MOOG INC.
Form 10-Q
April 27, 2018
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)
ý QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended March 31, 2018

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

INC.
(Exact name of registrant as specified in its charter)

New York State	16-0757636
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
East Aurora, New York	14052-0018
(Address of principal executive offices)	(Zip Code)

(716) 652-2000
(Telephone number including area code)

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

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 ý No ¨

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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 ý Accelerated filer ¨ Non-accelerated filer ¨ (Do not check if smaller reporting company)
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 the 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 is a shell company (as defined in Rule 12b-2 of the Exchange Act).
Yes ¨ No ý

The number of shares outstanding of each class of common stock as of April 24, 2018 was:
Class A common stock, $1.00 par value, 32,441,477 shares
Class B common stock, $1.00 par value, 3,321,143 shares

Moog Inc.
QUARTERLY REPORT ON FORM 10-Q
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PART I FINANCIAL INFORMATION
Item 1. Financial Statements
Moog Inc.
Consolidated Condensed Statements of Earnings
(Unaudited)

(dollars in thousands, except share and per share data)	Three Months Ended March 31, 2018	Three Months Ended April 1, 2017	Six Months Ended March 31, 2018	Six Months Ended April 1, 2017
Net sales	$689,049	$632,403	$1,316,584	$1,222,073
Cost of sales	489,071	447,323	932,497	864,487
Inventory write-down - restructuring	7,329	—	7,329	—
Gross profit	192,649	185,080	376,758	357,586
Research and development	34,085	36,950	66,505	71,514
Selling, general and administrative	99,999	87,064	195,949	172,127
Interest	9,089	8,649	17,735	17,135
Restructuring	24,058	—	24,058	—
Other	(251)	4,214	(992)	12,119
Earnings before income taxes	25,669	48,203	73,503	84,691
Income taxes	11,704	16,541	58,239	22,971
Net earnings attributable to Moog and noncontrolling interest	13,965	31,662	15,264	61,720
Net earnings (loss) attributable to noncontrolling interest	—	(364)	—	(870)
Net earnings attributable to Moog	$13,965	$32,026	$15,264	$62,590
Net earnings per share attributable to Moog				
Basic	$0.39	$0.89	$0.43	$1.74
Diluted	$0.39	$0.88	$0.42	$1.73
Dividends declared per share	$0.25	$—	$0.25	$—
Average common shares outstanding				
Basic	35,770,089	35,888,053	35,771,247	35,878,552
Diluted	36,179,858	36,236,838	36,190,455	36,254,802

See accompanying Notes to Consolidated Condensed Financial Statements.

Moog Inc.
Consolidated Condensed Statements of Comprehensive Income (Loss)
(Unaudited)

(dollars in thousands)	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Net earnings attributable to Moog and noncontrolling interest	$13,965	$31,662	$15,264	$61,720
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustment	20,297	12,695	30,661	(28,814)
Retirement liability adjustment	4,682	5,471	8,938	14,043
Change in accumulated income (loss) on derivatives	(579)	1,246	655	1,820
Other comprehensive income (loss), net of tax	24,400	19,412	40,254	(12,951)
Tax Cuts and Jobs Act, reclassification from AOCIL to retained earnings	(47,077)	—	(47,077)	—
Comprehensive income (loss)	(8,712)	51,074	8,441	48,769
Comprehensive income (loss) attributable to noncontrolling interest	—	(364)	—	(870)
Comprehensive income (loss) attributable to Moog	$(8,712)	$51,438	$8,441	$49,639

See accompanying Notes to Consolidated Condensed Financial Statements.

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Moog Inc.
Consolidated Condensed Balance Sheets
(Unaudited)

(dollars in thousands)	March 31, 2018	September 30, 2017
ASSETS		
Current assets		
Cash and cash equivalents	$255,536	$ 368,073
Receivables	770,731	727,740
Inventories	517,999	489,127
Prepaid expenses and other current assets	41,996	41,499
Total current assets	1,586,262	1,626,439
Property, plant and equipment, net of accumulated depreciation of $811,595 and $771,160, respectively	547,141	522,991
Goodwill	804,652	774,268
Intangible assets, net	114,056	108,818
Deferred income taxes	12,637	26,558
Other assets	38,009	31,518
Total assets	$3,102,757	$ 3,090,592
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities		
Short-term borrowings	$94	$ 89
Current installments of long-term debt	238	295
Accounts payable	190,631	170,878
Accrued compensation	137,848	148,406
Customer advances	166,390	159,274
Contract loss reserves	42,971	43,214
Other accrued liabilities	130,736	107,278
Total current liabilities	668,908	629,434
Long-term debt, excluding current installments	907,429	956,653
Long-term pension and retirement obligations	189,923	271,272
Deferred income taxes	43,218	13,320
Other long-term liabilities	37,575	5,609
Total liabilities	1,847,053	1,876,288
Commitments and contingencies (Note 18)	—	—
Shareholders' equity		
Common stock - Class A	43,736	43,704
Common stock - Class B	7,544	7,576
Additional paid-in capital	490,055	492,246
Retained earnings	1,901,182	1,847,819
Treasury shares	(739,091)	(739,157)
Stock Employee Compensation Trust	(93,330)	(89,919)
Supplemental Retirement Plan Trust	(12,078)	(12,474)
Accumulated other comprehensive loss	(342,314)	(335,491)
Total Moog shareholders' equity	1,255,704	1,214,304
Total liabilities and shareholders' equity	$3,102,757	$ 3,090,592

See accompanying Notes to Consolidated Condensed Financial Statements.

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Moog Inc.
Consolidated Condensed Statements of Shareholders' Equity
(Unaudited)

(dollars in thousands, except share data)	Amount	Number of Shares Class A Common Stock	Number of Shares Class B Common Stock
COMMON STOCK			
Beginning of period	$51,280	43,704,286	7,575,427
Conversion of Class B to Class A	—	31,272	(31,272)
End of period	51,280	43,735,558	7,544,155
ADDITIONAL PAID-IN CAPITAL			
Beginning of period	492,246		
Issuance of treasury shares	(2,733)		
Equity-based compensation expense	3,500		
Adjustment to market - SECT, SERP and other	(2,958)		
End of period	490,055		
RETAINED EARNINGS			
Beginning of period	1,847,819		
Net earnings attributable to Moog	15,264		
Dividends	(8,978)		
Tax Cuts and Jobs Act, reclassification from AOCIL to retained earnings	47,077		
End of period	1,901,182		
TREASURY SHARES AT COST			
Beginning of period	(739,157)	(10,933,003)	(3,333,927)
Class A and B shares issued related to equity compensation	5,184	79,679	28,239
Class A and B shares purchased	(5,118)	(37,784)	(22,165)
End of period	(739,091)	(10,891,108)	(3,327,853)
STOCK EMPLOYEE COMPENSATION TRUST (SECT)			
Beginning of period	(89,919)	(425,148)	(654,753)
Issuance of shares	1,941	—	21,871
Purchase of shares	(7,914)	—	(91,081)
Adjustment to market	2,562	—	—
End of period	(93,330)	(425,148)	(723,963)
SUPPLEMENTAL RETIREMENT PLAN (SERP) TRUST			
Beginning of period	(12,474)		(150,000)
Adjustment to market	396		—
End of period	(12,078)		(150,000)
ACCUMULATED OTHER COMPREHENSIVE LOSS			
Beginning of period	(335,491)		
Other comprehensive income (loss)	40,254		
Tax Cuts and Jobs Act, reclassification from AOCIL to retained earnings	(47,077)		
End of period	(342,314)		
TOTAL MOOG SHAREHOLDERS’ EQUITY	$1,255,704	32,419,302	3,342,339

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Moog Inc.
Consolidated Condensed Statements of Cash Flows
(Unaudited)

