, expected developments and operational strategies typically over a five-year period. If the carrying value of the reporting unit exceeds its fair value, goodwill is considered impaired and any loss must be measured.

In measuring the impairment loss, the implied fair value of goodwill is determined by assigning a fair value to all of the reporting unit's assets and liabilities, including any unrecognized intangible assets, as if the reporting unit had been acquired in a business combination at fair value. If the carrying amount of the reporting unit's goodwill exceeds the implied fair value of that goodwill, an impairment loss would be recognized in an amount equal to that excess.

The determination of our assumptions is subjective and requires significant estimates. Changes in these estimates and assumptions could materially affect the results of our reviews for impairment of goodwill.

For our annual test of goodwill for impairment in 2020, we performed a qualitative assessment for each of our four reporting units.

We evaluated the potential for goodwill impairment by considering macroeconomic conditions, industry and market conditions, cost factors, both current and future expected financial performance, and relevant entity-specific events for each of the reporting units. We also considered our overall market performance discretely as well as in relation to our peers. The results of our qualitative assessment indicated that it is more likely than not that the fair value of each of the reporting units exceed its carrying value; and therefore, a quantitative two-step impairment test was not necessary.

Reviews for Impairment of Long-Lived Assets

Long-lived assets held for use, which primarily includes finite-lived intangible assets, property, plant and equipment and right-of-use assets, are evaluated for impairment whenever events or circumstances indicate that the undiscounted net cash flows to be generated by their use over their expected useful lives and eventual disposition are less than their carrying value. The long-term nature of these assets requires the estimation of their cash inflows and outflows several years into the future and only takes into consideration technological advances known at the time of the impairment test.

During 2020, we recorded \$38 million of impairment charges for property, plant and equipment, right-of-use assets and intangible assets.

Pension Assumptions

We maintain various defined benefit pension plans covering employees at certain locations. In 2020, pension expense for all defined benefit plans was \$46 million, exclusive of the \$121 million pension settlement resulting from the transfer of future benefits obligations and annuity administration for certain retirees and beneficiaries in our qualified U.S. defined benefit pension plan. For further information, refer to Note 14, Employee Benefit Plans, of Item 8, Financial Statements and Supplementary Data of this report. Pension obligations and the related costs are determined using actuarial valuations that involve several assumptions. The most critical assumptions are the discount rate, the long-term expected return on assets and mortality rates. Other assumptions include salary increases and retirement age.

We use the spot rate approach to estimate the service and interest cost components of the net periodic benefit cost for most of our plans. Under this approach the service cost is determined by applying the discount rates along the yield curve to the specific service cost cash flows to determine the present value. The interest cost component is computed by using each assumed discount rate along the curve. The discount rates used in determining expense for the U.S. Employees' Retirement Plan, our largest plan, in 2020 were 3.5% for service cost and 2.9% for interest cost, compared to 4.4% and 4.1%, respectively, in 2019. A 50 basis point decrease in the discount rates would increase our annual pension expense by \$1 million. The discount rates are used to state expected future cash flows at present value. Using a higher discount rate decreases the present value of pension obligations and decreases pension expense. We use the Aon Hewitt AA Above Median yield curve to determine the discount rate for our U.S. defined benefit plans at year end. We believe that the Aon Hewitt AA Above Median yield curve best mirrors the yields of bonds that would be selected by management if actions were taken to settle our obligation.

Mortality rates are used to estimate the life expectancy of plan participants during which they are expected to receive benefit payments. We use a modified version of the mortality table and projection scale published by the Society of Actuaries (SOA), which reflects improvements consistent with the Social Security Administration, as a basis for our mortality assumptions for our U.S. plans. We believe the use of this modified table and projection scale best reflects our demographics and anticipated plan outcomes.

The long-term expected return on assets assumption reflects the average rate of return expected on funds invested or to be invested to provide for the benefits included in the projected benefit obligation. In determining the long-term expected return on assets assumption, we consider our current and target asset allocations. We consider the relative weighting of plan assets, the historical performance of total plan assets and individual asset classes and economic and other indicators of future performance. Asset management objectives include maintaining an adequate level of diversification to reduce interest rate and market risk and to provide adequate liquidity to meet immediate and future benefit payment requirements. In determining the 2020 expense for our largest plan, we used a 4.50% return on assets assumption, compared to 5.25% for 2019. A 25 basis point decrease in the long-term expected return on assets assumption would increase our annual pension expense by \$2 million.

Income Taxes

Our annual tax rate is based on our earnings before tax by jurisdiction, applicable statutory tax rates, the impacts of permanent differences, tax incentives and tax planning opportunities in the various jurisdictions in which we operate. Significant judgment is required in determining our annual tax rate and in evaluating our tax positions.

An estimated annual effective tax rate is applied to our quarterly ordinary operating results. For certain significant, unusual or infrequent events, we recognize the tax impact in the quarter in which it occurs.

We record reserves against tax benefits when it's more likely than not that we will not sustain a position if the appropriate taxing jurisdiction had full information and examined our position. We adjust these reserves when facts and circumstances change, such as when progress is made by taxing authorities in their review of our position. There is a considerable amount of judgment in making these assessments. There were no significant reserves taken in 2020.

Valuation allowances associated with deferred tax assets is another area that requires judgment. We record a valuation allowance to reduce deferred tax assets to the amount of future tax benefit that we believe is more likely than not to be realized. We consider recent earnings projections, allowable tax carryforward periods, tax planning strategies and historical earnings performance to determine the amount of the valuation allowance. Changes in these factors could cause us to adjust our valuation allowance, which would impact our income tax expense when we determine that these factors have changed.

At October 3, 2020, we had gross deferred tax assets of \$171 million and deferred tax asset valuation allowances of \$15 million. The deferred tax assets principally relate to benefit accruals, inventory obsolescence, tax benefit carryforwards and contract reserves. The deferred tax assets include \$14 million related to tax benefit carryforwards associated with net operating losses and tax credits, for which \$12 million of deferred tax asset valuation allowances are recorded.

COVID-19 IMPACTS ON OUR BUSINESS

The spread of the COVID-19 outbreak has disrupted businesses on a global scale. On March 11, 2020, the World Health Organization classified the outbreak as a pandemic. As we entered this crisis, the Company established two clear priorities: first and foremost the health and safety of our employees and their families, and second, continuing to meet the needs of our customers and secure the financial well-being of the Company. Substantially all of our operations and production activities have, to-date, remained operational. Many are considered essential and are exempt from closure directives. However, such directives could change at any time. We have implemented changes in our work practices maintaining a safe working environment for production employees at our facilities, while enabling other employees to productively work from home.

Early in our fiscal third quarter of 2020 in response to this pandemic, we implemented short term actions to maintain the financial health and liquidity of the Company. We now have more clarity around customer demand. We have resized the business in end markets in which we are facing significant and sustained reductions in demand. We will continue to monitor the situation, assessing further possible implications on our operations, supply chain, liquidity, cash flow and customer orders, and will take action in an effort to mitigate any adverse consequences. We will continue to focus on cash preservation and cost management, while opportunistically resuming investments in a measured and balanced way.

Recognizing the unprecedented nature, scope and continued uncertainty associated with this global health crisis, the duration and extent of the ongoing impact cannot be reasonably estimated at this time. Our businesses are facing varying levels of pressure depending on the markets they serve.

As such, we have suspended our practice of providing detailed guidance for fiscal 2021. However, we expect that COVID-19 will be with us for all of fiscal 2021, and as such, our factories will continue operating with the current work practices and that the majority of our office staff will continue to work remotely. We believe our defense, space and medical markets will remain strong; however, our medical market could soften as the initial surge of demand during the beginning of COVID-19 does not repeat. We do not expect any recovery in our industrial markets from the level in the second half of fiscal 2020. Also, we are working to the production schedules of our major commercial OEM customers, while recognizing that there remains considerable uncertainty in their outlooks. Additionally, we believe we may see a modest growth in commercial aftermarket demand in the second half of 2021.

We believe that our existing financial arrangements, along with our actions to mitigate the business pressures we are facing, will be sufficient to meet our operating needs over the short-term. We have available borrowings under short and long-term arrangements that could provide relief should the situation become more stressed.

CONSOLIDATED RESULTS OF OPERATIONS

The following is a discussion of our results of operations in fiscal 2020 compared to fiscal 2019. A discussion of our fiscal 2019 results of operations compared to fiscal 2018 results can be found within Part II, Item 7. Management's Discussion and Analysis within our fiscal 2019 Annual Report on Form 10-K filed with the Securities and Exchange Commission on November 12, 2019.

(dollars and shares in millions, except per share data)	2020 vs. 2019				2019 vs. 2018	
	2020	2019	2018	\$ Variance	% Variance	\$ Variance
Net sales	\$ 2,885	\$ 2,905	\$ 2,709	\$ (20)	(1%)	\$ 195
Gross margin	25.8 %	28.1%	28.6%			7%
Research and development expenses	\$ 111	\$ 126	\$ 130	\$ (16)	(12%)	\$ (3)
Selling, general and administrative expenses as a percentage of sales	13.8 %	13.9%	14.3%			(3%)
Interest expense	\$ 39	\$ 39	\$ 36	\$ —	(1%)	\$ 3
Restructuring expense	\$ 11	\$ —	\$ 29	\$ 11	100%	\$ (29)
Long-lived asset impairment	\$ 38	\$ —	\$ —	\$ 38	100%	\$ —
Pension settlement	\$ 121	\$ —	\$ —	\$ 121	100%	\$ —
Other	\$ 21	\$ 19	\$ 9	\$ 2	12%	\$ 10
Effective tax rate	(69.9)%	23.1%	47.7%			115%
Net earnings attributable to Moog and noncontrolling interest	\$ 9	\$ 175	\$ 95	\$ (165)	(95%)	\$ 79
Diluted average common shares outstanding	33	35	36	(2)	(5%)	(1)
Diluted earnings per share	\$ 0.28	\$ 4.96	\$ 2.64	\$ (4.68)	(94%)	\$ 2.32
Total backlog	\$ 2,555	\$ 2,233	n/a	\$ 323	14%	n/a
Twelve-month backlog	\$ 1,658	\$ 1,502	\$ 1,212	\$ 156	10%	\$ 290

Net sales decreased in 2020 compared to 2019 as the impacts of the global COVID-19 pandemic adversely affected our commercial aircraft programs and our industrial automation products. These declines were partially offset by higher demand for our military aircraft programs, space and defense programs and our medical products.

Gross margin decreased in 2020 compared to 2019. Gross profit in 2020 includes \$23 million of inventory write-downs related to the impact of the COVID-19 pandemic on our business. Also, as a result of the macro-economic conditions from the COVID-19 pandemic, facilities in our Aircraft Controls and Industrial Systems segments were under-utilized due to significantly lower sales volumes, which negatively impacted gross margin. Additionally, negative adjustments on development programs further reduced gross margin in 2020.

Research and development expenses declined in 2020 compared to 2019. In Aircraft Controls, we had \$10 million of lower research and development expense as we shifted work towards funded development programs and as work on major commercial OEM programs wound down. Also lower activity in Industrial Systems reduced research and development expenses \$4 million.

Selling, general and administrative expenses as a percentage of sales decreased in 2020 compared to 2019. The implementation of cost containment actions in response to the COVID-19 pandemic helped to reduce expenses, primarily in Space and Defense Controls and in Industrial Systems.

In 2020, we incurred impairment and restructuring expenses related to the impact that the COVID-19 pandemic had on our business. Throughout the year we incurred \$38 million of long-lived asset impairments, \$23 million of inventory write-downs and \$11 million of restructuring expense. Of the total expense, the charges consist of \$29 million of non-cash charges for the impairment of property, plant and equipment, \$23 million of non-cash inventory reserves, \$10 million for severance and \$9 million of non-cash charges for the impairment of intangible assets.

In the fourth quarter of 2020, we purchased a single premium non-participating group annuity contract for our retirees who are receiving benefits of our U.S. defined benefit plan, which were then transferred to an insurance company. As a result of this transaction, we incurred a \$121 million non-cash pension settlement charge as we accelerated unrecognized losses held in equity into our earnings.

Other expense in 2020 includes a \$4 million call premium as we redeemed our \$300 million aggregate principal 5.25% senior notes.

Our effective tax rate in 2020 differs from what would be expected by applying the U.S. federal statutory tax rate due to tax benefits recorded from increased foreign tax credit utilization and due to a lower earnings before income tax base resulting from the significant charges of the pension settlement and impairments on long-lived assets.

Other comprehensive income in 2020 was impacted by a \$26 million foreign currency translation gain, as compared to a \$30 million foreign currency translation loss in 2019. The change in foreign currency translation in 2020 compared to 2019 was primarily attributable to the appreciation of the Euro and the British Pound relative to the U.S. Dollar.

The change in twelve-month backlog at October 3, 2020 compared with September 28, 2019 was driven by increases in our military aircraft programs and by increases for our medical products. Backlog increased due to the timing of orders for the F-35 program, additional military development program orders, as well as higher military aftermarket orders. Within our medical programs, backlog increased due to higher medical equipment demand in response to COVID-19 requirements. These increases were partially offset by the timing of orders across our space and defense programs.

SEGMENT RESULTS OF OPERATIONS

Operating profit, as presented below, is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation expense, non-service pension expense and other corporate expenses. Cost of sales and other operating expenses are directly identifiable to the respective segment or allocated on the basis of sales, manpower or profit. Operating profit is reconciled to earnings before income taxes in Note 21, Segments, of Item 8, Financial Statements and Supplementary Data of this report.

Aircraft Controls

(dollars in millions)	2020 vs. 2019				2019 vs. 2018	
	2020	2019	2018	\$ Variance	% Variance	\$ Variance
Net sales - military aircraft	\$ 721	\$ 622	\$ 522	\$ 99	16%	\$ 100
Net sales - commercial aircraft	485	681	603	(196)	(29%)	78
	\$ 1,206	\$ 1,303	\$ 1,194	\$ (97)	(7%)	\$ 109
Operating profit	\$ 35	\$ 123	\$ 130	\$ (88)	(72%)	\$ (7)
Operating margin	2.9%	9.4%	10.9%			(5%)

Net sales decreased in 2020 compared to 2019 as the impacts of the global COVID-19 pandemic adversely affected our commercial OEM and aftermarket programs, but were partially offset by higher demand for our military OEM and aftermarket programs.

Across our commercial aircraft programs, the COVID-19 pandemic greatly reduced airline traffic and orders for new aircraft while, concurrently, our airframe customers reduced their inventory levels. These factors, which started in the second half of our fiscal 2020, lead to full year declines of \$169 million across our commercial OEM programs and \$27 million across our commercial aftermarket programs. Partially offsetting these declines in 2020 was a \$55 million military OEM sales increase and a \$44 million military aftermarket sales increase. Higher F-35 activity as the active fleet grew increased OEM sales \$39 million and increased aftermarket sales \$10 million. Additionally, work on funded development programs increased sales \$21 million, higher orders for the KC-46 program increased sales \$9 million, and sales for all of our remaining aftermarket programs increased when compared to 2019.

Operating margin decreased in 2020 compared to 2019 due mostly to the dramatic decline in sales in our commercial aircraft markets. In 2020, we incurred COVID-19 pandemic related impairments and restructuring totaling \$57 million. Excluding these charges, adjusted operating margin in 2020 was 7.6%. In addition to these charges, negative adjustments to development contracts and higher operating costs further reduced operating margins, offsetting \$10 million of lower research and development expenses.

Space and Defense Controls

(dollars in millions)	2020 vs. 2019				2019 vs. 2018	
	2020	2019	2018	\$ Variance	% Variance	\$ Variance
Net sales	\$ 770	\$ 683	\$ 581	\$ 87	13%	\$ 103
Operating profit	\$ 102	\$ 89	\$ 68	\$ 13	14%	\$ 21
Operating margin	13.2%	13.0%	11.6%			

The increase in Space and Defense Controls' net sales in 2020 compared to 2019 was primarily driven by growth in our space market.

Across our space programs, we are benefiting from increased government spending on military applications and civil missions. Sales in our space market increased \$75 million in 2020 when compared to 2019. Sales for launch vehicle programs increased \$56 million due to higher amounts of development work and higher NASA activity. Sales also increased \$17 million for satellite controls, due mostly to higher space avionics activity. Within our defense market, sales increased \$11 million. Sales for domestic and foreign defense vehicle programs increased \$18 million. These increases were mostly offset by a \$15 million sales decline for security sales, as delayed on-site installations due to the COVID-19 pandemic restrictions have reduced orders.

Operating margin increased in 2020 as compared to 2019 due primarily to higher sales volumes across our products. Also, the sales growth contributed to incremental margins beyond our selling and administrative expenses as we initiated cost containment actions in response to COVID-19.

Industrial Systems

	2020 vs. 2019					2019 vs. 2018	
(dollars in millions)	2020	2019	2018	\$ Variance	% Variance	\$ Variance	% Variance
Net sales	\$ 909	\$ 918	\$ 935	\$ (10)	(1%)	\$ (17)	(2%)
Operating profit	\$ 80	\$ 109	\$ 65	\$ (29)	(27%)	\$ 44	68%
Operating margin	8.8%	11.9%	6.9%				

The decline in Industrial Systems' net sales in 2020 compared to 2019 was driven by macroeconomic factors on our legacy industrial products, but was mostly offset by increased sales into our medical market and by acquired sales.

The COVID-19 pandemic, and the associated macroeconomic slowdown and reduced capital investments, have created productivity and demand challenges. Additionally, with the decline of the global airline market, demand for flight simulation products has weakened. These factors, which started in the second half of our fiscal 2020, lead to full year sales declines of \$42 million in our industrial automation market and \$20 million in our simulation and test market. Partially offsetting these declines was a \$46 million sales increase in medical product sales due to higher demand for our medical pumps and various components including those used in ventilators. Also, sales attributable to our GAT acquisition in 2020 were \$34 million.

Operating margin decreased in 2020 compared to 2019 due mostly to the dramatic sales decline in our industrial automation, simulation and test and our legacy energy markets. In 2020, we incurred COVID-19 pandemic related impairments and restructuring totaling \$14 million. Excluding these charges, adjusted operating margin in 2020 was 10.3%. In addition to these charges, a less favorable sales mix and factory inefficiencies due to the COVID-19 pandemic across our global footprint further depressed operating margin in 2020.

FINANCIAL CONDITION AND LIQUIDITY

(dollars in millions)	2020 vs. 2019				2019 vs. 2018	
	2020	2019	2018	\$ Variance	% Variance	\$ Variance
Net cash provided (used) by:						
Operating activities	\$ 279	\$ 181	\$ 102	\$ 98	54%	\$ 79
Investing activities	(146)	(116)	(142)	(30)	26%	26
Financing activities	(143)	(99)	(222)	(44)	45%	123

Our available borrowing capacity and our cash flow from operations provide us with the financial resources needed to run our operations, reinvest in our business and make strategic acquisitions.

At October 3, 2020, our cash balances were \$85 million which was primarily held outside of the U.S. Cash flow from our U.S. operations, together with borrowings on our credit facility, fund on-going activities, debt service requirements and future growth investments.

Operating activities

Net cash provided by operating activities increased in 2020 compared to 2019. In 2020, receivables provided \$191 million more cash, driven primarily by robust collections and by increased cash receipts associated with U.S. government defense contracts. Also, cash provided by customer advances increased \$80 million, driven by growth in both Aircraft Controls and in Space and Defense Controls. These increases were partially offset by accounts payable using \$137 million more of cash, due to the timing of payments, as well as higher inventory build-up in Aircraft Controls.

Investing activities

Net cash used by investing activities in 2020 included \$54 million for our acquisition of GAT and \$88 million for capital expenditures. Net cash used by investing activities in 2019 included \$118 million for capital expenditures. In response to the COVID-19 pandemic in 2020, we actively managed and prioritized our capital spend, focusing on compliance and business critical projects.

Financing activities

Net cash used by financing activities in 2020 included \$215 million related to repurchasing approximately 3 million shares, \$95 million of net payments on long-term debt and \$25 million of cash dividends. Additionally, financing activities in 2020 included the net proceeds of issuing our \$500 million aggregate principal 4.25% senior notes, which were used to repay a portion of our outstanding borrowings.

Net cash used by financing activities in 2019 included \$31 million of net payments on our credit facilities and \$35 million of cash dividends. Net cash used by financing activities in 2019 also included \$23 million related to repurchasing approximately 302,000 shares.

CAPITAL STRUCTURE AND RESOURCES

We maintain bank credit facilities to fund our short and long-term capital requirements, including acquisitions. From time to time, we also sell debt and equity securities to fund acquisitions or take advantage of favorable market conditions.

On October 15, 2019, we amended and restated our U.S. revolving credit facility, which matures on October 15, 2024. Our U.S. revolving credit facility has a capacity of \$1.1 billion and also provides an expansion option, which permits us to request an increase of up to \$400 million to the credit facility upon satisfaction of certain conditions. The U.S. revolving credit facility had an outstanding balance of \$362 million at October 3, 2020. The weighted-average interest rate on the majority of the outstanding credit facility borrowings is 2.25% and is based on LIBOR plus the applicable margin, which was 1.5% at October 3, 2020. The credit facility is secured by substantially all of our U.S. assets.

The U.S. revolving credit facility contains various covenants. The covenant for minimum interest coverage ratio, defined as the ratio of EBITDA to interest expense for the most recent four quarters, is 3.0. The covenant for the maximum leverage ratio, defined as the ratio of net debt to EBITDA for the most recent four quarters, is 4.0. We are in compliance with all covenants. EBITDA is defined in the loan agreement as (i) the sum of net income, interest expense, income taxes, depreciation expense, amortization expense, other non-cash items reducing consolidated net income and non-cash equity-based compensation expenses minus (ii) other non-cash items increasing consolidated net income.

We are generally not required to obtain the consent of lenders of the U.S. revolving credit facility before raising significant additional debt financing; however, certain limitations and conditions may apply that would require consent to be obtained. In recent years, we have demonstrated our ability to secure consents to access debt markets. We have also been successful in accessing equity markets from time to time. We believe that we will be able to obtain additional debt or equity financing as needed.

The SECT has a revolving credit facility with a borrowing capacity of \$35 million, maturing on July 26, 2022. Interest was 2.28% as of October 3, 2020 and is based on LIBOR plus a margin of 2.13%. As of October 3, 2020, there were \$6 million of outstanding borrowings.

On December 13, 2019, we completed the sale of \$500 million aggregate principal amount of 4.25% senior notes due December 15, 2027 with interest paid semiannually on June 15 and December 15 of each year, which commenced on June 15, 2020. The senior notes are unsecured obligations, guaranteed on a senior unsecured basis by certain subsidiaries and contain normal incurrence-based covenants and limitations such as the ability to incur additional indebtedness, pay dividends, make other restricted payments and investments, create liens and certain corporate acts such as mergers and consolidations. The aggregate net proceeds of \$492 million were used to repay indebtedness under our U.S. revolving credit facility, thereby increasing the unused portion of our U.S. revolving credit facility. The effective interest rate for these notes after considering the amortization of deferred debt issuance costs is 4.60%.

