

ANALOGIC CORP
Form 10-Q
March 13, 2017
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

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

For the quarterly period ended January 31, 2017

OR

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

For the transition period from _____ to _____

Commission File Number 0-6715

ANALOGIC CORPORATION

(Exact name of registrant as specified in its charter)

Massachusetts
(State or other jurisdiction of

04-2454372
(I.R.S. Employer

incorporation or organization)

Identification No.)

8 Centennial Drive, Peabody, Massachusetts
(Address of principal executive offices)

01960
(Zip Code)

(978) 326-4000

(Registrant's telephone number, including area code)

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

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

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

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

Large accelerated filer

Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company)

Smaller reporting company

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

As of March 1, 2017, there were 12,489,189 shares of common stock outstanding.

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ANALOGIC CORPORATION

Form 10Q Quarterly Report

For the Quarterly Period Ended January 31, 2017

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Table of Contents**Part I. FINANCIAL INFORMATION****Item 1. Financial Statements (Unaudited)****ANALOGIC CORPORATION****CONSOLIDATED BALANCE SHEETS****(Unaudited in thousands, except share and per share data)**

	January 31, 2017	July 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	\$ 152,990	\$ 118,697
Accounts receivable, net of allowance for doubtful accounts of \$1,091 and \$1,070 as of January 31, 2017 and July 31, 2016, respectively	91,581	112,412
Inventory	143,800	145,513
Income tax receivable	3,042	3,004
Prepaid expenses and other current assets	10,360	9,178
Total current assets	401,773	388,804
Property, plant, and equipment, net	106,652	107,790
Intangible assets, net	40,644	45,194
Goodwill	64,105	73,915
Deferred income taxes	10,733	10,671
Other assets	4,536	6,523
Total assets	\$ 628,443	\$ 632,897
Liabilities and Stockholders Equity		
Current liabilities:		
Accounts payable	\$ 30,063	\$ 28,575
Accrued employee compensation and benefits	16,968	18,108
Accrued income tax	722	1,610
Accrued warranty	6,060	6,296
Accrued restructuring charges	1,462	5,248
Deferred revenue	4,353	5,359
Customer deposits	4,193	3,476
Contingent consideration	3,096	4,534
Other current liabilities	4,232	5,261
Total current liabilities	71,149	78,467

Long-term liabilities:		
Accrued income taxes, net of current portion	2,351	2,174
Contingent consideration, net of current portion	1,040	7,705
Other long-term liabilities	11,699	13,374
Total long-term liabilities	15,090	23,253
Guarantees, commitments and contingencies (Note 16)		
Stockholders' Equity:		
Common stock, \$0.05 par value; 30,000,000 shares authorized and 12,482,405 shares issued and outstanding as of January 31, 2017; 30,000,000 shares authorized and 12,396,765 shares issued and outstanding as of July 31, 2016	623	619
Capital in excess of par value	154,821	149,005
Retained earnings	397,532	390,013
Accumulated other comprehensive loss	(10,772)	(8,460)
Total stockholders' equity	542,204	531,177
Total liabilities and stockholders' equity	\$ 628,443	\$ 632,897

The accompanying notes are an integral part of these unaudited consolidated financial statements.

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ANALOGIC CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

(Unaudited, in thousands, except per share data)

	Three Months Ended January 31,		Six Months Ended January 31,	
	2017	2016	2017	2016
Net revenue:				
Product	\$ 130,330	\$ 125,938	\$ 250,582	\$ 240,067
Engineering	1,204	1,931	2,077	2,750
Total net revenue	131,534	127,869	252,659	242,817
Cost of sales:				
Product	72,721	68,123	141,482	131,070
Engineering	1,123	967	1,846	2,029
Total cost of sales	73,844	69,090	143,328	133,099
Gross profit	57,690	58,779	109,331	109,718
Operating expenses:				
Research and product development	16,213	16,566	32,063	33,805
Selling and marketing	17,358	15,249	35,538	30,482
General and administrative	3,979	22,308	17,600	35,504
Restructuring	267	3,147	299	6,430
Asset impairment charges	10,423		10,423	
Total operating expenses	48,240	57,270	95,923	106,221
Income from operations	9,450	1,509	13,408	3,497
Other income (expense), net	28	(3,507)	(414)	(3,965)
Income (loss) before income taxes	9,478	(1,998)	12,994	(468)
Provision for income taxes	1,968	987	2,948	1,141
Net income (loss)	\$ 7,510	\$ (2,985)	\$ 10,046	\$ (1,609)
Net income (loss) per common share:				
Basic	\$ 0.60	\$ (0.24)	\$ 0.81	\$ (0.13)
Diluted	\$ 0.59	\$ (0.24)	\$ 0.79	\$ (0.13)
Weighted average shares outstanding:				

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Basic	12,466	12,418	12,442	12,422
Diluted	12,680	12,418	12,712	12,422
Dividends declared and paid per share	\$ 0.10	\$ 0.10	\$ 0.20	\$ 0.20

The accompanying notes are an integral part of these unaudited consolidated financial statements.

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ANALOGIC CORPORATION

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(Unaudited, in thousands)

	Three Months Ended		Six Months Ended	
	January 31,		January 31,	
	2017	2016	2017	2016
Net income (loss)	\$ 7,510	\$ (2,985)	\$ 10,046	\$ (1,609)
Other comprehensive income (loss), net of tax:				
Foreign currency translation adjustment, net of tax	(1,019)	(2,729)	(2,593)	(3,248)
Unrecognized gain on pension benefits, net of tax	52	50	110	50
Unrealized gain (loss) on foreign currency forward contracts, net of tax	385	(127)	171	(15)
Total other comprehensive loss, net of tax	(582)	(2,806)	(2,312)	(3,213)
Total comprehensive income (loss)	\$ 6,928	\$ (5,791)	\$ 7,734	\$ (4,822)

The accompanying notes are an integral part of these unaudited consolidated financial statements.

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ANALOGIC CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

(Unaudited, in thousands)

	Six Months Ended January 31,	
	2017	2016
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income (loss)	\$ 10,046	\$ (1,609)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:		
Benefit from deferred income taxes	(194)	(2,319)
Depreciation and amortization	12,871	11,281
Asset impairment charges	10,423	
Share-based compensation expense	4,255	4,209
Write down of demo equipment to net realizable value	969	1,319
Provision for excess and obsolescence inventory	1,329	624
Excess tax benefit from share-based compensation	(158)	(220)
Change in fair value of contingent consideration	(8,103)	
Provision for doubtful accounts, net of recovery	20	(32)
Gain (loss) on sale of property, plant and equipment	36	(12)
Net changes in operating assets and liabilities:		
Accounts receivable	20,223	22,945
Inventory	(4,180)	(20,074)
Prepaid expenses and other assets	641	(1,720)
Accounts payable	1,207	(1,394)
Accrued liabilities	(5,699)	9,866
Deferred revenue	(977)	(686)
Customer deposits	720	11
Accrued income taxes and income taxes receivable	(1,120)	(3,566)
Other liabilities	(1,552)	226
NET CASH PROVIDED BY OPERATING ACTIVITIES	40,757	18,849
CASH FLOWS FROM INVESTING ACTIVITIES:		
Additions to property, plant, and equipment	(5,743)	(4,521)
Acquisition of businesses, net of cash acquired		(8,048)
Proceeds from the sale of property, plant, and equipment	18	60
NET CASH USED IN INVESTING ACTIVITIES	(5,725)	(12,509)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Issuance of stock pursuant to exercise of stock options, employee stock purchase plan, restricted stock plans, and non-employee director stock plan	3,090	2,294

Repurchase of common stock		(7,236)
Shares repurchased for taxes for vested employee restricted stock grants	(1,039)	(1,708)
Excess tax benefit from share-based compensation	158	220
Dividends paid to shareholders	(2,501)	(2,487)
Cash paid for financing cost		(458)
NET CASH USED IN FINANCING ACTIVITIES	(292)	(9,375)
EFFECT OF EXCHANGE RATE CHANGES ON CASH	(447)	(698)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	34,293	(3,733)
CASH AND CASH EQUIVALENTS, BEGINNING OF PERIOD	118,697	123,800
CASH AND CASH EQUIVALENTS, END OF PERIOD	\$ 152,990	\$ 120,067

Supplemental disclosures of cash flow information:

Non-cash transfer of demonstration inventory to fixed asset	\$ 1,764	\$
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The accompanying notes are an integral part of these unaudited consolidated financial statements.

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ANALOGIC CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(Unaudited, in millions, except share and per share data)

1. Basis of presentation

Throughout this Quarterly Report on Form 10-Q, unless the context states otherwise, the words “we,” “us,” “our” and “Analogic” refer to Analogic Corporation and all of its subsidiaries taken as a whole, and “our board of directors” refers to the board of directors of Analogic Corporation.

Our unaudited consolidated financial statements presented herein have been prepared pursuant to the rules of the United States Securities and Exchange Commission, or SEC, for quarterly reports on Form 10-Q. Preparing financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, and expenses. We report our financial condition and results of operations on a fiscal year basis ending on July 31st of each year. The three months ended January 31, 2017 and 2016 represent the second quarters of fiscal years 2017 and 2016, respectively.

In our opinion, the accompanying unaudited consolidated financial statements contain all adjustments (consisting solely of normal recurring adjustments) necessary for a fair statement of the results for all interim periods presented. The results of operations for the three and six months ended January 31, 2017 are not necessarily indicative of the operating results for the full year. These statements should be read in conjunction with the consolidated financial statements and notes thereto for the fiscal year ended July 31, 2016, or fiscal year 2016, included in our Annual Report on Form 10-K as filed with the SEC on September 27, 2016. The year-end balance sheet data was derived from audited financial statements, but does not include all disclosures required by generally accepted accounting principles, or GAAP, in the United States of America.

Consolidation

The unaudited consolidated financial statements presented herein include our accounts and those of our subsidiaries, all of which are wholly owned. All intercompany accounts and transactions have been eliminated in consolidation.

In determining whether we are the primary beneficiary of an entity and therefore required to consolidate, we apply a qualitative approach that determines whether we have both (1) the power to direct the economically significant activities of the entity and (2) the obligation to absorb losses of, or the right to receive benefits from, the entity that could potentially be significant to that entity. We have not been required to consolidate the activity of any entity due to these considerations.

Reclassifications and revisions to prior period financial statements

Certain financial statement items have been reclassified to conform to the current period presentation. We separately presented write down of demo equipment to net realizable value and provision for excess and obsolescence inventory on our January 31, 2016 Consolidated Statements of Cash Flows to conform to the current period presentation. There was no impact on our Consolidated Statements of Operations as a result of these reclassifications.

2. Recent accounting pronouncements

Accounting pronouncements issued and recently adopted

Simplifying the Test for Goodwill Impairment

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles Goodwill and Other (Topic 350)*. The amendments remove Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. Goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The amendments are effective for annual or any interim goodwill impairment tests in fiscal years beginning after December 15, 2019. Early adoption is permitted for any impairment tests performed after January 1, 2017. The standard will be effective for us for annual or any interim goodwill impairment tests in fiscal years beginning August 1, 2020. We elected early adoption of ASU 2017-04 as of January 1, 2017. We do not deem the adoption of this update to have a material impact on our consolidated financial statements as of January 1, 2017.

