CARPENTER TECHNOLOGY CORP
Form 10-Q
February 01, 2018
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended December 31, 2017

or

o 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 1-5828

CARPENTER TECHNOLOGY CORPORATION
(Exact name of Registrant as specified in its Charter)

Delaware	23-0458500
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1735 Market Street, 15th Floor Philadelphia, Pennsylvania	19103
(Address of principal executive offices)	(Zip Code)

610-208-2000
(Registrant's telephone number, including area code)

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 x No o

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and “emerging growth company” in Rule 12b-2 of the Exchange Act.

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

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

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

The number of shares outstanding of the issuer’s common stock as of January 25, 2018 was 46,916,395.

Table of Contents

CARPENTER TECHNOLOGY CORPORATION
FORM 10-Q
INDEX

Table of Contents

PART I - FINANCIAL INFORMATION
Item 1. Financial Statements

CARPENTER TECHNOLOGY CORPORATION
CONSOLIDATED BALANCE SHEETS
(Unaudited)
($ in millions, except share data)

	December 31, 2017	June 30, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	$ 20.7	$66.3
Accounts receivable, net	297.2	290.4
Inventories	771.8	690.4
Other current assets	69.8	46.5
Total current assets	1,159.5	1,093.6
Property, plant and equipment, net	1,298.7	1,316.8
Goodwill	263.4	263.4
Other intangibles, net	61.6	64.9
Deferred income taxes	4.1	7.6
Other assets	156.8	131.8
Total assets	$ 2,944.1	$2,878.1
LIABILITIES		
Current liabilities:		
Short-term credit agreement borrowings	$ 9.3	$—
Current portion of long-term debt	55.0	55.0
Accounts payable	205.1	201.1
Accrued liabilities	118.4	139.9
Total current liabilities	387.8	396.0
Long-term debt, net of current portion	548.3	550.0
Accrued pension liabilities	369.7	378.3
Accrued postretirement benefits	123.4	122.6
Deferred income taxes	128.1	184.8
Other liabilities	50.0	47.8
Total liabilities	1,607.3	1,679.5
Contingencies and commitments (see Note 8)		
STOCKHOLDERS' EQUITY		
Common stock — authorized 100,000,000 shares; issued 55,450,861 shares at December 31, 2017 and 55,349,658 shares at June 30, 2017; outstanding 46,894,896 shares at December 31, 2017 and 46,753,180 shares at June 30, 2017	277.3	276.7
Capital in excess of par value	294.4	284.8
Reinvested earnings	1,420.1	1,321.8
Common stock in treasury (8,555,965 shares and 8,596,478 shares at December 31, 2017 and June 30, 2017, respectively), at cost	(339.9)	(341.6)
Accumulated other comprehensive loss	(315.1)	(343.1)
Total stockholders' equity	1,336.8	1,198.6
Total liabilities and stockholders' equity	$ 2,944.1	$2,878.1

See accompanying notes to consolidated financial statements.

3

Table of Contents

CARPENTER TECHNOLOGY CORPORATION
CONSOLIDATED STATEMENTS OF INCOME
(Unaudited)
($ in millions, except per share data)

	Three Months Ended December 31,		Six Months Ended December 31,	
	2017	2016	2017	2016
Net sales	$487.8	$427.4	$967.5	$816.3
Cost of sales	402.1	364.9	796.2	707.8
Gross profit	85.7	62.5	171.3	108.5
Selling, general and administrative expenses	44.9	47.1	88.8	91.7
Operating income	40.8	15.4	82.5	16.8
Interest expense	(7.3)	(7.4)	(14.5)	(14.8)
Other income, net	0.2	0.3	0.9	1.0
Income before income taxes	33.7	8.3	68.9	3.0
Income tax (benefit) expense	(58.4)	1.3	(46.6)	2.2
Net income	$92.1	$7.0	$115.5	$0.8
EARNINGS PER COMMON SHARE:				
Basic	$1.93	$0.15	$2.43	$0.01
Diluted	$1.92	$0.15	$2.41	$0.01
WEIGHTED AVERAGE COMMON SHARES OUTSTANDING:				
Basic	47.2	47.0	47.1	47.0
Diluted	47.6	47.1	47.5	47.1
Cash dividends per common share	$0.18	$0.18	$0.36	$0.36

See accompanying notes to consolidated financial statements.

Table of Contents

CARPENTER TECHNOLOGY CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)
($ in millions)

	Three Months Ended December 31,		Six Months Ended December 31,	
	2017	2016	2017	2016
Net income	$92.1	$7.0	$115.5	$0.8
Other comprehensive income, net of tax				
Pension and postretirement benefits, net of tax of $(0.8), $(3.5), $(2.1) and $(14.0), respectively	2.5	5.7	4.6	23.1
Net gain on derivative instruments, net of tax of $(5.6), $(2.4), $(10.4) and $(8.8), respectively	15.0	3.8	23.1	14.6
Foreign currency translation	(1.5)	(4.0)	0.3	(4.7)
Other comprehensive income	16.0	5.5	28.0	33.0
Comprehensive income	$108.1	$12.5	$143.5	$33.8

See accompanying notes to consolidated financial statements.

Table of Contents

CARPENTER TECHNOLOGY CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)
($ in millions)

	Six Months Ended December 31,	
	2017	2016
OPERATING ACTIVITIES		
Net income	$115.5	$0.8
Adjustments to reconcile net income to net cash provided from (used for) operating activities:		
Depreciation and amortization	58.0	58.7
Deferred income taxes	(66.2)	39.1
Net pension expense	7.1	31.0
Share-based compensation expense	8.1	6.5
Loss on disposals of property and equipment	0.4	0.3
Changes in working capital and other:		
Accounts receivable	(3.8)	0.8
Inventories	(81.5)	(74.2)
Other current assets	(17.6)	(5.6)
Accounts payable	11.8	17.2
Accrued liabilities	(6.2)	4.0
Pension plan contributions	(4.9)	(100.0)
Other postretirement plan contributions	(1.8)	(1.8)
Other, net	(1.6)	(2.2)
Net cash provided from (used for) operating activities	17.3	(25.4)
INVESTING ACTIVITIES		
Purchases of property, equipment and software	(55.7)	(45.1)
Net cash used for investing activities	(55.7)	(45.1)
FINANCING ACTIVITIES		
Credit agreement borrowings	—	80.0
Credit agreement repayments	—	(55.0)
Net change in short-term credit agreement borrowings	9.3	—
Dividends paid	(17.2)	(17.0)
Tax benefits on share-based compensation	—	0.3
Proceeds from stock options exercised	3.5	1.8
Withholding tax payments on share-based compensation awards	(0.6)	(0.4)
Net cash (used for) provided from financing activities	(5.0)	9.7
Effect of exchange rate changes on cash and cash equivalents	(2.2)	1.3
DECREASE IN CASH AND CASH EQUIVALENTS	(45.6)	(59.5)
Cash and cash equivalents at beginning of period	66.3	82.0
Cash and cash equivalents at end of period	$20.7	$22.5
SUPPLEMENTAL CASH FLOW INFORMATION:		
Non-cash investing activities:		
Acquisition of property, equipment and software	$5.8	$6.0

See accompanying notes to consolidated financial statements.

Table of Contents

CARPENTER TECHNOLOGY CORPORATION
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY
FOR THE SIX MONTHS ENDED DECEMBER 31, 2017 AND 2016
(Unaudited)
($ in millions, except per share data)

	Common Stock Par Value of $5	Common Stock Capital in Excess of Par Value	Reinvested Earnings	Common Stock in Treasury	Accumulated Other Comprehensive (Loss) Income	Total Equity
Balances at June 30, 2017	$276.7	$ 284.8	$1,321.8	$(341.6)	$ (343.1)	$ 1,198.6
Net income			115.5			115.5
Pension and postretirement benefits gain, net of tax					4.6	4.6
Net gain on derivative instruments, net of tax					23.1	23.1
Foreign currency translation					0.3	0.3
Cash Dividends:						0
Common @ $0.36 per share			(17.2)			(17.2)
Share-based compensation plans		6.7		1.7		8.4
Stock options exercised	0.6	2.9				3.5
Balances at December 31, 2017	$277.3	$ 294.4	$1,420.1	$(339.9)	$ (315.1)	$ 1,336.8

	Common Stock Par Value of $5	Common Stock Capital in Excess of Par Value	Reinvested Earnings	Common Stock in Treasury	Accumulated Other Comprehensive (Loss) Income	Total Equity
Balances at June 30, 2016	$276.3	$ 273.5	$1,308.9	$(343.9)	$ (409.9)	$ 1,104.9
Net income			0.8			0.8
Pension and postretirement benefits gain, net of tax					23.1	23.1
Net gain on derivative instruments, net of tax					14.6	14.6
Foreign currency translation					(4.7)	(4.7)
Cash Dividends:						0
Common @ $0.36 per share			(17.0)			(17.0)
Share-based compensation plans		5.0		1.5		6.5
Stock options exercised	0.4	1.4				1.8
Tax windfall on share-based compensation		0.3				0.3
Balances at December 31, 2016	$276.7	$ 280.2	$1,292.7	$(342.4)	$ (376.9)	$ 1,130.3

See accompanying notes to consolidated financial statements.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

1. Basis of Presentation

The accompanying unaudited consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America for interim financial information and the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by accounting principles generally accepted in the United States of America for complete financial statements. In the opinion of management, all adjustments, consisting of normal and recurring adjustments, considered necessary for a fair statement of the results are reflected in the interim periods presented. The June 30, 2017 consolidated balance sheet data was derived from audited financial statements, but does not include all of the disclosures required by accounting principles generally accepted in the United States of America. These unaudited consolidated financial statements should be read in conjunction with the consolidated financial statements and footnotes thereto included in Carpenter's annual report on Form 10-K for the fiscal year ended June 30, 2017 (the "2017 Form 10-K"). Operating results for the three and six months ended December 31, 2017 are not necessarily indicative of the operating results for any future period.

As used throughout this report, unless the context requires otherwise, the terms "Carpenter", the "Company", "Registrant", "Issuer", "we" and "our" refer to Carpenter Technology Corporation.

During the six months ended December 31, 2017, the Company changed the presentation of borrowings and repayments made under its revolving credit facility in the consolidated statements of cash flows. Prior year amounts have been reclassified to conform to the six months ended December 31, 2017 presentation.

2. Acquisition and Divestiture

On February 28, 2017, the Company acquired substantially all the assets of Puris LLC ("Puris"), for a cash purchase price of $35.3 million. The acquisition provides the Company with immediate entry into the rapidly growing titanium powder market, an expanded presence in additive manufacturing and strengthens the Company's capabilities as a solutions provider for customers across its end-use markets. The purchase price allocation resulted in the purchase price being allocated as follows: $1.7 million of working capital, $6.5 million of property and equipment, $8.5 million of identifiable intangible assets and $18.6 million to goodwill.

In the fourth quarter of fiscal year 2017, the Company divested its Specialty Steel Supply ("SSS") business. The divestiture was completed in two separate transactions for total cash proceeds of $12.0 million. The operations of the SSS business were historically included in the Performance Engineered Products ("PEP") segment. The Company does not have any significant continuing involvement in the operations of SSS after the divestiture.

3. Earnings per Common Share

The Company calculates basic and diluted earnings per share using the two class method. Under the two class method, earnings are allocated to common stock and participating securities (non-vested restricted shares and units that receive non-forfeitable dividends) according to their participation rights in dividends and undistributed earnings. The earnings available to each class of stock are divided by the weighted average number of outstanding shares for the period in each class. Diluted earnings per share assumes the issuance of common stock for all potentially dilutive share equivalents outstanding.

8

The calculations of basic and diluted earnings per common share for the three and six months ended December 31, 2017 and 2016 were as follows:

	Three Months Ended December 31,		Six Months Ended December 31,	
(in millions, except per share data)	2017	2016	2017	2016
Net income	$92.1	$7.0	$115.5	$0.8
Less: earnings and dividends allocated to participating securities	(0.9)	(0.1)	(1.0)	(0.1)
Earnings available for common stockholders used in calculation of basic earnings per common share	$91.2	$6.9	$114.5	$0.7
Weighted average number of common shares outstanding, basic	47.2	47.0	47.1	47.0
Basic earnings per common share	$1.93	$0.15	$2.43	$0.01
Net income	$92.1	$7.0	$115.5	$0.8
Less: earnings and dividends allocated to participating securities	(0.9)	(0.1)	(1.0)	(0.1)
Earnings available for common stockholders used in calculation of diluted earnings per common share	$91.2	$6.9	$114.5	$0.7
Weighted average number of common shares outstanding, basic	47.2	47.0	47.1	47.0
Effect of shares issuable under share-based compensation plans	0.4	0.1	0.4	0.1
Weighted average number of common shares outstanding, diluted	47.6	47.1	47.5	47.1
Diluted earnings per common share	$1.92	$0.15	$2.41	$0.01

The following awards issued under share-based compensation plans were excluded from the above calculations of diluted earnings per share because their effects were anti-dilutive:

	Three Months Ended December 31,		Six Months Ended December 31,	
(in millions)	2017	2016	2017	2016
Stock options	0.6	2.0	0.8	1.8

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

4. Inventories

Inventories consisted of the following components as of December 31, 2017 and June 30, 2017:

($ in millions)	December 31, 2017	June 30, 2017
Raw materials and supplies	$ 186.1	$ 152.8
Work in process	395.5	365.6
Finished and purchased products	190.2	172.0
Total inventory	$ 771.8	$ 690.4

Inventories are valued at the lower of cost or market. Cost for inventories is principally determined using the last-in, first-out ("LIFO") inventory costing method. The Company also uses the first-in, first-out ("FIFO") and average cost methods. As of December 31, 2017 and June 30, 2017, $128.8 million and $107.3 million of inventory, respectively, was accounted for using a method other than the LIFO inventory costing method.