(dollars in thousands)	Six Months Ended March 31, 2018	Six Months Ended April 1, 2017
CASH FLOWS FROM OPERATING ACTIVITIES		
Net earnings attributable to Moog and noncontrolling interest	$15,264	$61,720
Adjustments to reconcile net earnings to net cash provided (used) by operating activities:		
Depreciation	35,536	35,372
Amortization	9,425	9,325
Deferred income taxes	30,709	423
Equity-based compensation expense	3,500	3,154
Impairment of long-lived assets and inventory write-down associated with restructuring	21,811	—
Other	2,960	15,481
Changes in assets and liabilities providing (using) cash:		
Receivables	(30,111)	(20,989)
Inventories	(20,685)	14,327
Accounts payable	11,351	13,536
Customer advances	5,547	8,869
Accrued expenses	10,558	449
Accrued income taxes	4,953	(858)
Net pension and post retirement liabilities	(70,309)	(9,413)
Other assets and liabilities	14,721	(9,690)
Net cash provided by operating activities	45,230	121,706
CASH FLOWS FROM INVESTING ACTIVITIES		
Acquisitions of businesses, net of cash acquired	(42,116)	—
Purchase of property, plant and equipment	(43,924)	(30,210)
Other investing transactions	(3,781)	(928)
Net cash (used) by investing activities	(89,821)	(31,138)
CASH FLOWS FROM FINANCING ACTIVITIES		
Net short-term repayments	—	(1,280)
Proceeds from revolving lines of credit	209,500	94,145
Payments on revolving lines of credit	(269,610)	(143,700)
Proceeds from long-term debt	10,000	—
Payments on long-term debt	(20,614)	(97)
Proceeds from sale of treasury stock	2,451	2,135
Purchase of outstanding shares for treasury	(5,118)	(5,305)
Proceeds from sale of stock held by SECT	1,941	867
Purchase of stock held by SECT	(7,914)	(7,038)
Other financing transactions	—	(1,656)
Net cash (used) by financing activities	(79,364)	(61,929)
Effect of exchange rate changes on cash	11,418	(11,278)
Increase (decrease) in cash and cash equivalents	(112,537)	17,361
Cash and cash equivalents at beginning of period	368,073	325,128
Cash and cash equivalents at end of period	$255,536	$342,489

See accompanying Notes to Consolidated Condensed Financial Statements.

Moog Inc.
Notes to Consolidated Condensed Financial Statements
Six Months Ended March 31, 2018
(Unaudited)
(dollars in thousands, except per share data)
Note 1 - Basis of Presentation
The accompanying unaudited consolidated condensed financial statements have been prepared by management in accordance with U.S. generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. In the opinion of management, all adjustments consisting of normal recurring adjustments considered necessary for the fair presentation of results for the interim period have been included. The results of operations for the three and six months ended March 31, 2018 are not necessarily indicative of the results expected for the full year. The accompanying unaudited consolidated condensed financial statements should be read in conjunction with the financial statements and notes thereto included in our Form 10-K for the fiscal year ended September 30, 2017. All references to years in these financial statements are to fiscal years.

Certain prior year amounts have been reclassified to conform to current year's presentation. During 2018, we made a change to our segment reporting structure and merged our former Components segment into Space and Defense Controls and Industrial Systems. The Goodwill and Segment footnotes have been restated to reflect these changes.

Recent Accounting Pronouncements Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2018-02 Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income	The standard amends existing guidance and allows a reclassification from accumulated other comprehensive income (loss) to retained earnings for stranded deferred tax effects resulting from the Tax Cuts and Jobs Act. The standard requires certain disclosures about stranded deferred tax effects. The provisions of the standard are effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted.	We adopted this standard recording the related stranded deferred tax effects in the period of adoption, resulting in $47,077 being reclassified from accumulated other comprehensive income (loss) to retained earnings as of March 31, 2018. Date early adopted: Q2 2018

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Recent Accounting Pronouncements Not Yet Adopted

Standard	Description	Financial Statement Effect or Other Significant Matters
ASU no. 2014-09 Revenue from Contracts with Customers (and All Related ASUs)	The standard requires revenue recognition to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The standard also requires additional disclosures about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts. The provisions of the standard, as well as all subsequently issued clarifications to the standard, are effective for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years. The standard can be adopted using either a full retrospective or modified retrospective approach.	We plan to adopt the standard using the modified retrospective method, under which prior years' results are not restated, but supplemental information will be provided in our disclosures that will present fiscal 2019 results before adoption of the standard. In addition, a cumulative adjustment will be necessary to Shareholder's Equity at the beginning of fiscal 2019. We are assessing the impact of the standard on our financial statements and related disclosures, internal controls and financial policies and information technology systems. We have not yet quantified the impact on our financial statements and related disclosures. Planned date of adoption: Q1 2019
ASU no. 2016-01 Recognition and Measurement of Financial Assets and Financial Liabilities	The standard requires most equity investments to be measured at fair value, with subsequent changes in fair value recognized in net income. The amendment also impacts the measurement of financial liabilities under the fair value option as well as certain presentation and disclosure requirements for financial instruments. The provisions of the standard are effective for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years. Early adoption is permitted for some, but not all, provisions. The amendment requires certain provisions to be applied prospectively and others to be applied by means of a cumulative-effect adjustment.	We are currently evaluating the effect on our financial statements and related disclosures. Planned date of adoption: Q1 2019
ASU no. 2016-02 Leases (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 are currently evaluating the effect on our financial statements and related disclosures. Planned date of adoption: Q1 2020
ASU no. 2017-07 Presentation of Net Periodic	The standard amends existing guidance on the presentation of net periodic benefit cost in the income statement and what qualifies for	We are currently evaluating the effect on our financial statements and related disclosures.

Pension Cost and Net Periodic Postretirement Benefit Cost	capitalization on the balance sheet. The provisions of the standard are effective for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years. Early adoption is permitted as of the beginning of an annual period. The amendment requires income statement presentation provisions to be applied retrospectively and capitalization in assets provisions to be applied prospectively.	Planned date of adoption: Q1 2019
ASU no. 2017-12 Targeted Improvements to Accounting for Hedging Activities	The standard expands the hedging strategies eligible for hedge accounting, while simplifying presentation and disclosure by eliminating separate measurement and reporting of hedge ineffectiveness. The provisions of the standard are effective for fiscal years beginning after December 15, 2018 and interim periods within those fiscal years. Early adoption is permitted.	We are currently evaluating the effect on our financial statements and related disclosures. Planned date of adoption: Q1 2020

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 minimal impact on our financial statements and related disclosures.

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Note 2 - Acquisitions, Divestitures and Equity Method Investments

On March 29, 2018, we acquired VUES Brno s.r.o, located in the Czech Republic and Germany, for a purchase price, net of acquired cash, of $62,683, consisting of $42,110 in cash and $20,573 of assumed debt. VUES designs and manufactures customized electric motors, generators and solutions. This operation is included in our Industrial Systems segment. The purchase price allocation is subject to adjustments as we obtain additional information for our estimates during the measurement period.

On October 3, 2017, we, in collaboration with SIA Engineering Company, announced the joint venture company, Moog Aircraft Services Asia ("MASA"), in Singapore, of which we currently hold a 51% ownership. MASA is intended to provide maintenance, repair and overhaul services for our manufactured flight control systems. As we hold a majority ownership in MASA, but share voting control, we are accounting for this investment using the equity method. At March 31, 2018, we have made total contributions of $3,570 and intend to make one additional contribution of $1,530 during 2018. This operation is included in our Aircraft Controls segment.

In 2017, we sold non-core businesses of our Space and Defense Controls segment for $7,210 in cash and recorded losses in other expense of $13,119 related to the sales.

On April 2, 2017, we acquired Rotary Transfer Systems, a manufacturer of electromechanical systems, located in Germany and France for a purchase price, net of acquired cash, of $42,593, consisting of $40,545 in cash and $2,048 in assumed pension obligations. This operation is included in our Industrial Systems segment.

Note 3 - Receivables

Receivables consist of:

	March 31, 2018	September 30, 2017
Accounts receivable	$296,761	$ 286,773
Long-term contract receivables:		
Amounts billed	153,489	148,087
Unbilled recoverable costs and accrued profits	291,256	282,154
Total long-term contract receivables	444,745	430,241
Other	34,191	15,077
Total receivables	775,697	732,091
Less allowance for doubtful accounts	(4,966)	(4,351)
Receivables	$770,731	$ 727,740

We securitize certain trade receivables in transactions that are accounted for as secured borrowings (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 condensed balance sheets, is recorded at fair value, which approximates the total amount of the designated pool of accounts receivable. Refer to Note 6, Indebtedness, for additional disclosures related to the Securitization Program.

Note 4 - Inventories

Inventories, net of reserves, consist of:

	March 31, 2018	September 30, 2017
Raw materials and purchased parts	$189,317	$ 189,517
Work in progress	254,059	229,202
Finished goods	74,623	70,408
Inventories	$517,999	$ 489,127

There are no material inventoried costs relating to long-term contracts where revenue is accounted for using the percentage of completion, cost-to-cost method of accounting as of March 31, 2018 or September 30, 2017.

