UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 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 September 30, 2020

OR

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

COMMISSION FILE NUMBER: 1-12691

ION GEOPHYSICAL CORPORATION
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

Delaware	**22-2286646**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

2105 CityWest Blvd. Suite 100
Houston, Texas 77042-2855
(Address of principal executive offices) (Zip Code)

REGISTRANT'S TELEPHONE NUMBER, INCLUDING AREA CODE: (281) 933-3339

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

Title of each class	Trading symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value	**IO**	**New York Stock Exchange**

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

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

At November 2, 2020, there were 14,993,474 shares of common stock, par value $0.01 per share, outstanding.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
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FOR THE QUARTER ENDED SEPTEMBER 30, 2020

PART I. FINANCIAL INFORMATION
Item 1. *Financial Statements*

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS
(UNAUDITED)

	September 30, 2020	December 31, 2019
	(In thousands, except share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 51,056	$ 33,065
Accounts receivable, net	8,288	29,548
Unbilled receivables	9,629	11,815
Inventories, net	11,873	12,187
Prepaid expenses and other current assets	5,861	6,012
Total current assets	86,707	92,627
Deferred income tax asset, net	8,092	8,734
Property, plant and equipment, net	11,227	13,188
Multi-client data library, net	53,289	60,384
Goodwill	18,684	23,585
Right-of-use assets	37,730	32,546
Other assets	2,136	2,130
Total assets	$ 217,865	$ 233,194
LIABILITIES AND DEFICIT		
Current liabilities:		
Current maturities of long-term debt	$ 23,527	$ 2,107
Accounts payable	35,107	49,316
Accrued expenses	29,197	30,328
Accrued multi-client data library royalties	20,534	18,831
Deferred revenue	2,156	4,551
Current maturities of operating lease liabilities	6,727	11,055
Total current liabilities	117,248	116,188
Long-term debt, net of current maturities	119,349	119,352
Operating lease liabilities, net of current maturities	40,380	30,833
Other long-term liabilities	412	1,453
Total liabilities	277,389	267,826
Deficit:		
Common stock, $0.01 par value; authorized 26,666,667 shares; outstanding 14,315,453 and 14,224,787 shares at September 30, 2020 and December 31, 2019, respectively.	144	142
Additional paid-in capital	958,189	956,647
Accumulated deficit	(998,380)	(974,291)
Accumulated other comprehensive loss	(21,012)	(19,318)
Total stockholders' deficit	(61,059)	(36,820)
Noncontrolling interest	1,535	2,188
Total deficit	(59,524)	(34,632)
Total liabilities and deficit	$ 217,865	$ 233,194

See accompanying Footnotes to Condensed Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(UNAUDITED)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands, except per share data)			
Service revenues	$ 10,202	$ 41,990	$ 73,234	$ 100,525
Product revenues	6,032	11,249	22,145	31,445
Total net revenues	16,234	53,239	95,379	131,970
Cost of services	11,491	22,690	47,033	61,931
Cost of products	3,454	5,261	12,962	15,256
Impairment of multi-client data library	—	—	1,167	—
Gross profit	1,289	25,288	34,217	54,783
Operating expenses:				
Research, development and engineering	2,899	4,878	9,943	15,421
Marketing and sales	2,811	5,591	8,888	17,444
General, administrative and other operating expenses	6,743	10,961	21,546	36,550
Impairment of goodwill	—	—	4,150	—
Total operating expenses	12,453	21,430	44,527	69,415
Income (loss) from operations	(11,164)	3,858	(10,310)	(14,632)
Interest expense, net	(3,669)	(3,155)	(10,304)	(9,378)
Other income (expense), net	(525)	(242)	6,675	(938)
Income (loss) before income taxes	(15,358)	461	(13,939)	(24,948)
Income tax expense	1,056	3,790	9,982	7,916
Net loss	(16,414)	(3,329)	(23,921)	(32,864)
Less: Net income attributable to noncontrolling interest	(193)	(394)	(168)	(841)
Net loss attributable to ION	$ (16,607)	$ (3,723)	$ (24,089)	$ (33,705)
Net loss per share:				
Basic	$ (1.16)	$ (0.26)	$ (1.69)	$ (2.39)
Diluted	$ (1.16)	$ (0.26)	$ (1.69)	$ (2.39)
Weighted average number of common shares outstanding:				
Basic	14,278	14,181	14,255	14,104
Diluted	14,278	14,181	14,255	14,104