5. Accrued Liabilities

Accrued liabilities consisted of the following as of December 31, 2017 and June 30, 2017:

($ in millions)	December 31, 2017	June 30, 2017
Accrued compensation and benefits	$ 52.6	$ 59.1
Accrued postretirement benefits	15.5	15.5
Accrued interest expense	11.2	11.2
Deferred revenue	10.7	9.8
Derivative financial instruments	2.9	13.1
Other	25.5	31.2
Total accrued liabilities	$ 118.4	$ 139.9

CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

6. Pension and Other Postretirement Benefits

The components of the net periodic benefit cost related to the Company's pension and other postretirement benefits for the three and six months ended December 31, 2017 and 2016 were as follows:

Three months ended December 31,	Pension Plans		Other Postretirement Plans	
($ in millions)	2017	2016	2017	2016
Service cost	$2.4	$7.7	$ 0.7	$ 0.9
Interest cost	13.0	12.4	2.4	2.3
Expected return on plan assets	(16.5)	(16.6)	(1.7)	(1.7)
Amortization of net loss	3.4	9.5	0.7	0.8
Amortization of prior service cost (benefit)	0.5	0.5	(1.3)	(1.6)
Net periodic benefit costs	$2.8	$13.5	$ 0.8	$ 0.7

Six months ended December 31,	Pension Plans		Other Postretirement Plans	
($ in millions)	2017	2016	2017	2016
Service cost	$4.7	$16.0	$ 1.3	$ 1.8
Interest cost	26.1	25.3	4.8	4.6
Expected return on plan assets	(33.0)	(31.9)	(3.5)	(3.4)
Amortization of net loss	6.8	18.9	1.5	1.6
Amortization of prior service cost (benefit)	1.0	0.8	(2.6)	(3.2)
Curtailment charge	—	0.5	—	—
Net periodic benefit costs	$5.6	$29.6	$ 1.5	$ 1.4

In September 2016, the Company announced changes to retirement plans it offers to certain employees. Benefits accrued to eligible participants of its largest qualified defined benefit pension plan and certain non-qualified benefit plans were frozen effective December 31, 2016. The Company recognized the plan freeze in the three months ended September 30, 2016 as a curtailment, since the plan changes eliminated the accrual of defined benefits for future services for a significant number of participants. The impact of the curtailment included a one-time accelerated recognition of outstanding unamortized prior service costs of $0.5 million, which was recognized in the three months ended September 30, 2016.

During the six months ended December 31, 2017 and 2016, the Company made $4.9 million and $100.0 million, respectively, of contributions to its qualified defined benefit pension plans. The Company currently expects to contribute $1.8 million to its qualified defined benefit pension plans during the remainder of fiscal year 2018.

7. Debt

On March 31, 2017, the Company entered into a $400.0 million unsecured revolving credit facility ("Credit Agreement") that extends to March 2022. Interest on the borrowings under the Credit Agreement accrue at variable rates, based upon LIBOR or a defined "Base Rate," both are determined based upon the rating of the Company's senior unsecured long-term debt (the "Debt Rating"). The applicable margin to be added to LIBOR ranges from 1.00% to 1.75% (1.50% as of December 31, 2017), and for Base Rate-determined loans, from 0.00% to 0.75% (0.50% as of December 31, 2017). The Company also pays a quarterly commitment fee ranging from 0.125% to 0.400% (0.275% as of December 31, 2017), determined based upon the Debt Rating, of the unused portion of the $400.0 million commitment under the Credit Agreement. In addition, the Company must pay certain letter of credit fees, ranging from 1.00% to 1.75% (1.50% as of December 31, 2017), with respect to letters of credit issued under the Credit Agreement. The Company has the right to voluntarily prepay and re-borrow loans and to terminate or reduce the commitments under the facility. As of December 31, 2017, the Company had $6.0 million of issued letters of credit and $9.3 million of borrowings under the Credit Agreement with the balance of $384.7 million available to the Company.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

The Company is subject to certain financial and restrictive covenants under the Credit Agreement, which, among other things, require the maintenance of a minimum interest coverage ratio of 3.50 to 1.00. The interest coverage ratio is defined in the Credit Agreement as, for any period, the ratio of consolidated earnings before interest, taxes, depreciation and amortization and non-cash net pension expense ("EBITDA") to consolidated interest expense for such period. The Credit Agreement also requires the Company to maintain a debt to capital ratio of less than 55 percent. The debt to capital ratio is defined in the Credit Agreement as the ratio of consolidated indebtedness, as defined therein, to consolidated capitalization, as defined therein. As of December 31, 2017 and June 30, 2017, the Company was in compliance with all of the covenants of the Credit Agreement.

Long-term debt outstanding as of December 31, 2017 and June 30, 2017 consisted of the following:

($ in millions)	December 31, 2017	June 30, 2017
Medium-term notes, Series B at 6.97% to 7.10% due from April 2018 to May 2018 (face value of $55.0 million at December 31, 2017 and June 30, 2017)	$ 55.0	$ 55.0
Senior unsecured notes, 5.20% due July 2021 (face value of $250.0 million at December 31, 2017 and June 30, 2017)	249.3	251.2
Senior unsecured notes, 4.45% due March 2023 (face value of $300.0 million at December 31, 2017 and June 30, 2017)	299.0	298.8
Total	603.3	605.0
Less: amounts due within one year	55.0	55.0
Long-term debt, net of current portion	$ 548.3	$ 550.0

For the three months ended December 31, 2017 and 2016, interest costs totaled $7.9 million and $7.7 million, respectively, of which $0.6 million and $0.3 million, respectively, were capitalized as part of the cost of property, equipment and software. For the six months ended December 31, 2017 and 2016, interest costs totaled $15.6 million and $15.3 million, respectively, of which $1.1 million and $0.5 million, respectively, were capitalized as part of the cost of property, equipment and software.

8. Contingencies and Commitments

Environmental

The Company is subject to various federal, state, local and international environmental laws and regulations relating to pollution, protection of public health and the environment, natural resource damages and occupational safety and health. Although compliance with these laws and regulations may affect the costs of the Company's operations, compliance costs to date have not been material. The Company has environmental remediation liabilities at some of its owned operating facilities and has been designated as a potentially responsible party ("PRP") with respect to certain third party Superfund waste-disposal sites and other third party-owned sites. The Company accrues amounts for environmental remediation costs that represent management's best estimate of the probable and reasonably estimable future costs related to environmental remediation. During the six months ended December 31, 2017, the Company increased the liability for a Company-owned former operating site by $0.1 million. The liabilities recorded for environmental remediation costs at Superfund sites, other third party-owned sites and Carpenter-owned current or former operating facilities remaining at December 31, 2017 and June 30, 2017 were $16.2 million and $16.1 million, respectively. Additionally, the Company has been notified that it may be a PRP with respect to other Superfund sites as to which no proceedings have been instituted against the Company. Neither the exact amount of remediation costs nor the final method of their allocation among all designated PRPs at these Superfund sites have been determined. Accordingly, at this time, the Company cannot reasonably estimate expected costs for such matters. The liability for future environmental remediation costs that can be reasonably estimated is evaluated by management on a quarterly basis.

Table of Contents

Other

The Company is defending various routine claims and legal actions that are incidental to its business and common to its operations, including those pertaining to product claims, commercial disputes, patent infringement, employment actions, employee benefits, compliance with domestic and foreign laws, personal injury claims and tax issues. Like many other manufacturing companies in recent years, the Company, from time to time, has been named as a defendant in lawsuits alleging personal injury as a result of exposure to chemicals and substances in the workplace such as asbestos. The Company provides for costs relating to these matters when a loss is probable and the amount of the loss is reasonably estimable. The effect of the outcome of these matters on the Company’s future results of operations and liquidity cannot be predicted because any such effect depends on future results of operations and the amount and timing (both as to recording future charges to operations and cash expenditures) of the resolution of such matters. While it is not feasible to determine the outcome of these matters, management believes that the total liability from these matters will not have a material effect on the Company’s financial position, results of operations or cash flows over the long-term. However, there can be no assurance that an increase in the scope of pending matters or that any future lawsuits, claims, proceedings or investigations will not be material to the Company’s financial position, results of operations or cash flows in a particular future quarter or year.

9. Fair Value Measurements

The fair value hierarchy has three levels based on the inputs used to determine fair value. Level 1 refers to quoted prices in active markets for identical assets or liabilities. Level 2 refers to observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data. Level 3 refers to unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs. Currently, the Company does not use Level 1 and 3 inputs.

The following tables present the Company’s assets and liabilities that are measured at fair value on a recurring basis and are categorized using the fair value hierarchy:

December 31, 2017	Fair Value Measurements Using Input Type
($ in millions)	Level 2
Assets:	
Marketable securities:	
Municipal auction rate securities	$ 3.5
Derivative financial instruments	31.7
Total assets	$ 35.2
Liabilities:	
Derivative financial instruments	$ 4.1

June 30, 2017	Fair Value Measurements Using Input Type
($ in millions)	Level 2
Assets:	
Marketable securities:	
Municipal auction rate securities	$ 3.4
Derivative financial instruments	14.5
Total assets	$ 17.9
Liabilities:	
Derivative financial instruments	$ 19.1

The Company’s derivative financial instruments consist of commodity forward contracts, foreign currency forward contracts and interest rate swaps. These instruments are measured at fair value using the market method valuation technique. The inputs to this technique utilize information related to foreign exchange rates, commodity prices and interest rates published by third party leading financial news and data providers. This is observable data; however, the valuation of these instruments is not based on actual transactions for the same instruments and, as such, they are classified as Level 2. The Company’s use of derivatives and hedging policies are more fully discussed in Note 10.

The Company has currently chosen not to elect the fair value option for any items that are not already required to be measured at fair value in accordance with accounting principles generally accepted in the United States of America.

The carrying amounts of other financial instruments not listed in the table below approximate fair value due to the short-term nature of these items. The carrying amounts and estimated fair values of the Company’s financial instruments not recorded at fair value in the financial statements were as follows:

	December 31, 2017	June 30, 2017

($ in millions)	Carrying Value	Fair Value	Carrying Value	Fair Value
Long-term debt, including current portion	$603.3	$622.0	$605.0	$622.5
Company-owned life insurance	$16.0	$16.0	$15.9	$15.9

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

The carrying amount of company-owned life insurance reflects cash surrender values based upon the market values of underlying securities, using Level 2 inputs, net of any outstanding policy loans. The carrying value associated with the cash surrender value of these policies is recorded in other assets in the accompanying consolidated balance sheets.

The fair values of long-term debt as of December 31, 2017 and June 30, 2017 were determined by using current interest rates for debt with terms and maturities similar to the Company's existing debt arrangements and accordingly would be classified as Level 2 inputs in the fair value hierarchy.

10. Derivatives and Hedging Activities

The Company uses commodity forwards, interest rate swaps, forward interest rate swaps and foreign currency forwards to manage risks generally associated with commodity price, interest rate and foreign currency rate fluctuations. The following explains the various types of derivatives and includes a recap about the impact the derivative instruments had on the Company's financial position, results of operations and cash flows.

Cash Flow Hedging — Commodity forward contracts: The Company enters into commodity forward contracts to fix the price of a portion of anticipated future purchases of certain critical raw materials and energy to manage the risk of cash flow variability associated with volatile commodity prices. The commodity forward contracts have been designated as cash flow hedges. The qualifying hedge contracts are marked-to-market at each reporting date and any unrealized gains or losses are included in accumulated other comprehensive income (loss) ("AOCI") to the extent effective, and reclassified to cost of sales in the period during which the hedged transaction affects earnings or it becomes probable that the forecasted transaction will not occur. As of December 31, 2017, the Company had forward contracts to purchase 21.0 million pounds of certain raw materials with settlement dates through December 2023.

Cash Flow Hedging — Forward interest rate swaps: Historically, the Company has entered into forward interest rate swap contracts to manage the risk of cash flow variability associated with fixed interest debt expected to be issued. The forward interest rate swaps were designated as cash flow hedges. The qualifying hedge contracts were marked-to-market at each reporting date and any unrealized gains or losses were included in AOCI to the extent effective, and reclassified to interest expense in the period during which the hedged transaction affected earnings or it became probable that the forecasted transaction would not occur. Upon the issuance of the fixed rate debt, the forward interest rate swap contracts were terminated. The realized gains at the time the interest rate swap contracts were terminated are being amortized over the term of the underlying debt. For the three months ended December 31, 2017 and 2016, net gains of $0.1 million and $0.1 million, respectively, related to the previously terminated contracts were recorded as a reduction to interest expense. For the six months ended December 31, 2017 and 2016, net gains of $0.2 million and $0.2 million, respectively, related to the previously terminated contracts were recorded as a reduction to interest expense.

Cash Flow Hedging — Foreign currency forward contracts: The Company uses foreign currency forward contracts to hedge a portion of anticipated future sales denominated in foreign currencies, principally the Euro and Pound Sterling, in order to offset the effect of changes in exchange rates. The qualifying hedge contracts are marked-to-market at each reporting date and any unrealized gains or losses are included in AOCI to the extent effective, and reclassified to net sales in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur.