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Note 5 - 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
Acquisition	—	—	23,026	23,026
Foreign currency translation	2,558	332	4,468	7,358
Balance at March 31, 2018	$183,933	$260,283	$360,436	$804,652

In 2018, we changed our segment reporting structure as our former Components segment was separated and merged into Space and Defense Controls and Industrial Systems. As a result, the September 30, 2017 balances for those segments were restated to reflect this change. Goodwill for Space and Defense Controls and Industrial Systems increased by $86,995 and $224,194, respectively, than what was previously reported.

Goodwill in our Space and Defense Controls segment is net of a $4,800 accumulated impairment loss at March 31, 2018.

Goodwill in our Medical Devices reporting unit, included in our Industrial Systems segment, is net of a $38,200 accumulated impairment loss at March 31, 2018.

The gross carrying amounts, accumulated amortization and amortization expense in the disclosures below reflect the full write off of intangible assets as of March 31, 2018 based on the expected cash flows over the remaining life of the assets in relation to restructuring actions taken in our Industrial Systems segment. Refer to Note 11, Restructuring, for additional disclosures.

The components of intangible assets are as follows:

		March 31, 2018		September 30, 2017	
	Weighted-Average Life (years)	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Customer-related	11	$147,256	$(96,394)	$175,872	$(128,019)
Technology-related	9	71,442	(50,665)	71,924	(55,069)
Program-related	19	69,020	(34,007)	66,458	(30,675)
Marketing-related	8	25,135	(18,642)	26,552	(19,251)
Other	10	4,563	(3,652)	4,379	(3,353)
Intangible assets	12	$317,416	$(203,360)	$345,185	$(236,367)

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.

Amortization of acquired intangible assets was $4,671 and $9,271 for the three and six months ended March 31, 2018 and $4,723 and $9,200 for the three and six months ended April 1, 2017. Based on acquired intangible assets recorded at March 31, 2018, amortization is expected to be approximately $17,400 in 2018, $15,100 in 2019, $12,900 in 2020, $10,500 in 2021 and $8,900 in 2022.

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Note 6 - 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:

	March 31, 2018	September 30, 2017
U.S. revolving credit facility	$480,000	$ 540,110
Senior notes	300,000	300,000
Securitization program	130,000	120,000
Obligations under capital leases	238	306
Senior debt	910,238	960,416
Less deferred debt issuance cost	(2,571)	(3,468)
Less current installments	(238)	(295)
Long-term debt	$907,429	$ 956,653

Our U.S. revolving credit facility matures on June 28, 2021. 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 $200,000 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.

At March 31, 2018, we had $300,000 aggregate principal amount of 5.25% senior notes due December 1, 2022 with interest paid semiannually on June 1 and December 1 of each year. 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 Securitization Program was extended on October 23, 2017 and now matures on October 23, 2019. The Securitization Program provides up to $130,000 of borrowing capacity. 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 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 March 31, 2018, our minimum borrowing requirement was $104,000.

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Note 7 - Product Warranties

In the ordinary course of business, we warrant our products against defects 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. Activity in the warranty accrual is summarized as follows:

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Warranty accrual at beginning of period	$27,748	$22,883	$25,848	$21,363
Warranties issued during current period	3,280	4,741	8,037	8,155
Adjustments to pre-existing warranties	(175)	(106)	(245)	(371)
Reductions for settling warranties	(3,007)	(4,419)	(5,922)	(5,463)
Foreign currency translation	409	173	537	(412)
Warranty accrual at end of period	$28,255	$23,272	$28,255	$23,272

Note 8 - 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 March 31, 2018, we had interest rate swaps with notional amounts totaling $150,000. The interest rate swaps effectively convert this amount of variable-rate debt to fixed-rate debt at 2.62%, including the applicable margin of 1.38% as of March 31, 2018. The interest will revert back to variable rates based on LIBOR plus the applicable margin upon the maturity of the interest rate swaps. These interest rate swaps mature at various times through June 23, 2020.

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 and the British pound, we had outstanding foreign currency forwards with notional amounts of $49,153 at March 31, 2018. These contracts mature at various times through February 28, 2020.

We use forward currency contracts to hedge our net investment in certain foreign subsidiaries. To mitigate the exposure in foreign currencies, we had an outstanding net investment hedge in Euro, with a notional amount of $28,722 at March 31, 2018, maturing in our third quarter of 2018.

These interest rate swaps, foreign currency contracts and net investment hedges are recorded in the consolidated condensed 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 condensed 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 the first six months of 2018 or 2017.

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Derivatives not designated as hedging instruments

We also have foreign currency exposure on balances, primarily intercompany, that are denominated in foreign currencies and are adjusted to current values using period-end exchange rates. The resulting gains or losses are recorded in the consolidated condensed statements of earnings. To minimize foreign currency exposure, we had foreign currency contracts with notional amounts of $78,648 at March 31, 2018. The foreign currency contracts are recorded in the consolidated condensed balance sheets at fair value and resulting gains or losses are recorded in the consolidated condensed statements of earnings. We recorded the following gains or 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:

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Net gain (loss)	$(2,381)	$(493)	$(3,009)	$ 901

Summary of derivatives

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

		March 31, 2018	September 30, 2017
Derivatives designated as hedging instruments:			
Foreign currency contracts	Other current assets	$ 228	$ 551
Foreign currency contracts	Other assets	11	50
Interest rate swaps	Other current assets	1,412	552
Interest rate swaps	Other assets	592	314
Net investment hedge	Other current assets	240	—
	Total asset derivatives	$ 2,483	$ 1,467
Foreign currency contracts	Other accrued liabilities	$ 1,355	$ 1,434
Foreign currency contracts	Other long-term liabilities	494	244
Interest rate swaps	Other accrued liabilities	—	10
Interest rate swaps	Other long-term liabilities	—	15
	Total liability derivatives	$ 1,849	$ 1,703
Derivatives not designated as hedging instruments:			
Foreign currency contracts	Other current assets	$ 101	$ 95
Foreign currency contracts	Other accrued liabilities	$ 469	$ 383

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Note 9 - 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.

	Classification	March 31, 2018	September 30, 2017
Foreign currency contracts	Other current assets	$ 329	$ 646
Foreign currency contracts	Other assets	11	50
Interest rate swaps	Other current assets	1,412	552
Interest rate swaps	Other assets	592	314
Net investment hedge	Other current assets	240	—
	Total assets	$ 2,584	$ 1,562
Foreign currency contracts	Other accrued liabilities	$ 1,824	$ 1,817
Foreign currency contracts	Other long-term liabilities	494	244
Interest rate swaps	Other accrued liabilities	—	10
Interest rate swaps	Other long-term liabilities	—	15
	Total liabilities	$ 2,318	$ 2,086

Our only financial instrument for which the carrying value differs from its fair value is long-term debt. At March 31, 2018, the fair value of long-term debt was $917,738 compared to its carrying value of $910,238. 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.

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Note 10 - Employee Benefit Plans

Net periodic benefit costs for our defined benefit pension plans are as follows:

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
U.S. Plans				
Service cost	$5,633	$6,021	$11,267	$12,043
Interest cost	8,073	7,635	16,146	15,271
Expected return on plan assets	(13,575)	(13,627)	(27,151)	(27,255)
Amortization of prior service cost (credit)	47	47	94	94
Amortization of actuarial loss	6,902	8,419	13,804	16,838
Pension expense for U.S. defined benefit plans	$7,080	$8,495	$14,160	$16,991
Non-U.S. Plans				
Service cost	$1,519	$1,514	$2,989	$3,046
Interest cost	1,092	746	2,147	1,497
Expected return on plan assets	(1,290)	(1,122)	(2,533)	(2,253)
Amortization of prior service cost (credit)	(15)	(27)	(29)	(54)
Amortization of actuarial loss	648	1,109	1,272	2,229
Pension expense for non-U.S. defined benefit plans	$1,954	$2,220	$3,846	$4,465

Pension expense for our defined contribution plans consists of:

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
U.S. defined contribution plans	$4,136	$3,586	$8,108	$7,256
Non-U.S. defined contribution plans	1,550	1,472	3,259	2,832
Total pension expense for defined contribution plans	$5,686	$5,058	$11,367	$10,088

In 2018, expected contributions for all of our U.S. defined benefit pension plans to be approximately $149,000.