Accounting pronouncements issued and not yet effective

Clarifying the Definition of a Business

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. The amendments provide the requirements needed for a set to be a business and establish a practical way to determine when a set is not a business. To be considered a business, an acquisition would have to include an input and a substantive process that

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together significantly contribute to the ability to create outputs. An output is the result of inputs and substantive processes that provide goods or services to customers, other revenue, or investment income, such as dividends and interest. The amendments narrow the definition of outputs and align it with how outputs are described in Topic 606

Revenue from Contracts with Customers . The amendments are effective for annual periods beginning after December 15, 2017, including interim periods within those periods. Early adoption is permitted. The standard will be effective for us in fiscal years beginning August 1, 2018. We are currently evaluating the impact of the adoption of this update on our consolidated financial statements.

Classification of Certain Cash Receipts and Cash Payments

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230)*. The amendments provide guidance on the eight specific cash flow statement presentation and classification issues as follows: (1) debt prepayment or debt extinguishment costs; (2) settlement of zero-coupon debt instruments or other debt instruments with coupon interest rates that are insignificant in relation to the effective interest rate of the borrowing; (3) contingent consideration payments made after a business combination; (4) proceeds from the settlement of insurance claims; (5) proceeds from the settlement of corporate-owned life insurance policies, including bank-owned life insurance policies; (6) distributions received from equity method investees; (7) beneficial interests in securitization transactions; and (8) separately identifiable cash flows and application of the predominance principle. The amendments are effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. Early adoption is permitted. The standard will be effective for us in the first quarter of our fiscal year ending July 31, 2019. We are currently evaluating the impact of the adoption of this update on our consolidated financial statements.

Improvements to employee share-based payment accounting

In March 2016, the FASB issued ASU No. 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which amends ASC 718, *Stock Based Compensation*. The amendments require that all excess tax benefits be recorded as an income tax benefit or expense in the income statement and be classified as an operating activity in the statement of cash flows. Entities may also elect to estimate the amount of forfeitures or recognize them as they occur. The amendments are effective for fiscal years, and interim periods within those years, beginning after December 15, 2016. The standard will be effective for us in the first quarter of our fiscal year ending July 31, 2018 and early adoption is permitted. We are currently evaluating the impact of the adoption of this update on our consolidated financial statements.

Leases

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* . The standard requires lessees to recognize assets and liabilities for most leases on the balance sheet. For income statement purposes, the standard requires leases to be classified as either operating or finance. The standard is effective for annual and interim periods beginning after December 15, 2018. Early adoption is permitted. The standard will be effective for us in the first quarter of our fiscal year ending July 31, 2020. Adoption requires application of the new guidance for all periods presented. We are currently evaluating the impact of the adoption of this standard on our consolidated financial statements.

Revenue from contracts with customers

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* . This update affects any entity that either enters into contracts with customers to transfer goods or services or enters into contracts for the transfer of nonfinancial assets. This update will supersede existing revenue recognition requirements and most industry-specific guidance. This update also supersedes some cost guidance, including revenue recognition guidance

for construction-type and production-type contracts. The update's core principle is that a company will recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. In doing so, companies will need to use more judgment and make more estimates than under today's guidance. These may include identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. This update should be applied either on a retrospective or modified retrospective basis. This update was originally effective for us in the first quarter of our fiscal year ending July 31, 2018. Early adoption was not permitted. In August 2015, the FASB approved a one year delay of the effective date of the new revenue standard for public entities. Therefore, this update would be effective for us in the first quarter of our fiscal year ending July 31, 2019. The standard permits entities to early adopt, but only as of the original effective date (i.e. one year earlier). We are currently evaluating the impact of the adoption of this update on our consolidated financial statements.

3. Business Combinations

Oncura Partners Diagnostics, LLC, or Oncura

On January 8, 2016, the Company wholly acquired Oncura Partners Diagnostics, LLC, a privately held provider of remote, real-time ultrasound imaging and teleconsulting services currently focused on the veterinary medicine market. Oncura is included within

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the Ultrasound reportable segment. The purchase price was \$20.2 million, comprised of an upfront cash payment of \$8.4 million, post-closing adjustments of \$0.4 million, the relief of liabilities owed to Analogic of \$1.3 million, and the fair value of contingent consideration at the time of acquisition of \$10.1 million. The acquisition has been accounted for as an acquisition of a business.

We finalized the purchase accounting for the Oncura acquisition during the second quarter of fiscal year 2017. The following table summarizes the purchase price allocation based on estimates of the fair values of the separately identifiable assets acquired and liabilities assumed as of the acquisition date. The fair value measurements of intangibles, property, plant and equipment, deferred revenue, and contingent consideration were based upon significant inputs not observable in the market and therefore represent fair value measurements based on Level 3 inputs, as defined in *Note 7, Fair Value Measurements*.

(in millions)	
Cash	\$ 0.4
Accounts receivable	0.3
Inventory	0.2
Other assets	0.4
Property, plant, and equipment	0.4
Goodwill	16.4
Intangible assets:	
Tradename (estimated useful life of 5 years)	\$ 1.0
Customer relationships (estimated useful life of 6 years)	3.1
Total intangible assets	4.1
Total assets acquired	22.2
Accounts payable and accrued expenses	(0.9)
Deferred revenue	(1.1)
Total liabilities assumed	(2.0)
Total purchase price	\$ 20.2

We estimated the fair value of identifiable acquisition-related intangible assets primarily based on discounted cash flow projections that will arise from these assets. We use significant judgment with regard to assumptions used in the determination of fair value such as discount rates and the determination of the estimated useful lives of the intangible assets.

In connection with this acquisition, we recorded an acquisition date fair value contingent consideration obligation of \$10.1 million within long-term contingent consideration, in the Consolidated Balance Sheets. This obligation is payable upon the achievement of certain revenue and gross margin targets over a four year period starting on May 1, 2016. There is no limit on the earnout that can be paid out. The \$10.1 million fair value was estimated through a Monte Carlo valuation model that incorporates probability adjusted assumptions relating to the achievement of these targets and the likelihood of us making payments. This fair value measurement is based upon significant inputs not observable in the market and therefore represents a Level 3 input measurement. Subsequent changes in the fair value of this obligation will be recognized as adjustments to the contingent consideration liability and reflected within our

Consolidated Statement of Operations within general and administrative operating expenses. During the six months ended January 31, 2017 and fiscal year 2016, the estimated fair value of our contingent consideration obligation changed by \$(8.1) million and \$0.1 million. The total fair value of our contingent consideration obligation was \$2.1 million and \$10.2 million as of January 31, 2017 and July 31, 2016. For additional information related to the fair value of this obligation, please refer to *Note 7. Fair Value Measurements*.

We recorded goodwill of \$16.4 million related to the Oncura acquisition representing the value of the opportunities from the addition of Oncura's product and service portfolio within the veterinary industry. The goodwill from this acquisition will be deductible for tax purposes over the statutory 15 year period.

During the three and six months ended January 31, 2017, we did not incur acquisition costs. During the three and six months ended January 31, 2016, we incurred acquisition costs of approximately \$0.4 million, which consisted primarily of legal and due diligence expenses that are included in our general and administrative expenses in our Consolidated Statements of Operations.

The pro forma financial information for the three and six months ended January 31, 2017 and 2016, including revenue and net income, is immaterial, and has not been separately presented.

4. Accounts receivable, net

Our accounts receivable arise primarily from products sold and services provided in North America, Europe and Asia. The balance in accounts receivable represents the amount due from our domestic and foreign original equipment manufacturers, or OEM, customers, distributors and end users. We perform ongoing credit evaluations of our customers' financial condition and continuously monitor collections and payments from our customers and maintain a provision for estimated credit losses based upon specific

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customer collection issues that have been identified. We accrue reserves against trade receivables for estimated losses that may result from a customer's inability to pay. Amounts determined to be uncollectible are charged or written off against the reserve. To date, our historical write-offs of accounts receivable have been minimal.

Our top ten customers combined accounted for approximately 63% and 61% of our total net revenue for each of the three months ended January 31, 2017 and 2016, respectively and 63% and 62% of our total net revenue for the six months ended January 31, 2017 and 2016 respectively. Set forth in the table below are customers which individually accounted for 10% or more of our net revenue.

	Three Months Ended January 31,		Six Months Ended January 31,	
	2017	2016	2017	2016
Koninklijke Philips Electronics N.V., or Philips	14%	13%	13%	13%
Siemens AG	11%	13%	12%	14%
L-3 Communications Corporation, or L-3	10%	*	10%	*
Toshiba Corporation, or Toshiba	11%	11%	10%	11%

Note (*): Total net revenue was less than 10% in this period.

The following table summarizes our customers with net accounts receivable balances greater than or equal to 10% of our total net accounts receivable balance:

	As of January 31, 2017	As of July 31, 2016
L-3	13%	17%
Philips	18%	15%
Toshiba	10%	*

5. Inventory

The components of inventory, net of allowance for obsolete, unmarketable or slow-moving inventories, are summarized as follows:

(in millions)	As of January 31, 2017	As of July 31, 2016
Raw materials	\$ 72.4	\$ 68.6
Work in process	45.3	45.6
Finished goods	26.1	31.3
Total inventory	\$ 143.8	\$ 145.5

6. Intangible assets and goodwill

Intangible assets

Intangible assets include the value assigned to intellectual property and other technology, patents, customer contracts and relationships, and trade names. The estimated useful lives for all of these intangible assets, excluding a trade name determined to have an indefinite life, range between 1 to 14 years. Indefinite-lived intangible assets consist of trade names acquired in business combinations. The carrying values of our indefinite-lived intangible assets were \$7.6 million at both January 31, 2017 and July 31, 2016.

Finite-lived intangible assets are summarized as follows:

(in millions)	Weighted Average Amortization Period	As of January 31, 2017			As of July 31, 2016		
		Accumulated Amortization/			Accumulated		
		Cost	Write-Offs	Net	Cost	Amortization	Net
Developed technologies	10 years	\$ 29.2	\$ 16.5	\$ 12.7	\$ 29.9	\$ 15.1	\$ 14.8
Customer relationships	13 years	46.8	27.2	19.6	47.1	25.2	21.9
Trade names	3 years	1.8	1.1	0.7	1.9	1.0	0.9
Total finite-lived intangible assets		\$ 77.8	\$ 44.8	\$ 33.0	\$ 78.9	\$ 41.3	\$ 37.6

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Amortization expense related to acquired intangible assets was \$2.0 million and \$4.0 million for the three and six months ended January 31, 2017, respectively. Amortization expense related to acquired intangible assets was \$2.0 million and \$4.0 for the three and six months ended January 31, 2016, respectively.

During the second quarter of fiscal year 2017, management noted impairment indicators related to the Pathfinder intangible assets which had a carrying value of \$0.6 million. Pathfinder is part of our Security and Detection operating segment. Management performed an impairment test based on the projected future cash flows and recorded an impairment charge of \$0.6 million, including a write-off of developed technology of \$0.5 million and a write-off of trade name of \$0.1 million. We recorded these amounts in the asset impairment charges caption in our accompanying unaudited condensed consolidated statements of operations.

The estimated future amortization expense related to intangible assets for the five succeeding fiscal years is expected to be as follows:

(in millions)	Estimated Future Amortization Expense
Remaining 2017	\$ 3.9
2018	6.8
2019	5.6
2020	5.2
2021	4.8
Thereafter	6.7
	\$ 33.0

Goodwill

Analogic has goodwill balances of \$64.1 million at January 31, 2017 and \$73.9 million at July 31, 2016. We review periodically or more frequently if indicators are present or changes in circumstances suggest that it is more likely than not that impairment may exist and we perform a formal goodwill impairment test in the second quarter of each fiscal year.