The Company also uses foreign currency forward contracts to protect certain short-term asset positions denominated in foreign currencies against the effect of changes in exchange rates. These positions do not qualify for hedge accounting and accordingly are marked-to-market at each reporting date through charges to other income and expense. As of December 31, 2017 and June 30, 2017, the fair value of the outstanding foreign currency forwards not designated as hedging instruments and the charges to income for changes in fair value for these contracts were not material.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

Fair Value Hedging - Interest rate swaps: The Company uses interest rate swaps to achieve a level of floating rate debt relative to fixed rate debt where appropriate. The Company has designated fixed to floating interest rate swaps as fair value hedges. Accordingly, the changes in the fair value of these instruments are immediately recorded in earnings. The mark-to-market values of both the fair value hedging instruments and the underlying debt obligations are recorded as equal and offsetting gains and losses in interest expense in the consolidated statements of income. As of December 31, 2017 and June 30, 2017, the total notional amount of floating interest rate contracts was $150.0 million. For the three months ended December 31, 2017 and 2016, net gains of $0.2 million and $0.5 million, respectively, were recorded as a reduction to interest expense. For the six months ended December 31, 2017 and 2016, net gains of $0.4 million and $0.9 million, respectively, were recorded as a reduction to interest expense.

The fair value and location of outstanding derivative contracts recorded in the accompanying consolidated balance sheets were as follows as of December 31, 2017 and June 30, 2017:

December 31, 2017 ($ in millions)	Interest Rate Swaps	Foreign Currency Contracts	Commodity Contracts	Total Derivatives
Asset Derivatives:				
Derivatives designated as hedging instruments:				
Other current assets	$ 0.5	$ —	$ 12.7	$ 13.2
Other assets	0.6	—	17.9	18.5
Total asset derivatives	$ 1.1	$ —	$ 30.6	$ 31.7
Liability Derivatives:				
Derivatives designated as hedging instruments:				
Accrued liabilities	$ —	$ 1.3	$ 1.6	$ 2.9
Other liabilities	0.9	—	0.3	1.2
Total liability derivatives	$ 0.9	$ 1.3	$ 1.9	$ 4.1

June 30, 2017 ($ in millions)	Interest Rate Swaps	Foreign Currency Contracts	Commodity Contracts	Total Derivatives
Asset Derivatives:				
Derivatives designated as hedging instruments:				
Other current assets	$ 0.6	$ 0.2	$ 6.4	$ 7.2
Other assets	1.6	—	5.7	7.3
Total asset derivatives	$ 2.2	$ 0.2	$ 12.1	$ 14.5
Liability Derivatives:				
Derivatives designated as hedging instruments:				
Accrued liabilities	$ —	$ 1.0	$ 12.1	$ 13.1
Other liabilities	—	—	6.0	6.0
Total liability derivatives	$ —	$ 1.0	$ 18.1	$ 19.1

Substantially all of the derivative contracts are subject to master netting arrangements, or similar agreements with each counterparty, which provide for the option to settle contracts on a net basis when they settle on the same day and in the same currency. In addition, these arrangements provide for a net settlement of all contracts with a given counterparty in the event that the arrangement is terminated due to the occurrence of default or a termination event.

The Company presents the outstanding derivative contracts on a net basis by counterparty in the consolidated balance sheets. If the Company had chosen to present the derivative contracts on a gross basis, the total asset derivatives would have been $33.6 million and total liability derivatives would have been $6.0 million as of December 31, 2017.

According to the provisions of the Company’s derivative arrangements, in the event that the fair value of outstanding derivative positions with certain counterparties exceeds certain thresholds, the Company may be required to issue cash collateral to the counterparties. As of December 31, 2017 and June 30, 2017, the Company had no cash collateral held by counterparties.

The Company is exposed to credit loss in the event of nonperformance by counterparties on its derivative instruments as well as credit or performance risk with respect to its customer commitments to perform. Although nonperformance is possible, the Company does not anticipate nonperformance by any of the parties. In addition, various master netting arrangements are in place with counterparties to facilitate settlements of gains and losses on these contracts.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

Cash Flow Hedges

For derivative instruments that are designated and qualify as cash flow hedges, the effective portion of the gain or loss on the derivative is reported as a component of AOCI and reclassified into earnings in the same period or periods during which the hedged transactions affect earnings or it becomes probable the forecasted transactions will not occur. The following is a summary of the gains (losses) related to cash flow hedges recognized during the three and six months ended December 31, 2017 and 2016:

($ in millions)	Amount of Gain (Loss) Recognized in AOCI on Derivatives (Effective Portion) Three Months Ended December 31, 2017	2016	Six Months Ended December 31, 2017	2016
Derivatives in Cash Flow Hedging Relationship:				
Commodity contracts	$20.7	$(22.5)	$30.3	$(15.4)
Foreign exchange contracts	(0.3)	0.6	(0.7)	0.6
Total	$20.4	$(21.9)	$29.6	$(14.8)

($ in millions)	Location of (Loss) Gain Reclassified from AOCI into Income	Amount of (Loss) Gain Reclassified from AOCI into Income (Effective Portion) Three Months Ended December 31, 2017	2016	Amount of (Loss) Gain Reclassified from AOCI into Income (Ineffective Portion) Three Months Ended December 31, 2017	2016
Derivatives in Cash Flow Hedging Relationship:					
Commodity contracts	Cost of sales	$ (0.2)	$ (7.9)	$ —	$ —
Foreign exchange contracts	Net sales	(0.1)	0.5	—	—
Forward interest rate swaps	Interest expense	0.1	0.1	—	—
Total		$ (0.2)	$ (7.3)	$ —	$ —

($ in millions)	Location of (Loss) Gain Reclassified from AOCI into Income	Amount of (Loss) Gain Reclassified from AOCI into Income (Effective Portion) Six Months Ended December 31, 2017	2016	Amount of (Loss) Gain Reclassified from AOCI into Income (Ineffective Portion) Six Months Ended December 31, 2017	2016

Derivatives in Cash Flow Hedging Relationship:					
Commodity contracts	Cost of sales	$ (2.8)	$ (18.0)	$ (0.8)	$ 0.5
Foreign exchange contracts	Net sales	(0.5)	0.6	—	—
Forward interest rate swaps	Interest expense	0.2	0.2	—	—
Total		$ (3.1)	$ (17.2)	$ (0.8)	$ 0.5

The Company estimates that $10.5 million of net derivative gains included in AOCI as of December 31, 2017 will be reclassified into income within the next 12 months. No significant cash flow hedges were discontinued during the three and six months ended December 31, 2017.

11. Other Income, Net

Other income, net consisted of the following:

	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Foreign exchange loss	$(0.9)	$(0.2)	$(0.8)	$(0.2)
Unrealized gains on company-owned life insurance contracts and investments held in rabbi trusts	0.9	0.3	1.4	0.8
Other	0.2	0.2	0.3	0.4
Total other income, net	$0.2	$0.3	$0.9	$1.0

12. Income Taxes

The effective tax rate used for interim periods is the estimated annual effective consolidated tax rate, based on the current estimate of full year results, except that taxes related to specific events, if any, are recorded in the interim period in which they occur. The annual effective tax rate is based upon a number of significant estimates and judgments, including the estimated annual pre-tax income of the Company in each tax jurisdiction in which it operates, and the development of tax planning strategies during the year. In addition, the Company's tax expense can be impacted by changes in tax rates or laws, the finalization of tax audits, and other factors that cannot be predicted with certainty. As such there can be significant volatility in interim tax provisions.

Income tax expense for the three months ended December 31, 2017 was a benefit of $58.4 million, or negative 173.3 percent of pre-tax income as compared with expense of $1.3 million, or 15.7 percent of pre-tax income for the three months ended December 31, 2016. Income tax expense for the six months ended December 31, 2017 was a benefit of $46.6 million or negative 67.6 percent of pre-tax income as compared with expense of $2.2 million, or 73.3 percent of pre-tax income for the six months ended December 31, 2016.

An Act to Provide for Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year 2018" (the "Act") was enacted on December 22, 2017. The Act includes provisions that reduce the federal corporate income tax rate, create a territorial tax system with a one-time mandatory tax on previously deferred foreign earnings (i.e. transition tax), and change certain business deductions including allowing for immediate expensing of certain qualified capital expenditures. The permanent reduction to the U.S. federal corporate income tax rate from 35% to 21% is effective January 1, 2018. Based on the provisions of the Act, during the quarter ended December 31, 2017, the Company's estimated annual effective tax rate was adjusted to incorporate the lower federal tax rate that will be phased in for fiscal year 2018. The Company also recorded discrete income tax net benefits of $66.0 million during the quarter ended December 31, 2017. Included in this benefit are a $73.3 million tax benefit to reflect the impact of the re-measurement of deferred tax assets and liabilities at the reduced federal tax rate, $5.1 million expense for the transition tax and income tax expense of $2.2 million for increases in certain state valuation allowances for deferred tax assets resulting from the impact of a state law change that will limit the Company's ability to utilize state net operating loss carryforwards.

The Company determined that the amounts recorded for the liability associated transition tax are provisional because various components of the computation are not yet finalized as of December 31, 2017, including the following significant items: the actual aggregate foreign cash position and the earnings and profits of the foreign entities as of June 30, 2018, the interpretation and identification of cash positions as of June 30, 2018, and computations of accumulated earnings and profits balances as of November 2, 2017 and December 31, 2017. Under the Act, the transition tax will be paid over an eight year period beginning in fiscal year 2019.

The Company also determined that the re-measurement of deferred tax assets and liabilities at the lower federal corporate income tax rate is provisional until such time that the underlying temporary differences are known rather than estimated.

Future adjustments to the provisional amounts related to the Act will be recorded as discrete adjustments to income tax expense in the period in which those adjustments are determined.

Income tax expense for the three months ended December 31, 2016 includes tax benefits of $0.9 million associated with the repatriation of earnings from one of our foreign subsidiaries. Income tax expense also includes a $0.3 million benefit primarily due to additional research and development credits claimed in the prior year.

In October 2016, the Company made a voluntary pension contribution of $100.0 million that was announced in connection with the plan freeze. As a result of the pension contribution, income tax expense in the six months ended December 31, 2016 included a discrete tax charge of $2.1 million due to reduced tax benefits for domestic manufacturing claimed in prior periods.

As of June 30, 2017, the Company had $99.1 million of indefinitely reinvested foreign earnings for which deferred income taxes had not been provided. Given the Act's significant changes and potential opportunities to repatriate cash tax free, the Company is in the process of evaluating its assertions for indefinite reinvestment.

13. Business Segments

The Company has two reportable segments, Specialty Alloys Operations ("SAO") and Performance Engineered Products ("PEP").

The SAO segment is comprised of the Company's major premium alloy and stainless steel manufacturing operations. This includes operations performed at mills primarily in Reading and Latrobe, Pennsylvania and surrounding areas as well as South Carolina and Alabama. The combined assets of the SAO operations are being managed in an integrated manner to optimize efficiency and profitability across the total system.

The PEP segment is comprised of the Company's differentiated operations. This segment includes the Dynamet titanium business, the Carpenter Powder Products business, the Amega West business, and the Latrobe and Mexico distribution businesses. The businesses in the PEP segment are managed with an entrepreneurial structure to promote flexibility and agility to quickly respond to market dynamics.

The Company's executive management evaluates the performance of these operating segments based on sales, operating income and cash flow generation. Segment operating profit excludes general corporate costs, which include executive and director compensation, and other corporate facilities and administrative expenses not allocated to the segments.

The service cost component of the Company's net pension expense, which represents the estimated cost of future pension liabilities earned associated with active employees, is included in the operating income of the business segments. The residual net pension expense, which is comprised of the expected return on plan assets, interest costs on the projected benefit obligations of the plans and amortization of actuarial gains and losses and prior service costs, is included under the heading "Pension earnings, interest and deferrals".

On a consolidated basis, one customer, Arconic Inc., accounted for approximately 10 percent of the net sales for both the three and six months ended December 31, 2017. On a consolidated basis, one customer, Arconic Inc., accounted for approximately 17 percent and 15 percent of the net sales for the three and six months ended December 31, 2016, respectively. Approximately 22 percent of the accounts receivable outstanding at December 31, 2017 is due from two customers, Arconic Inc. and Precision Castparts Corporation. No single customer accounted for 10 percent or more of the accounts receivable outstanding at June 30, 2017.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

Segment Data	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Net Sales:				
Specialty Alloys Operations	$406.3	$348.6	$803.1	$663.7
Performance Engineered Products	104.8	83.2	205.5	161.7
Intersegment	(23.3)	(4.4)	(41.1)	(9.1)
Consolidated net sales	$487.8	$427.4	$967.5	$816.3

Segment Data	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Operating Income:				
Specialty Alloys Operations	$49.8	$35.6	$100.3	$60.6
Performance Engineered Products	7.5	0.8	12.8	(2.0)
Corporate costs	(13.9)	(16.0)	(26.9)	(29.8)
Pension earnings, interest and deferrals	(0.5)	(5.6)	(1.1)	(12.7)
Intersegment	(2.1)	0.6	(2.6)	0.7
Consolidated operating income	$40.8	$15.4	$82.5	$16.8

Segment Data	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Depreciation and Amortization:				
Specialty Alloys Operations	$23.4	$23.7	$46.5	$47.2
Performance Engineered Products	5.1	5.2	10.1	10.3
Corporate	0.9	0.9	1.8	1.7
Intersegment	(0.2)	0.1	(0.4)	(0.5)
Consolidated depreciation and amortization	$29.2	$29.9	$58.0	$58.7

Segment Data	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Capital Expenditures:				
Specialty Alloys Operations	$11.2	$8.3	$28.4	$23.0
Performance Engineered Products	6.3	2.5	11.1	7.0
Corporate	9.6	7.7	16.7	15.2
Intersegment	(0.3)	—	(0.5)	(0.1)
Consolidated capital expenditures	$26.8	$18.5	$55.7	$45.1

Segment Data	December 31,	June 30,
($ in millions)	2017	2017
Total Assets:		

Specialty Alloys Operations	$ 2,337.9	$2,292.1
Performance Engineered Products	475.7	434.3
Corporate	148.4	167.2
Intersegment	(17.9)	(15.5)
Consolidated total assets	$ 2,944.1	$2,878.1

14. Recent Accounting Pronouncements

Recently Issued Accounting Pronouncements - Adopted in current period

In March 2016, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2016-09, Compensation — Stock Compensation (Topic 718) - Improvements to Employee Share-Based Payment Accounting, which outlines new provisions intended to simplify various aspects related to accounting for share-based payments and their presentation in the financial statements. The update revises requirements in the following areas: income tax consequences, forfeitures and classification on the statement of cash flows. The Company adopted this standard in the quarter ended September 30, 2017. The standard did not have a material impact on the consolidated financial statements of the Company. The amendments requiring recognition of excess tax benefits and tax deficiencies in the income statement will be applied prospectively. The inclusion of excess tax benefits and deficiencies as a component of income tax expense will increase volatility of the provision for income taxes as the amount of excess tax benefits or deficiencies from share-based compensation awards are dependent on the stock price at the date the awards are exercised or vested. The Company does not expect the impact to be material to the Company's consolidated results of operations; however, such determination is subject to change based on facts and circumstances at the time when awards vest or settle. The Company accounts for forfeitures of share-based awards when they occur. The Company applied the amendments related to the presentation of excess tax benefits on the consolidated statement of cash flows using a prospective transition method, and as a result, excess tax benefits related to share-based awards will be reported as cash flows from operating activities. The Company applied the amendments related to the presentation of statutory tax withholding on the consolidated statement of cash flows using a retrospective transition method as required, and as a result, statutory tax withholding related to share-based awards which had been previously classified as cash flows used for operating activities has been be reclassified as cash flows used for financing activities.