On December 13, 2019, we issued a notice of redemption to the holders of our 5.25% senior notes due on December 1, 2022, to redeem and retire all of the outstanding notes. The notes were redeemed on January 13, 2020 at 101.313% pursuant to an early redemption right. We redeemed the aggregate principal amount of \$300 million using proceeds drawn from our U.S. revolving credit facility. The associated loss on redemption includes \$4 million of call premium paid to external bondholders.

We have a trade receivables securitization facility (the "Securitization Program"), which was extended on October 16, 2019 and matures on October 29, 2021. The Securitization Program provides up to \$130 million of borrowing capacity and lowers our cost to borrow funds as compared to the U.S. revolving credit facility. On November 6, 2020, we gave notice to reduce our borrowing capacity to \$80 million. Under the Securitization Program, we sell certain trade receivables and related rights to an affiliate, which in turn sells an undivided variable percentage ownership interest in the trade receivables to a financial institution, while maintaining a subordinated interest in a portion of the pool of trade receivables. We had an outstanding balance of \$69 million at October 3, 2020. The Securitization Program has a minimum borrowing requirement, which was \$55 million at October 3, 2020. Interest on the secured borrowings under the Securitization Program was 1.02% at October 3, 2020 and is based on 30-day LIBOR plus an applicable margin.

At October 3, 2020, we had \$738 million of unused capacity, including \$697 million from the U.S. revolving credit facility after considering standby letters of credit. Our leverage ratio covenant limits our unused borrowing capacity to \$552 million as of October 3, 2020.

Net debt to capitalization was 40% at October 3, 2020 and 36% at September 28, 2019. The increase in net debt to capitalization is primarily due to our shares repurchases.

We declared and paid cash dividends of \$0.25 per share on our Class A and Class B common stock in three of the four quarters of 2020.

The Board of Directors has authorized a share repurchase program. This program has been amended from time to time to authorize additional repurchases that includes both Class A and Class B common stock, and allows us to buy up to an aggregate 13 million common shares. Under this program, we have purchased approximately 12.8 million shares for \$889 million as of October 3, 2020.

Our immediate financial focus will continue to revolve around cash preservation and cost management, while opportunistically resuming investments in a measured and balanced way. We are committed to ensuring that we have adequate liquidity during this COVID-19 pandemic, protecting the long-term health of the Company and emerging financially strong and ready to capitalize on opportunities once this situation stabilizes.

Off Balance Sheet Arrangements

We do not have any material off balance sheet arrangements that have or are reasonably likely to have a material future effect on our financial condition, results of operations or cash flows.

Contractual Obligations and Commercial Commitments

Our significant contractual obligations and commercial commitments at October 3, 2020 are as follows:

(dollars in millions)	Payments due by period					
Contractual Obligations	Total	2021	2022-2023	2024-2025	After 2025	
Long-term debt	\$ 939	\$ —	\$ 76	\$ 362	\$ 500	
Interest on long-term debt	153	21	43	42	47	
Right-of-use lease liabilities	117	\$ 20	\$ 33	\$ 20	\$ 43	
Purchase obligations	560	421	113	8	18	
Total contractual obligations	\$ 1,768	\$ 463	\$ 265	\$ 433	\$ 607	

The obligations in the table above exclude unrecognized tax benefits, which are not material. We are unable to determine if and when any of those amounts will be settled, nor can we estimate any potential changes to the unrecognized tax benefits.

The table above excludes interest on variable-rate debt from our U.S. revolving credit facility, other revolving credit facilities and the Securitization Program, as we are unable to determine the rate and average balance outstanding for the periods presented in the above table. Interest on variable-rate long-term debt, assuming the rate and outstanding balances do not change from those at October 3, 2020, would be approximately \$11 million annually.

Total contractual obligations exclude pension obligations. In 2021, we have no minimum funding requirements. However, we anticipate making contributions to defined benefit pension plans of \$14 million, of which approximately \$5 million is for a non-qualified U.S. plan. We are unable to determine minimum funding requirements beyond 2021.

We have made no discretionary incremental contributions to our defined benefit plans in excess of minimum funding requirements. We do not plan to make additional contributions for the foreseeable future.

(dollars in millions)		Commitments expiring by period				
Other Commercial Commitments	Total	2021	2022-2023	2024-2025	After 2025	
Standby letters of credit	\$ 41	\$ 17	\$ 24	\$ —	\$ —	

ECONOMIC CONDITIONS AND MARKET TRENDS

We operate within the aerospace and defense and industrial markets. Our businesses are facing varying levels of pressure from the COVID-19 pandemic.

Within our aerospace and defense markets, our defense and space businesses represent approximately half of our 2020 sales. We expect these businesses may face modest supply chain and production level risks, as they are more directly affected by program funding levels which, to-date, are stable. However, our commercial aircraft market, which represents less than 20% of our 2020 sales, will continue to face the greatest pressures due to the dramatic reductions in air travel.

Within our industrial markets, our industrial automation, simulation and test and energy niche markets, which represents less than 25% of our 2020 sales, will continue to face productivity and demand challenges from the macroeconomic slowdown and reduced capital investments. Our medical business, which represents approximately 10% of our 2020 sales, has seen a surge in demand for our medical applications essential in the fight against the pandemic. As this surge in demand wanes, we expect to return to normal growth rates in the future.

A common factor throughout our markets is the continuing demand for technologically advanced products.

Aerospace and Defense

Within aerospace and defense, we serve three end markets: defense, commercial aircraft and space.

The defense market is dependent on military spending for development and production programs, which to-date, have not been impacted by the COVID-19 pandemic. We have a growing development program order book for future generation aircraft and hypersonic missiles, and we strive to embed our technologies within these high-performance military programs of the future. Aircraft production programs are typically long-term in nature, offering predictability as to capacity needs and future revenues. We maintain positions on numerous high priority programs, including the Lockheed Martin F-35 Lightning II, FA-18E/F Super Hornet and V-22 Osprey. The large installed base of our products leads to attractive aftermarket sales and service opportunities. The tactical and strategic missile, missile defense and defense controls markets are dependent on many of the same market conditions as military aircraft, including overall military spending and program funding levels. At times when there are perceived threats to national security, U.S. Defense spending can increase; at other times, defense spending can decrease. Future levels of defense spending are uncertain, subject to presidential and congressional debate and could be reduced if the pandemic continues.

The commercial OEM aircraft market has depended on a number of factors, including both the last decade's increasing global demand for air travel and increasing fuel prices. Both factors contributed to the demand for new, more fuel-efficient aircraft with lower operating costs that lead to large production backlogs for Boeing and Airbus. However, the impact of the COVID-19 pandemic has drastically reduced air traffic as travel restrictions and social distancing measures were implemented to help control the spread of the virus. The reduced air traffic has applied financial pressures on airlines, which have in turn dramatically reduced flight hours and delayed the purchases of new aircraft in order to preserve cash and liquidity. Given the uncertain length of this pandemic, the commercial market may shift away from wide-body aircraft. Additionally, given the abruptly stalled global economies and social pauses, global oil production is now over-supplied, creating drastic reductions in the prices of oil. The lower prices for jet fuel mitigates the advantage of new, more fuel-efficient aircraft that created record backlogs for the OEMs. Furthermore, as companies and employees become accustomed to working remotely, business travel and the associated flight hours may not reach the pre-crisis levels. As such, we believe Boeing and Airbus will continue to directionally match their production rates with the reduced air traffic volume, which will lower their demand for our flight control systems. We believe the commercial OEM market will face these pressures for a prolonged period of time.

The commercial aftermarket is driven by usage and age of the existing aircraft fleet for passenger and cargo aircraft, which drives the need for maintenance and repairs. Given the dramatic reductions in flight hours and the airlines' cash preservation measures due to the impacts of COVID-19, we believe the demand volume for our maintenance services and spare parts will remain at depressed levels over the short-term. Also, with fewer expected new aircraft deliveries, we would see lower future initial provisioning and spares sales. However, when domestic and international travel begin to recover, we expect a faster recovery in this market as compared to the commercial OEM market.

The space market is comprised of four customer markets: the civil market, the department of defense market, the commercial space market and the new space market. The civil market, namely NASA, is driven by investment for commercial and exploration activities, including NASA's return to the moon. The department of defense market is driven by governmental-authorized levels of funding for satellite communications, as well as funding for hypersonic defense technologies. The commercial space market is comprised of large satellite customers, which traditionally sell to communications companies. Trends for this market, as well as for commercial launch vehicles, follow demand for increased capacity. This, in turn tends to track with underlying demand for increased consumption of telecommunication services, satellite replacements and global navigation needs. The new space market is driven by investments to increase the speed and access to space through smaller satellites at reduced cost. Similar to the defense market, funding for these four markets have not been impacted by the COVID-19 pandemic to-date.

Industrial

Within industrial, we serve two end markets: industrial and medical with our industrial automation products, our simulation and test products, our energy generation and exploration products and our medical products.

The industrial market we serve with our industrial automation products is influenced by several factors including capital investment levels, the pace of product innovation, economic conditions, cost-reduction efforts and technology upgrades. As governments around the world implement increasingly stringent measures to help control the spread of the COVID-19 virus, the subsequent economic downturn has constrained capital investment and slowed investments in product innovation and upgrades. These unfavorable economic conditions have affected, and could for an extended period of time, affect our supply chain, productivity and customer demand as our customers are also impacted by international and domestic economic conditions.

Our simulation and test products operate in markets that are largely affected by these same factors and investment challenges stemming from the COVID-19 pandemic. Reduced air travel and the subsequent reduction in new commercial aircraft have reduced the need for flight simulator training, for which we supply motion control products. Similarly, the recent lower capital spend has reduced the need for our automotive and material testing applications.

Our energy generation and exploration products operate in a market that is affected by changing oil and natural gas prices, global urbanization and the resulting change in supply and demand for global energy. Historically, drivers for global growth include investments in power generation infrastructure and exploration of new oil and gas resources. However, the COVID-19 pandemic has led to reduced oil prices, which reduces the economic feasibility for these investments and explorations.

The medical market we serve, in general, is influenced by economic conditions, regulatory environments, hospital and outpatient clinic spending on equipment, population demographics, medical advances, patient demands and the need for precision control components and systems. The outbreak of the COVID-19 virus has created unprecedented demand for medical equipment and has shifted the way hospitals optimize their capacity. Our medical components products are critical motion control components for life saving medical equipment, including ventilators, oxygen concentrators and continuous positive airway pressure (CPAP) machines, among others. The COVID-19 pandemic has increased the demand for ventilators, of which our products are a key component of that industry's supply chain. Additionally, our medical devices products including infusion and enteral feeding pumps, and their corresponding disposable sets, are used primarily in the home healthcare environment. Since the COVID-19 pandemic has altered the way hospitals provide care by asking non-critical patients to recuperate at home, our medical device products have seen an increase in orders. However, we don't expect this surge in demand to continue as our customers refill and resize their inventory levels.

Foreign Currencies

We are affected by the movement of foreign currencies compared to the U.S. dollar, particularly in Aircraft Controls and Industrial Systems. About one-fifth of our 2020 sales were denominated in foreign currencies. During 2020, average foreign currency rates generally weakened against the U.S. dollar compared to 2019. The translation of the results of our foreign subsidiaries into U.S. dollars decreased sales by \$4 million compared to one year ago. During 2019, average foreign currency rates generally weakened against the U.S. dollar compared to 2018. The translation of the results of our foreign subsidiaries into U.S. dollars decreased 2019 sales by \$23 million compared to 2018.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 1, Summary of Significant Accounting Policies, included in Item 8, Financial Statements and Supplementary Data of this report for further information regarding Financial Accounting Standards Board issued Accounting Standards Updates ("ASU").

Item 7A.	Quantitative and Qualitative Disclosures about Market Risk.
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In the normal course of business, we are exposed to interest rate risk from our long-term debt and foreign exchange rate risk related to our foreign operations and foreign currency transactions. To manage these risks, we may enter into derivative instruments such as interest rate swaps and foreign currency contracts. We do not hold or issue financial instruments for trading purposes. In 2020, our derivative instruments consisted of interest rate swaps designated as cash flow hedges and foreign currency contracts.

At October 3, 2020, we had \$437 million of borrowings subject to variable interest rates. At October 3, 2020, we had no outstanding interest rate swaps. During 2020, our average borrowings subject to variable interest rates, after adjusting for interest rate swaps, were \$502 million and, therefore, if interest rates had been one percentage point higher during 2020, our interest expense would have been \$5 million higher.

We also enter into forward contracts to reduce fluctuations in foreign currency cash flows related to third party purchases and revenue, intercompany product shipments and to reduce exposure on intercompany balances that are denominated in foreign currencies. We have foreign currency contracts with notional amounts of \$162 million outstanding at October 3, 2020 that mature at various times through November 26, 2021. These include notional amounts of \$136 million outstanding where the U.S. dollar is one side of the trade. The net fair value of all of our foreign currency contracts involving the U.S. dollar was a \$3 million net asset at October 3, 2020. A hypothetical 10 percent increase in the value of the U.S. dollar against all currencies would decrease the fair value of our foreign currency contracts at October 3, 2020 by approximately \$12 million, while a hypothetical 10 percent decrease in the value of the U.S. dollar against all currencies would increase the fair value of our foreign currency contracts at October 3, 2020 by approximately \$15 million. It is important to note that gains and losses indicated in the sensitivity analysis would often be offset by gains and losses on the underlying receivables and payables.

Although the majority of our sales, expenses and cash flows are transacted in U.S. dollars, we have exposure to changes in foreign currency exchange rates such as the Euro, British pound and Japanese yen. If average annual foreign exchange rates collectively weakened or strengthened against the U.S. dollar by 10%, our net earnings in 2020 would have decreased or increased by \$5 million from foreign currency translation. This sensitivity analysis assumed that each exchange rate would change in the same direction relative to the U.S. dollar and excludes the potential effects that changes in foreign currency exchange rates may have on actual transactions.

Item 8. Financial Statements and Supplementary Data.

MOOG^{INC.}
Consolidated Statements of Earnings

	Fiscal Years Ended		
	October 3, 2020	September 28, 2019 (1)	September 29, 2018 (1)
(dollars in thousands, except share and per share data)			
Net sales	\$ 2,884,554	\$ 2,904,663	\$ 2,709,468
Cost of sales	2,118,150	2,088,831	1,923,179
Inventory write-down	22,708	—	12,198
Gross profit	743,696	815,832	774,091
Research and development	110,865	126,453	129,838
Selling, general and administrative	397,947	404,653	388,434
Interest	38,897	39,269	36,238
Long-lived asset impairment	37,839	—	—
Restructuring	10,700	—	28,794
Pension settlement	121,324	—	—
Other	20,707	18,505	8,608
Earnings before income taxes	5,417	226,952	182,179
Income taxes (benefit)	(3,788)	52,404	86,818
Net earnings attributable to Moog and noncontrolling interest	\$ 9,205	\$ 174,548	\$ 95,361
Net earnings attributable to noncontrolling interest	—	—	121
Net earnings attributable to Moog	\$ 9,205	\$ 174,548	\$ 95,240
Net earnings per share attributable to Moog			
Basic	\$ 0.28	\$ 5.01	\$ 2.67
Diluted	\$ 0.28	\$ 4.96	\$ 2.64
Dividends declared per share	\$ 0.75	\$ 1.00	\$ 0.50
Average common shares outstanding			
Basic	33,257,684	34,854,614	35,661,638
Diluted	33,437,801	35,178,968	36,052,307

See accompanying Notes to Consolidated Financial Statements.

(1) As Adjusted, see Note 1 - Summary of Significant Accounting Policies.



Consolidated Statements of Comprehensive Income (Loss)

(dollars in thousands)	Fiscal Years Ended		
	October 3, 2020	September 28, 2019 (1)	September 29, 2018 (1)
Net earnings attributable to Moog and noncontrolling interest	\$ 9,205	\$ 174,548	\$ 95,361
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustment	26,405	(29,984)	(16,279)
Retirement liability adjustment	102,081	(12,806)	28,024
Change in accumulated income (loss) on derivatives	1,538	105	(121)
Other comprehensive income (loss), net of tax	130,024	(42,685)	11,624
Tax Cuts and Jobs Act, reclassification from AOCIL to retained earnings	—	—	(47,077)
Comprehensive income (loss)	139,229	131,863	59,908
Comprehensive income attributable to noncontrolling interest	—	—	91
Comprehensive income (loss) attributable to Moog	\$ 139,229	\$ 131,863	\$ 59,817

See accompanying Notes to Consolidated Financial Statements.

(1) As Adjusted, see Note 1 - Summary of Significant Accounting Policies.

MOOG^{inc.}
Consolidated Balance Sheets

(dollars in thousands, except per share data)	October 3, 2020	September 28, 2019 (1)
ASSETS		
Current assets		
Cash and cash equivalents	\$ 84,583	\$ 89,702
Restricted cash	489	2,846
Receivables, net	855,535	954,355
Inventories, net	623,043	534,974
Prepaid expenses and other current assets	49,837	47,096
Total current assets	1,613,487	1,628,973
Property, plant and equipment, net	600,498	586,767
Operating lease right-of-use assets	68,393	—
Goodwill	821,856	784,240
Intangible assets, net	85,046	79,646
Deferred income taxes	18,924	19,992
Other assets	17,627	14,619
Total assets	\$ 3,225,831	\$ 3,114,237
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Current installments of long-term debt	\$ 350	\$ 249
Accounts payable	176,868	257,677
Accrued compensation	109,510	143,765
Contract advances	203,338	137,242
Accrued liabilities and other	220,488	188,725
Total current liabilities	710,554	727,658
Long-term debt, excluding current installments	929,982	832,984
Long-term pension and retirement obligations	183,366	160,034
Deferred income taxes	40,474	40,528
Other long-term liabilities	118,372	30,552
Total liabilities	1,982,748	1,791,756
Shareholders' equity		
Common stock - par value \$1.00		
Class A - Authorized 100,000,000 shares	43,799	43,795
Issued 43,799,229 and outstanding 29,414,083 shares at October 3, 2020		
Issued 43,794,935 and outstanding 32,268,275 shares at September 28, 2019		
Class B - Authorized 20,000,000 shares. Convertible to Class A on a one-for-one basis	7,481	7,485
Issued 7,480,484 and outstanding 2,751,894 shares at October 3, 2020		
Issued 7,484,778 and outstanding 2,426,819 shares at September 28, 2019		
Additional paid-in capital	472,645	510,546
Retained earnings	2,112,734	2,128,739
Treasury shares	(990,783)	(769,569)
Stock Employee Compensation Trust	(64,242)	(111,492)
Supplemental Retirement Plan Trust	(53,098)	(71,546)
Accumulated other comprehensive loss	(285,453)	(415,477)
Total shareholders' equity	1,243,083	1,322,481
Total liabilities and shareholders' equity	\$ 3,225,831	\$ 3,114,237

See accompanying Notes to Consolidated Financial Statements.

(1) As Adjusted, see Note 1 - Summary of Significant Accounting Policies.

MOOG^{inc.}
Consolidated Statements of Shareholders' Equity

(dollars in thousands)	Fiscal Years Ended		
	October 3, 2020 (1)	September 28, 2019 (1)	September 29, 2018 (1)
COMMON STOCK			
Beginning and end of year	\$ 51,280	\$ 51,280	\$ 51,280
ADDITIONAL PAID-IN CAPITAL			
Beginning of year	510,546	502,257	492,246
Issuance of treasury shares	142	(1,018)	(4,321)
Equity-based compensation expense	5,661	6,464	5,804
Redemption of noncontrolling interest	—	—	175
Adjustment to market - SECT and SERP	(43,704)	2,843	8,353
End of year	472,645	510,546	502,257
RETAINED EARNINGS			
Beginning of year	2,128,739	1,974,125	1,849,697
Net earnings	9,205	174,548	95,240
Dividends	(25,210)	(34,857)	(17,889)
Adoption of ASC 606	—	14,923	—
Tax Cuts and Jobs Act, reclassification from AOCIL	—	—	47,077
End of year	2,112,734	2,128,739	1,974,125
TREASURY SHARES AT COST			
Beginning of year	(769,569)	(738,494)	(739,157)
Class A and B shares issued related to compensation	11,887	9,880	8,881
Class A and B shares purchased	(233,101)	(40,955)	(8,218)
End of year	(990,783)	(769,569)	(738,494)
STOCK EMPLOYEE COMPENSATION TRUST (SECT)			
Beginning of year	(111,492)	(118,449)	(89,919)
Issuance of shares	28,768	22,190	4,714
Purchase of shares	(6,774)	(15,288)	(30,358)
Adjustment to market	25,256	55	(2,886)
End of year	(64,242)	(111,492)	(118,449)
SUPPLEMENTAL RETIREMENT PLAN (SERP) TRUST			
Beginning of year	(71,546)	(72,941)	(12,474)
Issuance of shares	—	4,293	—
Purchase of shares	—	—	(55,000)
Adjustment to market	18,448	(2,898)	(5,467)
End of year	(53,098)	(71,546)	(72,941)
ACCUMULATED OTHER COMPREHENSIVE LOSS			
Beginning of year	(415,477)	(372,792)	(337,369)
Other comprehensive income (loss)	130,024	(42,685)	11,654
Tax Cuts and Jobs Act, reclassification to retained earnings	—	—	(47,077)
End of year	(285,453)	(415,477)	(372,792)
TOTAL MOOG SHAREHOLDERS' EQUITY	1,243,083	1,322,481	1,224,986
NONCONTROLLING INTEREST			
Beginning of year	—	—	—
Noncontrolling interest of acquired entity	—	—	1,927
Net earnings attributable to noncontrolling interest	—	—	121
Foreign currency translation adjustment	—	—	(30)
Acquisition of noncontrolling interest	—	—	(2,018)
End of year	—	—	—
TOTAL SHAREHOLDERS' EQUITY	\$ 1,243,083	\$ 1,322,481	\$ 1,224,986

See accompanying Notes to Consolidated Financial Statements.

(1) As Adjusted, see Note 1 - Summary of Significant Accounting Policies.



Consolidated Statements of Shareholders' Equity, Shares

(share data)	Fiscal Years Ended		
	October 3, 2020	September 28, 2019	September 29, 2018
COMMON STOCK - CLASS A			
Beginning of year	43,794,935	43,784,489	43,704,286
Conversion of Class B to Class A	4,294	10,446	80,203
End of year	43,799,229	43,794,935	43,784,489
COMMON STOCK - CLASS B			
Beginning of year	7,484,778	7,495,224	7,575,427
Conversion of Class B to Class A	(4,294)	(10,446)	(80,203)
End of year	7,480,484	7,484,778	7,495,224
TREASURY SHARES - CLASS A COMMON STOCK			
Beginning of year	(11,101,512)	(10,872,575)	(10,933,003)
Class A shares issued related to compensation	31,943	109,005	104,842
Class A shares purchased	(2,890,429)	(337,942)	(44,414)
End of year	(13,959,998)	(11,101,512)	(10,872,575)
TREASURY SHARES - CLASS B COMMON STOCK			
Beginning of year	(3,345,489)	(3,323,996)	(3,333,927)
Class B shares issued related to compensation	215,040	148,017	64,664
Class B shares purchased	(214,428)	(169,510)	(54,733)
End of year	(3,344,877)	(3,345,489)	(3,323,996)
SECT - CLASS A COMMON STOCK			
Beginning and end of period	(425,148)	(425,148)	(425,148)
SECT - CLASS B COMMON STOCK			
Beginning of year	(886,300)	(983,772)	(654,753)
Issuance of shares	408,641	270,675	57,277
Purchase of shares	(79,884)	(173,203)	(386,296)
End of year	(557,543)	(886,300)	(983,772)
SERP - CLASS B COMMON STOCK			
Beginning of year	(826,170)	(876,170)	(150,000)
Issuance of shares	—	50,000	—
Purchase of shares	—	—	(726,170)
End of year	(826,170)	(826,170)	(876,170)

See accompanying Notes to Consolidated Financial Statements.