Changes in the carrying amount of goodwill by reportable segments for the six months ended January 31, 2017 are as follows:

(in millions)	Medical Imaging	Ultrasound	Security and Detection	Total Goodwill
Balance as of July 31, 2016 Goodwill	\$ 1.9	\$ 71.5	\$ 0.5	\$ 73.9
Impairment losses		(9.8)		(9.8)
Balance as of January 31, 2017 Goodwill	1.9	71.5	0.5	73.9
Accumulated impairment losses		(9.8)		(9.8)

\$ 1.9	\$ 61.7	\$ 0.5	\$ 64.1
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We have four reporting units with goodwill Medical Imaging, Ultrasound, Oncura, and Security and Detection and three reportable segments Medical Imaging, Ultrasound, and Security and Detection. We performed the annual impairment test for our goodwill and other intangible assets with indefinite lives as of December 31, 2016. We first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value and as a basis for determining whether it is necessary to perform the quantitative impairment test. Alternatively, we may elect to bypass the qualitative assessment and proceed to the two-step quantitative impairment test. If we choose to perform a qualitative assessment and determine it is more likely than not that the carrying value of the net assets is more than the fair value of the related operations, the two-step impairment process is then performed; otherwise, no further testing is required.

Our quantitative impairment assessment considered both the market approach and income approach to calculate the fair value of the reporting unit, with different weights assigned to each. Under the market approach, the fair value of the reporting unit is based on trading multiples of a peer group of companies, which was determined based on an analysis of the selected guideline public companies business enterprise value (BEV) plus a control premium, which was determined based on an analysis of control premiums for recent relevant acquisitions. Under the income approach, the fair value of the reporting unit is based on the present value of estimated future cash flows, which are determined, based upon the Company s most recent strategic operating plan and considering market participant assumptions. The income approach is dependent on a number of significant management assumptions including estimates of future revenues, costs and expenses, and a number of significant valuation inputs including discount rates, working

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capital rates and tax rates. For our Medical Imaging, Ultrasound, Oncura and Security and Detection reporting units, we used the two-step quantitative impairment test. For the Security and Detection reporting unit, we performed the market approach and determined that the fair value of our Security and Detection reporting unit was in excess of its carrying value, and concluded that there was no impairment. For our Medical Imaging and Ultrasound reporting units we used both the market approach and income approach and determined that there was no impairment of goodwill. For our Medical Imaging reporting unit, we determined that the estimated fair value of the Medical Imaging reporting unit substantially exceeds its carrying value. For our Ultrasound reporting unit, we determined that our Ultrasound reporting unit was at risk of failing the first step of the goodwill impairment test in future reporting periods due to forecast revisions and changes in strategy in our ultrasound business. For example, an increase in the discount rate applied to the Ultrasound cash flows of 300 basis points could result in a failure of Step 1 of the impairment test. Also, a decrease in the revenue compound annual growth rate within the Ultrasound cash flow forecast of 200 basis points could result in a failure of Step 1 of the impairment test. Our Ultrasound reporting unit had excess fair value over carrying value of approximately 25% as of our annual test date and held \$55.1 million of allocated goodwill as of December 31, 2016.

For our Oncura reporting unit, recent changes in our strategy caused us to decrease future forecasted revenues from our prior estimates. As a result, we determined that the associated goodwill was impaired and recorded an estimated charge of \$9.8 million in the second quarter of fiscal year 2017. We recorded this amount in the asset impairment charges caption in our accompanying unaudited condensed consolidated statements of operations. The amount of this charge is subject to finalization in the third quarter of fiscal year 2017. We would recognize any necessary adjustment to this estimate in the third quarter of fiscal year 2017, as we finalize the second step of the goodwill impairment test, in accordance with ASC Topic 350, *Intangibles - Goodwill and Other*. Also as a result of our decreased revenue forecast for Oncura, we recorded an adjustment to the associated contingent considerations liability, which resulted in a gain of \$8.1 million recorded within General and Administrative expenses.

The aggregate amount of goodwill that remains associated with our Oncura reporting unit is \$6.6 million as of January 31, 2017. In addition, the remaining book value of our other intangible assets allocated to our Oncura reporting unit is approximately \$3.3 million as of January 31, 2017. In accordance with ASC Topic 360, we tested our Oncura amortizable intangible assets as of December 31, 2016 for recoverability on an undiscounted cash flow basis, and determined that these assets were recoverable.

We compared the fair value of a tradename that has an indefinite life using the relief from royalty approach to its carrying value as of December 31, 2016. The relief from royalty approach utilized an after-tax royalty rate and a discount rate. The after-tax royalty rate was determined based on royalty research and margin analysis, while the discount rate was determined after consideration of market rates of return on debt and equity capital, the weighted average return on invested capital, and the risk associated with achieving forecasted sales for the tradename. We determined that the fair value of the tradename was in excess of its carrying value.

The current economic environment and the uncertainties regarding its impact on our business and our estimates for forecasted revenue and spending levels made for purposes of our goodwill and trade name impairment testing may not be accurate predictions of the future. If our assumptions regarding forecasted revenue or margin growth rates of each reporting unit and trade name are not achieved, we may be required to record an impairment charge for the goodwill and trade name in future periods, whether in connection with our next annual impairment testing in the second quarter of the fiscal year ending July 31, 2018, or prior to that if any such change constitutes a triggering event outside of the quarter from when the annual goodwill and trade name impairment test is performed. Changes in our forecasts, or decreases in the value of our common stock could cause book values of certain operations to exceed their fair values which may result in goodwill impairment charges in future periods. It is not possible at this time to determine if any such future impairment charge would result or, if it does, whether such charge would be material.

7. Fair value measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or the most advantageous market for the asset transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. We use a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the last unobservable, that may be used to measure fair value:

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

Level 2 Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

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The following tables provide the assets and liabilities carried at fair value and measured on a recurring basis at January 31, 2017 and July 31, 2016:

Fair Value Measurements at January 31, 2017				
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(in millions)	Total			
Assets				
Cash and cash equivalents	\$ 153.0	\$ 153.0	\$	\$
Plan assets for deferred compensation	6.5	6.5		
Total assets at fair value	\$ 159.5	\$ 159.5	\$	\$
Liabilities				
Contingent consideration	\$ 4.1	\$	\$	\$ 4.1
Foreign currency forward contracts				
Total liabilities at fair value	\$ 4.1	\$	\$	\$ 4.1

Fair Value Measurements at July 31, 2016				
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
(in millions)	Total			
Assets				
Cash and cash equivalents	\$ 118.7	\$ 118.7	\$	\$
Plan assets for deferred compensation	5.9	5.9		
Total assets at fair value	\$ 124.6	\$ 124.6	\$	\$
Liabilities				
Contingent consideration	\$ 12.2	\$	\$	\$ 12.2
Foreign currency forward contracts	0.3		0.3	
Total liabilities at fair value	\$ 12.5	\$	\$ 0.3	\$ 12.2

Assets held in the deferred compensation plan will be used to pay benefits under our non-qualified deferred compensation plan. The investments primarily consist of mutual funds which are publicly traded on stock exchanges. Accordingly, the fair value of these assets is categorized as Level 1 within the fair value hierarchy.

The fair value of the liabilities arising from our foreign currency forward contracts is determined by valuation models based on market observable inputs, including forward and spot prices for currencies. Accordingly, the fair value of these liabilities is categorized as Level 2 within the fair value hierarchy.

The fair value of our contingent consideration obligation is based on significant unobservable inputs, including management estimates and assumptions, and is measured based on the probability-weighted present value of the payments expected to be made. Accordingly, the fair value of this liability is categorized as Level 3 within the fair value hierarchy.

The fair value of the contingent payments associated with the acquisition of PocketSonics, Inc., or PocketSonics, was calculated utilizing 100% probability for the earn out associated with the Section 510(k) clearance obtained from the Food and Drug Administration, or FDA, on April 9, 2014 and the first commercial shipment as defined in the purchase agreement, in the fiscal year ending July 31, 2016, or fiscal year 2016. Each quarter we revalue the contingent consideration obligations associated with the acquisition of PocketSonics to its then current fair value and record changes in the fair value to the Consolidated Statements of Operations. Changes in contingent consideration result from changes in the assumptions regarding probabilities of the estimated timing of launch, volume sales target, payments and the discount rate used to estimate the fair value of the liability. The assumptions used in estimating fair value require significant judgment. The use of different assumptions and judgments could result in a materially different estimate of fair value. There was no change in the fair value of our contingent consideration obligation during the three and six months ended January 31, 2017. As of January 31, 2017 and July 31, 2016 the fair value of the contingent consideration obligation was reported in Other current liabilities as \$2.0 million, in the Consolidated Balance Sheets. We anticipate paying out the \$2.0 million contingent liability by the end of the third quarter during fiscal year 2017. Please refer to *Note 3. Business combination* in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016 for more information on the acquisition of Pocketsonics.

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The fair value of the contingent payment obligation associated with the acquisition of Oncura was valued using a Monte Carlo simulation. The fair value of the contingent payment obligation of Oncura will be revalued each quarter to its then fair value and we will record changes in the fair value as contingent consideration expense within our Consolidated Statement of Operations within general and administrative operating expenses. Changes in contingent consideration expense result from changes in the assumptions regarding probabilities of the estimated future sales volume and gross margin targets and the discount rate used to estimate the fair value of the liability. The assumptions used in estimating the fair value require significant judgment. The use of different assumptions and judgments could result in a different estimate of fair value. There was a \$8.2 million and \$8.1 million decrease in the fair value of our contingent consideration obligation during the three and six months ended January 31, 2017, due to revisions in our forecasted revenues of the Oncura business, which reduced the amount of contingent consideration we expect to pay. As of January 31, 2017, the fair value of the contingent consideration obligation associated with the Oncura acquisition was \$1.1 million within short-term contingent consideration and \$1.0 million within long-term contingent consideration, in the Consolidated Balance Sheets. For more information on the acquisition of Oncura, please refer to *Note 3. Business combination* in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016.

8. Derivative instruments

Certain of our foreign operations have revenue and expenses transacted in currencies other than the U.S. dollar. In order to mitigate foreign currency exchange risk, we use forward contracts to lock in exchange rates associated with a portion of our forecasted international expenses.

As of January 31, 2017, we have forward contracts outstanding with notional amounts totaling \$14.3 million. These contracts are designated as cash flow hedges, and the unrealized loss of \$0.0 million, net of tax, on these contracts are reported in Accumulated other comprehensive income as of January 31, 2017. Assets and liability derivatives designated as hedging instruments are presented in other assets and other liabilities, respectively, on our Consolidated Balance Sheets. At January 31, 2017 we had a derivative liability of \$0.0 million included in other liabilities on our Consolidated Balance Sheet.

As of July 31, 2016, we have forward contracts outstanding with notional amounts totaling \$18.6 million. These contracts are designated as cash flow hedges, and the unrealized loss of \$0.2 million, net of tax, on these contracts are reported in Accumulated other comprehensive income as of July 31, 2016. At July 31, 2016 we had a derivative liability of \$0.3 million included in other liabilities on our Consolidated Balance Sheet.

Realized gains and (losses) on the cash flow hedges are recognized in income in the period when the payment of expenses is recognized. During the three and six months ended January 31, 2017 we recorded approximately \$0.2 million and \$0.3 million of realized loss, respectively, included in our Consolidated Statements of Operations. During the three and six months ended January 31, 2016 we recorded \$0.2 million and \$0.5 million of realized loss, respectively.

9. Common stock repurchases

On May 26, 2016, our board of directors authorized the repurchase of up to \$15.0 million of our common stock. This amount is in addition to \$1.0 million remaining under the \$30 million stock repurchase authorized by our board of directors on June 2, 2014. The purchases will be made from time to time depending on market conditions and other factors. The Company's repurchase program has no expiration date. The Board's authorization of the share repurchase program does not obligate the Company to acquire any particular amount of common stock, and the program may be suspended or discontinued at any time at the Company's discretion. No shares have been repurchased under this

program in the three and six months ended January 31, 2017.