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Note 11 - Restructuring
In 2018, we initiated restructuring actions in conjunction with exiting the wind pitch control business within our Industrial Systems segment. These actions will result in workforce reductions, principally in Germany and China. Charges taken consist of $7,329 of non-cash inventory reserves, $14,482 of non-cash charges, primarily for the impairment of long-lived assets, $7,439 for severance and $2,137 for other costs.
Restructuring activity for severance and other costs is as follows:

	Aircraft Controls	Industrial Systems	Corporate	Total
Balance at September 30, 2017	$ 130	$ —	$ 1,038	$ 1,168
Charged to expense - 2018 plan	—	31,387	—	31,387
Cash payments - 2016 plan	(130)	—	(298)	(428)
Non-cash charges - 2018 plan	—	(21,811)	—	(21,811)
Balance at March 31, 2018	$ —	$ 9,576	$ 740	$ 10,316

As of March 31, 2018, the restructuring accrual consists of $740 for the 2016 plan and $9,576 for the 2018 plan. Restructuring for all plans is expected to be paid by December 29, 2018, except portions classified as long-term liabilities based on payment arrangements.
Note 12 - Income Taxes
The effective tax rates for the three and six months ended March 31, 2018 were 45.6% and 79.2%, respectively. The effective tax rate for the three months ended March 31, 2018 is higher than would be expected by applying the U.S. federal statutory tax rate to earnings before income taxes primarily due to limited tax benefits associated with the restructuring charges taken in foreign jurisdictions of our Industrial Systems segment. The effective tax rate for the six months ended March 31, 2018 was also significantly impacted by the enactment of the Tax Cuts and Jobs Act (the "Act") of 2017.
The Act was enacted on December 22, 2017. It reduces the U.S. federal corporate tax rate from 35% to 21%, requires companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred and creates new taxes on certain foreign sourced earnings. As of March 31, 2018, we have not completed the accounting for the tax effects of enactment of the Act; however, as described below, we have made a reasonable estimate of the effects on the one-time transition tax, withholding taxes on earnings deemed to be repatriated and existing deferred tax balances. These amounts are provisional and subject to change as the determination of the impact of the income tax effects will require additional analysis of historical records, annual data and further interpretation of the Act from yet to be issued U.S. Treasury regulations.
During the six months ended March 31, 2018, we recorded a $31,300 one-time transition tax on undistributed foreign earnings deemed to be repatriated and a tax charge of $15,910 as an additional provision for taxes on undistributed earnings not considered to be permanently reinvested. No additional income taxes have been provided for any remaining undistributed foreign earnings not subject to the transition tax, or any additional outside basis difference inherent in these entities, as these amounts continue to be indefinitely reinvested in foreign operations. Determining the amount of unrecognized deferred tax liability related to any remaining undistributed foreign earnings not subject to the transition tax and additional outside basis difference in these entities is not practicable. These charges are partially offset by a $8,966 benefit due to the remeasurement of deferred tax assets and liabilities arising from a lower U.S. corporate tax rate, which took into account our decision to accelerate pension contributions into our 2017 pension plan year. This allows the pension contribution tax deduction to be taken in our 2017 federal income tax return which is taxed at the 35% federal rate.
The effective tax rate for the three and six months ended April 1, 2017 were 34.3% and 27.1%, respectively. The effective tax rate for the three months ended April 1, 2017 is impacted by higher earnings in jurisdictions with higher statutory tax rates and no tax benefit for the losses associated with certain held for sale non-core businesses in Space and Defense Controls. The effective tax rate for the six months ended April 1, 2017 is lower than would be expected by applying the U.S. federal statutory tax rate to earnings before income taxes primarily due to a significant portion of our earnings that come from foreign operations with lower tax rates. Additionally, our effective tax rate in 2017

includes tax benefits associated with selling our European space businesses.

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Note 13 - Accumulated Other Comprehensive Income (Loss)

The changes in AOCIL, net of tax, by component for the six months ended March 31, 2018 are as follows:

	Accumulated foreign currency translation (1)	Accumulated retirement liability	Accumulated gain (loss) on derivatives	Total
AOCIL at September 30, 2017	$ (83,166)	$ (251,865)	$ (460)	$ (335,491)
Other comprehensive income (loss) before reclassifications	30,661	(1,222)	136	29,575
Amounts reclassified from AOCIL	—	10,160	519	10,679
Other comprehensive income (loss)	30,661	8,938	655	40,254
Tax Cuts and Jobs Act, reclassification from AOCIL to retained earnings (2)	—	(47,209)	132	(47,077)
AOCIL at March 31, 2018	$ (52,505)	$ (290,136)	$ 327	$ (342,314)

(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.

(2) In the second quarter of 2018, we early adopted ASU 2018-02 and reclassified the stranded deferred tax effects resulting from the Tax Cuts and Jobs Act to retained earnings.

The amounts reclassified from AOCIL into earnings are as follows:

	Statement of earnings classification	Three Months Ended		Six Months Ended	
		March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Retirement liability:					
Prior service cost (credit)		$ (86)	$ 20	$ (171)	$ 39
Actuarial losses		7,423	9,406	14,819	18,823
Reclassification from AOCIL into earnings (1)		7,337	9,426	14,648	18,862
Tax effect		(1,796)	(3,424)	(4,488)	(6,851)
Net reclassification from AOCIL into earnings		$ 5,541	$ 6,002	$ 10,160	$ 12,011
Derivatives:					
Foreign currency contracts	Sales	$ (138)	$ 1,157	$ (256)	$ 2,454
Foreign currency contracts	Cost of sales	502	664	1,198	1,131
Interest rate swaps	Interest	(102)	63	(116)	178
Reclassification from AOCIL into earnings		262	1,884	826	3,763
Tax effect		(72)	(500)	(307)	(973)
Net reclassification from AOCIL into earnings		$ 190	$ 1,384	$ 519	$ 2,790

(1) The reclassifications are included in the computation of net periodic pension cost and postretirement benefit cost.

The amounts deferred in AOCIL are as follows:

	Net deferral in AOCIL - effective portion			
	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Foreign currency contracts	$ (1,655)	$ (323)	$ (827)	$ (2,109)
Interest rate swaps	630	69	1,247	763
Net gain (loss)	(1,025)	(254)	420	(1,346)
Tax effect	256	116	(284)	376

Net deferral in AOCIL of derivatives	$(769)	$(138)	$136	$(970)

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Note 14 - 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 Moog Inc. Retirement Savings Plan (RSP). 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 15 - Earnings per Share

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

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Basic weighted-average shares outstanding	35,770,089	35,888,053	35,771,247	35,878,552
Dilutive effect of equity-based awards	409,769	348,785	419,208	376,250
Diluted weighted-average shares outstanding	36,179,858	36,236,838	36,190,455	36,254,802

For the three and six months ended March 31, 2018, there were 21,887 and 17,432 common shares from equity-based awards, respectively, excluded from the calculation of diluted earnings per share as they would be anti-dilutive. For the three and six months ended April 1, 2017, there were 99,978 and 107,960 common shares from equity-based awards, respectively, excluded from the calculation of diluted earnings per share as they would be anti-dilutive.

During the second quarter of 2018, 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 June 1, 2018 to shareholders of record at the close of business on May 15, 2018.

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Note 16 - Segment Information
Effective October 1, 2017, we made changes to our segment reporting structure that resulted in three reporting segments. Our former Components segment has been separated and merged into Space and Defense Controls and Industrial Systems. All amounts have been restated to reflect this change.
Below are sales and operating profit by segment for the three and six months ended March 31, 2018 and April 1, 2017 and a reconciliation of segment operating profit to earnings before income taxes. Operating profit is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation 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, number of employees or profit.
Refer to Note 11, Restructuring, for the impact of amounts charged to expense that are reflected in the operating profit (loss) of the Industrial Systems segment.

	Three Months Ended		Six Months Ended	
	March 31, 2018	April 1, 2017	March 31, 2018	April 1, 2017
Net sales:				
Aircraft Controls	$311,439	$289,661	$589,973	$558,111
Space and Defense Controls	143,527	138,834	276,920	261,424
Industrial Systems	234,083	203,908	449,691	402,538
Net sales	$689,049	$632,403	$1,316,584	$1,222,073
Operating profit (loss):				
Aircraft Controls	$33,480	$31,181	$64,248	$54,292
Space and Defense Controls	16,841	11,381	33,130	20,469
Industrial Systems	(6,050)	22,265	13,196	42,428
Total operating profit	44,271	64,827	110,574	117,189
Deductions from operating profit:				
Interest expense	9,089	8,649	17,735	17,135
Equity-based compensation expense	1,499	986	3,500	3,154
Corporate and other expenses, net	8,014	6,989	15,836	12,209
Earnings before income taxes	$25,669	$48,203	$73,503	$84,691

The amounts reclassified for net sales and operating profit as a result of the revised segment reporting structure for the three and six months ended April 1, 2017 are as follows:

	Three Months Ended	Six Months Ended
Net sales:		
Space and Defense Controls	$32,986	$62,646
Industrial Systems	88,477	174,708
Total	$121,463	$237,354
Operating profit:		
Space and Defense Controls	$893	$2,885
Industrial Systems	9,947	19,409
Total	$10,840	$22,294

Segment assets for Space and Defense Controls and Industrial Systems are approximately $627,000 and $1,229,000, respectively, as of March 31, 2018, primarily as a result of the change to our segment reporting structure.