MOOG^{inc.}
Consolidated Statements of Cash Flows

(dollars in thousands)	Fiscal Years Ended		
	October 3, 2020	September 28, 2019 (1)	September 29, 2018 (1)
CASH FLOWS FROM OPERATING ACTIVITIES			
Net earnings attributable to Moog and noncontrolling interest	\$ 9,205	\$ 174,548	\$ 95,361
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation	74,243	71,926	71,231
Amortization	12,729	13,334	17,341
Deferred income taxes	(40,845)	(4,598)	30,613
Equity-based compensation expense	5,661	6,464	5,804
Impairment of long-lived assets and inventory write-down	60,547	—	—
Pension settlement	121,324	—	—
Other	9,636	4,239	34,455
Changes in assets and liabilities providing (using) cash:			
Receivables	111,525	(79,887)	(67,621)
Inventories	(99,015)	(96,652)	(32,451)
Accounts payable	(84,065)	52,499	35,980
Contract advances	65,680	(14,432)	(10,998)
Accrued expenses	(3,516)	19,758	10,631
Accrued income taxes	(17,964)	3,818	4,227
Net pension and post retirement liabilities	33,305	32,529	(122,233)
Other assets and liabilities	20,727	(2,123)	30,067
Net cash provided by operating activities	279,177	181,423	102,407
CASH FLOWS FROM INVESTING ACTIVITIES			
Acquisitions of businesses, net of cash acquired	(54,265)	—	(48,382)
Purchase of property, plant and equipment	(88,284)	(118,422)	(94,517)
Other investing transactions	(3,644)	2,702	1,257
Net cash used by investing activities	(146,193)	(115,720)	(141,642)
CASH FLOWS FROM FINANCING ACTIVITIES			
Net short-term repayments	—	(3,653)	3,618
Proceeds from revolving lines of credit	1,151,550	971,658	568,550
Payments on revolving lines of credit	(1,187,159)	(998,726)	(678,660)
Proceeds from long-term debt	15,128	—	15,000
Payments on long-term debt	(74,470)	(411)	(25,922)
Proceeds from senior notes, net of issuance costs	491,769	—	—
Payments on senior notes	(300,000)	—	—
Payments on finance lease obligations	(1,167)	—	—
Payment of dividends	(25,210)	(34,857)	(17,889)
Proceeds from sale of treasury stock	7,014	5,268	4,560
Purchase of outstanding shares for treasury	(232,290)	(40,955)	(8,218)
Proceeds from sale of stock held by SECT	24,721	13,990	4,714
Purchase of stock held by SECT	(6,774)	(15,288)	(30,358)
Proceeds from sale of SERP stock	—	4,293	—
Purchase of stock held by SERP Trust	—	—	(55,000)
Other financing transactions	(5,878)	—	(1,964)
Net cash used by financing activities	(142,766)	(98,681)	(221,569)
Effect of exchange rate changes on cash	2,306	(2,180)	1,541
Decrease in cash, cash equivalents and restricted cash	(7,476)	(35,158)	(259,263)
Cash, cash equivalents and restricted cash at beginning of year	92,548	127,706	386,969
Cash, cash equivalents and restricted cash at end of year	\$ 85,072	\$ 92,548	\$ 127,706

Consolidated Statements of Cash Flows, continued

	Fiscal Years Ended		
	October 3, 2020	September 28, 2019	September 29, 2018
SUPPLEMENTAL CASH FLOW INFORMATION			
Interest paid	\$ 38,420	\$ 38,864	\$ 36,689
Income taxes paid, net of refunds	59,053	36,474	34,214
Treasury shares issued as compensation	9,063	11,795	—
Equipment acquired through lease financing	24,904	216	297

See accompanying Notes to Consolidated Financial Statements.

(1) As Adjusted, see Note 1 - Summary of Significant Accounting Policies.

Notes to Consolidated Financial Statements
(dollars in thousands, except per share data)

Note 1 - Summary of Significant Accounting Policies

Consolidation: The consolidated financial statements include the accounts of Moog Inc. and all of our U.S. and foreign subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Fiscal Year: Our fiscal year ends on the Saturday that is closest to September 30. The consolidated financial statements include 53 weeks for the year ended October 3, 2020, and 52 weeks for the years ended September 28, 2019 and September 29, 2018.

Operating Cycle: Consistent with industry practice, aerospace and defense related inventories, unbilled recoverable costs and profits on over-time contract receivables, customer advances, warranties and contract reserves include amounts relating to contracts having long production and procurement cycles, portions of which are not expected to be realized or settled within one year.

Foreign Currency Translation: Assets and liabilities of subsidiaries that prepare financial statements in currencies other than the U.S. dollar are translated using rates of exchange as of the balance sheet date and the statements of earnings are translated at the average rates of exchange for each reporting period.

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

Revenue Recognition: We recognize revenue from contracts with customers using an over-time, cost-to-cost method of accounting or at the point in time that control transfers to the customer. For additional discussion on revenue recognition, see Note 2, Revenue from Contracts with Customers.

Shipping and Handling Costs: Shipping and handling costs are included in cost of sales.

Research and Development: Research and development costs are expensed as incurred and include salaries, benefits, consulting, material costs and depreciation.

Bid and Proposal Costs: Bid and proposal costs are expensed as incurred and classified as selling, general and administrative expenses.

Equity-Based Compensation: Our equity-based compensation plans allow for various types of equity-based incentive awards. The types and mix of these incentive awards are evaluated on an on-going basis and may vary based on our overall strategy regarding compensation. Equity-based compensation expense is based on awards that are ultimately expected to vest over the requisite service periods and are based on the fair value of the award measured on the grant date. Vesting requirements vary for directors, officers and key employees. In general, awards granted to officers and key employees principally vest over three years, in equal annual installments for time-based awards and in three years cliff vest for performance-based awards. We have elected to account for forfeitures when the forfeiture of the underlying awards occur. Equity-based compensation expense is included in selling, general and administrative expenses.

Cash and Cash Equivalents: All highly liquid investments with an original maturity of three months or less are considered cash equivalents.

Restricted Cash: Restricted cash principally represents funds held to satisfy supplemental retirement obligations.

Allowance for Doubtful Accounts: The allowance for doubtful accounts is based on our assessment of the collectibility of customer accounts. The allowance is determined by considering factors such as historical experience, credit quality, age of the accounts receivable balances and current economic conditions that may affect a customer's ability to pay.

Inventories: Inventories are stated at the lower of cost or net realizable value with cost determined primarily on the first-in, first-out (FIFO) method of valuation.

Property, Plant and Equipment: Property, plant and equipment are stated at cost. Plant and equipment are depreciated principally using the straight-line method over the estimated useful lives of the assets, generally ranging from 15 to 40 years for buildings and improvements, 5 to 15 years for machinery and equipment and 3 to 10 years for computer equipment and software. Leasehold improvements are amortized on a straight-line basis over the term of the lease or the estimated useful life of the asset, whichever is shorter.

Goodwill: We test goodwill for impairment at the reporting unit level on an annual basis or more frequently if an event occurs or circumstances change that indicate that the fair value of a reporting unit is likely to be below its carrying amount. We also test goodwill for impairment when there is a change in reporting units.

We may elect to perform a qualitative assessment that considers economic, industry and company-specific factors for all or selected reporting units. If, after completing this assessment, it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying value, we proceed to a quantitative test. We may also elect to perform a quantitative test instead of a qualitative assessment for any or all of our reporting units.

Quantitative testing requires a comparison of the fair value of each reporting unit to its carrying value. We typically use the discounted cash flow method to estimate the fair value of our reporting units. The discounted cash flow method incorporates various assumptions, the most significant being projected revenue growth rates, operating margins and cash flows, the terminal growth rate and the weighted-average cost of capital. If the carrying value of the reporting unit exceeds its fair value, goodwill is considered impaired and any loss must be measured. To determine the amount of the impairment loss, the implied fair value of goodwill is determined by assigning a fair value to all of the reporting unit's assets and liabilities, including any unrecognized intangible assets, as if the reporting unit had been acquired in a business combination at fair value. If the carrying amount of the reporting unit goodwill exceeds the implied fair value of that goodwill, an impairment loss would be recognized in an amount equal to that excess.

There were no goodwill impairment charges recorded in 2020, 2019 or 2018.

Acquired Intangible Assets: Acquired identifiable intangible assets are recorded at cost and are amortized over their estimated useful lives.

Impairment of Long-Lived Assets: Long-lived assets, including acquired identifiable intangible assets, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of those assets may not be recoverable. We use undiscounted cash flows to determine whether impairment exists and measure any impairment loss using discounted cash flows.

In 2020, we recorded impairment charges on long-lived assets primarily in our Aircraft Controls and Industrial Systems segments. These charges relate to property, plant and equipment, right-of-use-assets and intangibles assets that experienced significant decline in value due to economic impacts of the COVID-19 pandemic. These charges are included in long-lived asset impairment in the Consolidated Statements of Earnings.

In 2019, we recorded impairment charges for capitalized software costs that were not placed in service. These charges are included as other expense in the Consolidated Statements of Earnings.

In 2018, we recorded impairment charges in our Industrial Systems segment. These charges relate to intangible assets and equipment that will no longer be used as a result of restructuring actions taken for the wind pitch control business we exited. These charges are included in restructuring in the Consolidated Statements of Earnings.

See Note 6 - Property, Plant and Equipment, Note 7 - Leases, Note 8 - Goodwill and Intangible Assets and Note 12 - Fair Value for additional disclosures relating to impairment charges recorded.

Product Warranties: In the ordinary course of business, we warrant our products against defect in design, materials and workmanship typically over periods ranging from twelve to sixty months. We determine warranty reserves needed by product line based on historical experience and current facts and circumstances.

Financial Instruments: Our financial instruments consist primarily of cash and cash equivalents, receivables, notes payable, accounts payable, long-term debt, interest rate swaps and foreign currency contracts. The carrying values for our financial instruments approximate fair value with the exception at times of long-term debt. We do not hold or issue financial instruments for trading purposes.

We carry derivative instruments on the Consolidated Balance Sheets at fair value, determined by reference to quoted market prices. The accounting for changes in the fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and, if so, the reason for holding it. Our use of derivative instruments is generally limited to cash flow hedges of certain interest rate risks and minimizing foreign currency exposure on foreign currency transactions, which are typically designated in hedging relationships, and intercompany balances, which are not designated as hedging instruments. Cash flows resulting from forward contracts are accounted for as hedges of identifiable transactions or events and classified in the same category as the cash flows from the items being hedged.

Reclassifications: Certain prior year amounts have been reclassified to conform to current year's presentation, which management does not consider to be material.

Refer to the following table for a summary of ASUs we adopted during 2020 and the related financial statement impact.

Recent Accounting Pronouncements:

Recent Accounting Pronouncements Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2016-02 <i>Leases</i> (and all related ASUs)	The standard requires most lease arrangements to be recognized in the balance sheet as lease assets and lease liabilities. The standard also requires additional disclosures about the leasing arrangements. The provisions of the standard are effective for fiscal years beginning after December 15, 2018 and interim periods within those years. Early adoption is permitted.	We adopted this standard using the modified retrospective method, without adjusting prior comparative periods. We recorded initial right-of-use (ROU) assets of \$75,521 and lease liabilities of \$79,187, which included reclassifying deferred rent as a component of the ROU asset on the Consolidated Balance Sheets. There were no material changes to our Consolidated Statements of Earnings or Consolidated Statements of Cash Flows. See Note 7 - Leases, for additional disclosure. Date adopted: Q1 2020

Recent Accounting Pronouncements Not Yet Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2016-13 <i>Measurement of Credit Losses on Financial Instruments</i>	The standard replaces the incurred loss model with the current expected credit loss (CECL) model to estimate credit losses for financial assets measured at amortized cost and certain off-balance sheet credit exposures. The CECL model requires a Company to estimate credit losses expected over the life of the financial assets based on historical experience, current conditions and reasonable and supportable forecasts. The provisions of the standard are effective for fiscal years beginning after December 15, 2019 and interim periods within those fiscal years. Early adoption is permitted. The amendment requires a modified retrospective approach by recording a cumulative-effect adjustment to retained earnings as of the beginning of the period of adoption.	We evaluated the effect of this standard and determined that it will not have a material impact on our financial statements, disclosures, internal controls or processes. Planned date of adoption: Q1 2021

We consider the applicability and impact of all ASUs. ASUs not listed above were assessed and determined to be either not applicable, or had or are expected to have an immaterial impact on our financial statements and related disclosures.

Impact of Change in Accounting Principle

Beginning in the first quarter of 2020, we changed our method of accounting for the determination of the market-related value of assets for a class of assets within the qualified U.S. defined benefit plan (the plan). This class of assets is currently comprised solely of the fixed income funds asset class held in the portfolio for the plan and provides a natural hedge (liability-hedging assets) against the changes in the recorded amount of net periodic pension cost. Refer to Note 14 - Employee Benefit Plans for our fair value disclosure by asset classification. Our previous method of accounting was to calculate the market-related value of assets for all the plan's assets recognizing investment gains and losses ratably over a five-year period. We have elected to use the fair value of our liability-hedging assets, which represent approximately 80% of the plan's assets, to determine the market-related value of the assets beginning in the first quarter of 2020. This change in accounting principle is preferable as the recognition of the gains and losses on this class of assets will affect net periodic pension cost in the period in which they occur. No change is being made to the accounting principle for the other classes of pension assets, which represent the remaining 20% of the pension asset portfolio for the plan. The gains and losses for these other plan assets will continue to be amortized into earnings over a five-year period.

The change in accounting principle requires retrospective application and prospective disclosure. The tables below represent the impact of this change on the Consolidated Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the fiscal years ended October 3, 2020, September 28, 2019 and September 29, 2018, respectively, and on the Consolidated Balance Sheets for the fiscal years ended October 3, 2020, September 28, 2019, September 29, 2018 and September 30, 2017, respectively. The change in accounting principle had no impact on the Consolidated Statements of Cash Flows for these periods.

The tables below represent the impact of the change in accounting principle on the Consolidated Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the fiscal year ended October 3, 2020.

	As Reported (With Change), October 3, 2020	Impact of Change	Without Change, October 3, 2020
Other	\$ 20,707	\$ 11,502	\$ 32,209
Earnings (loss) before income taxes	5,417	(11,502)	(6,085)
Income taxes (benefit)	(3,788)	(2,714)	(6,502)
Net earnings attributable to Moog and noncontrolling interest	\$ 9,205	\$ (8,788)	\$ 417
Net earnings attributable to Moog	\$ 9,205	\$ (8,788)	\$ 417
Net earnings per share attributable to Moog			
Basic	\$ 0.28	\$ (0.27)	\$ 0.01
Diluted	\$ 0.28	\$ (0.27)	\$ 0.01
Retirement liability adjustment	\$ 102,081	\$ 8,788	\$ 110,869
Other comprehensive income, net of tax	\$ 130,024	\$ 8,788	\$ 138,812
Comprehensive income (loss)	\$ 139,229	\$ —	\$ 139,229
Comprehensive income (loss) attributable to Moog	\$ 139,229	\$ —	\$ 139,229

The table below represents the impact of the change in accounting principle on the Consolidated Balance Sheet and Consolidated Statements of Shareholders' Equity as of October 3, 2020.

	As Reported (With Change), October 3, 2020	Impact of Change	Without Change, October 3, 2020
Shareholders' equity			
Retained earnings (loss)	\$ 2,112,734	\$ (4,199)	\$ 2,108,535
Accumulated other comprehensive income (loss)	(285,453)	4,199	(281,254)
Total shareholders' equity	\$ 1,243,083	\$ —	\$ 1,243,083

The tables below represent the impact of the change in accounting principle on the Consolidated Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the fiscal year ended September 28, 2019.

	As Previously Reported, September 28, 2019	Impact of Change	As Reported (With Change), September 28, 2019
Other	\$ 11,699	\$ 6,806	\$ 18,505
Earnings (loss) before income taxes	233,758	(6,806)	226,952
Income taxes (benefit)	54,010	(1,606)	52,404
Net earnings attributable to Moog and noncontrolling interest	\$ 179,748	\$ (5,200)	\$ 174,548
Net earnings attributable to Moog	\$ 179,748	\$ (5,200)	\$ 174,548
Net earnings per share attributable to Moog			
Basic	\$ 5.16	\$ (0.15)	\$ 5.01
Diluted	\$ 5.11	\$ (0.15)	\$ 4.96
Retirement liability adjustment	\$ (18,006)	\$ 5,200	\$ (12,806)
Other comprehensive income (loss), net of tax	\$ (47,885)	\$ 5,200	\$ (42,685)
Comprehensive income (loss)	\$ 131,863	\$ —	\$ 131,863
Comprehensive income (loss) attributable to Moog	\$ 131,863	\$ —	\$ 131,863

The table below represents the impact of the change in accounting principle on the Consolidated Balance Sheet and Consolidated Statements of Shareholders' Equity as of September 28, 2019.

	As Previously Reported, September 28, 2019	Impact of Change	As Reported (With Change), September 28, 2019
Shareholders' equity			
Retained earnings (loss)	\$ 2,133,328	\$ (4,589)	\$ 2,128,739
Accumulated other comprehensive income (loss)	(420,066)	4,589	(415,477)
Total shareholders' equity	\$ 1,322,481	\$ —	\$ 1,322,481

The tables below represent the impact of the change in accounting principle on the Consolidated Statements of Earnings and the Consolidated Statements of Comprehensive Income (Loss) for the fiscal year ended September 29, 2018.

	As Previously Reported, September 29, 2018	Impact of Change	As Reported (With Change), September 29, 2018
Other	\$ 6,950	\$ 1,658	\$ 8,608
Earnings (loss) before income taxes	183,837	(1,658)	182,179
Income taxes (benefit)	87,209	(391)	86,818
Net earnings attributable to Moog and noncontrolling interest	\$ 96,628	\$ (1,267)	\$ 95,361
Net earnings attributable to Moog	\$ 96,507	\$ (1,267)	\$ 95,240
Net earnings per share attributable to Moog			
Basic	\$ 2.71	\$ (0.04)	\$ 2.67
Diluted	\$ 2.68	\$ (0.04)	\$ 2.64
Retirement liability adjustment	\$ 26,757	\$ 1,267	\$ 28,024
Other comprehensive income, net of tax	\$ 10,357	\$ 1,267	\$ 11,624
Comprehensive income (loss)	\$ 59,908	\$ —	\$ 59,908
Comprehensive income (loss) attributable to Moog	\$ 59,817	\$ —	\$ 59,817

The table below represents the impact of the change in accounting principle on the Consolidated Statements of Shareholders' Equity as of September 29, 2018.

	As Previously Reported, September 29, 2018	Impact of Change	As Reported (With Change), September 29, 2018
Shareholders' equity			
Retained earnings	\$ 1,973,514	\$ 611	\$ 1,974,125
Accumulated other comprehensive income (loss)	(372,181)	(611)	(372,792)
Total shareholders' equity	\$ 1,224,986	\$ —	\$ 1,224,986

The table below represents the impact of the change in accounting principle on the Consolidated Statements of Shareholders' Equity as of September 30, 2017.

	As Previously Reported, September 30, 2017	Impact of Change	As Reported (With Change), September 30, 2017
Shareholders' equity			
Retained earnings	\$ 1,847,819	\$ 1,878	\$ 1,849,697
Accumulated other comprehensive income (loss)	(335,491)	(1,878)	(337,369)
Total shareholders' equity	\$ 1,214,304	\$ —	\$ 1,214,304

See Note 14 - Employee Benefit Plans and Note 20 - Accumulated Other Comprehensive Income (Loss) for adjusted reporting for prior periods.

Note 2 - Revenue from Contracts with Customers

We recognize revenue from contracts with customers using the five-step model prescribed in ASC 606. The first step is identifying the contract. The identification of a contract with a customer requires an assessment of each party's rights and obligations regarding the products or services to be transferred, including an evaluation of termination clauses and presently enforceable rights and obligations. Each party's rights and obligations and the associated terms and conditions are typically determined in purchase orders. For sales that are governed by master supply agreements under which provisions define specific program requirements, purchase orders are issued under these agreements to reflect presently enforceable rights and obligations for the units of products and services being purchased.

Contracts are sometimes modified to account for changes in contract specifications and requirements. When this occurs, we assess the modification as prescribed in ASC 606 and determine whether the existing contract needs to be modified (and revenue cumulatively caught up), whether the existing contract needs to be terminated and a new contract needs to be created, or whether the existing contract remains and a new contract needs to be created. This is determined based on the rights and obligations within the modification as well as the associated transaction price.

The next step is identifying the performance obligations. A performance obligation is a promise to transfer goods or services to a customer that is distinct in the context of the contract, as defined by ASC 606. We identify a performance obligation for each promise in a contract to transfer a distinct good or service to the customer. As part of our assessment, we consider all goods and/or services promised in the contract, regardless of whether they are explicitly stated or implied by customary business practices. The products and services in our contracts are typically not distinct from one another due to their complexity and reliance on each other or, in many cases, we provide a significant integration service. Accordingly, many of our contracts are accounted for as one performance obligation. In limited cases, our contracts have more than one distinct performance obligation, which occurs when we perform activities that are not highly complex or interrelated or involve different product life cycles. Warranties are provided on certain contracts, but do not typically provide for services beyond standard assurances and are therefore not distinct performance obligations under ASC 606.

The third step is determining the transaction price, which represents the amount of consideration we expect to be entitled to receive from a customer in exchange for providing the goods or services. There are times when this consideration is variable, for example a volume discount, and must be estimated. Sales, use, value-added, and excise taxes are excluded from the transaction price, where applicable.

The fourth step is allocating the transaction price. The transaction price must be allocated to the performance obligations identified in the contract based on relative stand-alone selling prices when available, or an estimate for each distinct good or service in the contract when standalone prices are not available. Our contracts with customers generally require payment under normal commercial terms after delivery. Payment terms are typically within 30 to 60 days of delivery. The timing of satisfaction of our performance obligations does not significantly vary from the typical timing of payment.

The final step is the recognition of revenue. We recognize revenue as the performance obligations are satisfied. ASC 606 provides guidance to help determine if we are satisfying the performance obligation at a point in time or over time. In determining when performance obligations are satisfied, we consider factors such as contract terms, payment terms and whether there is an alternative use of the product or service. In essence, we recognize revenue when or as control of the promised goods or services transfer to the customer.