10. Accumulated other comprehensive income

Components of comprehensive (loss) income include net income and certain transactions that have generally been reported in the Consolidated Statements of Changes in Stockholders' Equity. Other comprehensive (loss) income consists of reported foreign currency translation gains and losses (net of taxes), actuarial gains and losses on pension plan assets (net of taxes), and changes in the unrealized value on foreign currency forward contracts (net of taxes). Deferred taxes are not provided on cumulative translation adjustments where we expect earnings of a foreign subsidiary to be indefinitely reinvested. The income tax effect of currency translation adjustments related to foreign subsidiaries that are not considered indefinitely reinvested is recorded as a component of deferred taxes with an offset to other comprehensive (loss) income.

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The following table summarizes components of Accumulated other comprehensive (loss) income for the six months ended January 31, 2017:

(in millions)	Unrealized Gain on Foreign Currency Forward Contracts	Unrealized Losses on Pension Plan	Currency Translation Adjustment	Accumulated Other Comprehensive Income
Balance as of July 31, 2016	\$ (0.2)	\$ (4.9)	\$ (3.4)	\$ (8.5)
Pre-tax change before reclassification to earnings		0.2	(2.5)	(2.3)
Amount reclassified to earnings	0.2			0.2
Income tax benefit (provision)		(0.1)	(0.1)	(0.2)
Balance as of January 31, 2017	\$ (0.0)	\$ (4.8)	\$ (6.0)	\$ (10.8)

The ineffective portion of the unrealized losses on foreign currency forward contracts and unrealized gains or losses on currency translation adjustment are included in other expense, net on our Consolidated Statements of Operations.

11. Share-based compensation

The following table presents share-based compensation expense included in our Consolidated Statements of Operations:

(in millions)	Three Months Ended January 31,		Six Months Ended January 31,	
	2017	2016	2017	2016
Cost of product sales	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.3
Cost of engineering sales	0.1	0.1	0.1	0.1
Research and product development	0.5	0.6	0.9	1.1
Selling and marketing	0.5	0.3	0.9	0.7
General and administrative	1.4	0.7	2.2	2.0
Total share-based compensation expense before tax	2.6	1.8	4.2	4.2
Income tax effect	(0.8)	(0.5)	(1.3)	(1.2)
Share-based compensation expense included in net income	\$ 1.8	\$ 1.3	\$ 2.9	\$ 3.0

Stock options

We estimate the fair value of stock options using the Black-Scholes valuation model. Key input assumptions used to estimate the fair value of stock options include the exercise price of the award, the expected option term, the expected volatility of our stock over the option's expected term, the risk-free interest rate over the option's expected term, and our expected annual dividend yield. Estimates of fair value are not intended to predict actual future events or the value ultimately realized by persons who receive equity awards.

No stock options were granted during the three and six months ended January 31, 2017 and January 31, 2016, respectively.

The total intrinsic value of options exercised during the three and six months ended January 31, 2017 was \$1.5 million and \$2.2 million, respectively.

Restricted stock and restricted stock units

We estimate the fair value of restricted stock units, or RSUs, that vest based on service conditions using the quoted closing price of our common stock on the date of grant. Share-based compensation expense is amortized over each award's vesting period on a straight-line basis for all awards with service and performance conditions that vest at the end of the performance cycle, while the accelerated method applies to other awards with both service and performance conditions.

For our non-GAAP earnings per share, or EPS awards, the compensation cost is amortized over the performance period on a straight-line basis, net of forfeitures, because such awards vest only at the end of the performance period. The compensation cost is based on the number of shares that are deemed probable of vesting at the end of the three-year performance cycle. This probability assessment is done each quarter and changes in estimates can result in significant expense fluctuations due to the cumulative catch-up adjustment. We estimate the fair value of the non-GAAP EPS awards using the quoted closing price of our common stock on the date of grant.

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For our relative total shareholder return, or TSR awards, which are based on market performance of our stock as compared to an industry peer group, the compensation cost is amortized over the performance period on a straight-line basis net of forfeitures, because the awards vest only at the end of the measurement period and the probability of actual shares expected to be earned is considered in the grant date valuation. As a result, the expense is not adjusted to reflect the actual shares earned. We estimate the fair value of the TSR awards using the Monte-Carlo simulation model.

We granted 0 and 28,148 TSR awards and 0 and 62,032 non-GAAP EPS awards during the three and six months ended January 31, 2017, respectively. We granted 1,711 and 24,821 TSR awards and 2,320 and 32,444 non-GAAP EPS awards during the three and six months ended January 31, 2016, respectively. The fair value of our TSR performance-based awards at the date of grant was estimated using the Monte-Carlo simulation model with the following assumptions:

	Three Months Ended January 31,		Six Months Ended January 31,	
	2017	2016	2017	2016
Stock price (1)	\$	\$ 81.90	\$ 90.23	\$ 84.06
Expected volatility (2)	0.00%	27.6%	27.0%	26.4%
Risk-free interest rate (3)	0.00%	1.16%	0.85%	1.04%
Expected annual dividend yield (4)	0.00%	0.00%	0.00%	0.00%
Weighted average grant date fair value of time-based restricted stock awards	\$ 92.30	\$ 81.90	\$ 89.48	\$ 83.99
Weighted average grant date fair value of performance based restricted stock awards	\$	\$ 100.82	\$ 87.05	\$ 98.81

- (1) The stock price is the closing price of our common stock on the date of grant.
- (2) The expected volatility for each grant is determined based on the historical volatility for the peer group companies and our common stock over a period equal to the remaining term of the performance period from the date of grant for all awards.
- (3) The risk-free interest rate is determined based on the yield of zero-coupon U.S. Treasury securities for a period that is commensurate with the performance period.
- (4) Dividends are considered reinvested when calculating TSR. The dividend yield is therefore considered to be 0%. The total fair value of RSUs that vested during the three and six months ended January 31, 2017 was \$0.6 million and \$3.2 million, respectively.

The total fair value of RSUs that vested during the three and six months ended January 31, 2016 was \$2.4 million and \$4.4 million, respectively.

As of January 31, 2017, the unrecognized compensation cost, net of estimated forfeitures, related to unvested stock options and restricted stock was \$12.9 million. This cost will be recognized over an estimated weighted average amortization period of 1.4 years and assumes target performance for the non-GAAP EPS awards.

12. Restructuring charges***Fiscal Year 2017 Restructuring Plan***

On March 6, 2017, the Company announced a restructuring of its Ultrasound business designed to improve profitability and provide consistent long term growth. The Company intends to focus on its core markets of Urology and Surgery as well as specific areas of the Point of Care market where its products have a competitive advantage. The Company will consolidate the activities currently conducted in Vancouver, British Columbia with its existing operations in Copenhagen, Denmark and Peabody, Massachusetts and plans to exit the Vancouver facility by the end fiscal 2017. The Company intends to re-size its U.S. sales, global marketing as well as general and administration organizations in-line with its objectives. These activities will result in a workforce reduction of approximately 130 employees and is expected to be substantially completed by the end of fiscal 2017.

The Company expects to incur restructuring related charges of up to \$5.0 million in fiscal 2017 of which \$0.5 million was recorded in the second quarter of FY17.

Fiscal Year 2016 Restructuring Plan

On September 16, 2015, the Company announced our fiscal year 2016 restructuring plan, or 2016 Restructuring Plan. This plan includes the transition of certain manufacturing activities from our Peabody, Massachusetts location to our existing facility in Shanghai, China, and a reduction in force in order to align our research and development investment with expected customer funding. We had pre-tax

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adjustment of approximately (\$0.2) million to restructuring during the three and six months ended January 31, 2017. We incurred pre-tax charges of \$3.1 million and \$6.4 million during the three and six months ended January 31, 2016, respectively, primarily relating to severance and personnel related costs for terminated employees. We expect that the 2016 Restructuring Plan will be substantially completed during fiscal year 2017.

Current Period Activity

The following table summarizes accrued restructuring activities for the three months ended January 31, 2017:

(in millions)	Employee Severance and Benefits (A)	Other Restructuring Costs (A)	Total
Balance at October 31, 2016	\$ 2.5	\$	\$ 2.5
Restructuring charge	0.5		0.5
Adjustments	(0.2)		(0.2)
Cash payments	(1.3)		(1.3)
Balance at January 31, 2017	\$ 1.5	\$	\$ 1.5

(A) Restructuring charges in fiscal year 2017 includes \$0.5 million with respect to Fiscal Year 2017 actions. All other activity pertains to the Fiscal Year 2016 Restructuring Plan.

The following table summarizes accrued restructuring activities for the six months ended January 31, 2017:

(in millions)	Employee Severance and Benefits (A)	Other Restructuring Costs (A)	Total
Balance at July 31, 2016	\$ 5.2	\$	\$ 5.2
Restructuring charge	0.5		0.5
Adjustments	(0.2)		(0.2)
Cash payments	(4.0)		(4.0)
Balance at January 31, 2017	\$ 1.5	\$	\$ 1.5

(A) Restructuring charges in fiscal year 2017 includes \$0.5 million with respect to Fiscal Year 2017 actions. All other activity pertains to the Fiscal Year 2016 Restructuring Plan.

Restructuring and related charges, including actions associated with acquisitions, by segment are as follows:

(in millions)	For Three Months Ended		For Six Months Ended	
	January 31,		January 31,	
	2017	2016	2017	2016
Medical Imaging	\$ 0.09	\$ 1.9	\$ 0.11	\$ 4.0
Ultrasound	0.17	0.6	0.18	1.3
Security and Detection	0.01	0.6	0.01	1.2
Total restructuring and related charges	\$ 0.27	\$ 3.1	\$ 0.30	\$ 6.5

Accrued restructuring charges are classified on the Consolidated Balance Sheets in the Current Liabilities section.

13. Net income per common share

Basic net income per share is computed using the weighted average number of common shares outstanding during the period. Diluted net income per share is computed using the sum of the weighted average number of common shares outstanding during the period and, if dilutive, the weighted average number of potential shares of common stock, including unvested restricted stock and the assumed exercise of stock options using the treasury stock method.

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Basic and diluted net income per share are calculated as follows:

	Three Months Ended January 31,		Six Months Ended January 31,	
(in millions, except per share data and share data in thousands)	2017	2016	2017	2016
Net income (loss)	\$ 7.5	\$ (3.0)	\$ 10.0	\$ (1.6)
Weighted average number of common shares outstanding-basic	12,466	12,418	12,442	12,422
Effect of dilutive securities:				
Stock options and restricted stock units	214		270	
Weighted average number of common shares outstanding-diluted	12,680	12,418	12,712	12,422
Basic net income (loss) per share	\$ 0.60	\$ (0.24)	\$ 0.81	\$ (0.13)
Diluted net income (loss) per share	\$ 0.59	\$ (0.24)	\$ 0.79	\$ (0.13)
Anti-dilutive shares related to outstanding stock options				
and unvested restricted stock (A)	372	326	372	357

(A) These shares related to outstanding stock options and unvested restricted stock were not included in our calculations of diluted earnings per share, as the effect of including them would be anti-dilutive.