In August 2016, the FASB issued ASU 2016-15, Statement of Cash Flows (Topic 230) - Classification of Certain Cash Receipts and Cash Payments, which outlines new provisions intended to reduce the existing diversity in practice related to accounting for the cash flow and its presentation in the financial statements. ASU 2016-15 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2017, with early adoption permitted. The Company adopted the provisions of ASU 2016-15 in the quarter ended September 30, 2017. The adoption of ASU 2016-15 did not materially impact the Company's consolidated statement of cash flows.

In November 2016, the FASB issued ASU 2016-18, Statement of Cash Flows (Topic 230) - Restricted Cash, which outlines that a statement of cash flows explains the change during the period in total cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. ASU 2016-18 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2017, with early adoption permitted. The Company adopted the provisions of ASU 2016-18 in the quarter ended September 30, 2017. The adoption of ASU 2016-18 did not materially impact the Company's consolidated statement of cash flows.

In January 2017, the FASB issued ASU 2017-04, Intangibles - Goodwill and Other (Topic 350) - Simplifying the Test for Goodwill Impairment, which outlines updates to simplify the subsequent measurement of goodwill by eliminating Step 2 from the goodwill impairment test. ASU 2017-04 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2019, with early adoption permitted. The Company adopted ASU 2017-04 in the quarter ended September 30, 2017. The adoption of ASU 2017-04 did not have an impact on the Company's financial statements.

Recently Issued Accounting Pronouncements - Pending Adoption

In May 2014, the FASB issued ASU No. 2014-09, Revenue from Contracts with Customers (Topic 606). The guidance in ASU 2014-09 requires that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The guidance in ASU 2014-09 permits two methods of adoption: full retrospective in which the standard is applied to all of the periods presented or modified retrospective where an entity would recognize the cumulative effect of initially applying the standard as an adjustment to the opening balance of retained earnings. The adoption will include updates as provided under ASU 2016-08, Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net); ASU 2016-10, Revenue from Contracts with Customers: Identifying Performance Obligations and Licensing; ASU 2016-12, Revenue from Contracts with Customers: Narrow-Scope Improvements and Practical Expedients; ASU 2016-20, Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers; ASU 2017-13, Revenue Recognition (Topic 605), Revenue from Contracts with Customers (Topic 606), Leases (Topic 840), and Leases (Topic 842): Amendments to SEC Paragraphs Pursuant to the Staff Announcement at the July 20, 2017 EITF Meeting and Rescission of Prior SEC Staff Announcements and Observer Comments and ASU 2017-14, Income Statement-Reporting Comprehensive Income (Topic 220), Revenue Recognition (Topic 605), and Revenue from Contracts with Customers (Topic 606).

The Company is in the process of evaluating the effect that Topic 606 will have on its Consolidated Financial Statements and related disclosures, as well as the expected method of adoption. Currently, the Company is in the process of completing the assessment phase of its evaluation. The assessment phase includes conducting and evaluating the results of internal surveys of its businesses, holding revenue recognition workshops with commercial and business unit finance leadership, and reviewing revenue arrangements across all businesses to initially identify a set of applicable qualitative revenue recognition changes related to the standards update. The Company’s method of adoption for Topic 606 has not yet been determined and is not expected to be finalized until the assessment phase of the evaluation has been completed. The Company’s effective date for the adoption of Topic 606 is July 1, 2018.

In February 2016, the FASB issued ASU 2016-02 Leases (Topic 842). ASU 2016-02 improves transparency and comparability among companies by recognizing lease assets and lease liabilities on the balance sheet and by disclosing key information about leasing arrangements. ASU 2016-02 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2018, with early adoption permitted. The Company is evaluating the impact of the adoption of ASU 2016-02 on the consolidated financial statements.

In October 2016, the FASB issued ASU 2016-16, Income Taxes (Topic 740) - Intra-Entity Transfers of Assets Other Than Inventory, which outlines updates to improve the accounting for the income tax consequences of intra-entity transfers of assets other than inventory. ASU 2016-16 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2017, with early adoption permitted. The Company is evaluating the impact of the adoption of ASU 2016-16 on the consolidated financial statements.

In March 2017, the FASB issued ASU 2017-07, Compensation - Retirement Benefits (Topic 715) - Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost, which outlines updates to improve the presentation of net periodic pension cost and net periodic postretirement benefit cost. ASU 2017-07 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2017, with early adoption permitted. The Company is evaluating the impact of the adoption of ASU 2017-07 on the consolidated financial statements.

In August 2017, the FASB issued ASU 2017-12, Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities, which expands and refines hedge accounting for both financial and non-financial risk components, aligns the recognition and presentation of the effects of hedging instruments and hedge items in the financial statements, and includes certain targeted improvements to ease the application of current guidance related to the assessment of hedge effectiveness. ASU 2017-12 is effective for public business entities for annual periods, including interim periods within those annual periods, beginning after December 15, 2018, with early adoption permitted. The Company is evaluating the impact of the adoption of ASU 2017-12 on the consolidated financial statements.

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

15. Reclassifications from Accumulated Other Comprehensive Income (Loss) (AOCI)

The changes in AOCI by component, net of tax, for the three months ended December 31, 2017 and 2016 were as follows:

Three Months Ended December 31, 2017 ($ in millions) (a)	Cash flow hedging items	Pension and other postretirement benefit plan items	Unrealized losses on available-for-sale securities	Foreign currency items	Total
Balance at September 30, 2017	$ 5.8	$ (296.9)	$ (0.3)	$ (39.7)	$ (331.1)
Other comprehensive income (loss) before reclassifications	14.9	—	—	(1.5)	13.4
Amounts reclassified from AOCI (b)	0.1	2.5	—	—	2.6
Net other comprehensive income (loss)	15.0	2.5	—	(1.5)	16.0
Balance at December 31, 2017	$ 20.8	$ (294.4)	$ (0.3)	$ (41.2)	$ (315.1)

Three Months Ended December 31, 2016 ($ in millions) (a)	Cash flow hedging items	Pension and other postretirement benefit plan items	Unrealized losses on available-for-sale securities	Foreign currency items	Total
Balance at September 30, 2016	$ (11.0)	$ (326.9)	$ (0.3)	$ (44.2)	$ (382.4)
Other comprehensive loss before reclassifications	(0.6)	—	—	(4.0)	(4.6)
Amounts reclassified from AOCI (b)	4.4	5.7	—	—	10.1
Net other comprehensive income (loss)	3.8	5.7	—	(4.0)	5.5
Balance at December 31, 2016	$ (7.2)	$ (321.2)	$ (0.3)	$ (48.2)	$ (376.9)

(a) All amounts are net of tax. Amounts in parentheses indicate debits.
(b) See separate table below for further details.

The changes in AOCI by component, net of tax, for the six months ended December 31, 2017 and 2016 were as follows:

Six Months Ended December 31, 2017 ($ in millions) (a)	Cash flow hedging items	Pension and other postretirement benefit plan items	Unrealized losses on available-for-sale securities	Foreign currency items	Total
Balance at June 30, 2017	$ (2.3)	$ (299.0)	$ (0.3)	$ (41.5)	$ (343.1)
Other comprehensive income before reclassifications	21.0	—	—	0.3	21.3
Amounts reclassified from AOCI (b)	2.1	4.6	—	—	6.7
Net other comprehensive income	23.1	4.6	—	0.3	28.0
Balance at December 31, 2017	$ 20.8	$ (294.4)	$ (0.3)	$ (41.2)	$ (315.1)

24

Table of Contents
CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

Six Months Ended December 31, 2016 ($ in millions) (a)	Cash flow hedging items	Pension and other postretirement benefit plan items	Unrealized losses on available-for-sale securities	Foreign currency items	Total
Balance at June 30, 2016	$ (21.8)	$ (344.3)	$ (0.3)	$ (43.5)	$ (409.9)
Other comprehensive income (loss) before reclassifications	3.9	11.4	—	(4.7)	10.6
Amounts reclassified from AOCI (b)	10.7	11.7	—	—	22.4
Net current-period other comprehensive income (loss)	14.6	23.1	—	(4.7)	33.0
Balance at December 31, 2016	$ (7.2)	$ (321.2)	$ (0.3)	$ (48.2)	$ (376.9)

(a) All amounts are net of tax. Amounts in parentheses indicate debits.
(b) See separate table below for further details.

CARPENTER TECHNOLOGY CORPORATION
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

The following is a summary of amounts reclassified from AOCI for the three and six months ended December 31, 2017 and 2016:

($ in millions) (a)	Location of (loss) gain	Amount Reclassified from AOCI Three Months Ended December 31,		Amount Reclassified from AOCI Six Months Ended December 31,	
Details about AOCI Components		2017	2016	2017	2016
Cash flow hedging items:					
Commodity contracts	Cost of sales	$(0.2)	$(7.9)	$(2.8)	$(18.0)
Foreign exchange contracts	Net sales	(0.1)	0.5	(0.5)	0.6
Forward interest rate swaps	Interest expense	0.1	0.1	0.2	0.2
	Total before tax	(0.2)	(7.3)	(3.1)	(17.2)
	Tax benefit	0.1	2.9	1.0	6.5
	Net of tax	$(0.1)	$(4.4)	$(2.1)	$(10.7)

($ in millions) (a)	Location of (loss) gain	Amount Reclassified from AOCI Three Months Ended December 31,		Amount Reclassified from AOCI Six Months Ended December 31,	
Details about AOCI Components		2017	2016	2017	2016
Amortization of pension and other postretirement benefit plan items:					
Net actuarial loss	(b)	$(4.1)	$(10.3)	$(8.3)	$(20.5)
Prior service benefit	(b)	0.8	1.1	1.6	2.4
Curtailment charge	(b)	—	—	—	(0.5)
	Total before tax	(3.3)	(9.2)	(6.7)	(18.6)
	Tax benefit	0.8	3.5	2.1	6.9
	Net of tax	$(2.5)	$(5.7)	$(4.6)	$(11.7)

(a) Amounts in parentheses indicate debits to income/loss.
(b) These AOCI components are included in the computation of net periodic benefit cost (see Note 6. Pension and Other Postretirement Benefits for additional details).

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

Background and General

We are engaged in the manufacturing, fabrication and distribution of specialty metals. We primarily process basic raw materials such as nickel, cobalt, titanium, manganese, chromium, molybdenum, iron scrap and other metal alloying elements through various melting, hot forming and cold working facilities to produce finished products in the form of billet, bar, rod, wire and narrow strip in many sizes and finishes. We also produce certain metal powders. Our sales are distributed directly from our production plants and distribution network as well as through independent distributors. Unlike many other specialty steel producers, we operate our own worldwide network of service and distribution centers. These service centers, located in the United States, Canada, Mexico, Europe and Asia, allow us to work more closely with customers and to offer various just-in-time stocking programs. We also manufacture and rent down-hole drilling tools and components used in the oil and gas industry.

As part of our overall business strategy, we have sought out and considered opportunities related to strategic acquisitions, divestitures and joint collaborations as well as possible business unit dispositions aimed at broadening our offering to the marketplace. We have participated with other companies to explore potential terms and structures of such opportunities and expect that we will continue to evaluate these opportunities.

Table of Contents

Our discussions below in this Item 2 are based upon the more detailed discussions about our business, operations and financial condition included in Item 7 of our 2017 Form 10-K. Our discussions here focus on our results during or as of the three and six-month periods ended December 31, 2017 and the comparable periods of fiscal year 2017, and to the extent applicable, on material changes from information discussed in the 2017 Form 10-K and other important intervening developments or information that we have reported on Form 8-K. These discussions should be read in conjunction with the 2017 Form 10-K for detailed background information and with any such intervening Form 8-K.

Impact of Raw Material Prices and Product Mix

We value most of our inventory utilizing the last-in, first-out ("LIFO") inventory costing method. Under the LIFO inventory costing method, changes in the cost of raw materials and production activities are recognized in cost of sales in the current period even though these materials may potentially have been acquired at significantly different values due to the length of time from the acquisition of the raw materials to the sale of the processed finished goods to the customers. In a period of rising raw material costs, the LIFO inventory valuation normally results in higher cost of sales. Conversely, in a period of decreasing raw material costs, the LIFO inventory valuation normally results in lower cost of sales.