Under ASC 606, revenue recognized over time using the cost-to-cost method of accounting was 65% and 64% for the years ended October 3, 2020 and September 28, 2019, respectively. The over-time method of revenue recognition is predominantly used in Aircraft Controls and Space and Defense Controls. We use this method for U.S. Government contracts and repair and overhaul arrangements as we are creating or enhancing assets that the customer controls as the assets are being created or enhanced. In addition, many of our large commercial contracts qualify for over-time accounting as our performance does not create an asset with an alternative use and we have an enforceable right to payment for performance completed to date. Our over-time contracts are primarily firm fixed price.

Revenue is recognized on contracts using the cost-to-cost method of accounting as work progresses toward completion as determined by the ratio of cumulative costs incurred to date to estimated total contract costs at completion, multiplied by the total estimated contract revenue, less cumulative revenue recognized in prior periods. We believe that cumulative costs incurred to date as a percentage of estimated total contract costs at completion is an appropriate measure of progress toward satisfaction of performance obligations as this measure most accurately depicts the progress of our work and transfer of control to our customers. Changes in estimates affecting sales, costs and profits are recognized in the period in which the change becomes known using the cumulative catch-up method of accounting, resulting in the cumulative effect of changes reflected in the period. Estimates are reviewed and updated quarterly for substantially all contracts. In 2020, we recognized revenues of \$15,785 for adjustments made to performance obligations satisfied (or partially satisfied) in previous periods. In 2019, we recognized revenues of \$20,055 for adjustments made to performance obligations satisfied (or partially satisfied) in previous periods.

Contract costs include only allocable, allowable and reasonable costs which are included in cost of sales when incurred. For applicable U.S. Government contracts, contract costs are determined in accordance with the Federal Acquisition Regulations and the related Cost Accounting Standards. The nature of these costs includes development engineering costs and product manufacturing costs such as direct material, direct labor, other direct costs and indirect overhead costs. Contract profit is recorded as a result of the revenue recognized less costs incurred in any reporting period. Variable consideration and contract modifications, such as performance incentives, penalties, contract claims or change orders are considered in estimating revenues, costs and profits when they can be reliably estimated and realization is considered probable. As of October 3, 2020, revenue recognized on contracts for unresolved claims or unapproved contract change orders was not material.

As of October 3, 2020, we had contract reserves of \$72,412. For contracts with anticipated losses at completion, a provision for the entire amount of the estimated remaining loss is charged against income in the period in which the loss becomes known. Contract losses are determined considering all direct and indirect contract costs, exclusive of any selling, general or administrative cost allocations that are treated as period expenses. Loss reserves are more common on firm fixed-price contracts that involve, to varying degrees, the design and development of new and unique controls or control systems to meet the customers' specifications. In accordance with ASC 606, we calculate contract losses at the contract level, versus the performance obligation level. Recall reserves are recorded when additional work is needed on completed products for them to meet contract specifications. Contract-related loss reserves are recorded for the additional work needed on completed and delivered products in order for them to meet contract specifications.

Revenue recognized at the point in time control was transferred to the customer was 35% and 36% for the years ended October 3, 2020 and September 28, 2019, respectively. This method of revenue recognition is used most frequently in Industrial Systems. We use this method for commercial contracts in which the asset being created has an alternative use. We determine the point in time control transfers to the customer by weighing the five indicators provided by ASC 606 - the entity has a present right to payment; the customer has legal title; the customer has physical possession; the customer has the significant risks and rewards of ownership; and the customer has accepted the asset. When control has transferred to the customer, profit is generated as cost of sales is recorded and as revenue is recognized. Inventory costs include all product manufacturing costs such as direct material, direct labor, other direct costs and indirect overhead cost allocations. Shipping and handling costs are considered costs to fulfill a contract and not considered performance obligations. They are included in cost of sales as incurred.

Contract Assets and Liabilities

Unbilled receivables (contract assets) primarily represent revenues recognized for performance obligations that have been satisfied but for which amounts have not been billed. These are included as Receivables on the Consolidated Balance Sheets. Contract advances (contract liabilities) relate to payments received from customers in advance of the satisfaction of performance obligations for a contract. We do not consider contract advances to be significant financing components as the intent of these payments in advance are for reasons other than providing a significant financing benefit and are customary in our industry.

Total contract assets and contract liabilities are as follows:

	October 3, 2020	September 28, 2019
Unbilled receivables	\$ 493,734	\$ 468,824
Contract advances	203,338	137,242
Net contract assets	\$ 290,396	\$ 331,582

The increase in contract assets reflects the net impact of additional unbilled revenues recorded in excess of revenue recognized during the period. The increase in contract liabilities reflects the net impact of additional deferred revenues recorded in excess of revenue recognized during the period. As of October 3, 2020, we recognized \$78,873 of revenue that was included in the contract liability balance at the beginning of the period.

Remaining Performance Obligations

As of October 3, 2020, the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied (or partially unsatisfied), also known as backlog, was \$2,555,129. We expect to recognize approximately 65% of that amount as sales over the next twelve months and the balance thereafter.

Disaggregation of Revenue

See Note 21, Segments, for disclosures related to disaggregation of revenue.

Note 3 - Acquisitions and Divestitures

On November 28, 2019, we acquired GAT Gesellschaft für Antriebstechnik mbH and GAT Inc. (GAT), headquartered in Geisenheim, Germany for a purchase price of \$54,265, net of acquired cash. GAT designs and manufactures high-end fluid rotating unions and slip rings. This operation is included in our Industrial Systems segment.

In the first quarter of 2020, we sold a non-core business of our Industrial Systems segment for \$1,775 in net consideration and recorded a gain in other income of \$169.

In the first quarter of 2019, we sold a non-core business of our Industrial Systems segment for \$4,191 in cash and recorded a gain in other income of \$2,641.

Note 4 - Receivables

Receivables consist of:

	October 3, 2020	September 28, 2019
Accounts receivable	\$ 363,089	\$ 477,154
Unbilled receivables	493,734	468,824
Other	5,025	13,779
Less allowance for doubtful accounts	(6,313)	(5,402)
Receivables, net	\$ 855,535	\$ 954,355

We securitize certain trade receivables in transactions that are accounted for as secured borrowings (the "Securitization Program"). We maintain a subordinated interest in a portion of the pool of trade receivables that are securitized. The retained interest, which is included in Receivables in the Consolidated Balance Sheets, is recorded at fair value, which approximates the total amount of the designated pool of accounts receivable. See Note 9, Indebtedness, for additional disclosures related to the Securitization Program.

Over-time contract receivables are primarily associated with prime contractors and subcontractors in connection with U.S. Government contracts, as well as commercial aircraft and satellite manufacturers. Amounts billed for over-time contracts to the U.S. Government were \$10,286 at October 3, 2020 and \$7,573 at September 28, 2019. Unbilled recoverable costs and accrued profits under over-time contracts to be billed to the U.S. Government were \$34,223 at October 3, 2020 and \$48,004 at September 28, 2019. Unbilled recoverable costs and accrued profits principally represent revenues recognized on contracts that were not billable on the balance sheet date. These amounts will be billed in accordance with contract terms, generally as certain milestones are reached or upon shipment. Approximately 99% of unbilled amounts are expected to be collected within one year. In situations where billings exceed revenues recognized, the excess is included in contract advances.

There are no material amounts of claims or unapproved change orders included in the Consolidated Balance Sheets. There are no material balances billed but not paid by customers under retainage provisions.

Concentrations of credit risk on receivables are limited to those from significant customers who are believed to be financially sound. Receivables from Boeing were \$249,424 at October 3, 2020 and \$245,892 at September 28, 2019. We perform periodic credit evaluations of our customers' financial condition and generally do not require collateral.

Note 5 - Inventories

Inventories, net of reserves, consist of:

	October 3, 2020	September 28, 2019
Raw materials and purchased parts	\$ 235,906	\$ 189,875
Work in progress	327,990	276,538
Finished goods	59,147	68,561
Inventories, net	\$ 623,043	\$ 534,974

There are no material inventoried costs relating to over-time contracts where revenue is accounted for using the cost-to-cost method of accounting as of October 3, 2020 and September 28, 2019.

Net inventory disclosed above reflects non-cash inventory reserves of \$16,319 as of October 3, 2020 due to the impact of the COVID-19 pandemic.

Note 6 - Property, Plant and Equipment

Property, plant and equipment consists of:

	October 3, 2020	September 28, 2019
Land	\$ 37,463	\$ 33,111
Buildings and improvements	476,659	469,867
Machinery and equipment	782,194	775,378
Computer equipment and software	158,683	137,221
Property, plant and equipment, at cost	1,454,999	1,415,577
Less accumulated depreciation and amortization	(854,501)	(828,810)
Property, plant and equipment, net	\$ 600,498	\$ 586,767

In 2020, we recorded \$25,419 of impairment charges for owned and finance lease ROU assets, based on expected cash flows over the remaining life of the assets in relation to the impact of the COVID-19 pandemic. In 2019, we recorded \$4,464 relating to impairment charges for capitalized software that was not placed in service. In 2018, we recorded \$2,066 of impairment charges taken on equipment associated with the wind pitch control business we exited.

Note 7 - Leases

On September 29, 2019, we adopted ASC 842: Leases, and the related amendments (ASC 842), using the modified retrospective method, as described in Note 1, Summary of Significant Accounting Policies, without adjusting prior comparative periods.

We lease certain manufacturing facilities, office space and machinery and equipment globally. At inception we evaluate whether a contractual arrangement contains a lease. Specifically, we consider whether we control the underlying asset and have the right to obtain substantially all the economic benefits or outputs from the asset. If the contractual arrangement contains a lease, we then determine the classification of the lease, operating or finance, using the classification criteria described in ASC 842. We then determine the term of the lease based on terms and conditions of the contractual arrangement, including whether the options to extend or terminate the lease are reasonably certain to be exercised. We have elected to not separate lease components from non-lease components, such as common area maintenance charges and instead, account for the lease and non-lease components as a single component.

Our lease ROU assets represent our right to use an underlying asset for the lease term and our lease liabilities represent our obligation to make lease payments. Operating lease ROU assets are included in Operating lease right-of-use assets and operating lease liabilities are included in Accrued liabilities and other and Other long-term liabilities on the Consolidated Balance Sheets. Finance lease ROU assets are included in Property, plant and equipment and finance lease liabilities are included in Accrued liabilities and other and Other long-term liabilities on the Consolidated Balance Sheets. Operating lease cost is included in Cost of sales and Selling, general and administrative on the Consolidated Statements of Earnings. Finance lease cost is included in Cost of sales, Selling, general and administrative and Interest on the Consolidated Statements of Earnings.

The ROU assets and lease liabilities for both operating and finance leases are recognized as of the commencement date at the net present value of the fixed minimum lease payments over the term of the lease, using the discount rate described below. Variable lease payments are recorded in the period in which the obligation for the payment is incurred. Variable lease payments based on an index or rate are initially measured using the index or rate as of the commencement date of the lease and included in the fixed minimum lease payments. For short-term leases that have a term of 12 months or less as of the commencement date, we do not recognize a ROU asset or lease liability on our balance sheet; we recognize expense as the lease payments are made over the lease term.

The discount rate used to calculate the present value of our leases is the rate implicit in lease. If the information necessary to determine the rate implicit in the lease is not available, we use our incremental borrowing rate for collateralized debt, which is determined using our credit rating and other information available as of the lease commencement date.

The components of lease expense were as follows:

	Fiscal Year Ended October 3, 2020
Operating lease cost	\$ 27,493
Finance lease cost:	
Amortization of right-of-use assets	\$ 1,175
Interest on lease liabilities	367
Total finance lease cost	\$ 1,542

As we have not restated prior-year information for the adoption of ASC 842, total rent expense for operating leases under ASC 840 amounted to \$25,510 in 2019 and \$26,594 in 2018.

Supplemental cash flow information related to leases was as follows:

	Fiscal Year Ended October 3, 2020
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flow for operating leases	\$ 24,218
Operating cash flow for finance leases	367
Financing cash flow for finance leases	1,167
Assets obtained in exchange for lease obligations:	
Operating leases	13,738
Finance leases	11,166

Supplemental balance sheet information related to leases was as follows:

	October 3, 2020
Operating Leases	
Operating lease right-of-use assets	\$ 68,393
Accrued liabilities and other	\$ 15,034
Other long-term liabilities	60,837
Total operating lease liabilities	\$ 75,871
Finance Leases	
Property, plant, and equipment, at cost	\$ 13,930
Accumulated depreciation	(1,497)
Property, plant, and equipment, net	\$ 12,433
Accrued liabilities and other	\$ 2,199
Other long-term liabilities	11,392
Total finance lease liabilities	\$ 13,591
Weighted average remaining lease term in years	
Operating leases	7.4
Finance leases	12.3
Weighted average discount rate	
Operating leases	4.7%
Finance leases	4.8%

Maturities of lease liabilities were as follows:

	October 3, 2020	
	Operating Leases	Finance Leases
2021	\$ 17,495	\$ 2,487
2022	16,392	2,253
2023	12,651	2,146
2024	9,050	2,085
2025	7,388	1,839
Thereafter	34,056	8,694
Total lease payments	97,032	19,504
Less: imputed interest	(21,161)	(5,913)
Total	\$ 75,871	\$ 13,591

The operating lease right-of-use assets and finance leased cost in the disclosures above reflect write downs of \$3,696 and \$1,112, respectively as of October 3, 2020, based on expected cash flows over the remaining life of the assets in relation to impairment charges associated with the COVID-19 pandemic.

As we have not restated prior-year information for the adoption of ASC 842, future minimum rental payments required under non-cancellable operating leases under ASC 840 as of September 28, 2019 were \$20,993 in 2020, \$19,118 in 2021, \$15,636 in 2022, \$11,344 in 2023, \$7,151 in 2024 and \$41,670 thereafter.

Note 8 - Goodwill and Intangible Assets

The changes in the carrying amount of goodwill are as follows:

	Aircraft Controls	Space and Defense Controls	Industrial Systems	Total
Balance at September 30, 2017	\$ 181,375	\$ 259,951	\$ 332,942	\$ 774,268
Acquisitions	—	3,769	27,329	31,098
Divestiture	—	(1,836)	—	(1,836)
Foreign currency translation	(1,468)	(152)	(4,693)	(6,313)
Balance at September 29, 2018	179,907	261,732	355,578	797,217
Divestiture	—	—	(1,237)	(1,237)
Foreign currency translation	(2,968)	(48)	(8,724)	(11,740)
Balance at September 28, 2019	176,939	261,684	345,617	784,240
Acquisition	—	—	25,237	25,237
Divestiture	—	—	(635)	(635)
Foreign currency translation	2,582	42	10,390	13,014
Balance at October 3, 2020	\$ 179,521	\$ 261,726	\$ 380,609	\$ 821,856

Goodwill in our Space and Defense Controls segment is net of a \$4,800 accumulated impairment loss at October 3, 2020. Goodwill in our Medical Devices reporting unit, included in our Industrial Systems segment, is net of a \$38,200 accumulated impairment loss at October 3, 2020.

The components of intangible assets are as follows:

		October 3, 2020		September 28, 2019	
	Weighted-Average Life (years)	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Customer-related	11	\$ 140,048	\$ (103,733)	\$ 132,697	\$ (100,091)
Technology-related	9	77,060	(54,833)	69,220	(52,192)
Program-related	23	38,963	(17,340)	62,015	(35,680)
Marketing-related	8	25,581	(20,981)	23,139	(19,899)
Other	10	4,134	(3,853)	4,061	(3,624)
Intangible assets	12	\$ 285,786	\$ (200,740)	\$ 291,132	\$ (211,486)

Substantially all acquired intangible assets other than goodwill are being amortized. Customer-related intangible assets primarily consist of customer relationships. Technology-related intangible assets primarily consist of technology, patents, intellectual property and software. Program-related intangible assets consist of long-term programs represented by current contracts and probable follow on work. Marketing-related intangible assets primarily consist of trademarks, trade names and non-compete agreements.

In 2020, we recorded a \$8,723 write down of intangible assets based on expected cash flows over the remaining life of the assets in relation to the impairment charges associated with the COVID-19 pandemic. In 2018, we recorded a \$12,316 write down of intangible assets related to impairment charges taken on the wind pitch control business we exited.

Amortization of acquired intangible assets is as follows:

	2020	2019	2018
Acquired intangible asset amortization	\$ 12,524	\$ 13,079	\$ 17,037

Based on acquired intangible assets recorded at October 3, 2020, amortization is estimated to be approximately:

	2021	2022	2023	2024	2025
Estimated future amortization of acquired intangible assets	\$ 10,800	\$ 10,600	\$ 9,700	\$ 9,300	\$ 8,200

Note 9 - Indebtedness

We maintain short-term line of credit facilities with banks throughout the world that are principally demand lines subject to revision by the banks.

Long-term debt consists of:

	October 3, 2020	September 28, 2019
U.S. revolving credit facility	\$ 362,136	\$ 395,712
SECT revolving credit facility	6,000	7,000
Senior notes 4.25%	500,000	—
Senior notes 5.25%	—	300,000
Securitization program	69,000	130,000
Other long-term debt	1,661	—
Obligations under capital leases	—	679
Senior debt	938,797	833,391
Less deferred debt issuance cost	(8,465)	(158)
Less current installments	(350)	(249)
Long-term debt	\$ 929,982	\$ 832,984

On October 15, 2019, we amended and restated our U.S. revolving credit facility, which matures on October 15, 2024. Our U.S. revolving credit facility has a capacity of \$1,100,000 and provides an expansion option, which permits us to request an increase of up to \$400,000 to the credit facility upon satisfaction of certain conditions. The credit facility is secured by substantially all of our U.S. assets. The loan agreement contains various covenants which, among others, specify interest coverage and maximum leverage. We are in compliance with all covenants. The weighted-average interest rate on the majority of the outstanding credit facility borrowings is 2.25% and is based on LIBOR plus the applicable margin, which was 1.5% at October 3, 2020.

The SECT has a revolving credit facility with a borrowing capacity of \$35,000, maturing on July 26, 2022. Interest is based on LIBOR plus an applicable margin of 2.13%. A commitment fee is also charged based on a percentage of the unused amounts available and is not material.

On December 13, 2019, we completed the sale of \$500,000 aggregate principal amount of 4.25% senior notes due December 15, 2027 with interest paid semiannually on June 15 and December 15 of each year, which commenced on June 15, 2020. The senior notes are unsecured obligations, guaranteed on a senior unsecured basis by certain subsidiaries and contain normal incurrence-based covenants and limitations such as the ability to incur additional indebtedness, pay dividends, make other restricted payments and investments, create liens and certain corporate acts such as mergers and consolidations. The aggregate net proceeds of \$491,769 were used to repay indebtedness under our U.S. revolving credit facility, thereby increasing the unused portion of our U.S. revolving credit facility. The effective interest rate for these notes after considering the amortization of deferred debt issuance costs is 4.60%.

On December 13, 2019, we issued a notice of redemption to the holders of our 5.25% senior notes due on December 1, 2022, to redeem and retire all of the outstanding notes. The notes were redeemed on January 13, 2020 at 101.313% pursuant to an early redemption right. We redeemed the aggregate principal amount of \$300,000 using proceeds drawn from our U.S. revolving credit facility. The associated loss on redemption includes \$3,939 of call premium paid to external bondholders.

The Securitization Program was extended on October 16, 2019 and matures on October 29, 2021 and effectively increases our borrowing capacity by up to \$130,000. On November 6, 2020, we gave notice to reduce our borrowing capacity to \$80,000. Under the Securitization Program, we sell certain trade receivables and related rights to an affiliate, which in turn sells an undivided variable percentage ownership interest in the trade receivables to a financial institution, while maintaining a subordinated interest in a portion of the pool of trade receivables. Interest for the Securitization Program is 1.02% at October 3, 2020 and is based on 30-day LIBOR plus an applicable margin. A commitment fee is also charged based on a percentage of the unused amounts available and is not material. The agreement governing the Securitization Program contains restrictions and covenants which include limitations on the making of certain restricted payments, creation of certain liens, and certain corporate acts such as mergers, consolidations and sale of substantially all assets. The Securitization Program has a minimum borrowing requirement equal to the lesser of either 80% of our borrowing capacity or 100% of our borrowing base, which is a subset of the trade receivables sold under this agreement. As of October 3, 2020, our minimum borrowing requirement was \$55,200.

Maturities of long-term debt are:

	2021	2022	2023	2024	2025	Thereafter
Long-term debt maturities	\$ 350	\$ 75,364	\$ 947	\$ —	\$ 362,136	\$ 500,000

At October 3, 2020, we had pledged assets with a net book value of \$1,775,860 as security for long-term debt.

At October 3, 2020, we had \$737,692 of unused short and long-term borrowing capacity, including \$696,656 from the U.S. revolving credit facility.

Commitment fees are charged on some of these arrangements and on the U.S. revolving credit facility based on a percentage of the unused amounts available and are not material.

Note 10 - Other Accrued Liabilities

Other accrued liabilities consists of:

	October 3, 2020	September 28, 2019
Contract reserves	\$ 72,412	\$ 60,914
Employee benefits	40,734	37,040
Warranty accrual	27,707	28,061
Accrued income taxes	11,785	26,532
Other	67,850	36,178
Other accrued liabilities	\$ 220,488	\$ 188,725

Activity in the warranty accrual is summarized as follows:

	2020	2019	2018
Warranty accrual at beginning of period	\$ 28,061	\$ 25,537	\$ 25,848
Additions from acquisitions	767	—	184
Warranties issued during current period	14,820	20,024	15,705
Adjustments to pre-existing warranties	(1,779)	(952)	(806)
Reductions for settling warranties	(14,656)	(16,083)	(15,101)
Foreign currency translation	494	(465)	(293)
Warranty accrual at end of period	\$ 27,707	\$ 28,061	\$ 25,537

Note 11 - Derivative Financial Instruments

We principally use derivative financial instruments to manage interest rate risk associated with long-term debt and foreign exchange risk related to foreign operations and foreign currency transactions. We enter into derivative financial instruments with a number of major financial institutions to minimize counterparty credit risk.

Derivatives designated as hedging instruments

Interest rate swaps are used to adjust the proportion of total debt that is subject to variable and fixed interest rates. The interest rate swaps are designated as hedges of the amount of future cash flows related to interest payments on variable-rate debt that, in combination with the interest payments on the debt, convert a portion of the variable-rate debt to fixed-rate debt. At October 3, 2020, we had no outstanding interest rate swaps.

We use foreign currency contracts as cash flow hedges to effectively fix the exchange rates on future payments and revenue. To mitigate exposure in movements between various currencies, including the Philippine peso, the British pound and the Czech koruna, we had outstanding foreign currency contracts with notional amounts of \$38,133 at October 3, 2020. These contracts mature at various times through November 26, 2021.

We use forward currency contracts to hedge our net investment in certain foreign subsidiaries. As of October 3, 2020, we had no outstanding net investment hedges.

Interest rate swaps, foreign currency contracts and net investment hedges are recorded in the Consolidated Balance Sheets at fair value and the related gains or losses are deferred in Shareholders' Equity as a component of Accumulated Other Comprehensive Income (Loss) (AOCIL). These deferred gains and losses are reclassified into the Consolidated Statements of Earnings, as necessary, during the periods in which the related payments or receipts affect earnings. However, to the extent the interest rate swaps and foreign currency contracts are not perfectly effective in offsetting the change in the value of the payments and revenue being hedged, the ineffective portion of these contracts is recognized in earnings immediately. Ineffectiveness was not material in 2020, 2019 or 2018.