14. Income taxes

The following table presents the provision for income taxes and our effective tax rate for the three and six months ended January 31, 2017 and 2016:

	Three Months Ended January 31,		Six Months Ended January 31,	
(in millions except percentages)	2017	2016	2017	2016
Provision for income taxes	\$ 2.0	\$ 1.0	\$ 2.9	\$ 1.1
Effective tax rate	21%	-51%	23%	-244%

The effective income tax rate on operations is based upon the estimated income for the year, the composition of the income in different countries, and adjustments, if any, in the applicable quarterly periods for the potential tax consequences, benefits, resolutions of tax audits or other tax contingencies.

Our effective tax rate for the three and six months ended January 31, 2017 is lower than the statutory rate of 35% primarily due to income generated outside the United States in countries with lower tax rates, tax credits in the United States and Canada, and the manufacturing deduction in the United States. The tax provision for the three and six months ended January 31, 2017 includes discrete tax benefits totaling \$0.4 million.

Our effective tax rate for the three and six months ended January 31, 2016 is lower than the statutory rate of 35% primarily due to income generated outside the United States in countries with lower tax rates, tax credits in Canada, and a non-recurring discrete item. The tax provision for the three and six months ended January 31, 2016 includes discrete tax benefits totaling \$1.4 million and \$1.3 million, respectively.

We are subject to U.S. Federal income tax as well as the income tax of multiple state and foreign jurisdictions. As of January 31, 2017, we have concluded all U.S. Federal income tax matters through the year ended July 31, 2012.

We accrue interest and, if applicable, penalties for any uncertain tax positions. This interest and penalty expense is treated as a component of income tax expense. At January 31, 2017 and July 31, 2016, we had approximately \$0.5 million and \$0.4 million accrued for interest and penalties on unrecognized tax benefits.

At January 31, 2017, we had \$7.1 million of unrecognized tax benefits for uncertain tax positions and \$0.5 million of related accrued interest and penalties. We are unable to reasonably estimate the amount and period in which these liabilities might be paid.

We do not provide for U.S. Federal income taxes on undistributed earnings of consolidated foreign subsidiaries, as such earnings are intended to be indefinitely reinvested in those operations. Determination of the potential deferred income tax liability on these undistributed earnings is not practicable because such liability, if any, is dependent on circumstances that exist if and when remittance occurs. The circumstances that would affect the calculations would be the source location and amount of the distribution, the underlying tax rate already paid on the earnings, foreign withholding taxes and the opportunity to use foreign tax credits.

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Our business is strategically aligned into three segments: Medical Imaging, Ultrasound, and Security and Detection. Our business segments are described as follows:

Medical Imaging primarily includes systems and subsystems for CT and MRI medical imaging equipment as well as state-of-the-art, selenium-based detectors for screening of breast cancer and other diagnostic applications in mammography.

Ultrasound includes ultrasound systems and transducers primarily in the urology, surgery, and point-of-care markets.

Security and Detection includes advanced threat detecting CT systems utilizing our expertise in advanced imaging technology, primarily used in the checked baggage screening at airports worldwide.

The tables below present information about our reportable segments:

(in millions)	Three Months Ended January 31,		Six Months Ended January 31,	
	2017	2016	2017	2016
Product revenue:				
Medical Imaging	\$ 71.2	\$ 72.4	\$ 137.7	\$ 136.8
Ultrasound	40.3	42.6	75.9	79.1
Security and Detection	18.8	10.9	37.0	24.2
Total product revenue	\$ 130.3	\$ 125.9	\$ 250.6	\$ 240.1
Engineering revenue:				
Medical Imaging	\$ 1.2	\$ 1.1	\$ 1.9	\$ 1.7
Ultrasound		0.7	0.2	0.9
Security and Detection		0.2		0.2
Total engineering revenue	\$ 1.2	\$ 2.0	\$ 2.1	\$ 2.8
Net revenue:				
Medical Imaging	\$ 72.4	\$ 73.5	\$ 139.6	\$ 138.5
Ultrasound	40.3	43.3	76.1	80.0
Security and Detection	18.8	11.1	37.0	24.4
Total net revenue	\$ 131.5	\$ 127.9	\$ 252.7	\$ 242.9
Income from operations:				
Medical Imaging (A)	\$ 12.2	\$ 11.6	\$ 18.9	\$ 18.0

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Ultrasound (B)	(4.5)	(9.9)	(10.3)	(14.5)
Security and Detection (C)	1.8	(0.2)	4.8	
Total income from operations	9.5	1.5	13.4	3.5
Total other income (loss), net	0.03	(3.5)	(0.4)	(4.0)
Income (loss) before income taxes	\$ 9.5	\$ (2.0)	\$ 13.0	\$ (0.5)

(in millions)	As of January 31, 2017	As of July 31, 2016
Identifiable total assets by segment:		
Medical Imaging	\$ 179.9	\$ 191.1
Ultrasound	142.2	152.5
Security and Detection	43.3	49.8
Total reportable segment assets	365.4	393.4
Corporate assets (D)	198.9	165.6
Total identifiable assets	\$ 564.3	\$ 559.0

(A) Includes restructuring charges of \$0.09 million and \$1.9 million for three months ended January 31, 2017 and January 31, 2016, respectively and \$0.11 million and \$4.0 million for six months January 31, 2017 and January 31, 2016.

(B) Includes restructuring charges of \$0.17 million and \$0.6 million for three months ended January 31, 2017 and January 31, 2016, respectively and \$0.18 million and \$1.3 million for six months January 31, 2017 and January 31, 2016.

Includes contingent consideration charges of \$(8.2) million and \$(8.1) million related to Oncura for three and six months ended January 31, 2017, respectively, asset impairment charges of \$9.8 million related to Oncura for three and six months ended January 31, 2017, charges for the BK Medical matter of \$10.1 million for three and six months ended January 31, 2016.

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(C) Includes restructuring charges of \$0.01 million and \$0.6 million for three months ended January 31, 2017 and January 31, 2016, respectively and \$0.01 million and \$1.2 million for six months January 31, 2017 and January 31, 2016.

Includes asset impairment charges of \$0.6 million related to Pathfinder for three and six months ended January 31, 2017.

(D) Includes cash and cash equivalents of \$139.9 million and \$97.3 million as of January 31, 2017 and July 31, 2016, respectively.

16. Guarantees, commitments and contingencies***Guarantees and Indemnification Obligations***

Our standard OEM and supply agreements entered in the ordinary course of business typically contain an indemnification provision pursuant to which we indemnify, hold harmless, and agree to reimburse the indemnified party for losses suffered or incurred by the indemnified party in connection with any U.S. patent or any copyright or other intellectual property infringement claim by any third party with respect to our products. Such provisions generally survive termination or expiration of the agreements. The potential amount of future payments we could be required to make under these indemnification provisions is, in some instances, unlimited. Our costs to defend lawsuits or settle claims related to these indemnification agreements have been insignificant to date. As a result, we believe that our estimated exposure on these agreements is currently minimal. Accordingly, we have no liabilities recorded for these agreements as of January 31, 2017.

Generally, we warrant that our products will perform in all material respects in accordance with our standard published specifications in effect at the time of delivery of the products to the customer for a period ranging from 12 to 60 months from the date of delivery. We provide for the estimated cost of product and service warranties based on specific warranty claims, claim history, and engineering estimates, where applicable.

The following table presents our product warranty liability as of January 31, 2017:

(in millions)	As of January 31, 2017
Beginning balance	\$ 6.3
Provision	0.3
Settlements made in cash or in kind during the period	(0.5)
Ending balance	\$ 6.1

At January 31, 2017 and July 31, 2016, we had deferred revenue for extended product warranty contracts of \$0.3 million and \$0.2 million, respectively.

Revolving Credit Agreements

On November 23, 2015, we entered into a five-year revolving credit agreement, or Credit Agreement, with the financial institutions identified therein as lenders, which included JPMorgan Chase Bank, N.A., TD Bank, N.A., Wells Fargo Bank, N.A., HSBC Bank, N.A., and People's United Bank, N.A. The Credit Agreement provides \$100.0 million in available credit and expires on November 23, 2020, when all outstanding borrowings must be paid in full. The credit facility does not require amortization of principal and may be reduced before maturity in whole or in part at our option without penalty. Upon entry into the Credit Agreement, we terminated without penalty a \$100.0 million five-year, revolving credit agreement entered into on October 11, 2011 and previously paid in full in accordance with its terms. Borrowings under the Credit Agreement may be used for general corporate purposes, including permitted acquisitions. The amount of available credit can be increased under specified circumstances up to \$200.0 million in aggregate. We are the sole borrower under the Credit Agreement. The obligations under the credit facility are guaranteed as required to be by our material domestic subsidiaries as designated by us from time to time or as required under the Credit Agreement. There are no pledges of the capital stock or assets of our international subsidiaries.

Interest rates on borrowings outstanding under the credit facility range from 1.25% to 1.75% above the LIBOR rate, or, at our option range from 0.00% to 1.00% above a defined base rate, the amount in each case varying based upon our leverage ratio. A quarterly commitment fee ranging from 0.20% to 0.35% per annum is applicable on the undrawn portion of the credit facility, based upon our leverage ratio.

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The Credit Agreement limits our and our subsidiaries' ability to, among other things: incur additional indebtedness; incur liens or guarantee obligations; pay dividends or make other distributions; make investments; dispose of assets; and engage in transactions with affiliates except on an arms-length basis. In addition, the Credit Agreement requires us to maintain the following financial ratios:

A leverage ratio, defined as consolidated funded indebtedness to consolidated trailing four quarters earnings before interest, taxes, depreciation and amortization, or EBITDA, with the adjustments as stipulated in the Credit Agreement, of no greater than 2.75:1.00 (with a temporary step-up in the event of certain acquisitions); and

An interest coverage ratio, defined as the ratio of consolidated trailing four quarters adjusted EBITDA to consolidated interest charges of no less than 3.00:1.00 at any time.

As of January 31, 2017, our leverage ratio was 0.004:1.00 and our interest coverage ratio was not applicable as we had no attributable interest expense. As of January 31, 2017, we were in full compliance with all financial and operating covenants contained in the Credit Agreement.

Any failure to comply with the financial or operating covenants of the credit facility would prevent us from being able to borrow and would also constitute a default, permitting the lenders to, among other things, accelerate repayment of outstanding borrowings, including all accrued interest and fees, and to terminate the credit facility. A change in control, as defined in the Credit Agreement, would also constitute an event of default, permitting the lenders to accelerate repayment and terminate the Credit Agreement.

In connection with entering into the Credit Agreement, we incurred approximately \$0.5 million of transactions costs, which are being amortized over the five-year life of the credit facility.

As of January 31, 2017 and July 31, 2016, we had approximately \$1.2 million in other revolving credit facilities with banks available for direct borrowings.

We did not have any borrowing outstanding under any of our credit facilities at January 31, 2017 and July 31, 2016, respectively.

Legal Claims

We are subject to litigation, claims, investigations and audits arising from time to time in the ordinary course of our business. Although legal proceedings are inherently unpredictable, we believe that we have valid defenses with respect to those matters currently pending against us and intend to defend ourselves vigorously. The outcome of these matters, individually and in the aggregate, is not expected to have a material impact on our cash flows, results of operations, or financial position. We record losses when estimable and probable in accordance with U.S. GAAP.

On January 3, 2017, the Company's subsidiary Ultrasonix Medical Corporation (UMC) received a notice of civil claim as a defendant. The lawsuit relates to the lease of a corporate office in Burnaby, British Columbia, of which UMC never took possession. The lawsuit claims that UMC is indebted to the landlord for unpaid and accelerated rent in an amount of approximately CAD 1.0 million, plus costs, plus interest on unpaid rent commencing in April 2014. Subsequent to the second quarter ended January 31, 2017, the Company filed a response in which it contests both liability and the extent of damages. It is reasonably possible that we will have a loss in connection with this matter, but

currently we are unable to estimate the amount of liability, if any, that may be incurred related to this matter.