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Note 17 - Related Party Transactions

On November 20, 2017, John Scannell was elected to 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 for the six months ended March 31, 2018 totaled $11,218. At March 31, 2018, we held a $15,000 interest rate swap with M&T Bank and outstanding leases with a total original cost of $27,516. 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 6, Indebtedness.

Note 18 - 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 may still be significant effort required to complete the ultimate deliverable. Future variability in internal cost 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 $47,418 of standby letters of credit issued by a bank to third parties on our behalf at March 31, 2018.

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Item 2. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

The following should be read in conjunction with Management’s Discussion and Analysis of Financial Condition and Results of Operations contained in the Company’s Annual Report filed on Form 10-K for the fiscal year ended September 30, 2017. All references to years in this Management’s Discussion and Analysis of Financial Condition and Results of Operations are to fiscal years and amounts may differ from reported values due to rounding.

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.
- Commercial 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 - injection molding, metal forming, heavy industry, material and automotive testing and pilot training simulators.
- Energy market - power generation, oil and gas exploration and wind energy.
- Medical market - enteral clinical nutrition and infusion therapy pumps, ultrasonic sensors and surgical handpieces and CT scanners.

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, Costa Rica, India, China, Japan, Italy, Netherlands, Canada, Ireland and Luxembourg.

We have long-term contracts with some of our customers. These contracts are predominantly within Aircraft Controls and Space and Defense Controls and represent 38%, 34% and 33% of our sales in 2017, 2016 and 2015, respectively. We recognize revenue on these contracts using the percentage of completion, cost-to-cost method of accounting as work progresses toward completion. The remainder of our sales are recognized when the risks and rewards of ownership and title to the product are transferred to the customer, principally as units are delivered or as service obligations are satisfied. This method of revenue recognition is predominantly used within the Industrial Systems segment, as well as with aftermarket activity.

We concentrate on providing our customers with products designed and manufactured to the highest quality standards. Our products are applied in demanding applications, "When Performance Really Matters®." We believe we have achieved a leadership position in the high performance, precision controls market, by capitalizing on our core foundational strengths, which are our technical experts working collaboratively around the world and the capabilities we deliver for mission-critical solutions. 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 their most demanding technical problems, we have been able to innovate our control product franchise from one market to another, organically growing from a high-performance components supplier to a high-performance systems supplier. In addition, we continue achieving substantial content positions on the platforms on which we currently participate, seeking to be the dominant supplier in the current niche markets we serve. We also look for innovation in all aspects of our business, employing new technologies to improve productivity and to develop innovative business models.

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Our fundamental 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. Additionally, we take a balanced approach to capital deployment, which may include strategic acquisitions or further share buyback activity, in order to maximize shareholder returns over the long-term.

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 March 29, 2018, we acquired VUES Brno s.r.o, located in the Czech Republic and Germany, for $63 million. VUES designs and manufactures customized electric motors, generators and solutions. This operation is included in our Industrial Systems segment.

On October 3, 2017, we, in collaboration with SIA Engineering Company, announced the joint venture company, Moog Aircraft Services Asia ("MASA"), in Singapore, of which we currently hold a 51% ownership. MASA is intended to provide maintenance, repair and overhaul services for our manufactured flight control systems. As we hold a majority ownership in MASA, but share voting control, we are accounting for this investment using the equity method. At March 31, 2018, we have made total contributions of $4 million to MASA and intend to make one additional contribution of $2 million during 2018. This operation is included in our Aircraft Controls segment.

In 2017, we acquired Rotary Transfer Systems, a manufacturer of electromechanical systems, located in Germany and France for $43 million. This acquisition is included in our Industrial Systems segment. We also sold non-core businesses in our Space and Defense Controls segment for $7 million and recorded losses in other expense of $13 million related to the sales.

CRITICAL ACCOUNTING POLICIES

On a regular basis, we evaluate the critical accounting policies used to prepare our consolidated financial statements, including, but not limited to, revenue recognition on long-term contracts, contract and contract-related loss reserves, reserves for inventory valuation, reviews for impairment of goodwill, reviews for impairment of long-lived assets, pension assumptions and income taxes. See Note 12 of the Consolidated Condensed Financial Statements included in Item 1, Financial Statements of this report for the impact of the enactment of the Tax Cuts and Jobs Act of 2017.

Other than that described below, there have been no material changes in critical accounting policies in the current year from those disclosed in our 2017 Annual Report on Form 10-K.

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Reviews for Impairment of Goodwill

Interim Test

Effective October 1, 2017, we changed our segment reporting structure from four to three reporting segments. The former Components reporting segment has been divided and merged into the Space and Defense Controls and Industrial Systems reporting segments. This change also impacted the reporting units we use to review goodwill for impairment. Based on the accounting rules that require aggregation of components with similar economic characteristics, we have changed the number of reporting units from five to four - Aircraft Controls, Space and Defense Controls, Industrial Systems and Medical Devices.

We transferred or allocated the assets and liabilities of the former Components business including the proportionate share of goodwill based on the relative fair value of the business to the new respective reporting units - Space and Defense Controls and Industrial Systems. We then compared the fair values to the carrying values of the reporting units and the resulting fair values exceeded the carrying values, so we determined that goodwill was not impaired. The fair value of each of these two reporting units exceeded the carrying amounts by over 100%. While any individual assumption could differ from those that we used, we believe the overall fair values of these reporting units are reasonable, as the values are derived from a mix of reasonable assumptions. Had we used discount rates that were 100 basis points higher or a terminal growth rate that was 100 basis points lower than those we assumed, the fair values of each of these reporting units would have continued to exceed their carrying amounts by at least 80%.

RECENT ACCOUNTING PRONOUNCEMENTS

See Note 1 of the Consolidated Condensed Financial Statements included in Item 1, Financial Statements of this report for further information regarding Financial Accounting Standards Board issued Accounting Standards Updates ("ASU").

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CONSOLIDATED RESULTS OF OPERATIONS

(dollars and shares in millions, except per share data)	Three Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance	Six Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance
Net sales	$689	$632	$57	9%	$1,317	$1,222	$95	8%
Gross margin	28.0%	29.3%			28.6%	29.3%		
Research and development expenses	$34	$37	$(3)	(8%)	$67	$72	$(5)	(7%)
Selling, general and administrative expenses as a percentage of sales	14.5%	13.8%			14.9%	14.1%		
Interest expense	$9	$9	$—	5%	$18	$17	$1	4%
Restructuring expense	$24	$—	$24	n/a	$24	$—	$24	n/a
Other	$—	$4	$(4)	(106%)	$(1)	$12	$(13)	(108%)
Effective tax rate	45.6%	34.3%			79.2%	27.1%		
Net earnings attributable to Moog	$14	$32	$(18)	(56%)	$15	$63	$(47)	(76%)
Diluted earnings per share attributable to Moog	$0.39	$0.88	$(0.49)	(56%)	$0.42	$1.73	$(1.31)	(76%)

Net sales increased across all of our segments in the second quarter and in the first half of 2018 compared to the second quarter and the first half of 2017. Stronger foreign currencies, primarily the Euro relative to the U.S. Dollar, increased sales $15 million and $23 million, respectively.

Gross margin decreased in the second quarter of 2018 compared to the second quarter of 2017. Gross profit in the second quarter of 2018 includes $7 million of inventory write-down associated with the restructuring expense in Industrial Systems. In addition, Aircraft Controls' gross margin declined as cost growth on fixed-price development programs and lower amounts of high-margin legacy commercial OEM sales offset a favorable sales mix from higher military OEM and commercial aftermarket sales. In the first half of 2018 compared to the first half of 2017, gross margin excluding the second quarter inventory write-down was relatively unchanged. Improved sales mixes in Aircraft Controls and in Industrial Systems were offset by a negative sales mix in Space and Defense Controls, due to the reduced amount of last year's favorable defense controls sales.