Derivatives not designated as hedging instruments

We also have foreign currency exposure on balances, primarily intercompany, that are denominated in a foreign currency and are adjusted to current values using period-end exchange rates. The resulting gains or losses are recorded in the Consolidated Statements of Earnings. To minimize foreign currency exposure, we have foreign currency contracts with notional amounts of \$123,992 at October 3, 2020. The foreign currency contracts are recorded in the Consolidated Balance Sheets at fair value and resulting gains or losses are recorded in the Consolidated Statements of Earnings. We recorded the following gains and losses on foreign currency contracts which are included in other income or expense and generally offset the gains or losses from the foreign currency adjustments on the intercompany balances that are also included in other income or expense:

	Statements of Earnings location	2020	2019
Net gain (loss)			
Foreign currency contracts	Other	\$ 1,306	\$ (2,347)

Summary of derivatives

The fair value and classification of derivatives is summarized as follows:

	Balance Sheets location	October 3, 2020	September 28, 2019
Derivatives designated as hedging instruments:			
Foreign currency contracts	Other current assets	\$ 1,818	\$ 1,060
Foreign currency contracts	Other assets	169	261
Interest rate swaps	Other current assets	—	57
	Total asset derivatives	\$ 1,987	\$ 1,378
Foreign currency contracts	Accrued liabilities and other	\$ 169	\$ 736
Foreign currency contracts	Other long-term liabilities	—	152
	Total liability derivatives	\$ 169	\$ 888
Derivatives not designated as hedging instruments:			
Foreign currency contracts	Other current assets	\$ 1,044	\$ 93
Foreign currency contracts	Accrued liabilities and other	\$ 245	\$ 359

Note 12 - Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Depending on the nature of the asset or liability, various techniques and assumptions can be used to estimate fair value. The definition of the fair value hierarchy is as follows:

Level 1 – Quoted prices in active markets for identical assets and liabilities.

Level 2 – Observable inputs other than quoted prices in active markets for similar assets and liabilities.

Level 3 – Inputs for which significant valuation assumptions are unobservable in a market and therefore value is based on the best available data, some of which is internally developed and considers risk premiums that a market participant would require.

Our derivatives are valued using various pricing models or discounted cash flow analyses that incorporate observable market data, such as interest rate yield curves and currency rates, and are classified as Level 2 within the valuation hierarchy.

The following table presents the fair values and classification of our financial assets and liabilities measured on a recurring basis, all of which are classified as Level 2:

	Balance Sheets location	October 3, 2020	September 28, 2019
Foreign currency contracts	Other current assets	\$ 2,862	\$ 1,153
Foreign currency contracts	Other assets	169	261
Interest rate swaps	Other current assets	—	57
	Total assets	\$ 3,031	\$ 1,471
Foreign currency contracts	Accrued liabilities and other	\$ 414	\$ 1,095
Foreign currency contracts	Other long-term liabilities	—	152
	Total liabilities	\$ 414	\$ 1,247

Our only financial instrument for which the carrying value differs from its fair value is long-term debt. At October 3, 2020, the fair value of long-term debt was \$941,054 compared to its carrying value of \$938,797. The fair value of long-term debt is classified as Level 2 within the fair value hierarchy and was estimated based on quoted market prices.

Property, plant and equipment, right-of-use assets and intangible assets have been measured at fair values on a nonrecurring basis using future discounted cash flows and other observable inputs (Level 3) and are not included in the fair value tables above. In 2020, the impairment losses of \$37,839 recorded as a result of these measurements are described in Note 6 - Property, Plant and Equipment, Note 7 - Leases and Note 8 - Goodwill and Intangible Assets.

Note 13 - Restructuring

In 2020, we initiated restructuring actions in relation to impacts of the COVID-19 pandemic. The actions have and will result in workforce reductions, primarily in the Philippines, Europe and the U.S. We have recorded a total of \$10,466 for severance.

In 2018, we initiated restructuring actions in conjunction with exiting the wind pitch control business within our Industrial Systems segment. These actions have resulted in workforce reductions, principally in Germany and China.

The restructuring charge in 2018 consists of \$12,198 of non-cash inventory reserves, \$12,316 of non-cash charges for the impairment of intangible assets, \$2,162 of non-cash charges, primarily for the impairment of other long-lived assets, \$7,969 for severance, \$3,130 for facility closure and \$3,217 for other costs.

Restructuring activity for severance and other costs by segment and reconciliation to consolidated amounts is as follows:

	Space and				
	Aircraft Controls	Defense Controls	Industrial Systems	Corporate	Total
Balance at September 30, 2017	\$ 130	\$ —	\$ —	\$ 1,038	\$ 1,168
Charged to expense - 2018 plan	987	46	39,609	350	40,992
Non-cash charges - 2018 plan	(385)	—	(26,676)	—	(27,061)
Adjustments to provision	—	119	2	(10)	111
Cash payments - 2014 plan	—	—	—	(599)	(599)
Cash payments - 2015 plan	—	(101)	—	(350)	(451)
Cash payments - 2016 plan	(99)	—	(5,607)	—	(5,706)
Foreign currency translation	(7)	—	(334)	—	(341)
Balance at September 29, 2018	626	64	6,994	429	8,113
Adjustments to provision	13	(21)	275	17	284
Cash payments - 2016 plan	—	—	—	(446)	(446)
Cash payments - 2018 plan	(632)	(16)	(2,757)	—	(3,405)
Foreign currency translation	(7)	—	(416)	—	(423)
Balance at September 28, 2019	—	27	4,096	—	4,123
Charged to expense - 2020 plan	3,340	185	7,175	—	10,700
Non-cash charges - 2020 plan	(234)	—	—	—	(234)
Adjustments to provision	—	(1)	(892)	—	(893)
Cash payments - 2018 plan	—	(26)	(705)	—	(731)
Cash payments - 2020 plan	(1,859)	(185)	(828)	—	(2,872)
Foreign currency translation	—	—	249	—	249
Balance at October 3, 2020	\$ 1,247	\$ —	\$ 9,095	\$ —	\$ 10,342

As of October 3, 2020, the restructuring accrual consists of \$7,608 for the 2020 plan and \$2,734 for the 2018 plan. Restructuring is expected to be paid by September 30, 2021, except portions classified as long-term liabilities based on the nature of the reserve.

Note 14 - Employee Benefit Plans

We maintain multiple employee benefit plans, covering employees at certain locations.

Our qualified U.S. defined benefit pension plan is not open to new entrants. New employees are not eligible to participate in the pension plan. Instead, we make contributions for those employees to an employee-directed investment fund in the Moog Inc. Retirement Savings Plan ("RSP"). Effective January 1, 2020, all employees hired prior to January 1, 2019 are eligible to either participate in the new RSP(+) or remain in the existing RSP. All employees hired after January 1, 2019 are automatically enrolled in the new RSP(+). The Company's contributions to both the RSP and RSP(+) are based on a percentage of the employee's eligible compensation and age and are in addition to the employer match on voluntary employee contributions. The Company's contributions and the employer match were both enhanced under the new RSP(+).

The RSP and RSP(+) includes an employee stock ownership feature. As one of the investment alternatives, participants in the RSP and RSP(+) can acquire our stock at market value. Shares are allocated and compensation expense is recognized as the employer share match is earned. At October 3, 2020, the participants in the RSP and RSP(+) owned 1,519,892 Class B shares.

On September 16, 2020, we entered into an agreement to purchase a single premium non-participating group annuity contract and transferred the future benefit obligations and annuity administration for certain retirees and beneficiaries in our qualified U.S defined benefit pension plan. This settlement reduced the projected benefit obligation and fair value of assets by \$486,615 and resulted in a one-time settlement charge of \$121,324.

The changes in projected benefit obligations and plan assets and the funded status of the U.S. and non-U.S. defined benefit plans are as follows:

	U.S. Plans		Non-U.S. Plans	
	2020	2019	2020	2019
Change in projected benefit obligation:				
Projected benefit obligation at prior year measurement date	\$ 1,065,937	\$ 915,274	\$ 249,575	\$ 207,645
Service cost	23,033	21,003	6,771	4,988
Interest cost	30,597	36,924	2,785	4,393
Contributions by plan participants	—	—	832	828
Actuarial (gains) losses	97,438	130,377	(3,572)	48,564
Foreign currency exchange impact	—	—	16,256	(10,878)
Benefits paid	(40,246)	(36,455)	(5,278)	(6,040)
Curtailments	—	—	81	—
Settlements	(486,615)	—	(2,999)	—
Other	(1,455)	(1,186)	(32)	75
Projected benefit obligation at measurement date	\$ 688,689	\$ 1,065,937	\$ 264,419	\$ 249,575
Change in plan assets:				
Fair value of assets at prior year measurement date	\$ 1,004,163	\$ 878,983	\$ 166,242	\$ 145,641
Actual return on plan assets	134,871	157,966	(5,088)	24,623
Employer contributions	5,154	4,855	7,017	7,464
Contributions by plan participants	—	—	832	828
Benefits paid	(40,246)	(36,455)	(5,278)	(6,040)
Settlements	(486,615)	—	(2,999)	—
Foreign currency exchange impact	—	—	10,071	(6,220)
Other	(1,455)	(1,186)	(32)	(54)
Fair value of assets at measurement date	\$ 615,872	\$ 1,004,163	\$ 170,765	\$ 166,242
Funded status and amount recognized in assets and liabilities	\$ (72,817)	\$ (61,774)	\$ (93,654)	\$ (83,333)
Amount recognized in assets and liabilities:				
Long-term assets	\$ 30,887	\$ 35,429	\$ 3,862	\$ 2,575
Current and long-term pension liabilities	(103,704)	(97,203)	(97,516)	(85,908)
Amount recognized in assets and liabilities	\$ (72,817)	\$ (61,774)	\$ (93,654)	\$ (83,333)
Amount recognized in AOCIL, before taxes:				
Prior service cost (credit)	\$ —	\$ 133	\$ 56	\$ 82
Actuarial losses	184,156	324,145	60,721	56,411
Amount recognized in AOCIL, before taxes	\$ 184,156	\$ 324,278	\$ 60,777	\$ 56,493

Our funding policy is to contribute at least the amount required by law in the respective countries.

The total accumulated benefit obligation as of the measurement date for all defined benefit pension plans was \$868,316 in 2020 and \$1,235,230 in 2019. At the measurement date in 2020, our plans had fair values of plan assets totaling \$786,637. The following table provides aggregate information for the pension plans, which have projected benefit obligations or accumulated benefit obligations in excess of plan assets:

	October 3, 2020	September 28, 2019
Projected benefit obligation	\$ 312,995	\$ 278,405
Accumulated benefit obligation	277,404	208,625
Fair value of plan assets	111,776	95,294

Weighted-average assumptions used to determine benefit obligations as of the measurement dates and weighted-average assumptions used to determine net periodic benefit cost are as follows:

	U.S. Plans			Non-U.S. Plans		
	2020	2019	2018	2020	2019	2018
Assumptions for net periodic benefit cost:						
Service cost discount rate	3.5%	4.4%	4.2%	1.6%	2.9%	2.5%
Interest cost discount rate	2.9%	4.1%	3.5%	1.3%	2.6%	2.2%
Return on assets	4.5%	5.3%	7.0%	2.7%	3.5%	3.5%
Rate of compensation increase	2.9%	3.5%	3.5%	2.1%	2.5%	2.5%
Assumptions for benefit obligations:						
Discount rate	3.0%	3.3%	4.3%	1.4%	1.6%	2.8%
Rate of compensation increase	3.3%	2.9%	3.5%	2.2%	2.1%	2.5%

Pension plan investment policies and strategies are developed on a plan specific basis, which varies by country. The overall objective for the long-term expected return on both domestic and international plan assets is to earn a rate of return over time to meet anticipated benefit payments in accordance with plan provisions. The long-term investment objective of both the domestic and international retirement plans is to maintain the economic value of plan assets and future contributions by producing positive rates of investment return after subtracting inflation, benefit payments and expenses. Each of the plan's strategic asset allocations is based on this long-term perspective and short-term fluctuations are viewed with appropriate perspective.

The U.S. qualified defined benefit plan's assets are invested for long-term investment results. To accommodate the long-term investment horizon while providing appropriate liquidity, the plan maintains a liquid cash reserve sufficient to allow the plan to meet its benefit payment, fee and expense obligations. Its assets are broadly diversified to help alleviate the risk of adverse returns in any one security or investment class. The international plans' assets are invested in both low-risk and high-risk investments in order to achieve the long-term investment strategy objective. Investment risks for both domestic and international plans are considered within the context of the entire asset allocation, rather than on a security-by-security basis.

The U.S. qualified defined benefit plan and certain international plans have investment committees that are responsible for formulating investment policies, developing manager guidelines and objectives and approving and managing qualified advisors and investment managers. The guidelines established for each of the plans define permitted investments within each asset class and apply certain restrictions such as limits on concentrated holdings in order to meet overall investment objectives.

Pension obligations and the related costs are determined using actuarial valuations that involve several assumptions. The return on assets assumption reflects the average rate of return expected on funds invested or to be invested to provide for the benefits included in the projected benefit obligation. In determining the return on assets assumption, we consider the relative weighting of plan assets, the historical performance of total plan assets and individual asset classes and economic and other indicators of future performance. Asset management objectives include maintaining an adequate level of diversification to reduce interest rate and market risk and to provide adequate liquidity to meet immediate and future benefit payment requirements.

In determining our U.S. pension expense for 2020, we assumed an average rate of return on U.S. pension assets of approximately 4.5% measured over a planning horizon with reasonable and acceptable levels of risk. The rate of return was based on the actual asset allocation of 18% in equity securities and 82% in fixed income securities at September 28, 2019. As a result of the pension settlement transaction, we modified our asset allocation to align our investment portfolio to maintain the funded status of the plan. In determining our non-U.S. pension expense for 2020, we assumed an average rate of return on non-U.S. pension assets of approximately 2.7% measured over a planning horizon with reasonable and acceptable levels of risk. The rate of return assumed an average asset allocation of 30% in equity securities and 70% in fixed income securities and other investments.

The weighted average asset allocations by asset category for the pension plans as of October 3, 2020 and September 28, 2019 are as follows:

	U.S. Plans			Non-U.S. Plans		
	Target	2020 Actual	2019 Actual	Target	2020 Actual	2019 Actual
Asset category:						
Equity	35%-45%	37%	18%	20%-40%	24%	25%
Fixed Income	55%-65%	63%	82%	30%-45%	38%	36%
Other	—%	—%	—%	25%-40%	38%	39%

The valuation methodologies used for pension plan assets measured at fair value have been applied consistently.

Cash and cash equivalents: Direct cash holdings valued at cost, which approximates fair value.

Money market funds: Institutional short-term investment vehicles valued daily.

Shares of registered investment companies: Consists of both equity and fixed income mutual funds. Valued at quoted market prices that represent the net asset value of shares held by the plan at year end.

Fixed income securities: Valued using methods, such as dealer quotes, available trade information, spreads, bids and offers provided by a pricing vendor.

Equity securities: Traded on national exchanges are valued at the last reported sales price. Investments denominated in foreign currencies are translated into U.S. dollars using the last reported exchange rate.

Collective investment trust: Net asset value of the fund is calculated daily by the investment manager.

Unit linked life insurance funds: Net asset value of the fund is calculated daily by the investment manager.

Investment in insurance contracts: Valued at contract value, which is the fair value of the underlying investment of the insurance company.

Limited partnerships: Valued at net asset value of units held. The NAV is used as a practical expedient to estimate fair value. The NAV is based on the fair value of the underlying investments held by the fund less its liability. This practical expedient is not used when it is determined to be probable that the fund will sell the investment for an amount different from the reported NAV.

Securities or other assets for which market quotations are not readily available or for which market quotations do not represent the value at the time of pricing (including certain illiquid securities) are fair valued in accordance with procedures established under the supervision and responsibility of the Trustee of that investment. Such procedures may include the use of independent pricing services or affiliated advisor pricing, which use prices based upon yields or prices of securities of comparable quality, coupon, maturity and type, indications as to values from dealers, operating data and general market conditions.

The following tables present the consolidated plan assets using the fair value hierarchy, which is described in Note 12 - Fair Value, as of October 3, 2020 and September 28, 2019.

U.S. Plans, October 3, 2020	Level 1	Level 2	Level 3	Total
Investments at fair value:				
Shares of registered investment companies:				
Equity funds	\$ 197,580	\$ —	\$ —	\$ 197,580
Fixed income funds	390,695	—	—	390,695
Money market funds	—	6,281	—	6,281
Total investments in fair value hierarchy	588,275	6,281	—	594,556
Investments measured at NAV practical expedient (1)				21,316
Total investments at fair value	\$ 588,275	\$ 6,281	\$ —	\$ 615,872

Non-U.S. Plans, October 3, 2020	Level 1	Level 2	Level 3	Total
Investments at fair value:				
Mutual funds:				
Equity funds	\$ —	\$ 6,159	\$ —	\$ 6,159
Fixed income funds	—	7,558	—	7,558
Equity securities	8,689	—	—	8,689
Fixed income securities	—	17,930	—	17,930
Collective investment trusts	—	19,636	—	19,636
Unit linked life insurance funds	—	53,607	—	53,607
Money market funds	—	576	—	576
Cash and cash equivalents	149	—	—	149
Insurance contracts and other	—	—	56,461	56,461
Total investments at fair value	\$ 8,838	\$ 105,466	\$ 56,461	\$ 170,765

U.S. Plans, September 28, 2019	Level 1	Level 2	Level 3	Total
Investments at fair value:				
Shares of registered investment companies:				
Equity funds	\$ 144,898	\$ —	\$ —	\$ 144,898
Fixed income funds	823,008	—	—	823,008
Money market funds	—	6,418	—	6,418
Insurance contract	—	—	505	505
Total investments in fair value hierarchy	967,906	6,418	505	974,829
Investments measured at NAV practical expedient (1)				29,334
Total investments at fair value	\$ 967,906	\$ 6,418	\$ 505	\$ 1,004,163

Non-U.S. Plans, September 28, 2019	Level 1	Level 2	Level 3	Total
Investments at fair value:				
Mutual funds:				
Equity funds	\$ —	\$ 6,372	\$ —	\$ 6,372
Fixed income funds	—	7,657	—	7,657
Equity securities	7,310	—	—	7,310
Fixed income securities	—	18,740	—	18,740
Collective investment trusts	—	18,118	—	18,118
Unit linked life insurance funds	—	51,062	—	51,062
Money market funds	—	386	—	386
Cash and cash equivalents	384	—	—	384
Insurance contracts and other	—	—	56,213	56,213
Total investments at fair value	\$ 7,694	\$ 102,335	\$ 56,213	\$ 166,242

(1) Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the total retirement plan assets.

The following is a roll forward of the consolidated plan assets classified as Level 3 within the fair value hierarchy:

	U.S. Plans	Non-U.S. Plans	Total
Balance at September 29, 2018	\$ 484	\$ 40,601	\$ 41,085
Return on assets	21	16,868	16,889
Purchases from contributions to Plans	—	2,887	2,887
Settlements paid in cash	—	(1,603)	(1,603)
Foreign currency translation	—	(2,540)	(2,540)
Balance at September 28, 2019	505	56,213	56,718
Return on assets	4	(4,671)	(4,667)
Purchases from contributions to Plans	—	2,508	2,508
Settlements paid in cash	(509)	(1,274)	(1,783)
Foreign currency translation	—	3,685	3,685
Balance at October 3, 2020	\$ —	\$ 56,461	\$ 56,461

The following table summarizes investments measured at fair value based on net asset value (NAV) per share as of October 3, 2020:

Fair Value					
	October 3, 2020	September 28, 2019	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Limited partnerships (1)	\$ 21,316	\$ 29,334	\$ 4,888	Varies	10-45 days
Total	\$ 21,316	\$ 29,334	\$ 4,888		

(1) Investments in limited partnerships held by us invest primarily in emerging markets, equity and equity related securities. The strategy for the partnerships is to have exposure to certain markets or to securities that are judged to achieve superior earnings growth and/or judged undervalued relative to intrinsic value.

The preceding methods may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, although we believe the valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

Expense for all defined benefit plans is as follows:

	U.S. Plans			Non-U.S. Plans		
	2020	2019	2018	2020	2019	2018
Service cost	\$ 23,033	\$ 21,003	\$ 22,535	\$ 6,771	\$ 4,988	\$ 5,738
Interest cost	30,597	36,924	32,292	2,785	4,393	4,241
Expected return on plan assets	(44,084)	(45,054)	(53,744)	(4,577)	(5,182)	(5,001)
Amortization of prior service cost (credit)	133	187	187	(3)	(18)	(60)
Amortization of actuarial loss	25,316	26,639	28,709	4,943	2,532	2,512
Curtailment loss	—	—	—	100	—	—
Settlement loss	121,324	—	—	676	—	—
Total expense for defined benefit plans	\$ 156,319	\$ 39,699	\$ 29,979	\$ 10,695	\$ 6,713	\$ 7,430

The estimated net prior service credit and net actuarial loss that will be amortized from accumulated other comprehensive loss into net periodic benefit cost for pension plans in 2021 are \$6 and \$19,261, respectively.

Benefits expected to be paid to the participants of the plans are:

	U.S. Plans	Non-U.S. Plans
2021	\$ 8,587	\$ 6,206
2022	12,161	7,737
2023	16,205	9,304
2024	20,111	7,615
2025	23,617	7,964
Five years thereafter	167,235	45,256

We presently anticipate contributing approximately \$5,200 to the SERP Trust for the non-qualified plan and \$8,700 to the non-U.S. plans in 2021.

Expense for all defined contribution plans consists of:

	2020	2019	2018
U.S. defined contribution plans	\$ 27,698	\$ 19,848	\$ 16,568
Non-U.S. defined contribution plans	5,965	5,270	4,821
Total expense for defined contribution plans	\$ 33,663	\$ 25,118	\$ 21,389

We provide postretirement health care benefits to certain domestic retirees, who were hired prior to October 1, 1989. There are no plan assets. The changes in the accumulated benefit obligation of this unfunded plan for 2020 and 2019 are shown in the following table:

	October 3, 2020	September 28, 2019
Change in Accumulated Postretirement Benefit Obligation (APBO):		
APBO at prior year measurement date	\$ 8,810	\$ 8,857
Service cost	55	68
Interest cost	211	315
Contributions by plan participants	629	644
Benefits paid	(668)	(1,134)
Actuarial (gains) losses	237	60
APBO at measurement date	\$ 9,274	\$ 8,810
Funded status	\$ (9,274)	\$ (8,810)
Accrued postretirement benefit liability	\$ 9,274	\$ 8,810
Amount recognized in AOCIL, before taxes:		
Prior service credit	\$ —	\$ 259
Actuarial gains	3,297	4,142
Amount recognized in AOCIL, before taxes	\$ 3,297	\$ 4,401

The cost of the postretirement benefit plan is as follows:

	2020	2019	2018
Service cost	\$ 55	\$ 68	\$ 84
Interest cost	211	315	281
Amortization of prior service credit	(259)	(471)	(470)
Amortization of actuarial gain	(607)	(713)	(511)
Net periodic postretirement benefit cost (income)	\$ (600)	\$ (801)	\$ (616)

As of the measurement date, the assumed discount rate used in the accounting for the postretirement benefit obligation was 2.3% in 2020, 3.0% in 2019 and 4.2% in 2018. The assumed service cost discount rate and interest cost discount rate used in the accounting for the net periodic postretirement benefit cost were 3.1% and 2.5%, respectively in 2020, 4.3% and 3.8%, respectively in 2019 and 3.7% and 2.8%, respectively in 2018.