17. Subsequent events

We declared a dividend of \$0.10 per share of common stock on February 28, 2017, which will be paid on March 31, 2017 to stockholders of record on March 17, 2017.

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

The following discussion provides an analysis of our financial condition and results of operations and should be read in conjunction with the unaudited consolidated financial statements and notes thereto included elsewhere in this report. The discussion contains statements, which, to the extent that they are not a recitation of historical facts, constitute forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical fact, including, statements about product development, market and industry trends, strategic initiatives, regulatory approvals, sales, profits, expenses, price trends, research and development expenses and trends, and capital expenditures, we make in this document or in any document incorporated by reference are forward-looking. Without limiting the foregoing, the words "believes," "anticipates," "plans," "expects," "seeks," "estimates," and similar expressions are intended to identify forward looking statements. Such forward-looking statements involve known and unknown risks, uncertainties, and other factors, which may cause our actual results, performance, or achievements to differ materially from the projected results. See *Part I, Item 1A. Risk Factors* of our Annual Report on Form 10-K for fiscal year 2016 as filed with the U.S. Securities and Exchange Commission, or SEC on September 27, 2016 for a discussion of the primary risks and uncertainties known to us.

In addition, any forward-looking statements represent management's views only as of the date of this Quarterly Report on Form 10-Q was filed with the SEC and should not be relied upon as representing management's views as of any subsequent date. While management may elect to update forward-looking statements at some point in the future, it specifically disclaims any obligation to do so, even if its views change, except as required by law.

We report our financial condition and results of operations on a fiscal year basis ending July 31. The three months ended January 31, 2017 and 2016 represent the second quarters of fiscal years 2017 and 2016, respectively.

Our Management's Discussion and Analysis is presented in six sections as follows:

Executive Summary

Results of Operations

Liquidity and Capital Resources

Commitments, Contractual Obligations, and Off-Balance Sheet Arrangements

Recent Accounting Pronouncements

Critical Accounting Policies

Executive Summary

Introduction

Analogic Corporation designs, manufactures, and commercializes innovative real-time guidance, diagnostic imaging and threat detection technologies to advance the practice of medicine and save lives. We design, manufacture and sell advanced medical imaging, ultrasound and security systems and subsystems to original equipment manufacturers, or OEMs, and end users primarily for the healthcare and airport security markets.

Our business is strategically aligned into three segments: Medical Imaging, Ultrasound, and Security and Detection. Our business segments are described as follows:

Medical Imaging primarily includes systems and subsystems for CT and MRI medical imaging equipment as well as state-of-the-art, selenium-based detectors for screening of breast cancer and other diagnostic applications in mammography.

Ultrasound includes ultrasound systems and transducers primarily used in the urology, surgery, and point-of-care markets.

Security and Detection includes advanced threat detection CT systems utilizing our expertise in advanced medical imaging technology, primarily used in the checked baggage screening at airports worldwide.

Table of Contents**Financial Results**

The following table summarizes our financial results:

	Three Months Ended January 31,			Six Months Ended January 31,		
	Percentage			Percentage		
(in millions, except per share amounts and percentages)	2017	2016	Change	2017	2016	Change
Total net revenues	\$ 131.5	\$ 127.9	3%	\$ 252.7	\$ 242.8	4%
Gross profit	\$ 57.7	\$ 58.8	-2%	\$ 109.3	\$ 109.7	0%
Gross margin	43.9%	46.0%		43.3%	45.2%	
Income from operations	\$ 9.5	\$ 1.5	533%	\$ 13.4	\$ 3.5	283%
Operating margin	7.2%	1.2%		5.3%	1.4%	
Net income (loss)	\$ 7.5	\$ (3.0)	-350%	\$ 10.0	\$ (1.6)	-725%
Diluted net income (loss) per share	\$ 0.59	\$ (0.24)	-349%	\$ 0.79	\$ (0.13)	-708%

For a discussion of seasonal aspects of our business please refer to *Part 1, Item 1. Business* of our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016.

Results of Operations

Three and six months ended January 31, 2017 compared to the three and six months ended January 31, 2016

Net revenue**Product revenue**

Product revenue by segment is summarized as follows:

	Three Months Ended January 31,			Six Months Ended January 31,		
	Percentage			Percentage		
(in millions except percentages)	2017	2016	Change	2017	2016	Change
Medical Imaging	\$ 71.2	\$ 72.4	-2%	\$ 137.7	\$ 136.8	1%
Ultrasound	40.3	42.6	-6%	75.9	79.1	-4%
Security and Detection	18.8	10.9	73%	37.0	24.2	53%
Total product revenue	\$ 130.3	\$ 125.9	3%	\$ 250.6	\$ 240.1	4%

Medical Imaging

During the three months ended January 31, 2017 compared to the same period in 2016, our Medical Imaging revenue decreased by 2%, primarily due to the unfavorable timing of Digital Mammography shipments.

During the six months ended January 31, 2017 compared to the same period in 2016, our Medical Imaging revenue was essentially flat.

Ultrasound

During the three months ended January 31, 2017 compared to the same period in 2016, our Ultrasound revenue decreased by 6%, primarily due to a decrease in direct Ultrasound shipments and customer demand of legacy OEM probes.

During the six months ended January 31, 2017 compared to the same period in 2016, our Ultrasound revenue decreased by 4%, primarily due to decreased customer demand of legacy OEM probes, partially offset by an increase in direct Ultrasound shipments.

Security and Detection

During the three months ended January 31, 2017 compared to the same period in 2016, our Security and Detection revenue increased by 73%, due to increased volume in high speed and Rapid DNA systems.

During the six months ended January 31 2017 compared to the same period in 2016, our Security and Detection revenue increased by 53%, due to increased volume across all product lines.

Table of Contents***Engineering revenue***

Engineering revenue by segment is summarized as follows:

(in millions except percentages)	Three Months Ended			Six Months Ended		
	January 31, 2017	January 31, 2016	Percentage Change	January 31, 2017	January 31, 2016	Percentage Change
Medical Imaging	\$ 1.2	\$ 1.1	9%	1.9	\$ 1.7	12%
Ultrasound		0.7	-100%	0.2	0.9	-78%
Security and Detection		0.2	-100%		0.2	-100%
Total engineering revenue	\$ 1.2	\$ 2.0	-40%	\$ 2.1	\$ 2.8	-25%

The change in engineering revenue for the three and six months ended January 31, 2017 compared to the same periods in 2016, respectively, was primarily due to timing of work done on customer-funded engineering projects in all three of our reported segments.

Customer-funded engineering projects in each of the segments can vary substantially from period to period in terms of resource requirements, type, size, length of project, and profitability.

Gross margin***Product gross margin***

Product gross margin is summarized as follows:

(in millions except percentages)	Three Months Ended			Six Months Ended		
	January 31, 2017	January 31, 2016	Percentage Change	January 31, 2017	January 31, 2016	Percentage Change
Product gross profit	\$ 57.6	\$ 57.8	0%	\$ 109.1	\$ 109.0	0%
Product gross margin	44.2%	45.9%		43.5%	45.4%	

Product gross margin decreased by 1.7 points and 1.9 points, during the three and six months ended January 31, 2017 compared to the same periods in 2016, respectively, primarily due to product/segment mix.

Engineering gross margin

Engineering gross margin is summarized as follows:

(in millions except percentages)	Three Months Ended			Six Months Ended		
	January 31, 2017	January 31, 2016	Percentage Change	January 31, 2017	January 31, 2016	Percentage Change
Engineering gross profit	\$ 0.1	\$ 1.0	-90%	\$ 0.2	\$ 0.7	-71%

Engineering gross margin 6.7% 49.9% -87% 11.1% 26.2% -58%

The decrease in the engineering gross margin during the three and six months ended January 31, 2017 compared to the same periods in 2016, respectively, was due to the mix of engineering projects.

Operating expenses

Operating expenses are summarized as follows:

(in millions except percentages)	Three Months Ended			Percentage of Net	
	January 31, 2017	January 31, 2016	Percentage Change	Revenue 2017	Revenue 2016
Research and product development	\$ 16.2	\$ 16.6	-2.4%	12%	13%
Selling and marketing	17.3	15.2	13.8%	13%	12%
General and administrative	4.0	22.3	-82.1%	3%	17%
Restructuring	0.3	3.1	-90.3%	0%	2%
Asset impairment charges	10.4		100.0%	8%	0%
Total operating expenses	\$ 48.2	\$ 57.2	-15.7%	29%	45%

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(in millions except percentages)	Six Months Ended		Percentage Change	Percentage of Net Revenue	
	January 31, 2017	January 31, 2016		2017	2016
Research and product development	\$ 32.1	\$ 33.8	-5.0%	13%	14%
Selling and marketing	35.5	30.5	16.4%	14%	13%
General and administrative	17.6	35.5	-50.4%	7%	15%
Restructuring	0.3	6.4	-95.3%	0%	3%
Asset impairment charges	10.4		100.0%	4%	0%
Total operating expenses	\$ 95.9	\$ 106.2	-9.7%	34%	44%

Operating expenses for the three and six months ended January 31, 2017 decreased by \$9.0 million, or 15.7%, and \$10.3 million, or 9.7%, compared to the same periods in 2016, respectively.

Research and product development expenses decreased by \$0.4 million, or 2.4% and \$1.7 million, or 5.0% during the three and six months ended January 31, 2017, compared to the same periods in 2016, respectively, due to timing of material related spending.

Selling and marketing expenses increased by \$2.1 million, or 13.8% during the three months ended January 31, 2017 compared to the same period in 2016, due to a \$2.5 million increase in headcount related spending. Selling and marketing expenses increased by \$5.0 million, or 16.4% during the six months ended January 31, 2017 compared to the same period in 2016, due to a \$5.6 million increase in headcount related spending.

General and administrative expenses decreased by \$18.3 million, or 82.1% during the three months ended January 31, 2017 compared to the same periods in 2016, primarily due to a gain recorded in 2017 for the decrease in contingent consideration of \$8.2 million related to Oncura, due to revisions in our forecasted revenues of the Oncura business, which reduced the amount of contingent consideration we expect to pay, and charges for the BK Medical matter of \$10.1 million in 2016. General and administrative expenses decreased by \$17.9 million, or 50.4% during the six months ended January 31, 2017 compared to the same periods in 2016, primarily due to the decrease in contingent consideration of \$8.1 million related to Oncura, and charges for the BK Medical matter of \$10.1 million in 2016. For more information on the BK Medical matter, please refer to *Note 11. Commitments, guarantees and contingencies* in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016.

Restructuring expenses were \$0.3 million and \$0.3 million during the three and six months ended January 31, 2017, compared to \$3.1 million and \$6.4 million the same periods in 2016, respectively, primarily due to expenses in 2016 related to the Fiscal Year 2016 Restructuring Plan. Please refer to *Note 12. Restructuring Charges* for more information on the Fiscal Year 2016 Restructuring Plan.

During the second quarter of fiscal year 2017, management noted impairment indicators related to the Pathfinder intangible assets which had a carrying value of \$0.6 million. Pathfinder is part of our Security and Detection operating segment. Management performed an impairment test based on the projected future cash flows and recorded an impairment charge of \$0.6 million, including a write-off of developed technology of \$0.5 million and a write-off of trade name of \$0.1 million. We recorded these amounts in the asset impairment charges caption in our accompanying unaudited condensed consolidated statements of operations.