Research and development expenses decreased in the second quarter and in the first half of 2018 compared to the same periods of 2017. Within Aircraft Controls, research and development expenses decreased $4 million and $8 million, respectively, as we had lower activity across our major commercial OEM programs. The reduced spend was partially offset by increases in research and development activities across our other two segments.

Selling, general and administrative expenses as a percentage of sales increased in the second quarter and in the first half of 2018 compared to the same periods of 2017. Administrative expense increased $6 million and $9 million, respectively, due to higher planned selling expense in select growth markets, primarily in Industrial Systems, acquisition-related expenses and higher medical claims.

After years of investment in the wind pitch control business, we concluded we no longer have a viable business model, and that our best option is to phase out our participation in this market over the next six months. Therefore, in the second quarter of 2018, we incurred $31 million of restructuring expense in Industrial Systems. Of the total expense, the charges consist of $7 million of non-cash inventory reserves, $14 million of non-cash charges, primarily for the impairment of long-lived assets, $7 million for severance and $2 million for other costs.

Other expense in the second quarter and in the first half of 2017 included losses associated with selling our non-core businesses in Space and Defense Controls.

The effective tax rate in the second quarter of 2018 was impacted by limited tax benefits associated with the restructuring charges taken in foreign jurisdictions of our Industrial Systems segment. The effective tax rate in the first half of 2018 was also significantly impacted by the enactment of the Tax Cuts and Jobs Act of 2017. Excluding the one-time special impacts due to the Act, the effective tax rate for the first half of 2018 was 29.2%.

Our effective tax rate in the first half of 2017 is lower than the U.S. statutory tax rate as result of earnings taxed in foreign jurisdictions with lower statutory tax rates and includes the tax benefits associated with selling our European space businesses in the first quarter of 2017.

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Other comprehensive income in the first half of 2018 includes $31 million of foreign currency translation income, whereas other comprehensive income in the first half of 2017 includes $29 million of foreign currency translation loss. Foreign currency translation adjustments increased $59 million during the first half of 2018 compared to the first half of 2017, primarily attributable to changes in the Euro and the British Pound.

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SEGMENT RESULTS OF OPERATIONS

Effective October 1, 2017, we changed our segment reporting structure to three reporting segments. Our former Components segment has been separated and merged into Space and Defense Controls and Industrial Systems. All amounts have been restated to conform to the current presentation.

Operating profit, as presented below, is net sales less cost of sales and other operating expenses, excluding interest expense, equity-based compensation 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 16 of the Notes to Consolidated Condensed Financial Statements included in this report.

Aircraft Controls

(dollars in millions)	Three Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance	Six Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance
Net sales - military aircraft	$156	$137	$ 19	14 %	$280	$264	$ 16	6 %
Net sales - commercial aircraft	156	153	3	2 %	310	294	16	6 %
	$311	$290	$ 22	8 %	$590	$558	$ 32	6 %
Operating profit	$33	$31	$ 2	7 %	$64	$54	$ 10	18 %
Operating margin	10.8 %	10.8 %			10.9 %	9.7 %		
Backlog					$583	$594	$ (11)	(2 %)

Aircraft Controls' net sales increased in the second quarter of 2018 compared to the second quarter of 2017, driven primarily by increases in military OEM sales. Aircraft Controls' net sales also increased in the first half of 2018 compared to the first half of 2017, driven by increased military OEM and commercial aftermarket sales.

In the second quarter of 2018 compared to the second quarter of 2017, military OEM sales increased $21 million. Sales for foreign military programs increased $6 million, military navigational aides increased $4 million after an unusually low activity in the prior year's quarter and helicopters increased $4 million. In addition, sales for the F-35 program increased $3 million due to higher orders. Partly offsetting the OEM sales increase was lower aftermarket sales, driven primarily by lower sales volumes on the V-22 program. The total military aircraft sales growth in the second quarter of 2018 contributed to the sales growth in the first half of 2018 after a relatively flat first quarter.

In the second quarter and in the first half of 2018 compared to the same periods of 2017, commercial aftermarket sales increased $11 million and $18 million, respectively. Specifically, aftermarket sales for legacy Boeing programs increased $6 million and $10 million, respectively, as a result of business recapture activities. Also higher initial provisioning orders for the Boeing 787 and Airbus A350 programs increased aftermarket sales $4 million and $8 million.

In the second quarter, lower commercial OEM sales mostly offset the commercial aftermarket sales increase, as legacy Boeing volumes decreased sales $5 million and delays and unfavorable order timing on Airbus programs decreased sales an additional $4 million. In the first half of 2018, commercial OEM sales for Boeing decreased $4 million, as legacy volume declines offset 787 growth.

Operating margin in the second quarter of 2018 remained unchanged compared to the second quarter of 2017. Operating profit benefited $4 million on lower research and development expenses, as we had lower activity on our major commercial OEM programs. However, cost growth on fixed-price funded military development programs and lower amounts of high-margin legacy commercial OEM sales more than offset a favorable sales mix from higher military OEM and commercial aftermarket sales. Operating margin in the first half of 2018 increased compared to the operating margin in the first half of 2017. Research and development expenses decreased $8 million due to lower activity on our major commercial OEM programs. Additionally, operating profit benefited from higher amounts of foreign military sales.

The decrease of twelve-month backlog for Aircraft Controls at March 31, 2018 compared to April 1, 2017 is primarily due to the timing of orders for the F-35, partly offset by increasing orders for major commercial OEM programs.

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Space and Defense Controls

	Three Months Ended				Six Months Ended			
(dollars in millions)	March 31, 2018	April 1, 2017	$ Variance	% Variance	March 31, 2018	April 1, 2017	$ Variance	% Variance
Net sales	$144	$139	$ 5	3 %	$277	$261	$ 15	6 %
Operating profit	$17	$11	$ 5	48 %	$33	$20	$ 13	62 %
Operating margin	11.7 %	8.2 %			12.0 %	7.8 %		
Backlog					$410	$371	$ 39	11 %

Space and Defense Controls' net sales increased in our space market but declined in our defense market in the second quarter of 2018 compared to the second quarter of 2017. In the first half of 2018 compared to the first half of 2017, sales increased in both our space and defense markets. Partially offsetting the sales growth in our space market were declines of $5 million in the quarter and $11 million in the first half due to lost sales associated the 2017 divestitures of non-core businesses.

In the second quarter of 2018 compared to the second quarter of 2017, sales in our space market increased $9 million. Specifically, new satellite avionics programs increased sales $7 million and production ramp ups on launch vehicle programs increased sales $7 million. These sales increases were partially offset by the lost sales associated with the divestitures. Also in the second quarter of 2018 compared to the second quarter of 2017, sales in our defense market decreased $4 million. Specifically, sales decreased $7 million in total for both domestic and foreign defense vehicles due to production wind downs and timing delays. Additionally, we had lower spares sales and order push outs for our naval products, which decreased sales $3 million. Partly offsetting these declines was $4 million of higher defense components sales.

Sales also increased in the first half of 2018 compared to the first half of 2017. Sales increased $11 million in our space market driven by the strong avionics and launch vehicle sales, including the impact of the lost sales associated with last year's divestitures. Sales also increased $4 million in our defense market in the first half of 2018 compared to the first half of 2017. Higher orders for defense components increased sales $7 million, but were partially offset by the second quarter naval sales decline.

Operating margin increased in the second quarter and in the first half of 2018 compared to the same periods of 2017 due to the absence of last year's losses associated with selling our non-core businesses. Operating margin excluding the losses would have been 11.4% and 13.0%, respectively in 2017. The decline in operating margin in the first half of 2018 compared to the adjusted first half of 2017 is due to a negative sales mix, as the prior year's defense production programs have since wound down.

Twelve-month backlog for Space and Defense Controls at March 31, 2018 compared to April 1, 2017 increased as growth in orders for components and security programs was partially offset by program completions for satellite avionics.

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Industrial Systems

(dollars in millions)	Three Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance	Six Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance
Net sales	$234	$204	$ 30	15 %	$450	$403	$ 47	12 %
Operating profit (loss)	$(6)	$22	$ (28)	(127 %)	$13	$42	$ (29)	(69 %)
Operating margin	(2.6 %)	10.9 %			2.9 %	10.5 %		
Backlog					$287	$236	$ 51	22 %

Industrial Systems' net sales increased across our four markets in the second quarter and in the first half of 2018 compared to the same periods of 2017. Also, stronger foreign currencies, primarily the Euro relative to the U.S. Dollar, increased sales $11 million and $17 million, respectively. Additionally, the recent acquisition of Rotary Transfer Systems increased sales $6 million and $12 million, respectively, primarily in our industrial automation market.