For measurement purposes, a 8.0% annual per capita rate of increase of medical and drug costs were assumed for 2021, gradually decreasing to 4.5% for 2035 and years thereafter. A one percentage point increase in this rate would increase our accumulated postretirement benefit obligation as of the measurement date in 2020 by \$140, while a one percentage point decrease in this rate would decrease our accumulated postretirement benefit obligation by \$133. There would be no material effect on the total service cost and interest cost components of the net periodic postretirement benefit cost given a one percentage point increase or decrease in this rate.

Employee and management profit sharing reflects a discretionary payment based on our financial performance. Profit share expense was \$21,968, \$33,250 and \$22,524 in 2020, 2019 and 2018, respectively.

Note 15 - Income Taxes

The reconciliation of the provision for income taxes to the amount computed by applying the U.S. federal statutory tax rate to earnings before income taxes is as follows:

	2020	2019	2018
Earnings before income taxes:			
Domestic	\$ 1,126	\$ 136,308	\$ 135,589
Foreign	4,291	90,644	46,590
Total	\$ 5,417	\$ 226,952	\$ 182,179
Federal statutory income tax rate	21.0 %	21.0 %	24.5 %
Increase (decrease) in income taxes resulting from:			
Impacts of Tax Act	(96.4)%	0.4 %	16.9 %
Revaluation of deferred taxes	(21.6)%	(0.2)%	(6.0)%
Withholding taxes	27.5 %	1.0 %	4.1 %
Reversal of indefinite reinvestment assertion	(2.9)%	0.6 %	5.7 %
R&D and foreign tax credits	(102.8)%	(2.1)%	(4.3)%
Foreign tax rates	76.0 %	2.3 %	(0.7)%
Equity-based compensation	(6.5)%	(0.7)%	(0.7)%
Change in valuation allowance for deferred taxes	21.1 %	(0.7)%	5.7 %
State taxes, net of federal benefit	(1.9)%	1.4 %	1.9 %
Other	16.6 %	0.1 %	0.6 %
Effective income tax rate	(69.9)%	23.1 %	47.7 %

The Tax Cuts and Jobs Act (the "Tax Act") of 2017 was enacted on December 22, 2017. It reduced the U.S. federal corporate tax rate from 35% to 21%, required companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred and created new taxes on certain foreign sourced earnings. As of December 29, 2018, we completed the accounting for the tax effects of enactment of the one-time transition tax liability. The Tax Act also includes a Global Intangible Low-Tax Income (GILTI) provision that imposes U.S. tax on certain foreign subsidiary income in the year it is earned. This provision became effective beginning in 2019. Our accounting policy is to treat tax on GILTI as a current period cost included in tax expenses the year incurred. As such, we will not be measuring the impact of the GILTI in our determination of deferred taxes.

During 2018, we recorded a \$30,795 one-time transition tax on undistributed foreign earnings deemed to be repatriated and a tax charge of \$10,383 as an additional provision for taxes on undistributed earnings not considered to be permanently reinvested. These charges were partially offset by a \$10,946 benefit due to the remeasurement of deferred tax assets and liabilities arising from a lower U.S. corporate tax rate. In 2019, we recorded \$3,325 of GILTI tax and received a benefit of \$2,495 related to the Foreign-Derived Intangible Income deduction. In addition, we recorded \$1,317 of expense as an accrual for taxes on undistributed earnings not considered permanently reinvested. In 2020, we recorded \$1,620 of GILTI tax and received a benefit of \$3,394 related to the Foreign-Derived Intangible Income deduction. In 2020, we also recorded a tax benefit associated with an increase in foreign tax credit utilization applied against GILTI taxes of \$3,749. In addition, we recorded \$1,513 of expense as an accrual for taxes on undistributed earnings not considered permanently reinvested.

During 2020, 2019 and 2018, we repatriated available unremitted earnings from various foreign subsidiaries that were previously taxed under the Tax Act of \$23,001, \$103,227, \$235,263, respectively. Due to the Tax Act, we are no longer indefinitely reinvesting unremitted earnings effective December 30, 2017 and therefore we have recorded a liability for withholding taxes related to the remaining accumulated unremitted earnings generated by the foreign subsidiaries in the current year. We continue to be permanently invested in outside basis differences other than the unremitted earnings as we have no plans to liquidate or sell those foreign subsidiaries.

The components of income taxes are as follows:

	2020	2019	2018
Current:			
Federal	\$ 14,789	\$ 23,302	\$ 19,985
Foreign	18,997	29,460	35,515
State	3,271	4,240	705
Total current	37,057	57,002	56,205
Deferred:			
Federal	(35,603)	(5,666)	23,229
Foreign	(1,843)	1,413	3,354
State	(3,399)	(345)	4,030
Total deferred	(40,845)	(4,598)	30,613
Income taxes (benefit)	\$ (3,788)	\$ 52,404	\$ 86,818

Realization of deferred tax assets is dependent, in part, upon the generation of future taxable income during the periods in which those temporary differences become deductible. Management considers projected future taxable income and tax planning strategies in making its assessment of the recoverability of deferred tax assets.

The tax effects of temporary differences that generated deferred tax assets and liabilities are as follows:

	October 3, 2020	September 28, 2019
Deferred tax assets:		
Benefit accruals	\$ 78,703	\$ 114,077
Inventory reserves	31,571	26,364
Tax benefit carryforwards	14,146	14,196
Contract reserves not currently deductible	16,418	15,382
Lease liability	17,622	—
Other accrued expenses	12,510	4,918
Total gross deferred tax assets	170,970	174,937
Less valuation allowance	(14,784)	(13,137)
Total net deferred tax assets	\$ 156,186	\$ 161,800
Deferred tax liabilities:		
Differences in bases and depreciation of property, plant and equipment	\$ 152,926	\$ 121,353
Pension	24,810	60,983
Total gross deferred tax liabilities	177,736	182,336
Net deferred tax assets (liabilities)	\$ (21,550)	\$ (20,536)

Deferred tax assets and liabilities are reported in separate captions on the Consolidated Balance Sheets.

At October 3, 2020 foreign tax benefit carryforwards total \$30,517. Domestic benefit carryforwards include capital loss of \$5,000 and state tax losses of \$9,728. We also have \$1,184 and \$3,764 of federal and state tax credit carryforwards. Some of these tax benefit carryforwards do not expire and can be used to reduce current taxes otherwise due on future earnings. The change in the valuation allowance relates to tax benefit carryforwards reflecting recent and projected financial performance, tax planning strategies and statutory tax carryforward periods.

We have no material unrecognized tax benefits which, if ultimately recognized, will reduce our annual effective tax rate.

We are subject to income taxes in the U.S. and in various states and foreign jurisdictions. Tax regulations within each jurisdiction are subject to the interpretation of the related tax laws and regulations and require the application of significant judgment. With few exceptions, we are no longer subject to U.S. federal, state and local, or non-U.S. income tax examinations by tax authorities in significant jurisdictions for years before 2016. The statute of limitations in several jurisdictions will expire in the next twelve months and we will have no unrecognized tax benefits recognized if the statute of limitations expires without the relevant taxing authority examining the applicable returns.

We continue to record additional interest and penalties related to historical unrecognized tax benefits in income tax expense. We had accrued interest and penalties of \$961 and \$843 at October 3, 2020 and September 28, 2019, respectively. We expensed interest of \$117 and \$134 for 2020 and 2019, respectively.

Note 16 - Earnings per Share and Dividends

Basic and diluted weighted-average shares outstanding are as follows:

	2020	2019	2018
Basic weighted-average shares outstanding	33,257,684	34,854,614	35,661,638
Dilutive effect of equity-based awards	180,117	324,354	390,669
Diluted weighted-average shares outstanding	33,437,801	35,178,968	36,052,307

There were 136,323, 29,971 and 22,332 common shares from equity-based compensation in 2020, 2019 and 2018, respectively, excluded from the calculation of diluted earnings per share as they would be anti-dilutive.

We declared and paid cash dividends of \$0.75, \$1.00, \$0.50 per share in 2020, 2019 and 2018, respectively.

Note 17 - Shareholders' Equity

Class A and Class B common stock share equally in our earnings and are identical with certain exceptions. Other than on matters relating to the election of directors or as required by law where the holders of Class A and Class B shares vote as separate classes, Class A shares have limited voting rights, with each share of Class A being entitled to one-tenth of a vote on most matters, and each share of Class B being entitled to one vote. Class A shareholders are entitled, subject to certain limitations, to elect at least 25% of the Board of Directors (rounded up to the nearest whole number) with Class B shareholders entitled to elect the balance of the directors. No cash dividend may be paid on Class B shares unless at least an equal cash dividend is paid on Class A shares. Class B shares are convertible at any time into Class A shares on a one-for-one basis at the option of the shareholder.

Class A shares and Class B shares reserved for issuance at October 3, 2020 are as follows:

	Shares
Conversion of Class B to Class A shares	7,480,484
Employee Stock Purchase Plan	1,747,015
2014 Long Term Incentive Plan	1,806,390
2008 Stock Appreciation Rights Plan	1,166,555
Class A and B shares reserved for issuance	12,200,444

We are authorized to issue up to 10,000,000 shares of preferred stock. The Board of Directors may authorize, without further shareholder action, the issuance of additional preferred stock which ranks senior to both classes of our common stock with respect to the payment of dividends and the distribution of assets on liquidation. The preferred stock, when issued, would have such designations relative to voting and conversion rights, preferences, privileges and limitations as determined by the Board of Directors.

We issue common stock under our equity-based compensation plans from treasury stock or from stock held by the SECT. As of October 3, 2020, in addition to the shares reserved for issuance upon the exercise of outstanding equity awards, there were 1,046,786 shares authorized for awards that may be granted in the future under the 2014 Long Term Incentive Plan, assuming performance-based awards currently outstanding are all settled at the targeted payout.

Our Board of Directors has authorized a share repurchase program that has been amended from time to time to authorize additional repurchases. Shares acquired by the SECT or the SERP Trust are not included in this program. During 2020, we repurchased 2,881,116 of our Class A and B common stock for \$215,776. During 2019, we repurchased 302,184 of our Class A and Class B common stock for \$23,358. During 2018, we repurchased 328 of our Class A and Class B common stock for \$27. As of October 3, 2020, the total remaining authorization for future common share repurchases under our program is 166,191 shares.

Note 18 - Equity-Based Compensation

We have equity-based compensation plans that authorize the issuance of equity-based awards for shares of Class A and Class B common stock to directors, officers and key employees. Equity-based compensation grants are designed to reward long-term contributions to Moog and provide incentives for recipients to remain with Moog.

We have an Employee Stock Purchase Plan ("ESPP") that allows for qualified employees (as defined in the plan) to purchase our common stock at a price equal to 85% of the fair market value at the lower of the beginning or the end of the semi-annual offering period. During 2020, we issued 119,470 shares of Class B common stock at a weighted average price per share of \$58.71. During 2019, we issued 79,928 shares of Class B common stock at a weighted average price per share of \$65.91.

The 2014 Long Term Incentive Plan ("2014 Plan") authorizes the issuance of a total of 2,000,000 shares of either Class A or Class B common stock. The 2014 Plan is intended to provide a flexible framework that permits the development and implementation of a variety of equity-based programs that base awards on key performance metrics as well as align our long term incentive compensation with our peers and shareholder interests.

During 2020, we granted awards in the form of stock appreciation rights (SARs), performance-based restricted stock units (PSUs) and restricted stock awards (RSAs). The compensation cost for employee and non-employee director equity-based compensation programs for all current and prior year awards granted are as follows:

	2020	2019	2018
Stock appreciation rights	\$ 2,643	\$ 2,594	\$ 2,617
Performance-based restricted stock units	221	2,048	1,650
Restricted stock awards	680	480	480
Employee stock purchase plan	2,117	1,342	1,057
Total compensation cost before income taxes	\$ 5,661	\$ 6,464	\$ 5,804
Income tax benefit	\$ 677	\$ 1,024	\$ 1,136

Stock Appreciation Rights and Stock Options

The fair value of SARs granted was estimated on the date of grant using the Black-Scholes option-pricing model. The following table provides the range of assumptions used to value awards and the weighted-average fair value of the awards granted.

	2020	2019	2018
Expected volatility	27% - 28%	26%	25% - 26%
Risk-free rate	1.7% - 1.8%	3.0%	2.1%
Expected dividends	1.2%	1.2%	—%
Expected term	5-6 years	5-6 years	5-6 years
Weighted-average fair value of awards granted	\$ 21.45	\$ 20.79	\$ 23.03

To determine expected volatility, we generally use historical volatility based on daily closing prices of our Class A and Class B common stock over periods that correlate with the expected terms of the awards granted. The risk-free rate is based on the United States Treasury yield curve at the time of grant for the appropriate expected term of the awards granted. Expected dividends are based on our history and expectation of dividend payouts. The expected term of equity-based awards is based on vesting schedules, expected exercise patterns and contractual terms.

The number of shares received upon the exercise of a SAR is equal in value to the difference between the fair market value of the common stock on the exercise date and the exercise price of the SAR. The term of a SAR may not exceed ten years from the grant date. The exercise price of SARs and options, determined by a committee of the Board of Directors, may not be less than the fair value of the common stock on the grant date.

SARs and options are as follows:

	Number of Awards	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life	Aggregate Intrinsic Value
Stock Appreciation Rights				
Outstanding at September 28, 2019	935,156	\$ 62.60		
Granted in 2020	136,700	85.95		
Exercised in 2020	(71,557)	41.77		
Expired in 2020	(6,599)	75.58		
Forfeited in 2020	(9,430)	83.20		
Outstanding at October 3, 2020	984,270	\$ 67.07	5.0 years	\$ 6,777
Exercisable at October 3, 2020	740,288	\$ 61.63	3.8 years	\$ 6,777

The aggregate intrinsic value in the preceding tables represents the total pre-tax intrinsic value, based on our closing price of Class A common stock of \$66.82 and Class B common stock of \$64.27 as of October 3, 2020. That value would have been effectively received by the SAR holders had all SARs been exercised as of that date.

The intrinsic value of awards exercised and fair value of awards vested are as follows:

	2020	2019	2018
Stock Appreciation Rights			
Intrinsic value of SARs exercised	\$ 2,665	\$ 10,616	\$ 7,268
Total fair value of SARs vested	\$ 2,825	\$ 2,871	\$ 3,282
Stock Options			
Intrinsic value of options exercised	\$ —	\$ —	\$ 932
Total fair value of options vested	\$ —	\$ —	\$ 51

As of October 3, 2020, total unvested compensation expense associated with SARs amounted to \$2,926 and will be recognized over a weighted-average period of two years.

Performance-Based Restricted Stock Units

PSU awards consist of shares of our stock which are payable upon the determination that we achieve certain established performance targets and can range from 0% to 200% of the targeted payout based on the actual results. PSU's granted in 2020 have a performance period of three years. The fair value of each PSU granted is equal to the fair market value of our common stock on the date of grant. PSUs granted generally have a three years period cliff vesting schedule; however, according to the grant agreements, if certain conditions are met, the employee (or beneficiary) will receive a prorated amount of the award based on active employment during the service period.

PSUs are as follows:

Performance-Based Restricted Stock Units	Number of Awards	Weighted-Average Grant Date Fair Value
Nonvested at September 28, 2019	65,019	\$ 81.20
Granted in 2020	34,129	85.95
Vested in 2020	(29,195)	82.31
Forfeited in 2020	(5,112)	82.36
Nonvested at October 3, 2020	64,841	\$ 83.11

As of October 3, 2020, total unvested compensation expense associated with nonvested PSUs amounted to \$2,264 and will be recognized over a weighted-average period of two years.

The number of Class B common stock to be issued for PSU awards granted in 2018 that vested based on the achievement of performance targets in 2020, will be approximately 14,900 shares.

Restricted Stock Awards

The fair value of each RSA granted is equal to the fair market value of our common stock on the date of grant. These shares vest and are issued upon grant. There were 7,912 RSAs granted and vested in 2020 at a price of \$85.95 resulting in a fair value of the RSAs vested of \$680.

The Management Short Term Incentive Plan ("STI") is intended to attract, motivate and retain highly qualified executives serving on the management team and reward them according to our financial performance with a payment of either cash and/or shares of our common stock. There were 57,783 STI awards granted and vested in 2020 at a price of \$86.80, resulting in a fair value of \$5,016 in satisfaction of a portion of the 2019 management profit share expense.

Note 19 - Stock Employee Compensation Trust and Supplemental Retirement Plan Trust

The Stock Employee Compensation Trust (SECT) assists in administering and provides funding for equity-based compensation plans and benefit programs, including the RSP, RSP(+) and ESPP. The Supplemental Retirement Plan (SERP) Trust provides funding for benefits under the SERP provisions of the Moog Inc. Plan to Equalize Retirement Income and Supplemental Retirement Income. Both the SECT and the SERP Trust hold shares as investments. The shares in the SECT and SERP Trust are not considered outstanding for purposes of calculating earnings per share. However, in accordance with the trust agreements governing the SECT and SERP Trust, the trustees vote all shares held by the SECT and SERP Trust on all matters submitted to shareholders.

Note 20 - Accumulated Other Comprehensive Income (Loss)

The changes in AOCIL, net of tax, by component are as follows:

	Accumulated foreign currency translation (1)	Accumulated retirement liability	Accumulated gain (loss) on derivatives	Total
AOCIL at September 29, 2018	\$ (99,415)	\$ (272,928)	\$ (449)	\$ (372,792)
Other comprehensive income (loss) before reclassifications	(26,501)	(35,606)	41	(62,066)
Amounts reclassified from AOCIL	(3,483)	22,800	64	19,381
Other comprehensive income (loss)	(29,984)	(12,806)	105	(42,685)
AOCIL at September 28, 2019	(129,399)	(285,734)	(344)	(415,477)
Other comprehensive income (loss) before reclassifications	26,898	(13,659)	2,245	15,484
Amounts reclassified from AOCIL	(493)	115,740	(707)	114,540
Other comprehensive income (loss)	26,405	102,081	1,538	130,024
AOCIL at October 3, 2020	\$ (102,994)	\$ (183,653)	\$ 1,194	\$ (285,453)

(1) Net gains and losses on net investment hedges are recorded as cumulative translation adjustments in AOCIL to the extent that the instruments are effective in hedging the designated risk.

The amounts reclassified from AOCIL into earnings are as follows:

	Statements of Earnings location	2020	2019
Retirement liability:			
Prior service cost (credit)		\$ (129)	\$ (302)
Actuarial losses		29,652	30,488
Curtailment loss		100	—
Settlement loss		122,000	—
Reclassification from AOCIL into earnings (2)		151,623	30,186
Tax effect		(35,883)	(7,386)
Net reclassification from AOCIL into earnings		\$ 115,740	\$ 22,800
Derivatives:			
Foreign currency contracts	Sales	\$ (48)	\$ 106
Foreign currency contracts	Cost of sales	(874)	1,108
Interest rate swaps	Interest	(1)	(1,141)
Reclassification from AOCIL into earnings		(923)	73
Tax effect		216	(9)
Net reclassification from AOCIL into earnings		\$ (707)	\$ 64

(2) The reclassifications are included in the computation of non-service pension expense, which is included in Other on the Consolidated Statement of Earnings.

The effective portion of amounts deferred in AOCIL are as follows:

	2020	2019
Retirement liability:		
Net actuarial gain (loss) during period	\$ (16,131)	\$ (44,001)
Tax effect	2,472	8,395
Net deferral in AOCIL of retirement liability	\$ (13,659)	\$ (35,606)
Derivatives:		
Foreign currency contracts	\$ 2,965	\$ 639
Interest rate swaps	(47)	(525)
Net gain	2,918	114
Tax effect	(673)	(73)
Net deferral in AOCIL of derivatives	\$ 2,245	\$ 41

Note 21 - Segments

Aircraft Controls. We design, manufacture and integrate primary and secondary flight controls for military and commercial aircraft and provide aftermarket support. Our systems are used on both development and production programs in large commercial transports, supersonic fighters, multi-role military aircraft, business jets and rotorcraft. We also supply ground-based navigation aids.

We are currently working on the KC-46 military air refueling tanker and classified military development work on the military side, and the COMAC C919 and the Embraer E-Jet E2 family on the commercial side. Typically development programs require concentrated periods of research and development by our engineering teams, while production programs are generally long-term manufacturing efforts that extend for as long as the aircraft builder receives new orders.

Our mature production programs include, our large military programs include the F-35 Joint Strike Fighter, F/A-18E/F Super Hornet, the V-22 Osprey tiltrotor and the Black Hawk UH-60/Seahawk SH-60 helicopter, while our large commercial production programs include the full line of Boeing 7-series aircraft, Airbus A320, A330 and A350XWB and a variety of business jets.

Aftermarket sales, which represented 30%, 27% and 29% of 2020, 2019 and 2018 sales, respectively, for this segment consist of the maintenance, repair, overhaul and parts supply for both military and commercial aircraft. Further, we sell spare parts and line replaceable units to both military and commercial customers that they store throughout the world in order to minimize down time.

Space and Defense Controls. We provide controls for satellites, space vehicles, launch vehicles, armored combat vehicles, tactical and strategic missiles, security and surveillance and other defense applications.

We design, manufacture and integrate commercial and military satellite positioning controls. Propulsion components and systems accelerate the spacecraft for orbit-insertion, station keeping and attitude control. Mission specific actuation mechanisms control solar array panels and antennas. We also design, manufacture and integrate steering and propulsion controls for space launch vehicles, such as the Atlas, Delta and Ariane platforms. Additionally, we design and manufacture spaceflight electronics and software. We are also developing new control products and systems for a variety of programs related to manned spaceflight including NASA's new Space Launch System and Multi-Purpose Crew Vehicle.

In addition, we design controls for gun aiming, stabilization and automatic ammunition loading for armored combat vehicles for a variety of domestic and international customers. We are also developing a new reconfigurable turret system for several military vehicle programs. We also design controls for steering tactical and strategic missiles including: Lockheed Martin's Hellfire®, the U.S. National Missile Defense Agency's Ballistic Missile Defense initiatives and Raytheon's TOW and Trident missiles. We also design, build and integrate weapons stores management systems for light attack aerial reconnaissance, ground and sea platforms, as well as build high power, quiet controls for naval surface ships and submarines such as the U.S. Virginia Class. Our sensor and surveillance products are used in both military and commercial applications such as electrical grid and other critical infrastructure protection applications.

Also, we design and manufacture a number of component products that serve both the space and defense segments, including slip rings, fiber optic rotary joints and motors. Slip rings and fiber optic rotary joints use sliding contacts and optical technology to allow unimpeded rotation while delivering power and data through a rotating interface. Slip rings, fiber optic rotary joints and motors are used in a broad range of solutions, including satellites, missiles, radar pedestals and gimbals.