The volatility of the costs of raw materials has impacted our operations over the past several years. We, and others in our industry, generally have been able to pass cost increases on major raw materials through to our customers using surcharges that are structured to recover increases in raw material costs. Generally, the formula used to calculate a surcharge is based on published prices of the respective raw materials for the previous month which correlates to the prices we pay for our raw material purchases. However, a portion of our surcharges to customers may be calculated using a different surcharge formula or may be based on the raw material prices at the time of order, which creates a lag between surcharge revenue and corresponding raw material costs recognized in cost of sales. The surcharge mechanism protects our net income on such sales except for the lag effect discussed above. However, surcharges have had a dilutive effect on our gross margin and operating margin percentages as described later in this report.

Approximately 30 percent of our net sales are sales to customers under firm price sales arrangements. Firm price sales arrangements involve a risk of profit margin fluctuations, particularly when raw material prices are volatile. In order to reduce the risk of fluctuating profit margins on these sales, we enter into commodity forward contracts to purchase certain critical raw materials necessary to produce the related products sold. Firm price sales arrangements generally include certain annual purchasing commitments and consumption schedules agreed to by the customers at selling prices based on raw material prices at the time the arrangements are established. If a customer fails to meet the volume commitments (or the consumption schedule deviates from the agreed-upon terms of the firm price sales arrangements), the Company may need to absorb the gains or losses associated with the commodity forward contracts on a temporary basis. Gains or losses associated with commodity forward contracts are reclassified to earnings/loss when earnings are impacted by the hedged transaction. Because we value most of our inventory under the LIFO costing methodology, changes in the cost of raw materials and production activities are recognized in cost of sales in the current period attempting to match the most recently incurred costs with revenues. Gains or losses on the commodity forward contracts are reclassified from other comprehensive income (loss) together with the actual purchase price of the underlying commodities when the underlying commodities are purchased and recorded in inventory. To the extent that the total purchase price of the commodities, inclusive of the gains or losses on the commodity forward contracts, are higher or lower relative to the beginning of year costs, our cost of goods sold reflects such amounts. Accordingly, the gains and/or losses associated with commodity forward contracts may not impact the same period that the firm price sales arrangements revenue is recognized, and comparisons of gross profit from period to period may be impacted. These firm price sales arrangements are expected to continue as we look to strengthen our long-term customer relationships by expanding, renewing and in certain cases extending to a longer-term, our customer long-term arrangements.

We produce hundreds of grades of materials with a wide range of pricing and profit levels depending on the grade. In addition, our product mix within a period is subject to the fluctuating order patterns of our customers as well as decisions we may make on participation in certain products based on available capacity, including the impacts of capacity commitments we may have under existing customer agreements. While we expect to see positive contribution from a more favorable product mix in our margin performance over time, the impact by period may fluctuate and period-to-period comparisons may vary.

Table of Contents

Net Pension Expense

Net pension expense, as we define it below, includes the net periodic benefit costs related to both our pension and other postretirement plans. The net periodic benefit costs are determined annually based on beginning of year balances and are recorded ratably throughout the fiscal year, unless a significant re-measurement event occurs. We currently expect that the total net periodic benefit costs for fiscal year 2018 will be $14.0 million as compared with $48.2 million in fiscal year 2017. The following is the pension expense for the three and six months ended December 31, 2017 and 2016:

	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Pension plans	$2.8	$13.5	$5.6	$29.6
Other postretirement plans	0.8	0.7	1.5	1.4
Net periodic benefit costs	$3.6	$14.2	$7.1	$31.0

In September 2016, we announced changes to retirement plans we offer to certain employees. The decision was consistent with addressing costs and actively managing the business. Benefits accrued to eligible participants of our largest qualified defined benefit pension plan and certain non-qualified pension plans were frozen effective December 31, 2016. Approximately 1,900 affected employees were transitioned to the Company’s 401(k) plan that has been in effect for eligible employees since 2012, when the pension plan was closed to new entrants. We recognized the plan freeze in the three months ended September 30, 2016 as a curtailment, since it eliminated the accrual for a significant number of participants for all of their future services. We also made a voluntary pension contribution of $100.0 million to the affected plan in October 2016.

The service cost component of net pension expense represents the estimated cost of future pension liabilities earned associated with active employees. The pension earnings, interest and deferrals (“pension EID”) is comprised of the expected return on plan assets, interest costs on the projected benefit obligations of the plans and amortization of actuarial gains and losses and prior service costs.

Net pension expense is recorded in accounts that are included in both the cost of sales and selling, general and administrative expenses based on the function of the associated employees. The following is a summary of the classification of net pension expense for the three and six months ended December 31, 2017 and 2016:

	Three Months Ended December 31,		Six Months Ended December 31,	
($ in millions)	2017	2016	2017	2016
Cost of sales:				
Service cost	$2.7	$7.2	$5.3	$14.8
Pension earnings, interest and deferrals	—	3.8	—	8.9
	2.7	11.0	5.3	23.7
Selling, general and administrative expenses:				
Service cost	0.4	1.4	0.7	3.0

Pension earnings, interest and deferrals	0.5	1.8	1.1	3.8
Curtailment charge	—	—	—	0.5
	0.9	3.2	1.8	7.3
Net pension expense	$3.6	$14.2	$7.1	$31.0

As of December 31, 2017 and June 30, 2017, amounts related to the net pension expense capitalized in gross inventory were $1.6 million and $3.4 million, respectively.

Table of Contents

Operating Performance Overview

We delivered a solid first half to fiscal year 2018 including driving consistent backlog growth, gaining market share through expanded and new customer relationships, and enhancing our manufacturing discipline through the Carpenter Operating Model. Our SAO segment recorded its best second quarter and best first half since fiscal year 2014, while results at our PEP segment finished well ahead of our expectations. In addition, we submitted the majority of our Aerospace Vendor Approved Processes qualifications for our Athens facility, representing a major milestone. We are now actively working with our major customers to secure necessary approvals.

Conditions across our end-use markets continue to improve and we are generating increased customer demand for our solutions and growing our backlog. In the Aerospace and Defense end-use market, new engine platform demand is increasing and we are further benefiting from our strong position across a range of attractive sub-markets. In addition, demand for our solutions portfolio in the Medical end-use market remains high while the recovery in the oil and gas sub-market is strengthening.

Moving forward, we will continue to strategically invest in our core long-term growth capabilities. In addition, given the recent US tax reform, we plan to accelerate our investment into key areas including additive manufacturing and soft magnetics, which is consistent with our commitment to being a leading solutions provider for our customers.

Results of Operations — Three Months Ended December 31, 2017 vs. Three Months Ended December 31, 2016

For the three months ended December 31, 2017, we reported net income of $92.1 million, or $1.92 per diluted share. Excluding special items, earnings per share would have been $0.55 per diluted share for the three months ended December 31, 2017. This compares with net income for the same period a year earlier of $7.0 million, or $0.15 per diluted share. The current period results reflect stronger product demand driven by improving market conditions across our end-use markets.

Net Sales

Net sales for the three months ended December 31, 2017 were $487.8 million, which was a 14 percent increase over the same period a year ago. Excluding surcharge revenue, sales increased 13 percent on a 13 percent increase in shipment volume from the same period a year ago. The results primarily reflect the impact of stronger demand for materials primarily used in the Aerospace and Defense, Industrial and Consumer and Medical end-use markets.

Geographically, sales outside the United States increased 17 percent from the same period a year ago to $160.7 million for the three months ended December 31, 2017. The increase is primarily due to stronger demand in Europe in the Aerospace and Defense and Medical end-use markets and Asia Pacific in the Aerospace and Defense and Industrial and Consumer end-use markets. A portion of our sales outside the United States are denominated in foreign currencies. The impact of fluctuations in foreign currency exchange rates resulted in a $2.0 million increase in sales during the three months ended December 31, 2017 compared to the three months ended December 31, 2016. Net sales outside the United States represented 33 percent and 32 percent of total net sales for the three months ended December 31, 2017 and 2016, respectively.

Table of Contents

Sales by End-Use Markets

We sell to customers across diversified end-use markets. The following table includes comparative information for our net sales, which includes surcharge revenue by principal end-use markets. We believe this is helpful supplemental information in analyzing the performance of the business from period to period:

($ in millions)	Three Months Ended December 31, 2017	2016	$ Increase	% Increase
Aerospace and Defense	$264.9	$242.7	$ 22.2	9 %
Energy	31.8	30.1	1.7	6 %
Transportation	35.8	33.5	2.3	7 %
Medical	42.8	26.8	16.0	60 %
Industrial and Consumer	83.1	66.6	16.5	25 %
Distribution	29.4	27.7	1.7	6 %
Total net sales	$487.8	$427.4	$ 60.4	14 %

The following table includes comparative information for our net sales by the same principal end-use markets, but excluding surcharge revenue:

($ in millions)	Three Months Ended December 31, 2017	2016	$ Increase	% Increase
Aerospace and Defense	$220.3	$199.0	$ 21.3	11 %
Energy	28.9	27.1	1.8	7 %
Transportation	29.7	28.7	1.0	3 %
Medical	37.2	25.1	12.1	48 %
Industrial and Consumer	70.2	59.2	11.0	19 %
Distribution	29.2	27.6	1.6	6 %
Total net sales excluding surcharge	$415.5	$366.7	$ 48.8	13 %

Sales to the Aerospace and Defense end-use market increased 9 percent from the second quarter a year ago to $264.9 million. Excluding surcharge revenue, sales increased 11 percent from the second quarter a year ago on a 15 percent increase in shipment volume. The results reflect improved demand in the fastener, structural and distribution sub-markets as we benefited from our broad industry participation. In addition, we experienced stronger demand for our defense related applications driven by specific programs.

Sales to the Energy end-use market of $31.8 million reflect a 6 percent increase from the second quarter a year ago. Excluding surcharge revenue, sales increased 7 percent from a year ago. The results reflect the impact of an increase in sales, particularly rental and replacement activity through our Amega West business outpacing the moderate oil and gas sub-market expansion, partially offset by weaker demand for materials used in power generation applications.

Transportation end-use market sales increased 7 percent from the second quarter a year ago to $35.8 million. Excluding surcharge revenue, sales increased 3 percent on 2 percent higher shipment volume from the second quarter a year ago. The results reflect the impact of stronger demand for our material as a result of increases in medium and heavy duty truck production partially offset by continued softness in passenger car production.

Table of Contents

Medical end-use market sales increased 60 percent from the second quarter a year ago to $42.8 million. Excluding surcharge revenue, sales increased 48 percent on 39 percent higher shipment volume from the second quarter a year ago. The results reflect improved market conditions, share gains with key customers and the positive impact of supply chain inventory rebuilding for titanium materials used within the orthopedic and cardiology sub-markets.

Industrial and Consumer end-use market sales increased 25 percent from the second quarter a year ago to $83.1 million. Excluding surcharge revenue, sales increased 19 percent on a 15 percent increase in shipment volume. The results reflect the impact of stronger demand in select industrial applications and consumer electronics applications.

Gross Profit

Our gross profit in the second quarter increased 37 percent to $85.7 million, or 17.6 percent of net sales as compared with $62.5 million, or 14.6 percent of net sales in the same quarter a year ago. Excluding the impact of surcharge revenue, our gross margin in the second quarter was 20.6 percent as compared to 17.0 percent in the same period a year ago. The current quarter results reflect stronger product demand across end-use markets driving higher volumes compared to the same period a year ago.

Our surcharge mechanism is structured to recover increases in raw material costs, although in certain cases with a lag effect as discussed above. We estimate that the effect of surcharge lag negatively impacted our operating income by $3.0 million for the current second quarter.

While the surcharge generally protects the absolute gross profit dollars, it does have a dilutive effect on gross margin as a percent of sales. The following represents a summary of the dilutive impact of the surcharge on gross margin for the comparative three month periods. See the section “Non-GAAP Financial Measures” below for further discussion of these financial measures.

	Three Months Ended December 31,	
($ in millions)	2017	2016
Net sales	$487.8	$427.4
Less: surcharge revenue	72.3	60.7
Net sales excluding surcharge revenue	$415.5	$366.7
Gross profit	$85.7	$62.5
Gross margin	17.6 %	14.6 %
Gross margin excluding surcharge revenue	20.6 %	17.0 %

Selling, General and Administrative Expenses

Selling, general and administrative expenses of $44.9 million were 9.2 percent of net sales (10.8 percent of net sales excluding surcharge) as compared with $47.1 million and 11.0 percent of net sales (12.8 percent of net sales excluding surcharge) in the same quarter a year ago. Selling, general and administrative expenses decreased in the second quarter primarily as a result of lower consulting costs compared to the same quarter a year ago.

Operating Income

Our operating income in the recent second quarter was $40.8 million or 8.4 percent of net sales as compared with $15.4 million or 3.6 percent of net sales in the same quarter a year ago. Excluding surcharge revenue and pension EID, operating margin was 9.9 percent for the most recent quarter as compared with 5.7 percent a year ago. The increase in our operating margin for the second quarter of fiscal year 2018 reflects the impacts of stronger product demand across end-use markets and lower selling, general and administrative expenses compared to the same period a year ago.

Table of Contents

Operating income has been significantly impacted by our pension EID, which may be volatile based on conditions in the financial markets. The following presents our operating income and operating margin, in each case excluding the impact of surcharge revenue on net sales. We present and discuss these financial measures because management believes removing these items provides a more consistent and meaningful basis for comparing ongoing results of operations from period to period. See the section "Non-GAAP Financial Measures" below for further discussion of these financial measures.