Excluding the currency effects on sales in the second quarter and in the first half of 2018 compared to the same periods of 2017, sales increased in our industrial automation market $8 million and $13 million, respectively. The increases were primarily driven by the Rotary Transfer Systems acquisition, as well as the stronger macro economic growth. Sales also increased $4 million and $7 million, respectively, in our medical market driven by higher orders for our components. In addition, sales increased $4 million and $6 million, respectively, in our energy market driven by increased shipments for energy generation and exploration products. Finally, sales increased $2 million and $5 million, respectively, in our simulation and test market due to the timing of shipments for aerospace and auto test applications.

After years of investment in the wind pitch control business, we concluded we no longer have a viable business model, and that our best option is to phase out our participation in this market over the next six months. Therefore, in the second quarter of 2018, we incurred $31 million of restructuring expense in Industrial Systems. The total expense includes $7 million for inventory reserves, $14 million of non-cash charges, primarily for the impairment of long-lived assets, $7 million for severance and $2 million for other costs.

Operating margin decreased in the second quarter of 2018 compared to the second quarter of 2017 due to the restructuring expense. Excluding the effect of this expense, operating margin in the second quarter of 2018 was relatively unchanged from operating margin in the second quarter of 2017. Incremental margin from the higher sales volume offset higher operating expenses, including increased investments in research and development and selling. Operating margin excluding the effect of the restructuring expense in the first half of 2018 was lower compared to the same period of 2017. Through the first half of 2018, higher operating expenses more than offset the incremental margin from higher sales volumes.

The higher level of twelve-month backlog in Industrial Systems at March 31, 2018 compared to April 1, 2017 is mostly due to higher orders in our industrial automation market and for our energy generation and exploration products.

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CONSOLIDATED AND SEGMENT OUTLOOK

(dollars in millions)	2018	2017	2018 vs. 2017 $ Variance	2018 vs. 2017 % Variance
Net sales:				
Aircraft Controls	$1,195	$1,125	$70	6 %
Space and Defense Controls	557	529	28	5 %
Industrial Systems	934	843	91	11 %
	$2,687	$2,498	$189	8 %
Operating profit:				
Aircraft Controls	$128	$114	$14	12 %
Space and Defense Controls	65	49	16	34 %
Industrial Systems	69	88	(19)	(22 %)
	$261	$250	$11	4 %
Operating margin:				
Aircraft Controls	10.7 %	10.1 %		
Space and Defense Controls	11.7 %	9.2 %		
Industrial Systems	7.4 %	10.4 %		
	9.7 %	10.0 %		

2018 Outlook – We expect that all three segments will contribute to higher sales in 2018, driven primarily by military OEM sales in Aircraft Controls and industrial automation sales in Industrial Systems. We expect 2018 operating margin will decrease due to the second quarter's restructuring expense in Industrial Systems. Operating margin excluding the effect of this expense will be 10.9%, as margin expansion will be driven by the absence of 2017's losses associated with divesting non-core businesses, as well as incremental margin from higher sales. We expect that the impact of the Tax Cuts and Jobs Act will result in an unusually high effective tax rate of 48% in 2018. This will result in a 31% decrease in net earnings attributable to common shareholders to $97 million, and diluted earnings per share will range between $2.47 and $2.87 with a midpoint of $2.67. Excluding the impacts from the restructuring charge and the special impacts from the Tax Act, we expect an effective tax rate of 26.7%, net earnings attributable to common shareholders of $159 million and diluted earnings per share will range between $4.20 and $4.60, with a midpoint of $4.40, an increase of 13% compared to 2017.

2018 Outlook for Aircraft Controls – We expect 2018 sales in Aircraft Controls will increase primarily due to higher military OEM sales, driven by the continued ramp up of the F-35 program and by higher sales volumes on various other legacy programs. Partially offsetting the increases is an expected sales decline of legacy Boeing OEM programs. We expect 2018 operating margin will increase compared to 2017. We expect that research and development costs will decrease $11 million and that we will continue to realize the benefits of cost saving activities. However, we expect a negative sales mix, as sales on our mature commercial programs are replaced with sales growth on newer commercial programs.

2018 Outlook for Space and Defense Controls – We expect 2018 sales in Space and Defense Controls will increase due to sales growth from launch vehicles and satellite programs. Also, within our defense market, we expect higher missile systems and security sales will offset a decline in defense controls sales. We expect 2018 operating margin will increase, as the losses associated with divesting non-core businesses do not repeat.

2018 Outlook for Industrial Systems – We expect 2018 sales in Industrial Systems to increase across all of our major markets, lead primarily by growth in our industrial automation products. Also, we expect favorable currency adjustments and the recent acquisition of VUES Brno s.r.o to contribute to the sales growth. We expect 2018 operating margin will decrease due to the second quarter's restructuring expense. Operating margin excluding this expense will increase as we benefit from incremental margin on higher sales volumes.

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FINANCIAL CONDITION AND LIQUIDITY

(dollars in millions)	Six Months Ended March 31, 2018	April 1, 2017	$ Variance	% Variance
Net cash provided (used) by:				
Operating activities	$ 45	$ 122	$ (76)	(63 %)
Investing activities	(90)	(31)	(59)	188 %
Financing activities	(79)	(62)	(17)	28 %

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 March 31, 2018, our cash balances were $256 million, which is 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. Due to provisions in the Tax Cuts and Jobs Act, we plan to repatriate substantial amounts of our existing offshore cash and future earnings back to the U.S. Through the first half of 2018, we have repatriated $91 million.

Operating activities

Net cash provided by operating activities decreased in the first half of 2018 compared to the same period of 2017. Cash used by net pension and retirement liabilities increased $61 million, primarily due to an incremental pension contribution in the second quarter of 2018. Also, cash provided by inventory decreased $35 million, primarily in Aircraft Controls.

Investing activities

Net cash used by investing activities in the first half of 2018 included $44 million for capital expenditures and $42 million for the acquisition in our Industrial Systems segment, while net cash used by investing activities in 2017 included $30 million for capital expenditures.

We expect our 2018 capital expenditures to be approximately $95 million, due to facilities investments supporting the increased production of the F-35 program, as well as engine propulsion testing.

Financing activities

Net cash used by financing activities in the first half of both 2018 and 2017 include net payments on our credit facility. Also, we expect to pay approximately $18 million of cash dividends in 2018.

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 results of operations or financial condition.

Contractual Obligations and Commercial Commitments

Our contractual obligations and commercial commitments have not changed materially from the disclosures in our 2017 Annual Report on Form 10-K, with the exception of tax payments required as a result of the Tax Cuts and Jobs Act of 2017 and accelerated pension contributions into our 2017 pension plan year. See Notes 10 and 12 of the Consolidated Condensed Financial Statements included in Item 1, Financial Statements of this report for the impact.

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CAPITAL STRUCTURE AND RESOURCES

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

Our U.S. revolving credit facility matures on June 28, 2021. The 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 $200 million to the credit facility upon satisfaction of certain conditions. The U.S. revolving credit facility had an outstanding balance of $480 million at March 31, 2018. The weighted-average interest rate on all of the outstanding credit facility borrowings was 3.19% and is based on LIBOR plus the applicable margin, which was 1.38% at March 31, 2018 and will increase to 1.63% during the third quarter of 2018. 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, including letters of credit, to EBITDA for the most recent four quarters, is 3.5. 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.

At March 31, 2018, we had $586 million of unused capacity, including $573 million from the U.S. revolving credit facility after considering standby letters of credit. However, our leverage ratio covenant limits our total borrowing capacity to $466 million as of March 31, 2018.

We have $300 million aggregate principal amount of 5.25% senior notes due December 1, 2022 with interest paid semiannually on June 1 and December 1 of each year. 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.

We have a trade receivables securitization facility (the "Securitization Program"), which was extended on October 23, 2017 and now matures on October 23, 2019. 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. 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 $130 million at March 31, 2018. The Securitization Program has a minimum borrowing requirement, which was $104 million at March 31, 2018. Interest on the secured borrowings under the Securitization Program was 2.71% at March 31, 2018 and is based on 30-day LIBOR plus an applicable margin.

Net debt to capitalization was 34% at March 31, 2018 and 33% at September 30, 2017.