We review periodically or more frequently if indicators are present or changes in circumstances suggest that impairment may exist for impairment indicators and perform a formal goodwill impairment test in the second quarter of each fiscal year. We performed the annual impairment test for our goodwill and other intangible assets with

indefinite lives as of December 31, 2016. In conjunction with our annual goodwill impairment test on all reporting units, the fair value of each reporting unit exceeded its carrying value, with the exception of the Oncura reporting unit. For our Oncura reporting unit, recent changes in our strategy caused us to decrease future forecasted revenues from our prior estimates. As a result, we determined that the associated goodwill was impaired and recorded an estimated charge of \$9.8 million in the second quarter of fiscal year 2017. We recorded this amount in the asset impairment charges caption in our accompanying unaudited condensed consolidated statements of operations. The amount of this charge is subject to finalization in the third quarter of fiscal year 2017. We would recognize any necessary adjustment to this estimate in the third quarter of fiscal year 2017, as we finalize the second step of the goodwill impairment test, in accordance with ASC Topic 350, *Intangibles Goodwill and Other*. Also as a result of our decreased revenue forecast for Oncura, we recorded an adjustment to the associated contingent consideration liability, which resulted in a gain of \$8.1 million recorded within General and Administrative expenses. The aggregate amount of goodwill that remains associated with our Oncura reporting unit is \$6.6 million as of January 31, 2017. In addition, the remaining book value of our other intangible assets allocated to our Oncura reporting unit is approximately \$3.3 million as of January 31, 2017. In accordance with ASC Topic 360, we tested our Oncura amortizable intangible assets as of December 31, 2016 for recoverability on an undiscounted cash flow basis, and determined that these assets were recoverable.

We have four reporting units with goodwill Medical Imaging, Ultrasound, Oncura, and Security and Detection, and we have three reportable segments Medical Imaging, Ultrasound, and Security and Detection. We performed the annual impairment test for our goodwill and other intangible assets with indefinite lives as of December 31, 2016. We first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value and as a basis for determining whether it is necessary to perform the quantitative impairment test. Alternatively, we may elect to bypass the qualitative assessment and proceed to the two-step quantitative impairment test. If we choose to perform a qualitative assessment and determine it is more likely than not that the carrying value of the net assets is more than the fair value of the related operations, the two-step impairment process is then performed; otherwise, no further testing is required.

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Our quantitative impairment assessment considered both the market approach and income approach to calculate the fair value of the reporting unit, with different weights assigned to each. Under the market approach, the fair value of the reporting unit is based on trading multiples of a peer group of companies, which was determined based on an analysis of the selected guideline public companies' business enterprise value (BEV) plus a control premium, which was determined based on an analysis of control premiums for recent relevant acquisitions. Under the income approach, the fair value of the reporting unit is based on the present value of estimated future cash flows, which are determined, based upon the Company's most recent strategic operating plan and considering market participant assumptions. The income approach is dependent on a number of significant management assumptions including estimates of future revenues, costs and expenses, and a number of significant valuation inputs including discount rates, working capital rates and tax rates. For our Medical Imaging, Ultrasound, Oncura and Security and Detection reporting units, we used the two-step quantitative impairment test. For the Security and Detection reporting unit, we performed the market approach and determined that the fair value of our Security and Detection reporting units was in excess of its carrying value, and concluded that there was no impairment. For our Medical Imaging and Ultrasound reporting units, we used both the market approach and income approach and determined that there was no impairment of goodwill. For our Medical Imaging reporting unit, we determined that the estimated fair value of the Medical Imaging reporting unit substantially exceeds its carrying value. For our Ultrasound reporting unit, we determined that our Ultrasound reporting unit was at risk of failing the first step of the goodwill impairment test in future reporting periods due to forecast revisions and changes in strategy in our ultrasound business. For example, an increase in the discount rate applied to the Ultrasound cash flows of 300 basis points could result in a failure of Step 1 of the impairment test. Also, a decrease in the revenue compound annual growth rate within the Ultrasound cash flow forecast of 200 basis points could result in a failure of Step 1 of the impairment test. Our Ultrasound reporting unit had excess fair value over carrying value of approximately 25% as of our annual test date and held \$55.1 million of allocated goodwill as of December 31, 2016.

We compared the fair value of a tradename that has an indefinite life using the relief from royalty approach to its carrying value as of December 31, 2016. The relief from royalty approach utilized an after-tax royalty rate and a discount rate. The after-tax royalty rate was determined based on royalty research and margin analysis, while the discount rate was determined after consideration of market rates of return on debt and equity capital, the weighted average return on invested capital, and the risk associated with achieving forecasted sales for the tradename. We determined that the fair value of the tradename was in excess of its carrying value.

The current economic environment and the uncertainties regarding its impact on our business and our estimates for forecasted revenue and spending levels made for purposes of our goodwill and trade name impairment testing may not be accurate predictions of the future. If our assumptions regarding forecasted revenue or margin growth rates of each reporting unit and trade name are not achieved, we may be required to record an impairment charge for the goodwill and trade name in future periods, whether in connection with our next annual impairment testing in the second quarter of the fiscal year ending July 31, 2018, or prior to that if any such change constitutes a triggering event outside of the quarter from when the annual goodwill and trade name impairment test is performed. Changes in our forecasts, or decreases in the value of our common stock could cause book values of certain operations to exceed their fair values which may result in goodwill impairment charges in future periods. It is not possible at this time to determine if any such future impairment charge would result or, if it does, whether such charge would be material.

Other income (expense), net

Other income (expense), net is summarized as follows:

(in millions)	Three Months Ended		Six Months Ended	
	January 31,		January 31,	
	2017	2016	2017	2016
Interest income, net	\$ 0.11	\$	\$ 0.2	\$ 0.1
Other, net	(0.08)	(3.5)	(0.6)	(4.0)
Total other income (expense), net	\$ 0.03	\$ (3.5)	\$ (0.4)	\$ (3.9)

Other income (expense), net was \$0.03 million and (\$0.4) million during the three and six months ended January 31, 2017 compared to (\$3.5) million and (\$3.9) million the same periods in 2016, respectively, predominantly due to interest expense of \$3.2 million in 2016 related to the BK Medical matter. For more information on the BK Medical matter, please refer to *Note 11. Commitments, guarantees and contingencies* in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016.

Provision for income taxes

The following table presents the provision for income taxes and our effective tax rate for the three and six months ended January 31, 2017 and 2016:

	Three Months Ended		Six Months Ended	
	January 31,		January 31,	
(in millions except percentages)	2017	2016	2017	2016
Provision for income taxes	\$ 2.0	\$ 1.0	\$ 2.9	\$ 1.1
Effective tax rate	21%	-51%	23%	-244%

The effective income tax rate on operations is based upon the estimated income for the year, the composition of the income in different countries, and adjustments, if any, in the applicable quarterly periods for the potential tax consequences, benefits, resolutions of tax audits or other tax contingencies.

Our effective tax rate for the three and six months ended January 31, 2017 is lower than the statutory rate of 35% primarily due to income generated outside the United States in countries with lower tax rates, tax credits in the United States and Canada, and the manufacturing deduction in the United States. The tax provision for the three and six months ended January 31, 2017 includes discrete tax benefits totaling \$0.4 million.

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Our effective tax rate for the three and six months ended January 31, 2016 is lower than the statutory rate of 35% primarily due to income generated outside the United States in countries with lower tax rates, tax credits in Canada, and a non-recurring discrete item. The tax provision for the three and six months ended January 31, 2016 includes discrete tax benefits totaling \$1.4 million and \$1.3 million, respectively.

We are subject to U.S. Federal income tax as well as the income tax of multiple state and foreign jurisdictions. As of January 31, 2017, we have concluded all U.S. Federal income tax matters through the year ended July 31, 2012.

We accrue interest and, if applicable, penalties for any uncertain tax positions. This interest and penalty expense is treated as a component of income tax expense. At January 31, 2017 and July 31, 2016, we had approximately \$0.5 million and \$0.4 million accrued for interest and penalties on unrecognized tax benefits.

At January 31, 2017, we had \$7.1 million of unrecognized tax benefits for uncertain tax positions and \$0.5 million of related accrued interest and penalties. We are unable to reasonably estimate the amount and period in which these liabilities might be paid.

We do not provide for U.S. Federal income taxes on undistributed earnings of consolidated foreign subsidiaries, as such earnings are intended to be indefinitely reinvested in those operations. Determination of the potential deferred income tax liability on these undistributed earnings is not practicable because such liability, if any, is dependent on circumstances that exist if and when remittance occurs. The circumstances that would affect the calculations would be the source location and amount of the distribution, the underlying tax rate already paid on the earnings, foreign withholding taxes and the opportunity to use foreign tax credits.

Net income and diluted net income per share

Net income and diluted net income per share are summarized as follows:

(in millions except percentages)	Three Months Ended		Six Months Ended	
	January 31,		January 31,	
	2017	2016	2017	2016
Net income (loss)	\$ 7.5	\$ (3.0)	\$ 10.0	\$ (1.6)
% of net revenue	6%	-2%	4%	-1%
Diluted net income (loss) per share from operations	\$ 0.59	\$ (0.24)	\$ 0.79	\$ (0.13)

The increase in net income and diluted net income per share for the three and six months ended January 31, 2017 compared to the same periods in 2016, respectively, was primarily due to higher revenues and lower operating expenses, partially offset by lower gross margin and a higher provision for income taxes.

Liquidity and Capital Resources

Key liquidity and capital resource information are summarized as follows:

As of	As of	Percentage
January 31,	July 31,	

(in millions)	2017	2016	Change
Cash and cash equivalents (A)	\$ 153.0	\$ 118.7	29%
Working capital	\$ 330.6	\$ 310.3	7%

(A) Includes approximately \$44.1 million and \$45.3 million of cash and cash equivalents held outside the U.S. at January 31, 2017 and July 31, 2016, respectively.

As of January 31, 2017, we had cash and cash equivalents of \$153.0 million, a \$34.3 million increase from July 31, 2016, as we generated \$40.7 million in cash from operations and \$3.1 million from the issuance of stock. This was offset by \$5.7 million paid for additions to property and equipment, \$2.5 million cash payment to shareholders for dividends, and \$1.0 million for the shares surrendered for taxes for vested employee restricted stock grants.

The increase in working capital from July 31, 2016 to January 31, 2017 was primarily attributable to an increase in cash of \$34.3 million, decrease in accrued restructuring charges of \$3.8 million, increase in prepaid expenses and other current assets of \$1.2 million, partially offset by a decrease in accounts receivable of \$20.8 million.

Cash and cash equivalents at January 31, 2017 and July 31, 2016 primarily consisted of demand deposits at highly rated banks and financial institutions. We periodically review our investment portfolio to determine if any investments are impaired due to changes in credit risk or other potential valuation concerns. We believe that our cash equivalents were appropriately valued at January 31, 2017 and July 31, 2016 and we are not aware of any market events that would impact their valuation. This could change in the future should new developments arise in the credit markets.

Table of Contents***Cash flows***

Sources and uses of cash flows are summarized as follows:

(in millions, except percentages)	Six Months Ended January 31,		Percentage Change
	2017	2016	
Net cash provided by operating activities	\$ 40.7	\$ 18.8	116%
Net cash used in investing activities	(5.7)	(12.5)	-54%
Net cash used in financing activities	(0.3)	(9.4)	-97%
Effect of exchange rate changes on cash	(0.4)	(0.7)	-43%
Net increase (decrease) in cash and cash equivalents	\$ 34.3	\$ (3.8)	-1003%

Operating activities

Net cash provided by operating activities during the six months ended January 31, 2017 primarily reflects our net income of \$10.0 million, \$20.0 million related to the collection of accounts receivable, \$12.9 million related to depreciation and amortization, and asset impairment charges of \$10.4 million. This increase was partially offset by a decrease in fair value of contingent consideration of \$8.1 million as well as a decrease in accrued liability of \$5.7 million, primarily due to timing of payments to accrued restructuring charges.