	Three Months Ended December 31,	
($ in millions)	2017	2016
Net sales	$487.8	$427.4
Less: surcharge revenue	72.3	60.7
Net sales excluding surcharge revenue	$415.5	$366.7
Operating income	$40.8	$15.4
Pension EID	0.5	5.6
Operating income excluding pension EID	$41.3	$21.0
Operating margin	8.4 %	3.6 %
Operating margin excluding surcharge and pension EID	9.9 %	5.7 %

Interest Expense

Interest expense for the three months ended December 31, 2017 was $7.3 million compared with $7.4 million in the same period a year ago. We have used interest rate swaps to achieve a level of floating rate debt to fixed rate debt where appropriate. Interest expense for the three months ended December 31, 2017 includes net gains from interest rate swaps of $0.2 million compared with $0.5 million of net gains from interest rate swaps for the three months ended December 31, 2016. Capitalized interest reduced interest expense by $0.6 million for the three months ended December 31, 2017 and $0.3 million for the three months ended December 31, 2016.

Other Income, Net

Other income, net for the three months ended December 31, 2017 was $0.2 million as compared with $0.3 million for the three months ended December 31, 2016.

Income Taxes

Income tax expense in the recent second quarter was a benefit of $58.4 million, or negative 173.3 percent of pre-tax income compared with expense of $1.3 million, or 15.7 percent of pre-tax income in the same quarter a year ago.

An Act to Provide for Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year 2018 (the "Act") was enacted on December 22, 2017. The Act includes provisions that reduce the federal corporate income tax rate, create a territorial tax system with a one-time mandatory tax on previously deferred foreign earnings (i.e. transition tax), and change certain business deductions including allowing for immediate expensing of certain qualified capital expenditures. The permanent reduction to the U.S. federal corporate income tax rate from 35% to 21% is effective January 1, 2018. Based on the provisions of the Act, we adjusted our estimated annual effective tax rate to incorporate the lower blended federal tax rate that will be phased in for our fiscal year 2018. We also recorded a discrete net tax benefit of $66 million which reflects a $73.3 tax benefit related to the re-measurement of deferred tax assets and liabilities at the reduced federal tax rate, and a charge of $5.1 million for the transition tax. The discrete net tax benefit also includes a charge of $2.2 million associated with a state law change that will limit our ability to utilize certain state net operating loss carryforwards.

Income tax expense in the prior year includes tax benefits of $0.9 million associated with the repatriation of earnings from one of our foreign subsidiaries. Income tax expense also includes benefits of $0.3 million primarily due to additional research and development credits claimed in the prior year.

Table of Contents

Business Segment Results

We have two reportable business segments: SAO and PEP.

The following table includes comparative information for volumes by business segment:

(Pounds sold, in thousands)	Three Months Ended December 31, 2017	2016	Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	60,080	51,314	8,766	17 %
Performance Engineered Products *	3,282	2,350	932	40 %
Intersegment	(3,098)	(378)	(2,720)	(720)%
Consolidated pounds sold	60,264	53,286	6,978	13 %

* Pounds sold data for PEP segment includes Dynamet and Carpenter Powder Products businesses only.

The following table includes comparative information for net sales by business segment:

($ in millions)	Three Months Ended December 31, 2017	2016	$ Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	$406.3	$348.6	$ 57.7	17 %
Performance Engineered Products	104.8	83.2	21.6	26 %
Intersegment	(23.3)	(4.4)	(18.9)	(430)%
Total net sales	$487.8	$427.4	$ 60.4	14 %

The following table includes comparative information for our net sales by business segment, but excluding surcharge revenue:

($ in millions)	Three Months Ended December 31, 2017	2016	$ Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	$331.8	$288.1	$ 43.7	15 %
Performance Engineered Products	104.6	83.0	21.6	26 %
Intersegment	(20.9)	(4.4)	(16.5)	(375)%
Total net sales excluding surcharge revenue	$415.5	$366.7	$ 48.8	13 %

Specialty Alloys Operations Segment

Net sales for the quarter ended December 31, 2017 for the SAO segment increased 17 percent to $406.3 million, as compared with $348.6 million in the same quarter a year ago. Excluding surcharge revenue, net sales increased 15 percent on 17 percent higher shipment volume from a year ago. The results reflect the impact of stronger product demand driven by improving market conditions across our end-use markets compared to the prior year same quarter.

Operating income for the SAO segment was $49.8 million or 12.3 percent of net sales (15.0 percent of net sales excluding surcharge revenue) in the recent second quarter, as compared with $35.6 million or 10.2 percent of net sales (12.4 percent of net sales excluding surcharge revenue) in the same quarter a year ago. The increase in operating income reflects the impact of higher volume compared to the prior year same quarter.

Table of Contents

Performance Engineered Products Segment

Net sales for the quarter ended December 31, 2017 for the PEP segment increased 26 percent to $104.8 million, as compared with $83.2 million in the same quarter a year ago. Excluding surcharge revenue, net sales of $104.6 million increased 26 percent from a year ago. The results reflect an increase in sales primarily in the Energy and Medical end-use markets.

Operating income for the PEP segment was $7.5 million or 7.2 percent of net sales in the recent second quarter, compared with operating income of $0.8 million or 1.0 percent of net sales in the same quarter a year ago. The results reflect the increasing demand for titanium products combined with ongoing improvements in our oil and gas businesses and cost reduction initiatives.

Results of Operations — Six Months Ended December 31, 2017 vs. Six Months Ended December 31, 2016

Net Sales

Net sales for the six months ended December 31, 2017 were $967.5 million, which was a 19 percent increase over the same period a year ago. Excluding surcharge revenue, sales increased 17 percent on 15 percent higher shipment volume from the same period a year ago. The results primarily reflect the impact of stronger product demand for materials primarily used in the Aerospace and Defense, Medical and Industrial and Consumer end-use markets.

Geographically, sales outside the United States increased 24 percent from the same period a year ago to $320.6 million for the six months ended December 31, 2017. The increase is primarily due to higher demand in Europe in the Aerospace and Defense and Medical end-use markets, Asia Pacific in the Aerospace and Defense and Industrial and Consumer end-use markets and Canada in the Energy end-use market. A portion of our sales outside the United States are denominated in foreign currencies. The impact of fluctuations in foreign currency exchange rates resulted in a $3.3 million increase in sales during the six months ended December 31, 2017 compared to the six months ended December 31, 2016. Net sales outside the United States represented 33 percent and 32 percent of total net sales for the six months ended December 31, 2017 and 2016, respectively.

Sales by End-Use Markets

We sell to customers across diversified end-use markets. The following table includes comparative information for our net sales, which includes surcharge revenue by principal end-use markets. We believe this is helpful supplemental information in analyzing the performance of the business from period to period:

($ in millions)	Six Months Ended December 31, 2017	2016	$ Increase	% Increase
Aerospace and Defense	$523.5	$448.9	$ 74.6	17 %
Energy	63.8	58.5	5.3	9 %
Transportation	72.5	68.7	3.8	6 %
Medical	81.0	51.4	29.6	58 %
Industrial and Consumer	167.5	133.0	34.5	26 %
Distribution	59.2	55.8	3.4	6 %
Total net sales	$967.5	$816.3	$ 151.2	19 %

Table of Contents

The following table includes comparative information for our net sales by the same principal end-use markets, but excluding surcharge revenue:

($ in millions)	Six Months Ended December 31, 2017	2016	$ Increase	% Increase
Aerospace and Defense	$435.8	$372.5	$ 63.3	17 %
Energy	57.8	52.8	5.0	9 %
Transportation	60.3	59.2	1.1	2 %
Medical	70.6	48.1	22.5	47 %
Industrial and Consumer	141.9	118.5	23.4	20 %
Distribution	58.9	55.5	3.4	6 %
Total net sales excluding surcharge	$825.3	$706.6	$ 118.7	17 %

Sales to the Aerospace and Defense end-use market increased 17 percent from the same period a year ago to $523.5 million. Excluding surcharge revenue, sales increased 17 percent from the same period a year ago on a 20 percent increase in shipment volume. The results reflect the impact of stronger demand for materials used in aerospace engines and structural applications as well as defense applications driven by specific programs.

Sales to the Energy end-use market of $63.8 million reflect a 9 percent increase from the same period a year ago. Excluding surcharge revenue, sales increased 9 percent from a year ago. The results reflect an increase in sales of rental and replacement activity through our Amega West business driven by a moderate increase in the oil and gas sub-market offset by weaker demand for materials used in power generation applications.

Transportation end-use market sales increased 6 percent from the same period a year ago to $72.5 million. Excluding surcharge revenue, sales increased 2 percent on 2 percent lower shipment volume from the same period a year ago. The results reflect the impact of stronger demand for our materials as a result of increases in medium and heavy duty truck production offset by continued softness in passenger car production.

Medical end-use market sales increased 58 percent from the same period a year ago to $81.0 million. Excluding surcharge revenue, sales increased 47 percent on 30 percent higher shipment volume from the same period a year ago. The results reflect improved market conditions, share gains with key customers and the positive impact of supply chain inventory rebuilding for titanium materials within the orthopedic and cardiology sub-markets.

Industrial and Consumer end-use market sales increased 26 percent from the same period a year ago to $167.5 million. Excluding surcharge revenue, sales increased 20 percent on a 13 percent increase in shipment volume. The results reflect the impact of stronger demand for materials used in consumer electronics applications and industrial applications due in part to a moderate increase in recovery of oil and gas activity.

Gross Profit

Our gross profit in the six months ended December 31, 2017 increased 58 percent to $171.3 million, or 17.7 percent of net sales as compared with $108.5 million, or 13.3 percent of net sales in the same period a year ago. Excluding the impact of surcharge revenue, our gross margin in the six months ended December 31, 2017 was 20.8 percent as compared to 15.4 percent in the same period a year ago. The results for the six months ended December 31, 2017 reflect stronger product demand across end-use markets and stronger product mix compared to the same period a year ago.

35

Table of Contents

Our surcharge mechanism is structured to recover increases in raw material costs, although in certain cases with a lag effect as discussed above. While the surcharge generally protects the absolute gross profit dollars, it does have a dilutive effect on gross margin as a percent of sales. The following represents a summary of the dilutive impact of the surcharge on gross margin for the comparative six month periods. See the section "Non-GAAP Financial Measures" below for further discussion of these financial measures.

	Six Months Ended December 31,	
($ in millions)	2017	2016
Net sales	$967.5	$816.3
Less: surcharge revenue	142.2	109.7
Net sales excluding surcharge revenue	$825.3	$706.6
Gross profit	$171.3	$108.5
Gross margin	17.7 %	13.3 %
Gross margin excluding surcharge revenue	20.8 %	15.4 %

Selling, General and Administrative Expenses

Selling, general and administrative expenses of $88.8 million were 9.2 percent of net sales (10.8 percent of net sales excluding surcharge) for the six months ended December 31, 2017 as compared with $91.7 million or 11.2 percent of net sales (13.0 percent of net sales excluding surcharge) in the same period a year ago. Selling, general and administrative expenses decreased in the six months ended December 31, 2017 primarily as a result of lower consulting costs and pension expense offset by higher variable compensation accruals compared to the same period a year ago.

Operating Income

Our operating income in the six months ended December 31, 2017 was $82.5 million, or 8.5 percent of net sales as compared with $16.8 million, or 2.1 percent of net sales in the same period a year ago. Excluding surcharge revenue, pension EID and special items, operating margin was 10.1 percent for the six months ended December 31, 2017 and 4.2 percent for the same period a year ago. The increase in the operating margin reflects the impact of stronger product demand across end-use markets combined with stronger product mix and lower selling, general and administrative expenses compared to the same period a year ago.

Table of Contents

Operating income has been significantly impacted by our pension EID, which may be volatile based on conditions in the financial markets, as well as special items. The following presents our operating income and operating margin, in each case excluding the impact of surcharge on net sales, pension EID and special items. We present and discuss these financial measures because management believes removing the impact of these items provides a more consistent and meaningful basis for comparing results of operations from period to period. See the section "Non-GAAP Financial Measures" below for further discussion of these financial measures.

	Six Months Ended December 31,	
($ in millions)	2017	2016
Net sales	$967.5	$816.3
Less: surcharge revenue	142.2	109.7
Net sales excluding surcharge revenue	$825.3	$706.6
Operating income	$82.5	$16.8
Pension EID	1.1	12.7
Operating income excluding pension EID	83.6	29.5
Special items:		
Pension curtailment charge	—	0.5
Operating income excluding pension EID and special items	$83.6	$30.0
Operating margin	8.5 %	2.1 %
Operating margin excluding surcharge, pension EID and special items	10.1 %	4.2 %

Interest Expense

Interest expense for the six months ended December 31, 2017 was $14.5 million compared with $14.8 million in the same period a year ago. We have used interest rate swaps to achieve a level of floating rate debt to fixed rate debt where appropriate. Interest expense for the six months ended December 31, 2017 includes net gains from interest rate swaps of $0.4 million compared with $0.9 million for the six months ended December 31, 2016. Capitalized interest reduced interest expense by $1.1 million for the six months ended December 31, 2017 and $0.5 million for the six months ended December 31, 2016.

Other Income, Net

Other income, net was $0.9 million for the recent six months ended December 31, 2017 compared to $1.0 million in the same period a year ago.

Income Taxes

Income tax expense in the six months ended December 31, 2017 was a benefit of $46.6 million, or negative 67.6 percent of pre-tax income as compared with expense of $2.2 million, or 73.3 percent of pre-tax income in the six months ended December 31, 2016.

In December 2017, the United States enacted tax reform legislation. The Act includes provisions that reduce the federal corporate income tax rate, create a territorial tax system with a one-time mandatory tax on previously deferred foreign earnings (i.e. transition tax), and change certain business deductions including allowing for immediate expensing of certain qualified capital expenditures. The permanent reduction to the U.S. federal corporate income tax rate from 35% to 21% is effective January 1, 2018. Based on the provisions of the Act, during the current quarter we adjusted our estimated annual effective tax rate to incorporate the lower blended federal tax rate. We also recorded a discrete net tax benefit of $66 million which reflects a $73.3 tax benefit related to the re-measurement of deferred tax assets and liabilities at the reduced federal tax rate and a charge of $5.1 million for the transition tax. The discrete net tax benefit also includes a charge of $2.2 million associated with a state law change that will limit our ability to utilize certain state net operating loss carryforwards.