We believe that our cash on hand, cash flows from operations and available borrowings under short and long-term arrangements will continue to be sufficient to meet our operating needs.

During the second quarter of 2018, 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 June 1, 2018 to shareholders of record at the close of business on May 15, 2018.

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 9.7 million shares for

$650 million as of March 31, 2018.

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ECONOMIC CONDITIONS AND MARKET TRENDS

We operate within the aerospace and defense and industrial markets. Our aerospace and defense markets are affected by market conditions and program funding levels, while our industrial markets are influenced by general capital investment trends and economic conditions. A common factor throughout our markets is the continuing demand for technologically advanced products.

Aerospace and Defense

Approximately two-thirds of our 2017 sales were generated in aerospace and defense markets. 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. 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 Joint Strike Fighter, 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. Our security and surveillance product line is dependent on government funding at federal and local levels, as well as private sector demand.

Reductions in the U.S. Department of Defense's mandatory and discretionary budgeted spending, which became effective on March 1, 2013, resulting from the Budget Control Act of 2011, has had ramifications for the domestic aerospace and defense market. As originally passed, the Budget Control Act provided that, in addition to an initial significant reduction in future domestic defense spending, further automatic cuts to defense spending authorization (which is generally referred to as sequestration) of approximately $500 billion through the Federal Government's 2021 fiscal year would be triggered by the failure of Congress to produce a deficit reduction bill. The sequestration spending cuts were intended to be uniform by category for programs, projects and activities within accounts. The Bipartisan Budget Act of 2013 and the Bipartisan Budget Act of 2015 provided stability and modest growth in Department of Defense spending through 2017. However, future budgets beyond 2017 are uncertain with respect to the overall levels of defense spending. Currently, we expect approximately $740 million of U.S. defense sales in 2018.

The commercial aircraft market is dependent on a number of factors, including global demand for air travel, which generally follows underlying economic growth. As such, the commercial aircraft market has historically exhibited cyclical swings which tend to track the overall economy. In recent years, the development of new, more fuel-efficient commercial air transports has helped drive increased demand in the commercial aircraft market, as airlines replace older, less fuel-efficient aircraft with newer models in an effort to reduce operating costs. The aftermarket is driven by usage of the existing aircraft fleet and the age of the installed fleet, and is impacted by fleet re-sizing programs for passenger and cargo aircraft. Changes in aircraft utilization rates affect the need for maintenance and spare parts impacting aftermarket sales. Boeing and Airbus have historically adjusted production in line with air traffic volume. Demand for our commercial aircraft products is in large part dependent on new aircraft production, which is increasing as Boeing and Airbus work to fulfill large backlogs of unfilled orders.

The commercial space market is comprised of large satellite customers, traditionally 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 replacement and global navigation needs. The space market is also partially dependent on the governmental-authorized levels of funding for satellite communications, as well as investment for commercial and exploration activities.

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Industrial

Approximately one-third of our 2017 sales were generated in industrial markets. Within industrial, we serve three end markets: industrial automation, energy and medical.

The industrial automation market we serve is influenced by several factors including capital investment, product innovation, economic growth, cost-reduction efforts and technology upgrades. We experience challenges from the need to react to the demands of our customers, who are in large part sensitive to international and domestic economic conditions.

The energy market we serve is affected by changing oil and natural gas prices, global urbanization, the resulting change in supply and demand for global energy and the political climate and corresponding public support for investments in renewable energy generation capacity. Historically, drivers for global growth include investments in power generation infrastructure, including renewable energy, and exploration in search of new oil and gas resources. However, the significant decline in the price of crude oil has reduced investment in exploration activities. This reduced investment has directly affected our energy business. Currently, we expect approximately $34 million of oil exploration-related sales in 2018, down from approximately $100 million in 2014.

The medical market we serve 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. Advances in medical technology and medical treatments have had the effect of extending average life spans, in turn resulting in greater need for medical services. These same technology and treatment advances also drive increased demand from the general population as a means to improve quality of life. Access to medical insurance, whether through government funded health care plans or private insurance, also affects the demand for medical services.

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-quarter of our 2017 sales were denominated in foreign currencies. During the first six months of 2018, average foreign currency rates generally strengthened against the U.S. dollar compared to 2017. The translation of the results of our foreign subsidiaries into U.S. dollars increased sales by $23 million compared to the same period one year ago.

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Cautionary Statement

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,” “projects,” “approximate,” “estimates,” “predicts,” “potential,” “outlook,” “forecast,” “anticipates,” “presume” and “assume,” 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. These important factors, risks and uncertainties include:

- the markets we serve are cyclical and sensitive to domestic and foreign economic conditions and events, which may cause our operating results to fluctuate;
- we operate in highly competitive markets with competitors who may have greater resources than we possess;
- 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;
- we make estimates in accounting for long-term contracts, and changes in these estimates may have significant impacts on our earnings;
- we enter into fixed-price contracts, which could subject us to losses if we have cost overruns;
- we may not realize the full amounts reflected in our backlog as revenue, which could adversely affect our future revenue and growth prospects;
- 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;
- contracting on government programs is subject to significant regulation, including rules related to bidding, billing and accounting kickbacks and false claims, and any non-compliance could subject us to fines and penalties or possible debarment;
- 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;
- our new product research and development efforts may not be successful which could reduce our sales and earnings;
- our inability to adequately enforce and protect our intellectual property or defend against assertions of infringement could prevent or restrict our ability to compete;
- our business operations may be adversely affected by information systems interruptions, intrusions or new software implementations;
- our indebtedness and restrictive covenants under our credit facilities could limit our operational and financial flexibility;
- 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;
- a write-off of all or part of our goodwill or other intangible assets could adversely affect our operating results and net worth;
- our sales and earnings may be affected if we cannot identify, acquire or integrate strategic acquisitions, or if we engage in divesting activities;
- our operations in foreign countries expose us to political and currency risks and adverse changes in local legal and regulatory environments;
- unforeseen exposure to additional income tax liabilities may affect our operating results;
- government regulations could limit our ability to sell our products outside the United States and otherwise adversely affect our business;
- governmental regulations and customer demands related to conflict minerals may adversely impact our operating results;
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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;

- future terror attacks, war, natural disasters or other catastrophic events beyond our control could negatively impact our business;
- our operations are subject to environmental laws, and complying with those laws may cause us to incur significant costs; and
- we are involved in various legal proceedings, the outcome of which may be unfavorable to us.

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These factors are not exhaustive. 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.

Item 3. Quantitative and Qualitative Disclosures about Market Risk.

Refer to the Company’s Annual Report on Form 10-K for the year ended September 30, 2017 for a complete discussion of our market risk. There have been no material changes in the current year regarding this market risk information.

Item 4. Controls and Procedures.

(a) 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.

(b) Changes in Internal Control over Financial Reporting. There have been no changes during the most recent fiscal quarter that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

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PART II OTHER INFORMATION

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

(c) The following table summarizes our purchases of our common stock for the quarter ended March 31, 2018.

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)
December 31, 2017 - January 31, 2018	64,460	$ 88.89	—	3,349,819
February 1, 2018 - February 28, 2018	8,692	83.99	100	3,349,719
March 1, 2018 - March 31, 2018	181	85.61	—	3,349,719
Total	73,333	$ 88.30	100	3,349,719

(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") at average prices as follows: 38,669 shares at $89.01 per share during January; and 7,750 shares at $83.74 per share during February. In connection with the issuance of shares to the Employee Stock Purchase Plan ("ESPP"), we purchased 21,871 Class B shares at $88.74 per share from the SECT.

(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. In January, we accepted delivery of 3,920 shares at $88.49 per share, in February we accepted delivery of 842 shares at $86.31 per share and in March, we accepted delivery of 181 shares at $85.61 per share, 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 February, we purchased 100 Class B shares at an average price of $83.95 per share.

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Item 6. Exhibits.

(a) Exhibits

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.

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.

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

101 Interactive Date files (submitted electronically herewith)

(101.INS) XBRL Instance 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 Quarterly Report on Form 10-Q 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.

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SIGNATURES

Pursuant to the requirements 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)
Date:	April 27, 2018	By /s/ John R. Scannell John R. Scannell Chairman Chief Executive Officer (Principal Executive Officer)
Date:	April 27, 2018	By /s/ Donald R. Fishback Donald R. Fishback Vice President Chief Financial Officer (Principal Financial Officer)
Date:	April 27, 2018	By /s/ Jennifer Walter Jennifer Walter Vice President - Finance Controller (Principal Accounting Officer)