The cash flows provided by operating activities during the six months ended January 31, 2016 primarily reflects our net loss of \$1.6 million, \$20.1 million related to an increase in inventory due to the timing of shipments and to support growth in fiscal year 2016, and \$3.6 million related to a decrease in accrued income taxes. This decrease was partially offset by \$22.9 million related to the collection of accounts receivable, \$11.3 million related to depreciation and amortization, and \$9.9 million related to an increase in accrued liabilities.

Investing activities

Net cash used in investing activities during the six months ended January 31, 2017 was driven by purchases of property, plant and equipment of \$5.7 million.

The net cash used in investing activities during the six months ended January 31, 2016 was driven by capital expenditures of \$4.5 million and the acquisition of Oncura for an \$8 million net cash payment.

Financing activities

Net cash used in financing activities during the six months ended January 31, 2017 primarily reflected \$2.5 million of dividends paid to stockholders and \$1.0 million used for shares surrendered for taxes paid related to vested employee restricted stock, partially offset by proceeds from the issuance of common stock amounting to \$3.1 million associated with share-based compensation and CEO transition related exercise of stock options.

The net cash used in financing activities during the six months ended January 31, 2016 primarily reflected \$7.2 million used to repurchase common stock, \$2.5 million of dividends paid to stockholders and \$1.7 million used for shares surrendered for taxes paid related to vested employee restricted stock. This was partially offset by proceeds from the issuance of common stock amounting to \$2.3 million associated with stock option exercises.

We believe that our balances of cash and cash equivalents and cash flows expected to be generated by future operating activities will be sufficient to meet our cash requirements for at least the next 12 months.

Commitments, Contractual Obligations, and Off-Balance Sheet Arrangements

Our contractual obligations at January 31, 2017 related to our operating leases, purchase obligations, pension, and contingent consideration affect our liquidity and cash flows in future periods.

Operating Leases Certain of our subsidiaries lease manufacturing and office space under non-cancelable operating leases. These leases contain renewal options. We lease certain other real property and equipment under operating leases which, in the aggregate, are not significant. At January 31, 2017 and July 31, 2016, total commitments related to our operating leases were \$5.9 million and \$6.5 million, respectively.

Purchase Obligations We enter into certain long-term agreements with customers, which obligate us to purchase goods or services. At January 31, 2017 and July 31, 2016, total purchase obligations were \$32.5 million and \$23.9 million, respectively.

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Pension Our Canadian subsidiary, Analogic Canada Corporation, formerly known as ANRAD Corporation, sponsors a defined benefit retirement plan called the Analogic Canada Corporation Retirement Plan, or the Analogic Canada Plan. The Analogic Canada Plan was frozen to new accruals during fiscal year 2015. The Analogic Canada Plan provides benefits to employees based on a formula recognizing length of service and final average earnings. Please refer to *Note 14. Retirement Plans* in our Annual Report on Form 10-K for the fiscal year ending 2016 for details. The benefit obligation at January 31, 2017 and July 31, 2016 totaled \$4.3 million and \$4.4 million, respectively.

Contingent Consideration In connection with the acquisition of Oncura, as of January 31, 2017, we recorded a contingent consideration obligation of \$2.1 million. In connection with the acquisition of PocketSonics, as of January 31, 2017, we recorded a contingent consideration obligation of \$2.0 million. Please refer to *Note 7. Fair value measurements* for more information.

Financing Arrangements

On November 23, 2015, we entered into a five-year revolving credit agreement, or Credit Agreement, with the financial institutions identified therein as lenders, which included JPMorgan Chase Bank, N.A., TD Bank, N.A., Wells Fargo Bank, N.A., HSBC Bank, N.A., and People's United Bank, N.A. The Credit Agreement provides \$100.0 million in available credit and expires on November 23, 2020, when all outstanding borrowings must be paid in full. The credit facility does not require amortization of principal and may be reduced before maturity in whole or in part at our option without penalty. We did not have any borrowings outstanding under this Credit Agreement as of January 31, 2017. Please refer to *Note 16. Guarantees, commitments and contingencies* for more information on the Credit Agreement.

As of January 31, 2017 also have approximately \$1.2 million in other revolving credit facilities with banks available for direct borrowings.

Tax Related Obligations

At January 31, 2017, we had \$7.1 million of unrecognized tax benefits for uncertain tax positions and \$0.5 million of related accrued interest and penalties. We are unable to reasonably estimate the amount and period in which these liabilities might be paid. Please refer to *Note 14. Income taxes* to our consolidated financial statements for additional information regarding matters relating to income taxes, including unrecognized tax benefits.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements, as defined under SEC rules, during the periods presented.

Recent Accounting Pronouncements

For a discussion of new accounting standards please refer to *Note 2. Recent accounting pronouncements* to our consolidated financial statements included within this report.

Critical Accounting Policies

The accompanying discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America, or U.S. GAAP. Our most critical accounting policies have a significant

impact on the preparation of these consolidated financial statements. These policies include estimates and significant judgments that affect the reported amounts of assets, liabilities, revenue, and expenses, and related disclosures of contingent assets and liabilities.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Our market risks and the ways we manage them were summarized in Item 7A. Quantitative and Qualitative Disclosures about Market Risk of our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016. There have been no material changes during the six months ended January 31, 2017 to our market risks or to our management of such risks.

Item 4. Controls and Procedures

Our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures as of January 31, 2017. The term “disclosure controls and procedures”, as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized, and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the Company’s management, including its principal executive officer and principal financial officer, as appropriate, to allow timely decisions to be made regarding required disclosure. It should be noted that any system of controls and procedures, however well designed and operated, can provide only reasonable, and not absolute, assurance that the

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objectives of the system are met and that management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of January 31, 2017, our principal executive officer and principal financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the three months ended January 31, 2017 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Table of Contents**Part II. OTHER INFORMATION****Item 1. Legal Proceedings**

For a discussion of legal matters as of January 31, 2017, please refer to *Note 16. Guarantees, commitments and contingencies* to our consolidated financial statements included in this report.

Item 1A. Risk Factors

In addition to the other information set forth in this report, you should carefully consider the factors discussed in Part I, Item 1A. Risk Factors in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016, which could materially affect our business, financial condition, and future operating results. The risks described in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016, are not the only risks that we face. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial also may materially adversely affect our business, financial condition, and operating results. There have been no material changes to the risk factors set forth in our Annual Report on Form 10-K for fiscal year 2016, as filed with the SEC on September 27, 2016.

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

The following table contains information about purchases by us of our equity securities during the three months ended January 31, 2017:

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share (1)	Total Number of Shares Purchased of Shares that May Yet as Part of Publicly Be Purchased Under the	
			Announced Plans or Programs (1) (2)	Approximate Dollar Value of Shares that May Yet as Part of Publicly Be Purchased Under the Plans or Programs (000 s)
11/1/2016-11/30/2016		\$		\$ 16,006
12/1/2016-12/31/2016		\$	1,974	\$ 16,006
1/1/2017-1/31/2017		\$	527	\$ 16,006
Total		\$	2,501	\$ 16,006

- (1) During the second quarter of fiscal year 2017 we did not repurchase shares of our common stock in open-market transactions. No shares were purchased in Q2 FY17 pursuant to a repurchase program authorized by our board of directors that was announced on June 2, 2014 to repurchase up to \$30 million of our common stock. The repurchase program does not have a fixed expiration date.

On May 26, 2016, our board of directors authorized the repurchase of up to \$15.0 million of our common stock. No shares have been repurchased under this program.

- (2) Includes 2,501 shares, consisting of 1,974 shares and 527 shares of our common stock, surrendered by employees in order to meet tax withholding obligations in connection with the vesting of restricted stock in December 2016 and January 2017, respectively.

Item 5. Other information

On March 7, 2017, the Company and James Ryan executed a severance agreement (the Severance Agreement), as well as a non-competition and non-solicitation agreement attached as Exhibit A to the Severance Agreement. The full text of the Severance Agreement, as well as the exhibits thereto, is attached as Exhibit 10.1 to this quarterly report on Form 10-Q and incorporated herein by reference. The following description of the Severance Agreement is qualified in its entirety by reference to the Severance Agreement.

Under the Severance Agreement, if Mr. Ryan's employment is terminated by the Company other than for cause, other than by reason of Mr. Ryan's death or disability, and other than in connection with a change in control, then provided Mr. Ryan has executed a general release in favor of the Company and certain others and reaffirms Mr. Ryan's continuing obligations under the non-competition and non-solicitation agreement attached to his Severance Agreement and any other restrictive covenant agreements between Mr. Ryan and the Company (the Severance Conditions), the Company will (a) beginning on the 60 day following the date of termination, pay to Mr. Ryan a sum equal to twelve (12) months of base salary at Mr. Ryan's most recent base salary rate, such payment to be made in approximately equal installments according to the Company's then-current payroll practices, (b) provide continued medical and dental coverage for a period of twelve (12) months following the date of termination, and (c) pay to Mr. Ryan a sum equal to his actual incentive award, if any, as calculated according to the annual incentive plan for the fiscal year in which Mr. Ryan's termination occurs.

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If, within twenty four (24) months following a change in control, Mr. Ryan's employment is (i) terminated by the Company without cause and not for death or disability, or (ii) if Executive resigns his employment for good reason, the Company shall, subject to the Severance Conditions, pay Mr. Ryan (a) the amounts set forth in the preceding paragraph at the times provided therein, and (b) an amount equal to sixty percent (60%) of Mr. Ryan's most recent annualized base salary, payable on the sixtieth (60th) day following the date of termination.

If Mr. Ryan's employment is terminated by the Company for cause, or by reason of Mr. Ryan's death or disability, or by the Company other than for cause on or after the second anniversary of the start date, the Severance Agreement will terminate without further obligations to Mr. Ryan, other than the payment of accrued obligations.

Item 6. Exhibits

The exhibits listed on the Exhibit Index immediately preceding such exhibits, which is incorporated herein by reference, are filed or furnished as part of this Quarterly Report on Form 10-Q.

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ANALOGIC CORPORATION

Date: March 13, 2017

/s/ Fred B. Parks

Fred B. Parks

President and Chief Executive Officer

(Principal Executive Officer)

Date: March 13, 2017

/s/ Mark T. Frost

Mark T. Frost

Senior Vice President, Chief Financial Officer, and
Treasurer

(Principal Financial Officer)

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EXHIBIT INDEX

Exhibit	Description
3.1	By-laws of Analogic Corporation, a Massachusetts corporation; as amended through January 19, 2017.
*10.1	Severance Agreement between Analogic Corporation and James Ryan, dated March 7, 2017.
31.1	Certification of Principal Executive Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Certification of Principal Financial Officer pursuant to Rule 13a-14(a)/Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101	The following materials from Analogic Corporation's Quarterly Report on Form 10-Q for the quarter ended January 31, 2017 are formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets as of January 31, 2017 and July 31, 2016, (ii) Consolidated Statements of Operations for the Three and Six Months Ended January 31, 2017 and 2016, (iii) Consolidated Statements of Comprehensive Income for the Three and Six Months Ended January 31, 2017 and 2016, (iv) Consolidated Statements of Cash Flows for the Six Months Ended January 31, 2017 and 2016 and (v) Notes to Consolidated Financial Statements.

* Management contract or compensatory plan or arrangement