Industrial Systems. We provide customized machine performance components and systems utilizing electrohydraulic, electromechanical and control technologies in applications involving motion control, fluid control and power and data management across a variety of markets.

In the industrial automation market, we design, manufacture and integrate components and systems for applications in injection and blow molding machinery, metal forming presses and heavy industry for steel and aluminum production. Our components and systems allow for precise controls of critical parameters in the industrial manufacturing processes, using both hydraulic and electric technologies. Other industrial automation applications we serve include material handling and paper mills.

In the simulation and test market, we supply electromechanical motion simulation bases for the flight simulation and training applications. We also supply custom test systems and controls for automotive, structural and fatigue testing.

In the energy market, we supply solutions for power generation applications which allow for precise control and greater safety of fuel metering and guide vane positioning on steam and gas turbines. We also design and manufacture high reliability systems and components for applications in oil and gas exploration and production, including downhole drilling, topside and subsea environments. We supply high-reliability components for wind turbine applications.

In the medical market, we supply components and systems for diagnostic imaging CT scan medical equipment, sleep apnea equipment, oxygen concentrators, infusion therapy and enteral clinical nutrition.

Our components product categories include hydraulics, slip rings, rotary unions and fiber optic rotary joints, motors and infusion and enteral pumps and associated sets across similar markets.

Hydraulic components include high-performance servo valves with mechanical or electronic feedback, high-dynamic performance hydraulic servo pumps, energy-efficient electro hydrostatic actuators and complex hydraulic manifold systems.

Slip rings, rotary unions and fiber optic rotary joints come in a range of sizes that allow them to be used in many applications, including diagnostic imaging CT scan medical equipment, remotely operated vehicles and floating platforms for offshore oil exploration, surveillance cameras and wind turbines.

Electric motors are used in an equally broad range of solutions, many of which are the same as for slip rings. We design and manufacture a series of fractional horsepower brushless motors that provide extremely low acoustic noise and reliable long life operation, with the largest programs being sleep apnea equipment and datacenter cooling. Industrial customers use our motors for material handling and electric pumps. We supply ultra high-torque servomotors for servo press applications and high-power, multi-megawatt generators for dynamometer testing and hydropower.

Infusion therapy products include infusion pumps and associated administration sets. They offer IV, intra-arterial, subcutaneous or epidural flow of fluids and precise medicine delivery and can be applied to many applications, including hydration, nutrition, patient-controlled analgesia, local anesthesia, chemotherapy and antibiotics.

Enteral clinical nutrition products include a complete line of portable and stationary pumps along with disposable sets. They are designed for ease of use and mobility. Medical customers use our enteral feeding products in the delivery of enteral nutrition for patients in their own homes, hospitals and long-term care facilities.

Disaggregation of net sales by segment are as follows:

Market Type	2020	2019	2018
Net sales:			
Military	\$ 721,024	\$ 622,126	\$ 571,886
Commercial	484,726	680,846	621,619
Aircraft Controls	1,205,750	1,302,972	1,193,505
Space	294,254	218,970	214,741
Defense	475,860	464,498	366,136
Space and Defense Controls	770,114	683,468	580,877
Energy	127,693	120,771	163,888
Industrial Automation	405,291	447,515	430,754
Simulation and Test	102,600	122,935	127,321
Medical	273,106	227,002	213,123
Industrial Systems	908,690	918,223	935,086
Net sales	\$ 2,884,554	\$ 2,904,663	\$ 2,709,468

Customer Type	2020	2019	2018
Net sales:			
Commercial	\$ 484,726	\$ 680,846	\$ 621,619
U.S. Government (including OEM)	593,093	484,203	447,148
Other	127,931	137,923	124,738
Aircraft Controls	1,205,750	1,302,972	1,193,505
Commercial	133,715	124,445	116,984
U.S. Government (including OEM)	571,045	513,250	424,848
Other	65,354	45,773	39,045
Space and Defense Controls	770,114	683,468	580,877
Commercial	877,148	888,132	904,439
U.S. Government (including OEM)	23,184	20,452	25,886
Other	8,358	9,639	4,761
Industrial Systems	908,690	918,223	935,086
Commercial	1,495,589	1,693,423	1,643,042
U.S. Government (including OEM)	1,187,322	1,017,905	897,882
Other	201,643	193,335	168,544
Net sales	\$ 2,884,554	\$ 2,904,663	\$ 2,709,468

Operating profit is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation expense, non-service pension expense and other corporate expenses. Cost of sales and other operating expenses are directly identifiable to the respective segment or allocated on the basis of sales, manpower or profit. Operating profit by segment and reconciliations to consolidated amounts are as follows:

	2020	2019	2018
Operating profit:			
Aircraft Controls	\$ 34,670	\$ 122,701	\$ 129,772
Space and Defense Controls	101,667	88,990	67,615
Industrial Systems	80,025	109,451	64,964
Total operating profit	216,362	321,142	262,351
Deductions from operating profit:			
Interest expense	38,897	39,269	36,238
Equity-based compensation expense	5,661	6,464	5,804
Pension settlement	121,324	—	—
Non-service pension expense	15,231	19,552	8,436
Corporate and other expenses, net	29,832	28,905	29,694
Earnings before income taxes	\$ 5,417	\$ 226,952	\$ 182,179
Depreciation and amortization:			
Aircraft Controls	\$ 39,782	\$ 41,144	\$ 40,795
Space and Defense Controls	18,039	18,014	17,900
Industrial Systems	28,644	25,454	28,825
Corporate	507	648	1,052
Total depreciation and amortization	\$ 86,972	\$ 85,260	\$ 88,572
Identifiable assets:			
Aircraft Controls	\$ 1,322,335	\$ 1,300,781	\$ 1,168,964
Space and Defense Controls	761,874	737,141	660,589
Industrial Systems	1,102,222	1,040,659	1,077,022
Corporate	39,400	35,656	57,473
Total assets	\$ 3,225,831	\$ 3,114,237	\$ 2,964,048
Capital expenditures:			
Aircraft Controls	\$ 47,954	\$ 68,595	\$ 46,705
Space and Defense Controls	22,505	23,903	22,452
Industrial Systems	17,700	25,808	25,156
Corporate	125	116	204
Total capital expenditures	\$ 88,284	\$ 118,422	\$ 94,517

Sales, based on the customer's location, and property, plant and equipment by geographic area are as follows:

	2020	2019	2018
Net sales:			
United States	\$ 1,873,667	\$ 1,757,518	\$ 1,592,513
Germany	175,598	213,128	202,676
Japan	159,025	166,690	158,686
France	86,759	143,019	138,054
Other	589,505	624,308	617,539
Net sales	\$ 2,884,554	\$ 2,904,663	\$ 2,709,468
Property, plant and equipment, net:			
United States	\$ 389,454	\$ 365,136	\$ 325,088
United Kingdom	58,888	56,253	61,438
Philippines	37,270	61,910	63,870
Other	114,886	103,468	102,469
Property, plant and equipment, net	\$ 600,498	\$ 586,767	\$ 552,865

Sales to Boeing were \$402,960, \$370,306 and \$382,184, or 14%, 13% and 14% of sales, in 2020, 2019 and 2018, respectively, including sales to Boeing Commercial Airplanes of \$206,648, \$264,805 and \$238,118 in 2020, 2019 and 2018, respectively. Sales arising from U.S. Government prime or sub-contracts, including military sales to Boeing, were \$1,187,322, \$1,017,905 and \$897,882 in 2020, 2019 and 2018, respectively. Sales to Boeing and the U.S. Government and its prime- or sub-contractors are made primarily from our Aircraft Controls and Space and Defense Controls segments.

Note 22 - Related Party Transactions

John Scannell, Moog's Chairman of the Board of Director and Chief Executive Officer, is a member of the Board of Directors of M&T Bank Corporation and M&T Bank. We currently engage with M&T Bank in the ordinary course of business for various financing activities, all of which were initiated prior to the election of Mr. Scannell to the Board. M&T Bank provides credit extension for routine purchases, which totaled \$16,153, \$20,612 and \$20,536 for 2020, 2019 and 2018, respectively. At October 3, 2020, we held outstanding leases with a total original cost of \$25,882. M&T Bank also maintains an interest of approximately 12% in our U.S. revolving credit facility. Further details of the U.S. revolving credit facility can be found in Note 9, Indebtedness. Wilmington Trust, a subsidiary of M&T Bank, is the trustee of the pension assets for our qualified U.S. defined benefit pension plan.

Note 23 - Commitments and Contingencies

From time to time, we are involved in legal proceedings. We are not a party to any pending legal proceedings which management believes will result in a material adverse effect on our financial condition, results of operations or cash flows.

We are engaged in administrative proceedings with governmental agencies and legal proceedings with governmental agencies and other third parties in the normal course of our business, including litigation under Superfund laws, regarding environmental matters. We believe that adequate reserves have been established for our share of the estimated cost for all currently pending environmental administrative or legal proceedings and do not expect that these environmental matters will have a material adverse effect on our financial condition, results of operations or cash flows.

In the ordinary course of business we could be subject to ongoing claims or disputes from our customers, the ultimate settlement of which could have a material adverse impact on our consolidated results of operations. While the receivables and any loss provisions recorded to date reflect management's best estimate of the projected costs to complete a given project, there is still significant effort required to complete the ultimate deliverable. Future variability in internal cost and as well as future profitability is dependent upon a number of factors including deliveries, performance and government budgetary pressures. The inability to achieve a satisfactory contractual solution, further unplanned delays, additional developmental cost growth or variations in any of the estimates used in the existing contract analysis could lead to further loss provisions. Additional losses could have a material adverse impact on our financial condition, results of operations or cash flows in the period in which the loss may be recognized.

We are contingently liable for \$41,239 of standby letters of credit issued by a bank to third parties on our behalf at October 3, 2020. Purchase commitments outstanding at October 3, 2020 are \$559,953 including \$31,187 for property, plant and equipment.

Note 24 - Quarterly Data - Unaudited

2020	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Net sales	\$ 754,843	\$ 765,277	\$ 657,539	\$ 706,895	\$ 2,884,554
Gross profit	211,257	208,054	151,984	172,401	743,696
Net earnings (loss) attributable to Moog	50,027	49,745	(12,590)	(77,977)	9,205
Net earnings (loss) per share attributable to Moog:					
Basic	\$ 1.45	\$ 1.49	\$ (0.39)	\$ (2.40)	\$ 0.28
Diluted	\$ 1.44	\$ 1.48	\$ (0.39)	\$ (2.40)	\$ 0.28

2019	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Total
Net sales	\$ 679,676	\$ 718,811	\$ 740,969	\$ 765,207	\$ 2,904,663
Gross profit	199,502	197,401	211,919	207,010	815,832
Net earnings attributable to Moog	42,769	41,059	46,165	44,555	174,548
Net earnings per share attributable to Moog:					
Basic	\$ 1.23	\$ 1.18	\$ 1.32	\$ 1.28	\$ 5.01
Diluted	\$ 1.22	\$ 1.17	\$ 1.31	\$ 1.27	\$ 4.96

Note: Quarterly amounts may not add to the total due to rounding.

Note 25 - Subsequent Event

On November 5, 2020, the Board of Directors declared a \$0.25 per share quarterly dividend payable on issued and outstanding shares of our Class A and Class B common stock on December 7, 2020 to shareholders of record at the close of business on November 20, 2020.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Moog Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Moog Inc. (the Company) as of October 3, 2020 and September 28, 2019, the related consolidated statements of earnings, comprehensive income (loss), shareholders' equity and cash flows for each of the three years in the period ended October 3, 2020, and the related notes and financial statement schedule listed in the Index at Item 15 (2) (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at October 3, 2020 and September 28, 2019, and the results of its operations and its cash flows for each of the three years in the period ended October 3, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of October 3, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated November 17, 2020 expressed an unqualified opinion thereon.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company has elected to change its method of calculating the expected return of the fixed income assets held within the plan assets of its qualified U.S. defined benefit plan during the year ended October 3, 2020. See below for discussion of our related critical audit matter.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Estimated contract costs at completion

Description of the Matter As discussed in Note 2 of the consolidated financial statements, revenue for certain of the Company's contracts with its customers is recognized over time as work progresses toward completion and is measured based on the ratio of cumulative costs incurred to date to the estimated total contract costs at completion. For the year ended October 3, 2020, the Company recognized revenue of \$1.9 billion or 65% of total revenue on this basis. In addition, contract loss reserves are recorded for open contracts for which total estimated contract costs are expected to exceed total contract revenues. Auditing management's estimated contract costs at completion was complex and highly judgmental due to the significant judgments applied by management including the application of significant assumptions such as estimated direct labor hours, direct material costs, and other direct costs. A significant change in an estimate on one or more contracts could have a material effect on the Company's results of operations.

How We Addressed the Matter in Our Audit We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over management's review of estimated contract costs at completion, including the determination of the underlying significant assumptions described above. To test the estimated contract cost at completion, we performed audit procedures that included, among others, inspecting the approved contract and inquiring of program managers regarding the nature of the contract and the scope of work to be performed, testing the actual costs incurred through inspection of source documentation and testing the significant assumptions described above. Our testing of each of these assumptions included a combination of inquiries of finance directors and program managers, inspection of source documentation to support the future estimated costs and analytical procedures comparing profit rates to similar contracts, as applicable. We also assessed the historical accuracy of management's estimated costs at completion.

Long-lived asset impairment

Description of the Matter As reflected in the Company's consolidated financial statements, at October 3, 2020, the Company's net property, plant and equipment balance was \$600.5 million. As discussed in Note 1 of consolidated financial statements, long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of those assets may not be recoverable. The Company uses undiscounted cash flows to determine whether impairment exists and measure any impairment loss using discounted cash flows, or with another comparable method. During 2020, the Company recorded an impairment loss of \$37.8 million. These charges primarily related to long-lived assets that experienced a significant decline in value due to economic impacts of the COVID-19 pandemic within the Aircraft Controls segment. These charges are included in long-lived asset impairment in the consolidated statement of earnings. Auditing the Company's impairment measurement involved a higher degree of subjectivity as estimates underlying the determination of fair value were based on assumptions regarding future market and economic conditions. Significant assumptions used in the Company's fair value estimate included production volume forecasts, future pricing, cost escalations, economic life of property, plant and equipment, and replacement costs for certain property, plant and equipment primarily within the Aircraft Controls segment.

How We Addressed the Matter in Our Audit We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's process to determine the fair value of the impacted asset groups and measure the long-lived asset impairment, including controls over management's review of the significant assumptions underlying the fair value determination. Our testing of the Company's impairment measurement included, among other procedures, evaluating the reasonableness of the significant assumptions and operating data used to estimate the fair value. For example, we obtained support to evaluate the data used within the calculation and utilized our valuation specialists to perform a comparative calculation of the long-lived intangibles impairment valuation to determine if management's selected impairment was within a reasonable range.

Change in pension accounting

<i>Description of the Matter</i>	As discussed above and in Note 1 of the consolidated financial statements, the Company changed its method of accounting for the determination of the market-related value solely for the fixed income funds asset class representing approximately 80% of the assets within the qualified U.S. defined benefit plan (the plan). The Company's previous method of accounting was to calculate the market-related value of assets for all the plan's assets recognizing investment gains and losses ratably over a five-year period. The Company elected to use the fair value of the fixed income funds to determine the market-related value of the assets beginning in the first quarter of fiscal 2020. The recognition of gains and losses on this class of assets affects net periodic pension cost in the period in which they occur. Auditing the change in accounting involved especially challenging auditor judgment due to limited authoritative guidance for determining whether a method is preferable.
<i>How We Addressed the Matter in Our Audit</i>	We obtained an understanding, evaluated the design, and tested the operating effectiveness of controls over the Company's accounting for its pension liability and related costs, including controls over management's review and approval of the change in the application of the accounting principle. To test the justification for the change in accounting principle, we performed audit procedures that included, among others, evaluating management's determination that the change was rational and the accounting method to be applied was supportable and widely recognized in practice. Experienced members of the audit team, as well as subject matter professionals, were involved in analyzing whether the change in accounting principle was preferable.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2003.

Buffalo, NY
November 17, 2020

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) and 15d-15(f) of the Exchange Act. Under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of October 3, 2020 based upon the framework in Internal Control - Integrated Framework (2013) by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on that evaluation, our management concluded that our internal control over financial reporting is effective as of October 3, 2020.

We completed one acquisition in 2020, which was excluded from our management's report on internal control over financial reporting as of October 3, 2020. On November 28, 2019, we acquired GAT Gesellschaft für Antriebstechnik mbH and GAT Inc. This acquisition is included in our 2020 consolidated financial statements and constituted \$71.0 million and \$59.2 million of total and net assets, respectively, as of October 3, 2020 and \$33.5 million and \$0.1 million of net sales and net earnings, respectively, for the year then ended.

Ernst & Young LLP, independent registered public accounting firm, has audited our consolidated financial statements included in this Annual Report on Form 10-K and, as part of their audit, has issued their report, included herein, on the effectiveness of our internal control over financial reporting.

/s/ JOHN R. SCANNELL

John R. Scannell

Chief Executive Officer
(Principal Executive Officer)

/s/ JENNIFER WALTER

Jennifer Walter

Vice President,
Chief Financial Officer
(Principal Financial Officer)

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Moog Inc.

Opinion on Internal Control over Financial Reporting

We have audited Moog Inc.'s internal control over financial reporting as of October 3, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). In our opinion, Moog Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of October 3, 2020, based on the COSO criteria.

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of GAT Gesellschaft für Antriebstechnik mbH and GAT Inc., which is included in the 2020 consolidated financial statements of the Company and constituted \$71.0 million and \$59.2 million of total and net assets, respectively, as of October 3, 2020 and \$33.5 million and \$0.1 million of revenues and net earnings attributable to Moog, respectively, for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of GAT Gesellschaft für Antriebstechnik mbH and GAT Inc.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of October 3, 2020 and September 28, 2019, the related consolidated statements of earnings, comprehensive income (loss), shareholders' equity and cash flows for each of the three years in the period ended October 3, 2020, and the related notes and financial statement schedule listed in the Index at Item 15 (2) and our report dated November 17, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible 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 internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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/ Ernst & Young LLP
Buffalo, NY

November 17, 2020

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure.

Not applicable.

Item 9A. Controls and Procedures.

Disclosure Controls and Procedures.

We carried out an evaluation, under the supervision and with the participation of our management, including the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that these disclosure controls and procedures are effective as of the end of the period covered by this report, to ensure that information required to be disclosed in reports filed or submitted under the Exchange Act 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 management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

Management's Report on Internal Control over Financial Reporting.

See the report appearing under Item 8, Financial Statements and Supplemental Data of this report.

Changes in Internal Control over Financial Reporting.

There have been no changes in our internal control over financial reporting during the most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information.

On November 17, 2020, the Board of Directors approved a new cap applicable to the Chief Executive Officer's (CEO) bonus payment under the Company's Short Term Incentive Plan dated September 29, 2017, as amended November 3, 2020, (the "STI Plan") for fiscal year 2021. Payments under the STI Plan are based on a bonus formula and multipliers applicable to senior managers including named executive officers (NEOs). Payments under the STI Plan are subject to an overall cap tied to base salary. The cap applicable to the CEO was increased to 120% of base salary for fiscal year 2021. The bonus formula, multipliers, and cap remain the same for all other NEOs.

On November 17, 2020, the Board of Directors approved the Moog Inc. Revised 2021 Management Short Term Incentive Plan effective October 3, 2021 (the "Revised STI Plan"). The Revised STI Plan applies to the Company's fiscal years after fiscal year 2021. The CEO has full authority to establish levels of management eligible to participate. The bonuses are based on both the Company's diluted earnings per share ("EPS") and free cash flow ("FCF"), may be adjusted and payments are subject to an overall cap tied to base salary. The above description does not purport to be complete and is qualified in its entirety by reference to the full text, which is filed as Exhibit 10.1 to this Current Report on Form 10-K and incorporated by reference herein.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required herein with respect to our directors and certain information required herein with respect to our executive officers is incorporated by reference to the 2020 Proxy. Other information required herein is included in Item 1, Business, under “Executive Officers of the Registrant” of this report.

We have adopted a code of ethics that applies to our Chief Executive Officer, Chief Financial Officer and Controller. The code of ethics is available upon request without charge by contacting our Chief Financial Officer at 716-652-2000.

Item 11. Executive Compensation.

The information required herein is incorporated by reference to the 2020 Proxy.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required herein is incorporated by reference to the 2020 Proxy.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required herein is incorporated by reference to the 2020 Proxy.

Item 14. Principal Accountant Fees and Services.

The information required herein is incorporated by reference to the 2020 Proxy.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

Documents filed as part of this report:

1 Financial Statements

Consolidated Statements of Earnings
Consolidated Statements of Comprehensive Income (Loss)
Consolidated Balance Sheets
Consolidated Statements of Shareholders' Equity
Consolidated Statements of Cash Flows
Notes to Consolidated Financial Statements
Reports of Independent Registered Public Accounting Firm

2 Financial Statement Schedules

II. Valuation and Qualifying Accounts.

Schedules other than that listed above are omitted because the conditions requiring their filing do not exist or because the required information is included in the Consolidated Financial Statements, including the Notes thereto.

3 Exhibits

(3) Articles of Incorporation and By-Laws.

- (i) [Restated Certificate of Incorporation of Moog Inc., incorporated by reference to exhibit 3\(i\) of our report on Form 10-K for the year ended September 28, 2013.](#)
- (ii) [Restated By-laws of Moog Inc., dated May 8, 2018, as amended, incorporated by reference to exhibit 3.1 of our report on Form 10-Q for the quarter ended June 30, 2018.](#)

(4) Instruments defining the rights of security holders, including indentures.

- (a) [Form of Indenture between Moog Inc. and MUFG Union Bank, N.A. as Trustee, dated November 21, 2014, relating to the 5.25% Senior Notes due 2022, incorporated by reference to exhibit 4.1 of our report on Form 8-K dated November 21, 2014.](#)
- (b) [Form of Indenture between Moog Inc. and MUFG Union Bank, N.A. as Trustee, dated December 13, 2019, relating to the 4.25% Senior Notes due 2027, incorporated by reference to exhibit 4.1 of our report on Form 8-K dated December 13, 2019.](#)
- (c) [Description of Registrant's Securities.](#)

(10) Material contracts.

Credit and Securitization agreements.