Table of Contents

In October 2016, the Company made a voluntary pension contribution of $100.0 million that was announced in connection with the plan freeze. As a result of the pension contribution, income tax expense in the six months ended December 31, 2016 included a discrete tax charge of $2.1 million due to reduced tax benefits for domestic manufacturing claimed in prior periods.

Business Segment Results

We have two reportable business segments: SAO and PEP.

The following table includes comparative information for volumes by business segment:

(Pounds sold, in thousands)	Six Months Ended December 31, 2017	2016	Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	121,270	103,674	17,596	17 %
Performance Engineered Products *	6,808	4,764	2,044	43 %
Intersegment	(4,468)	(972)	(3,496)	(360)%
Consolidated pounds sold	123,610	107,466	16,144	15 %

* Pounds sold data for PEP segment includes Dynamet and Carpenter Powder Products businesses only.

The following table includes comparative information for net sales by business segment:

($ in millions)	Six Months Ended December 31, 2017	2016	$ Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	$803.1	$663.7	$ 139.4	21 %
Performance Engineered Products	205.5	161.7	43.8	27 %
Intersegment	(41.1)	(9.1)	(32.0)	(352)%
Total net sales	$967.5	$816.3	$ 151.2	19 %

The following table includes comparative information for our net sales by business segment, but excluding surcharge revenue:

($ in millions)	Six Months Ended December 31, 2017	2016	$ Increase (Decrease)	% Increase (Decrease)
Specialty Alloys Operations	$657.4	$554.0	$ 103.4	19 %
Performance Engineered Products	205.1	161.3	43.8	27 %
Intersegment	(37.2)	(8.7)	(28.5)	(328)%
Total net sales excluding surcharge revenue	$825.3	$706.6	$ 118.7	17 %

Specialty Alloys Operations Segment

Net sales for the six months ended December 31, 2017 for the SAO segment increased 21 percent to $803.1 million, as compared with $663.7 million in the same period a year ago. Excluding surcharge revenue, net sales increased 19 percent on 17 percent higher shipment volume from a year ago. The results reflect the impact of stronger product demand driven by improving market conditions across our end-use markets compared to the prior year same period.

Operating income for the SAO segment was $100.3 million or 12.5 percent of net sales (15.3 percent of net sales excluding surcharge revenue) in the recent six months ended December 31, 2017 as compared with $60.6 million or 9.1 percent of net sales (10.9 percent of net sales excluding surcharge revenue) in the same period a year ago. The increase in operating income reflects the impact of higher product demand and stronger product mix driven by improving market conditions across our end-use markets compared to the prior year same period.

Table of Contents

Performance Engineered Products Segment

Net sales for the six months ended December 31, 2017 for the PEP segment increased 27 percent to $205.5 million, as compared with $161.7 million in the same period a year ago. Excluding surcharge revenue, net sales increased 27 percent from a year ago. The results reflect an increase in sales primarily in the Energy and Medical end-use markets.

Operating income for the PEP segment was $12.8 million or 6.2 percent of net sales in the recent six months ended December 31, 2017, compared with an operating loss of $2.0 million or 1.2 percent of net sales in the same period a year ago. The results reflect the increasing demand for titanium products combined with ongoing improvements in our oil and gas businesses and cost reduction initiatives.

Liquidity and Financial Resources

During the six months ended December 31, 2017, we generated cash flows from operations of $17.3 million compared to cash used for operations of $25.4 million in the same period a year ago. Our free cash flow, which we define under “Non-GAAP Financial Measures” below, was negative $55.6 million as compared to negative $87.5 million for the same period a year ago. The free cash flow results reflect unfavorable working capital levels driven by increased investment in inventory to meet customer demands and higher accounts receivable driven by increased shipments. The results also reflect higher capital spending levels as we increased our investment in key growth initiatives during fiscal year 2018. In addition, the prior year results reflect the impact of the $100 million pension contribution offset by cash tax benefits realized with the contribution of approximately $39 million.

Capital expenditures for property, equipment and software were $55.7 million for the six months ended December 31, 2017 as compared to $45.1 million for the same period a year ago. In fiscal year 2018, we expect capital expenditures to be approximately $135 million.

Dividends during the six months ended December 31, 2017 and 2016 were $17.2 million and $17.0 million, respectively, and were paid at the same quarterly rate of $0.18 per share of common stock in both periods.

We have demonstrated the ability to generate cash to meet our needs through cash flows from operations, management of working capital and the availability of outside sources of financing to supplement internally generated funds. We generally target minimum liquidity of $150 million, consisting of cash and cash equivalents added to available borrowing capacity under our Credit Agreement. Our Credit Agreement contains a revolving credit commitment of $400.0 million, which expires in March 2022. As of December 31, 2017, we had $6 million of issued letters of credit and $9.3 million of borrowings under the Credit Agreement. The balance of the Credit Agreement ($384.7 million) remains available to us. As of December 31, 2017, we had total liquidity of $405.4 million, including $20.7 million of cash and cash equivalents. From time to time during the six months ended December 31, 2017, we have borrowed under our Credit Agreement. The weighted average daily borrowing under the Credit Agreement during the six months ended December 31, 2017 was approximately $8.6 million with daily outstanding borrowings ranging from $0.0 million to $30.8 million during the period.

We believe that our cash and cash equivalents of $20.7 million as of December 31, 2017 and available borrowing capacity of $384.7 million under our credit facility will be sufficient to fund our cash needs over the foreseeable future.

In the fourth quarter of fiscal year 2018, $55.0 million of medium term notes are due for redemption. We currently expect to fund the redemption of these notes using available cash.

During the six months ended December 31, 2017, we made pension contributions of $4.9 million to our qualified defined benefit pension plans. We currently expect to make approximately $1.8 million of contributions to our qualified defined benefit pension plans during the remainder of fiscal year 2018.

As of December 31, 2017, we had cash and cash equivalents of approximately $19.0 million held at various foreign subsidiaries. Our global cash deployment considers, among other things, the geographic location of our subsidiaries' cash balances, the locations of our anticipated liquidity needs, and the cost to access international cash balances, as necessary. The Act requires a one-time tax on previously deferred foreign earnings and generally provides for tax-free repatriations of these earnings beginning January 1, 2018. This will allow additional opportunities to access cash generated internationally. From time to time, we may make short-term intercompany borrowings against our cash held outside the United States in order to reduce or eliminate any required borrowing under our Credit Agreement.

Table of Contents

We are subject to certain financial and restrictive covenants under the Credit Agreement, which, among other things, require the maintenance of a minimum interest coverage ratio (3.50 to 1.00 as of December 31, 2017). The interest coverage ratio is defined in the Credit Agreement as, for any period, the ratio of consolidated earnings before interest, taxes, depreciation and amortization and non-cash net pension expense ("EBITDA") to consolidated interest expense for such period. The Credit Agreement also requires the Company to maintain a debt to capital ratio of less than 55%. The debt to capital ratio is defined in the Credit Agreement as the ratio of consolidated indebtedness, as defined therein, to consolidated capitalization, as defined therein. As of December 31, 2017, the Company was in compliance with all of the covenants of the Credit Agreement.

The following table shows our actual ratio performance with respect to the financial covenants as of December 31, 2017:

Covenant	Covenant Requirement	Actual Ratio
Consolidated interest coverage	3.50 to 1.00 (minimum)	10.91 to 1.00
Consolidated debt to capital	55% (maximum)	31.4%

We continue to believe that we will maintain compliance with the financial and restrictive covenants in future periods. To the extent that we do not comply with the covenants under the Credit Agreement, this could reduce our liquidity and flexibility due to potential restrictions on borrowings available to us unless we are able to obtain waivers or modifications of the covenants.

Non-GAAP Financial Measures

The following provides additional information regarding certain non-GAAP financial measures that we use in this report. Our definitions and calculations of these items may not necessarily be the same as those used by other companies.

Net Sales and Gross Margin Excluding Surcharge Revenue

This report includes discussions of net sales as adjusted to exclude the impact of raw material surcharge and the resulting impact on gross margins, which represent financial measures that have not been determined in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP"). We present and discuss these financial measures because management believes removing the impact of raw material surcharge from net sales and cost of sales provides a more consistent basis for comparing results of operations from period to period for the reasons discussed earlier in this report. Management uses its results excluding these amounts to evaluate its operating performance and to discuss its business with investment institutions, our Board of Directors and others. See our earlier discussion of "Gross Profit" for a reconciliation of net sales and gross margin, excluding surcharge revenue to net sales as determined in accordance with U.S. GAAP. Net sales and gross margin excluding surcharge revenue is not a U.S. GAAP financial measure and should not be considered in isolation of, or as a substitute for, net sales and gross margin calculated in accordance with U.S. GAAP.

Operating Income and Operating Margin Excluding Surcharge Revenue, Pension EID and Special Items

This report includes discussions of operating income and operating margin as adjusted to exclude the impact of raw material surcharge revenue, pension EID and special items which represent financial measures that have not been determined in accordance with U.S. GAAP. We present and discuss these financial measures because management believes removing the impact of raw material surcharge from net sales and cost of sales provides a more consistent and meaningful basis for comparing results of operations from period to period for the reasons discussed earlier in this report. In addition, management believes that excluding pension EID and special items from operating income and operating margin is helpful in analyzing our operating performance particularly as pension EID may be volatile due to changes in the financial markets. Management uses its results excluding these amounts to evaluate its operating performance and to discuss its business with investment institutions, our Board of Directors and others. See our earlier discussion of operating income for a reconciliation of operating income and operating margin excluding pension EID and special items to operating income and operating margin determined in accordance with U.S. GAAP. Operating income and operating margin excluding surcharge revenue, pension EID and special items is not a U.S. GAAP financial measure and should not be considered in isolation of, or as a substitute for, operating income and operating margin calculated in accordance with U.S. GAAP.

Table of Contents

Adjusted Earnings Per Share

The following provides a reconciliation of adjusted earnings per share, to its most directly comparable U.S. GAAP financial measures:

($ in millions, except per share amounts)	Income Before Income Taxes	Income Tax Benefit (Expense)	Net Income	Earnings Per Diluted Share*
Three months ended December 31, 2017, as reported	$ 33.7	$ 58.4	$ 92.1	$ 1.92
Special items:				
Impact of US tax reform and other legislative changes	—	(66.0)	(66.0)	(1.37)
Three months ended December 31, 2017, as adjusted	$ 33.7	$ (7.6)	$ 26.1	$ 0.55

* Impact per diluted share calculated using weighted average common shares outstanding of 47.6 million for the three months ended December 31, 2017.

($ in millions, except per share amounts)	Income Before Income Taxes	Income Tax Expense	Net Income	Earnings Per Diluted Share*
Three months ended December 31, 2016, as reported	$ 8.3	$ (1.3)	$ 7.0	$ 0.15
Special items:				
None reported	—	—	—	—
Three months ended December 31, 2016, as adjusted	$ 8.3	$ (1.3)	$ 7.0	$ 0.15

* Impact per diluted share calculated using weighted average common shares outstanding of 47.1 million for the three months ended December 31, 2016.

($ in millions, except per share amounts)	Income Before Income Taxes	Income Tax Benefit (Expense)	Net Income	Earnings Per Diluted Share**
Six months ended December 31, 2017, as reported	$ 68.9	$ 46.6	$115.5	$ 2.41
Special items:				
Impact of US tax reform and other legislative changes	—	(66.0)	(66.0)	(1.38)
Six months ended December 31, 2017, as adjusted	$ 68.9	$ (19.4)	$49.5	$ 1.03

** Impact per diluted share calculated using weighted average common shares outstanding of 47.5 million for the six months ended December 31, 2017.

Table of Contents

($ in millions, except per share amounts)	Income Before Income Taxes	Income Tax (Expense) Benefit	Net Income	Earnings Per Diluted Share**
Six months ended December 31, 2016, as reported	$ 3.0	$ (2.2)	$ 0.8	$ 0.01
Special items:				
Pension curtailment	0.5	(0.1)	0.4	0.01
Income tax item*	—	2.1	2.1	0.04
Total impact of special items	0.5	2.0	2.5	0.05
Six months ended December 31, 2016, as adjusted	$ 3.5	$ (0.2)	$ 3.3	$ 0.06

* Discrete income tax charge recorded during the three months ended September 30, 2016 as a result of changes to prior year income taxes in connection with our decision to make a voluntary pension contribution in October 2016.
** Impact per diluted share calculated using weighted average common shares outstanding of 47.1 million for the six months ended December 31, 2016.

Management believes that the presentation of earnings per share adjusted to exclude the special items is helpful in analyzing the operating performance of the Company, as these items are not indicative of ongoing operating performance. Our definitions and calculations of these items may not necessarily be the same as those used by other companies. Management uses its results excluding these amounts to evaluate its operating performance and to discuss its business with investment institutions, our Board of Directors and others. Adjusted earnings per share is not a U.S. GAAP financial measure and should not be considered in isolation of, or as a substitute for, earnings per share calculated in accordance with U.S. GAAP.

Free Cash Flow

The following provides a reconciliation of free cash flow, as used in this report, to its most directly comparable U.S. GAAP financial measures:

	Six Months Ended December 31,	
($ in millions)	2017	2016
Net cash provided from (used for) operating activities	$17.3	$(25.4)
Purchases of property, equipment and software	(55.7)	(45.1)
Dividends paid	(17.2)	(17.0)
Free cash flow	$(55.6)	$(87.5)

Management believes that the presentation of free cash flow provides useful information to investors regarding our financial condition because it is a measure of cash generated which management evaluates for alternative uses. It is management's current intention to use excess cash to fund investments in capital equipment, acquisition opportunities and consistent dividend payments. Free cash flow is not a U.S. GAAP financial measure and should not be considered in isolation of, or as a substitute for, cash flows calculated in accordance with U.S. GAAP.

Table of Contents

Contingencies

Environmental

We are subject to various federal, state, local and international environmental laws and regulations relating to pollution, protection of public health and the environment, natural resource damages and occupational safety and health. Although compliance with these laws and regulations may affect the costs of our operations, compliance costs to date have not been material. We have environmental remediation liabilities at some of our owned operating facilities and have been designated as a PRP with respect to certain third party Superfund waste-disposal sites and other third party-owned sites. We accrue amounts for environmental remediation costs that represent our best estimate of the probable and reasonably estimable future costs related to environmental remediation. During the six months ended December 31, 2017, the company increased the liability for a company-owned former operating site by $0.1 million. The liabilities recorded for environmental remediation costs at Superfund sites, other third party-owned sites and Carpenter-owned current or former operating facilities remaining at December 31, 2017 and June 30, 2017 were $16.2 million and $16.1 million, respectively. Additionally, we have been notified that we may be a PRP with respect to other Superfund sites as to which no proceedings have been instituted against us. Neither the exact amount of remediation costs nor the final method of their allocation among all designated PRPs at these Superfund sites have been determined. Accordingly, at this time, we cannot reasonably estimate expected costs for such matters. The liability for future environmental remediation costs that can be reasonably estimated is evaluated on a quarterly basis.

Estimates of the amount and timing of future costs of environmental remediation requirements are inherently imprecise because of the continuing evolution of environmental laws and regulatory requirements, the availability and application of technology, the identification of currently unknown remediation sites and the allocation of costs among the PRPs. Based upon information currently available, such future costs are not expected to have a material effect on our financial position, results of operations or cash flows over the long-term. However, such costs could be material to our financial position, results of operations or cash flows in a particular future quarter or year.

Other

We are defending various routine claims and legal actions that are incidental to our business, and that are common to our operations, including those pertaining to product claims, commercial disputes, patent infringement, employment actions, employee benefits, compliance with domestic and foreign laws, personal injury claims and tax issues. Like many other manufacturing companies in recent years we, from time to time, have been named as a defendant in lawsuits alleging personal injury as a result of exposure to chemicals and substances in the workplace such as asbestos. We provide for costs relating to these matters when a loss is probable and the amount of the loss is reasonably estimable. The effect of the outcome of these matters on our future results of operations and liquidity cannot be predicted because any such effect depends on future results of operations and the amount and timing (both as to recording future charges to operations and cash expenditures) of the resolution of such matters. While it is not feasible to determine the outcome of these matters, we believe that the total liability from these matters will not have a material effect on our financial position, results of operations or cash flows over the long-term. However, there can be no assurance that an increase in the scope of pending matters or that any future lawsuits, claims, proceedings or investigations will not be material to our financial position, results of operations or cash flows in a particular future quarter or year.

Table of Contents

Critical Accounting Policies and Estimates

A summary of other significant accounting policies is discussed in our 2017 Form 10-K Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations”, and in Note 1, Summary of Significant Accounting Policies, of the Notes to our consolidated financial statements included in Part II, Item 8 thereto.

Goodwill

Goodwill is not amortized, but instead is tested for impairment, at least annually at the reporting unit level. Potential impairment is identified by comparing the fair value of a reporting unit to its carrying value. The fair value is estimated based principally upon discounted cash flow analysis. If the carrying value of the reporting unit exceeds its fair value, any impairment loss is measured by comparing the carrying value of the reporting unit’s goodwill to its implied fair value. The discounted cash flow analysis for each reporting unit tested requires significant estimates and assumptions related to cash flow forecasts, discount rates, terminal values and income tax rates. The cash flow forecasts are developed based on assumptions about each reporting unit’s markets, product offerings, pricing, capital expenditure and working capital requirements as well as cost performance. The discount rates used in the discounted cash flow are estimated based on a market participant’s perspective of each reporting unit's weighted average cost of capital. The terminal value, which represents the value attributed to the reporting unit beyond the forecast period, is estimated using a perpetuity growth rate assumption. The income tax rates used in the discounted cash flow analysis represent estimates of the long-term statutory income tax rates for each reporting unit based on the jurisdictions in which the reporting units operate.

As of June 30, 2017, we had four reporting units with goodwill recorded. Goodwill associated with our SAO reporting unit is tested at the SAO segment level and represents approximately 75 percent of our total goodwill. All other goodwill is associated with our PEP segment, which includes 3 reporting units with goodwill recorded.

As of June 30, 2017, the fair value of the SAO reporting unit exceeded the carrying value by approximately 20 percent. The goodwill recorded related to the SAO reporting unit as of June 30, 2017 was $195.5 million. The discounted cash flows analysis for the reporting unit includes assumptions related to our ability to increase volume, improve mix, expand product offerings and continue to implement opportunities to reduce costs over the next several years. For purposes of the discounted cash flow analysis for SAO’s fair value, we used a weighted average cost of capital of 10 percent and a terminal growth rate assumption of 3 percent.

The estimate of fair value requires significant judgment. We based our fair value estimates on assumptions that we believe to be reasonable but that are unpredictable and inherently uncertain, including estimates of future growth rates and operating margins and assumptions about the overall economic climate and the competitive environment for our business units. There can be no assurance that our estimates and assumptions made for purposes of our goodwill and identifiable intangible asset testing as of the time of testing will prove to be accurate predictions of the future. If our assumptions regarding business projections, competitive environments or anticipated growth rates are not correct, we may be required to record goodwill and/or intangible asset impairment charges in future periods, whether in connection with our next annual impairment testing or earlier, if an indicator of an impairment is present before our next annual evaluation.

Table of Contents

Forward-Looking Statements

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the Private Securities Litigation Act of 1995. These forward-looking statements are subject to risks and uncertainties that could cause actual results to differ from those projected, anticipated or implied. The most significant of these uncertainties are described in Carpenter's filings with the Securities and Exchange Commission, including its report on Form 10-K for the year ended June 30, 2017, Form 10-Q for the quarter ended September 30, 2017, and the exhibits attached to those filings. They include but are not limited to: (1) the cyclical nature of the specialty materials business and certain end-use markets, including aerospace, defense, industrial, transportation, consumer, medical, and energy, or other influences on Carpenter's business such as new competitors, the consolidation of competitors, customers, and suppliers or the transfer of manufacturing capacity from the United States to foreign countries; (2) the ability of Carpenter to achieve cash generation, growth, earnings, profitability, operating income, cost savings and reductions, qualifications, productivity improvements or process changes; (3) the ability to recoup increases in the cost of energy, raw materials, freight or other factors; (4) domestic and foreign excess manufacturing capacity for certain metals; (5) fluctuations in currency exchange rates; (6) the degree of success of government trade actions; (7) the valuation of the assets and liabilities in Carpenter's pension trusts and the accounting for pension plans; (8) possible labor disputes or work stoppages; (9) the potential that our customers may substitute alternate materials or adopt different manufacturing practices that replace or limit the suitability of our products; (10) the ability to successfully acquire and integrate acquisitions; (11) the availability of credit facilities to Carpenter, its customers or other members of the supply chain; (12) the ability to obtain energy or raw materials, especially from suppliers located in countries that may be subject to unstable political or economic conditions; (13) Carpenter's manufacturing processes are dependent upon highly specialized equipment located primarily in facilities in Reading and Latrobe, Pennsylvania and Athens, Alabama for which there may be limited alternatives if there are significant equipment failures or a catastrophic event; (14) the ability to hire and retain key personnel, including members of the executive management team, management, metallurgists and other skilled personnel; and (15) fluctuations in oil and gas prices and production. Any of these factors could have an adverse and/or fluctuating effect on Carpenter's results of operations. The forward-looking statements in this document are intended to be subject to the safe harbor protection provided by Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Securities Exchange Act of 1934, as amended. Carpenter undertakes no obligation to update or revise any forward-looking statements.

Table of Contents

Item 3. Quantitative and Qualitative Disclosures about Market Risk

We use derivative financial instruments to reduce certain types of financial risk. Firm price sales arrangements involve a risk of profit margin fluctuations particularly as raw material prices have been volatile. As discussed in Note 10 to the consolidated financial statements included in Part I, Item 1 of this Quarterly Report on Form 10-Q, “Financial Statements”, in order to reduce the risk of fluctuating profit margins on these sales, we enter into commodity forward contracts to purchase certain critical raw materials necessary to produce the products sold under the firm price sales arrangements. If a customer fails to perform its obligations under the firm price sales arrangements, we may realize losses as a result of the related commodity forward contracts.

We are actively involved in managing risks associated with energy resources. Risk containment strategies include interaction with primary and secondary energy suppliers as well as obtaining adequate insurance coverage to compensate us for potential business interruption related to lack of availability of energy resources. In addition, we have used forwards and options to fix the price of a portion of our anticipated future purchases of certain energy requirements to protect against the impact of significant increases in energy costs. We also use surcharge mechanisms to offset a portion of these charges where appropriate.

Fluctuations in foreign currency exchange rates could subject us to risk of losses on anticipated future cash flows from our international operations or customers. Foreign currency forward contracts are used to hedge certain foreign exchange risks.

We use interest rate swaps to achieve a level of floating rate debt relative to fixed rate debt where appropriate. Historically, we have entered into forward interest rate swap contracts to manage the risk of cash flow variability associated with fixed interest debt expected to be issued.

All hedging strategies are reviewed and approved by senior financial management before being implemented. Senior financial management has established policies regarding the use of derivative instruments that prohibit the use of speculative or leveraged derivatives. Market valuations are performed at least quarterly to monitor the effectiveness of our risk management programs.

Based on the current funding level, the allocation policy for pension plan assets is to have approximately 60 percent in return seeking assets and 40 percent in liability matching assets. Return seeking assets include domestic and international equities and diversified loan funds. Liability matching assets include long duration bond funds.

The status of our financial instruments as of December 31, 2017 is provided in Note 10 to the consolidated financial statements included in Part I, Item 1, “Financial Statements” of this Quarterly Report on Form 10-Q. Assuming either of the following occurred on December 31, 2017, (a) an instantaneous 10 percent decrease in the price of raw materials and energy for which we have commodity forward contracts, or (b) a 10 percent strengthening of the U.S. dollar versus foreign currencies for which foreign exchange forward contracts existed, our results of operations would not have been materially affected in either scenario.

Table of Contents

Item 4. Controls and Procedures

(a) Evaluation of Effectiveness of Disclosure Controls and Procedures

The Company's management, with the participation of the Company's President and Chief Executive Officer and Senior Vice President and Chief Financial Officer, evaluated the effectiveness of the Company's disclosure controls and procedures as defined in Rules 13a—15(e) and 15d—15(e) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of December 31, 2017. Based on that evaluation, our management, including the President and Chief Executive Officer and Senior Vice President and Chief Financial Officer, concluded that the Company's disclosure controls and procedures as of December 31, 2017 were effective in providing a reasonable level of assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods required under the Securities and Exchange Commission's rules and forms, including a reasonable level of assurance that information required to be disclosed by us in such reports is accumulated and communicated to the Company's management, including the Company's President and Chief Executive Officer and Senior Vice President and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

(b) Changes in Internal Control over Financial Reporting

There have been no changes in the Company's internal control over financial reporting that occurred during the quarter ended December 31, 2017 that have materially affected, or are likely to materially affect, the Company's internal control over financial reporting.

PART II — OTHER INFORMATION

Item 1. Legal Proceedings

Pending legal proceedings involve ordinary routine litigation incidental to our business, which we do not believe would have a material adverse effect on our business regardless of their outcome. See "Management's Discussion and Analysis of Financial Condition and Results of Operations — Contingencies."

Item 1A. Risk Factors

We have evaluated the risks associated with our business and operations and determined that those risk factors included in Part 1, Item 1A of our 2017 Annual Report on Form 10-K adequately disclose the material risks that we face.

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

There were no reportable purchases during the quarter ended December 31, 2017, however employees surrendered 249 shares to the Company, at an average purchase price of $48.61, during such quarter for the payment of the minimum tax liability withholding obligations upon the vesting of shares of restricted stock and the exercise of options. We do not consider this a share buyback program.

Table of Contents

Item 6. Exhibits

Exhibit No.	Description
10.A	Amended and Restated Carpenter Technology Corporation Change in Control Severance Plan. (filed herewith)
31 (A)	Certification of President and Chief Executive Officer pursuant to Rule 13a—14(a) and Rule 15d—14(a) of the Securities Exchange Act, as amended. (filed herewith)
31 (B)	Certification of Senior Vice President and Chief Financial Officer pursuant to Rule 13a—14(a) and Rule 15d—14(a) of the Securities Exchange Act, as amended. (filed herewith)
32	Certification of President and Chief Executive Officer and Senior Vice President and Chief Financial Officer pursuant to 18 U.S.C. 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. (filed herewith)
101	The following financial information from this Quarterly Report on Form 10-Q for the fiscal quarter ended December 31, 2017, formatted in XBRL (Extensible Business Reporting Language) and filed electronically herewith: (i) the Consolidated Balance Sheets; (ii) the Consolidated Statements of Income; (iii) the Consolidated Statements of Comprehensive Income; (iv) the Consolidated Statements of Cash Flows; (v) the Consolidated Statements of Changes in Equity; and (vi) the Notes to the Consolidated Financial Statements.

Table of Contents

SIGNATURE

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 officer.

	Carpenter Technology Corporation (Registrant)
Date: February 1, 2018	/s/ Damon J. Audia Damon J. Audia Senior Vice President and Chief Financial Officer (Principal Financial Officer)

Table of Contents

Exhibit Index

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