- (a) [Form of Receivables Purchase Agreement, by and among Moog Receivables LLC, as Seller, Moog Inc., as Servicer, Market Street Funding LLC, as Issuer, and PNC Bank, National Association, as Administrator, dated as of March 5, 2012, incorporated by reference to exhibit 10.1 on Form 8-K dated March 9, 2012.](#)
- (b) [Second Amendment to the Receivables Purchase Agreement, dated March 4, 2013, by and among Moog Receivables LLC, as Seller, Moog Inc., as Servicer, Market Street Funding LLC, as Issuer and PNC Bank, National Association, as Administrator, incorporated by reference to exhibit 10.1 on Form 8-K dated March 6, 2013.](#)
- (c) [Fifth Amendment to the Receivables Purchase Agreement, dated February 14, 2014, by and among Moog Receivables LLC, as Seller, Moog Inc., as Servicer, Market Street Funding LLC, as Issuer and PNC Bank, National Association, as Administrator, incorporated by reference to exhibit 10.1 on Form 8-K dated February 14, 2014.](#)
- (d) [Seventh Amendment to the Receivables Purchase Agreement, dated February 10, 2015, by and among Moog Receivables LLC, as Seller, Moog Inc. as Servicer, Market Street Funding LLC, as Issuer and PNC Bank, National Association, as Administrator, incorporated by reference to exhibit 10.1 on Form 8-K dated February 10, 2015.](#)
- (e) [Eighth Amendment to the Receivables Purchase Agreement, dated April 15, 2016, by and among Moog Receivables LLC, as Seller, Moog Inc. as Servicer, Market Street Funding LLC, as Issuer and PNC Bank, National Association, as Administrator, incorporated by reference to exhibit 10.1 on Form 8-K dated April 15, 2016.](#)
- (f) [Ninth Amendment to the Receivables Purchase Agreement, dated October 23, 2017, by and among Moog Receivables LLC, as Seller, Moog Inc. as Servicer, Market Street Funding LLC, as Issuer and PNC Bank, National Association, as Administrator, incorporated by reference to exhibit 10.1 on Form 8-K dated October 26, 2017.](#)
- (g) [Fifth Amended and Restated Loan Agreement between Moog Inc. and the Lenders and HSBC Bank USA, National Association, as Administrative Agent for the Lenders dated as of October 15, 2019, incorporated by reference to exhibit 10.1 of our report on Form 8-K dated October 21, 2019.](#)

Management contracts or compensatory plan or arrangement.

- (h) [2008 Stock Appreciation Rights Plan, incorporated by reference to exhibit A of definitive proxy statement filed under Schedule 14A on December 10, 2007.](#)
- (i) [Form of Stock Appreciation Rights Award Agreement under 2008 Stock Appreciation Rights Plan, incorporated by reference to exhibit 10.14 of our report on Form 10-K for the year ended September 27, 2008.](#)
- (j) [First Amendment to the Moog Inc. 2008 Stock Appreciation Rights Plan, incorporated by reference to Appendix A of definitive proxy statement filed under Schedule 14A on December 13, 2012.](#)
- (k) [Second Amendment to the Moog Inc. 2008 Stock Appreciation Rights Plan, incorporated by reference to Item 8.01 on Form 8-K dated December 26, 2012.](#)

- (l) [2014 Long Term Incentive Plan, incorporated by reference to exhibit A of definitive proxy statement filed under Schedule 14A on December 12, 2014.](#)
 - (m) [Form of Stock Appreciation Rights Award Agreement under the 2014 Long Term Incentive Plan, incorporated by reference to exhibit 10.2 \(Class A common stock\) and exhibit 10.3 \(Class B common stock\) of our report on Form 8-K dated November 20, 2015.](#)
 - (n) [Form of Restricted Stock Unit Award Agreement under the 2014 Long Term Incentive Plan, incorporated by reference to exhibit 10.4 \(Class A common stock\) and exhibit 10.5 \(Class B common stock\) of our report on Form 8-K dated November 20, 2015.](#)
 - (o) [Form of Employment Termination Benefits Agreement between Moog Inc. and Employee-Officers, incorporated by reference to exhibit 10\(vii\) of our report on Form 10-K for the year ended September 25, 1999.](#)
 - (p) [Retention Agreement, dated March 1, 2017, incorporated by reference to exhibit 10.1 of our report on form 8-K dated March 6, 2017.](#)
 - (q) [Deferred Compensation Plan for Directors and Officers, amended and restated May 16, 2002, incorporated by reference to exhibit 10\(ii\) of our report on Form 10-K for the year ended September 28, 2002.](#)
 - (r) [Form of Indemnification Agreement for officers, directors and key employees, incorporated by reference to exhibit 10.1 of our report on Form 8-K dated November 30, 2004.](#)
 - (s) [Description of Management Short Term Incentive Plan, incorporated by reference to exhibit 10.1 of our report on Form 8-K/A dated November 24, 2015.](#)
 - (t) [Moog Inc. Management Short Term Incentive Plan, dated September 29, 2017, incorporated by reference to exhibit 10.1 of our report on Form 8-K dated October 5, 2017.](#)
 - (u) [First Amendment to the Moog Inc. Management Short Term Incentive Plan, dated July 26, 2018, incorporated by reference to exhibit 10.3 of our report on Form 10-Q for the quarter ended June 30, 2018.](#)
 - (v) [Moog Inc. Revised 2021 Management Short Term Incentive Plan, dated November 17, 2020 \(Filed herewith\).](#)
 - (w) [Moog Inc. Plan to Equalize Retirement Income and Supplemental Retirement Plan dated August 9, 2017, incorporated by reference to exhibit 10.1 of our report on Form 8-K dated August 11, 2017.](#)
 - (x) [Defined Contribution Supplemental Executive Retirement Plan, dated March 4, 2016, incorporated by reference to exhibit 10.1 of our report on Form 10-Q for the quarter ended April 2, 2016.](#)
 - (y) [First Amendment to the Defined Contribution Supplemental Executive Retirement Plan, dated July 26, 2018, incorporated by reference to exhibit 10.2 of our report on Form 10-Q for the quarter ended June 30, 2018.](#)
- Other material contracts.
- (z) [Moog Inc. Stock Employee Compensation Trust Agreement amended and restated as of August 13, 2014, incorporated by reference to exhibit 10.2 of our report on Form 10-Q for the quarter ended January 3, 2015.](#)
 - (aa) [Amendment No. 1 to the Moog Inc. Stock Employee Compensation Trust Agreement, dated May 8, 2018, incorporated by reference to exhibit 10.1 of our report on Form 10-Q for the quarter ended June 30, 2018.](#)
 - (ab) [Moog Inc. Supplemental Retirement Plan Trust, as amended and restated, effective January 1, 2015, incorporated by reference to exhibit 10.1 of our Form 10-Q for the quarter ended April 4, 2015.](#)

All of the exhibits listed above have been filed under Moog Inc., Securities and Exchange Commission file number 1-05129.

- (21) Our subsidiaries.
(All of which are wholly owned by the Corporation, directly or indirectly, unless otherwise noted). The names of indirectly owned subsidiaries are indented under the names of their respective parent corporations.

Name	State/Country of Incorporation
Certus Unmanned Aerial Systems LLC (Joint Venture - 50%)	Delaware
Curlin Medical Inc.	Delaware
Moog MDG SRL	Costa Rica
Viltechmeda UAB	Lithuania
ZEVEX, Inc.	Delaware
Moog Asset Management LLC	Delaware
Moog Australia Pty., Ltd.	Australia
Moog do Brasil Controles Ltda.	Brazil
Moog Controls Corp.	Ohio
Moog Controls Hong Kong Ltd.	Hong Kong
Moog Control Systems (Shanghai) Co., Ltd.	People's Republic of China
Moog Industrial Controls (Shanghai) Co., Ltd.	People's Republic of China
Moog Controls (India) Pvt. Ltd. (56% Moog Inc.; 44% Moog Singapore Pte. Ltd.)	India
Moog Controls Ltd.	United Kingdom
Moog Reading Limited	United Kingdom
Tritech Holdings Limited	United Kingdom
Tritech International Limited	United Kingdom
Tritech do Brasil Servicos E Equipamentos Submarinos Ltda.	Brazil
Moog Fernau Ltd.	United Kingdom
Moog Norden AB	Sweden
Moog Wolverhampton Limited	United Kingdom
Moog Holding GmbH & Co. KG	Germany
Moog Brno s.r.o	Czech Republic
Moog B.V.	Netherlands
Moog GmbH	Germany
Moog Control Equipment (Shanghai) Co., Ltd.	People's Republic of China
Moog Italiana S.r.l.	Italy
Moog Luxembourg S.A.R.L.	Luxembourg
Moog Rekofa GmbH	Germany
Moog Rheingau GmbH	Germany
GAT Gesellschaft fur Antriebtechnik mbH	Germany
GAT Transmission Technology (Beijing) Co. Ltd.	People's Republic of China
Obshestwo s Ogranizennoi Otvetstvennostju MOOG	Russia
Moog Luxembourg Finance S.A.R.L.	Luxembourg
Focal Technologies Corporation	Nova Scotia
Moog International Financial Services Center S.a.r.l.	Luxembourg
Moog Verwaltungs GmbH	Germany
Moog Ireland Limited	Ireland
Moog Japan Ltd.	Japan
Moog Korea Ltd.	South Korea
Moog Receivables LLC	Delaware
Moog S.A.R.L. (95% Moog Inc.; 5% Moog GmbH)	France
Moog Singapore Pte. Ltd.	Singapore
Moog Aircraft Services Asia PTE LTD. (Joint Venture - 51%)	Singapore
Moog EM Solutions (India) Private Limited	India
Moog India Technology Center Pvt. Ltd.	India
Moog Motion Controls Private Limited	India

(10.1)	Moog Inc. Revised 2021 Management Short Term Incentive Plan, dated November 17, 2020 (Filed herewith)
(23)	Consent of Ernst & Young LLP. (Filed herewith)
(31.1)	Certification of Chief Executive Officer pursuant to Exchange Act 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 Exchange Act Rule 13a-14(a) as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. (Filed herewith)
(32.1)	Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (Furnished herewith)
(101)	Interactive Data Files (submitted electronically herewith)
(101.INS)	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
(101.SCH)	XBRL Taxonomy Extension Schema Document
(101.CAL)	XBRL Taxonomy Extension Calculation Linkbase Document
(101.DEF)	XBRL Taxonomy Extension Definition Linkbase Document
(101.LAB)	XBRL Taxonomy Extension Label Linkbase Document
(101.PRE)	XBRL Taxonomy Extension Presentation Linkbase Document

In accordance with Rule 406T of Regulation S-T, the XBRL related information in Exhibit 101 to this Annual Report on Form 10-K shall not be deemed to be "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section and shall not be part of any registration or other document filed under the Securities Act or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.



Valuation and Qualifying Accounts

(dollars in thousands)						Schedule II
Description	Balance at beginning of year	Additions charged to costs and expenses	Deductions*	Foreign exchange impact and other	Balance at end of year	
Fiscal year ended September 29, 2018						
Contract reserves	\$ 46,314	\$ 36,830	\$ 34,241	\$ (85)	\$ 48,818	
Allowance for doubtful accounts	4,351	2,213	1,468	(137)	4,959	
Reserve for inventory valuation	108,539	33,569	15,540	(1,252)	125,316	
Deferred tax valuation allowance	4,776	10,499	101	7	15,181	
Fiscal year ended September 28, 2019						
Contract reserves	\$ 48,818	\$ 45,464	\$ 35,714	\$ 2,346	\$ 60,914	
Allowance for doubtful accounts	4,959	1,522	891	(188)	5,402	
Reserve for inventory valuation	125,316	23,227	12,716	(1,642)	134,185	
Deferred tax valuation allowance	15,181	274	1,808	(510)	13,137	
Fiscal year ended October 3, 2020						
Contract reserves	\$ 60,914	\$ 76,747	\$ 66,885	\$ 1,636	\$ 72,412	
Allowance for doubtful accounts	5,402	3,774	3,144	281	6,313	
Reserve for inventory valuation	134,185	52,956	35,747	1,917	153,311	
Deferred tax valuation allowance	13,137	2,003	860	504	14,784	

* Includes the effects of divestitures.

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.

Moog Inc.
(Registrant)

By /s/ JOHN R. SCANNELL

John R. Scannell
Chief Executive Officer
Date: November 17, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on November 17, 2020.

/s/ JOHN R. SCANNELL

John R. Scannell
Chairman of the Board and Director
Chief Executive Officer
(Principal Executive Officer)

/s/ WILLIAM G. GISEL, JR.

William G. Gisel, Jr.
Director

/s/ JENNIFER WALTER

Jennifer Walter
Vice President and Chief Financial Officer
(Principal Financial Officer)

/s/ PETER J. GUNDERMANN

Peter J. Gundermann
Director

/s/ MICHAEL J. SWOPE

Michael J. Swope
Controller
(Principal Accounting Officer)

/s/ KRAIG H. KAYSER

Kraig H. Kayser
Director

/s/ JANET M. COLETTI

Janet M. Coletti
Director

/s/ R. BRADLEY LAWRENCE

R. Bradley Lawrence
Director

/s/ DONALD R. FISHBACK

Donald R. Fishback
Director

/s/ BRIAN J. LIPKE

Brian J. Lipke
Director

/s/ BRENDA L. REICHELDERFER

Brenda L. Reichelderfer
Director

**MOOG INC.
REVISED 2021 MANAGEMENT
SHORT TERM INCENTIVE PLAN
Effective October 3, 2021**

Purpose

The purpose of this Moog Inc. Revised 2021 Management Short Term Incentive Plan (the “Plan”) is to attract, motivate and retain highly qualified executives serving on the management team of Moog Inc. (the “Company”), and to reward them according to the success of the Company by paying them annual bonuses (“Bonuses”) in cash and/or shares of the capital stock of the Company (“Company Stock”) contingent on Company performance. This Plan shall apply to the paying of Bonuses with respect to the Company’s fiscal years after Fiscal Year 2021.

General

This Plan supersedes all prior short-term incentive plans; provided that the prior short-term incentive plan - the Moog Inc. Management Sort Term Incentive Plan effective September 29, 2017, as amended -- shall apply to the payment of Bonuses with respect to Fiscal Year 2021. The Chief Executive Officer of the Company has full authority to establish levels of management eligible to participate in the Plan (“Management Tiers”) and to interpret, amend or modify the Plan at his sole discretion, with the exception of the application of the Plan to executive officers of the Company and the award of Company Stock as a form of payment, which rests with the Executive Compensation Committee (the “Committee”) of the Board of Directors of the Company. Notwithstanding the award matrix described below for determining the amount of Bonus payable for each Fiscal Year, the determination to make a payment under the Plan and, if made, its allocation, are discretionary. The Committee with respect to executive officers and the Chief Executive Officer with respect to all other eligible employees may make to the extent it or he or she deemed appropriate in view of events occurring during the Plan Year an increase or a decrease to any Bonus amount otherwise payable based on the matrix described below.

Plan Year

“Plan Year” refers to the fiscal year of the Company.

Eligibility

A Company employee is eligible to participate in the Plan and receive a Bonus for a Plan Year if the employee:

- is employed in an “eligible position,” that is, as a Company executive officer or in a management level position determined to be in one of the designated Management Tiers;
 - is employed in an eligible position at the start of the Plan Year, or is hired or promoted into an eligible position during the Plan Year; and
 - except as described below, is employed in an eligible position as a full-time employee on the date payment of the Bonus for a Plan Year is to be made.
-

Exhibit 10.1

Partial Service

The following rules will apply to employees who are employed in an eligible position for only a portion of the Plan Year:

- Retirement. An eligible employee who retires during a Plan Year will be eligible to receive a prorated amount of any Bonus earned for the Plan Year, based on the number of full months of employment in an eligible position during the Plan Year, without regard to the requirement that the employee be employed on the payment date. Where retirement occurs before the end of a Plan Year, the employee will be eligible to receive a prorated bonus based on the number of completed months worked during that year. An employee will be considered a “Retiree” if, at the date on which employment terminates, he or she is at least age 55 and has completed at least 15 years of service or is age 65 or older.
 - Disability. An eligible employee who receives long-term disability (“LTD”) payments during a Plan Year under a Company LTD Plan or policy will be eligible to receive a prorated amount of any Bonus earned for the Plan Year. Any Bonus payment earned for the Plan Year will be reduced, based on the number of full months the employee is absent on LTD leave during the Plan Year. LTD leave generally begins after six months of short-term disability leave. An eligible employee will receive employment credit under the Plan while on short-term disability leave. If an eligible employee ceases to qualify for LTD, and the eligible employee does not return to work with the Company at that time, the eligible employee will forfeit any right to receive any unpaid Bonus for the Plan Year.
 - Death. An eligible employee who terminates from the Company on account of death during the Plan Year or before the date payment of the Bonus for a Plan Year is made will be eligible to receive a prorated amount of any Bonus earned for the Plan Year, based on the number of full months of employment in an eligible position during the Plan Year, without regard to the requirement that the employee be employed on the payment date. If requested by the deceased eligible employee’s executor or administrator, the Chief Executive Office for Management Tiers and the Committee for executive officer may provide for payment of an estimated Bonus prior to the otherwise applicable payment date. Any such estimated payment shall be deemed to be final and not adjusted for year-end results.
 - Termination for Cause. Regardless of the provisions above, an eligible employee who is terminated by the Company for Cause, whether during or after the Plan Year, will immediately become ineligible and will forfeit any right to receive any unpaid Bonus for the Plan Year. Cause means termination of employment of an eligible employee under the Company’s generally applicable policies and procedures.
 - Leave of Absence. An eligible employee on a Company-approved leave of absence during a Plan Year (other than disability leave) will be eligible to receive a prorated amount of any Bonus earned for the Plan Year, based on the number of full months of active service performed by the eligible employee for the Company during the Plan Year. For this purpose, an eligible employee will be treated as continuing in active service with the Company for the first 90 days of the approved leave for purposes of calculating Bonus payments. If the Company-approved leave of absence ends for any reason prior to the date any Bonus for the Plan Year is paid, and the eligible employee does not return to work with the Company at that time, the eligible employee will forfeit any right to receive a Bonus for the Plan Year.
-

Exhibit 10.1

- New Hires/Promotions/Other Status Change. An employee who is hired into or promoted into an eligible position or otherwise has a position status change other than described above during the Plan Year will be eligible to receive a prorated amount of any Bonus earned, based on the number of full months of employment in an eligible position during the Plan Year.

Provided, however, in foreign jurisdictions (*i.e.*, outside of the United States of America) modification may be necessary to comply with local laws.

Separate Agreement

An eligible employee's right to a Bonus under this Plan may be superseded by the terms of a separate agreement between the Company and the employee that precludes payment of a Bonus for a Plan Year under certain circumstances or upon the occurrence of certain events.

Bonus Determinations

Bonuses will be based on both (a) the Company's diluted earnings per share ("EPS"), and (b) free cash flow ("FCF"). Both EPS and FCF may be adjusted. Subject to a maximum payment cap, the Bonus amount payable to any eligible employee is determined by a matrix using these two performance indicators and annually established targets and performance ranges for each indicator. Eligible employees will receive a pre-determined percentage of their respective Base Salary for performance at the specified target EPS and FCF ("on-target performance"). Performance above and below target will result in an incremental increase or decrease from the target amount as set out in the matrix.

The matrix provides for these two performance indicators to be determined independent of each other. The respective levels of performance are combined to determine the overall pre-determined percentage of salary paid as Bonus. Application of the matrix is subject to the following rules:

- On-target performance for one of indicator (*i.e.*, either EPS or FCF) will yield a bonus of 50% of the pre-determined percentage of Base Salary. If the annual performance of both indicators is on target, then eligible employees will receive a Bonus equal to 100% a pre-determined percentage of Base Salary;
- The maximum Bonus for each performance indicator shall be equal to (i) 100% times, (ii) the pre-determined percentage for the applicable employee, times (iii) the employee's Base Salary. The maximum total Bonus that can be attained from both performance indicators combined is 200% of the pre-determined percentage of Base Salary;
- The applicable Plan Year matrix will typically be established by the Company each year within 90 days of the beginning of the Plan Year.

Base Salary means the annualized base rate of pay as of the last day of the Plan Year, prior to any annual salary increase for the following Plan Year, except that in the case of an eligible employee who retires during a Plan Year, Base Salary means the eligible employee's annualized base rate of pay as of the date of his or her retirement. Subject to adjustment based on local law, base salary does not include bonuses, family allowances, meal allowances, vacation pay premiums, company car allowances and other perquisites of employment.

Time and Form of Payment

Any Bonuses payable with respect to a Plan Year will be paid following the end of the Plan Year. Payments at the discretion of the Committee may be made in the form of cash and/or stock. Payments will be made no later than March 15 following the end of the Plan Year.

Exhibit 10.1

Miscellaneous

Plan terms for employees in foreign jurisdictions are subject to modification as necessary to comply with local laws.

Bonuses payable under the Plan are subject to any required federal, state, local, foreign, and other applicable taxes and withholdings. The Plan will be governed by and construed in accordance with the laws of the State of New York without regard to principles of choice of laws.

Nothing in the Plan confers upon any employee or other person any rights with respect to the continuation of employment by the Company or interferes in any way with the right of the Company at any time to terminate such employment or to increase or decrease the compensation payable to the employee from the rate in effect at the commencement of a Plan Year or to otherwise modify the terms of the employee's employment.

Notwithstanding any other provisions in this Plan, any Bonus that is subject to recovery under any law, government regulation or stock exchange listing requirement, will be subject to such deductions and clawback as may be required to be made pursuant to such law, government regulation or stock exchange listing requirement (or any policy adopted by the Company pursuant to any such law, government regulation or stock exchange listing requirement).

The Company reserves the right to amend any provision or terminate the Plan at any time and for any reason, with or without notice.

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statements (Form S-8 No. 333-85657) pertaining to the Moog Inc. Retirement Savings Plan, formerly known as the Moog Inc. Savings and Stock Ownership Plan,
- (2) Registration Statement (Form S-8 No. 333-149748) pertaining to the Moog Inc. 2008 Stock Appreciation Rights Plan,
- (3) Registration Statement (Form S-8 No. 333-206091) pertaining to the Moog Inc. 2014 Long Term Incentive Plan,
- (4) Registration Statement (Form S-8 No. 333-213373) pertaining to the Moog Inc. Retirement Savings Plan, and
- (5) Registration Statement (Form S-8 No. 333-218546) pertaining to the Moog Inc. Employee Stock Purchase Plan

of our reports dated November 17, 2020, with respect to the consolidated financial statements and schedule of Moog Inc. and the effectiveness of internal control over financial reporting of Moog Inc. included in this Annual Report (Form 10-K) of Moog Inc. for the year ended October 3, 2020.

/s/ Ernst & Young LLP

Buffalo, New York
November 17, 2020

**Certification of Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a) as adopted
pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, John R. Scannell, certify that:

1. I have reviewed this annual report on Form 10-K of Moog Inc.;
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 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 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 registrant's board of directors (or persons performing 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 17, 2020

/s/ John R. Scannell
John R. Scannell
Chief Executive Officer

**Certification of Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a) as adopted
pursuant to Section 302 of the Sarbanes-Oxley Act of 2002**

I, Jennifer Walter, certify that:

1. I have reviewed this annual report on Form 10-K of Moog Inc.;
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 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 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 registrant's board of directors (or persons performing 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 17, 2020

/s/ Jennifer Walter

Jennifer Walter

Chief Financial Officer

**Certification pursuant to
18 U.S.C. Section 1350,
as adopted pursuant to
Section 906 of the Sarbanes-Oxley Act of 2002**

Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officers of Moog Inc. (the "Company") hereby certify that:

The Company's Annual Report on Form 10-K for the year ended October 3, 2020 fully complies with the requirements of section 13(a) or 15(d) of the Securities and Exchange Act of 1934 and the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 17, 2020

/s/ John R. Scannell
John R. Scannell
Chief Executive Officer

/s/ Jennifer Walter
Jennifer Walter
Chief Financial Officer

This certification shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liability of that section. This certification shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent specifically incorporated by the Company into such filing.