See accompanying Footnotes to Condensed Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(UNAUDITED)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(In thousands)			
Net loss	$ (16,414)	$ (3,329)	$ (23,921)	$ (32,864)
Other comprehensive loss, net of taxes, as appropriate:				
Foreign currency translation adjustments	772	(1,028)	(1,743)	(998)
Comprehensive net loss	(15,642)	(4,357)	(25,664)	(33,862)
Comprehensive income attributable to noncontrolling interest	(144)	(394)	(119)	(841)
Comprehensive net loss attributable to ION	$ (15,786)	$ (4,751)	$ (25,783)	$ (34,703)

See accompanying Footnotes to Condensed Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(UNAUDITED)

	Nine Months Ended September 30, 2020	Nine Months Ended September 30, 2019
	(In thousands)	
Cash flows from operating activities:		
Net loss	$ (23,921)	$ (32,864)
Adjustments to reconcile net loss to cash provided by operating activities:		
Depreciation and amortization (other than multi-client data library)	2,936	2,903
Amortization of multi-client data library	16,674	29,787
Stock-based compensation expense	1,637	3,736
Impairment of multi-client data library	1,167	—
Impairment of goodwill	4,150	—
Amortization of government relief funding expected to be forgiven	(6,923)	—
Deferred income taxes	237	(1,248)
Changes in operating assets and liabilities:		
Accounts receivable	21,065	2,115
Unbilled receivables	1,181	12,772
Inventories	77	729
Accounts payable, accrued expenses and accrued royalties	(6,429)	1,528
Deferred revenue	(2,246)	(2,398)
Other assets and liabilities	3,563	2,244
Net cash provided by operating activities	13,168	19,304
Cash flows from investing activities:		
Investment in multi-client data library	(19,841)	(21,225)
Purchase of property, plant and equipment	(865)	(1,272)
Net cash used in investing activities	(20,706)	(22,497)
Cash flows from financing activities:		
Borrowings under revolving line of credit	27,000	15,000
Payments under revolving line of credit	(4,500)	(15,000)
Proceeds from government relief funding	6,923	—
Payments on notes payable and long-term debt	(1,814)	(1,960)
Dividend payment to noncontrolling interest	(217)	—
Other financing activities	(91)	(655)
Net cash provided by (used in) financing activities	27,301	(2,615)
Effect of change in foreign currency exchange rates on cash, cash equivalents and restricted cash	501	151
Net increase (decrease) in cash, cash equivalents and restricted cash	20,264	(5,657)
Cash, cash equivalents and restricted cash at beginning of period	33,118	33,854
Cash, cash equivalents and restricted cash at end of period	$ 53,382	$ 28,197

See accompanying Footnotes to Condensed Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES

CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' DEFICIT

(UNAUDITED)

Three Months Ended September 30, 2020

(In thousands, except shares)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total Deficit
Balance at July 1, 2020	14,245,829	$ 142	$ 957,746	$ (981,773)	$ (21,833)	$ 1,608	$ (44,110)
Comprehensive income (loss):							
Net (loss) income	—	—	—	(16,607)	—	193	(16,414)
Translation adjustments	—	—	—	—	821	(49)	772
Dividend payment to noncontrolling interest	—	—	—	—	—	(217)	(217)
Stock-based compensation expense	—	—	543	—	—	—	543
Exercise of stock options	—	—	—	—	—	—	—
Vesting of restricted stock units/awards	111,094	2	(2)	—	—	—	—
Vested restricted stock cancelled for employee minimum income taxes	(41,470)	—	(98)	—	—	—	(98)
Balance at September 30, 2020	14,315,453	$ 144	$ 958,189	$ (998,380)	$ (21,012)	$ 1,535	$ (59,524)

Nine Months Ended September 30, 2020

(In thousands, except shares)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total Deficit
Balance at January 1, 2020	14,224,787	$ 142	$ 956,647	$ (974,291)	$ (19,318)	$ 2,188	$ (34,632)
Comprehensive income (loss):							
Net (loss) income	—	—	—	(24,089)	—	168	(23,921)
Translation adjustments	—	—	—	—	(1,694)	(604)	(2,298)
Dividend payment to noncontrolling interest	—	—	—	—	—	(217)	(217)
Stock-based compensation expense	—	—	1,637	—	—	—	1,637
Exercise of stock options	5,000	—	15	—	—	—	15
Vesting of restricted stock units/awards	128,183	2	(2)	—	—	—	—
Vested restricted stock cancelled for employee minimum income taxes	(42,517)	—	(108)	—	—	—	(108)
Balance at September 30, 2020	14,315,453	$ 144	$ 958,189	$ (998,380)	$ (21,012)	$ 1,535	$ (59,524)

Three Months Ended September 30, 2019

(In thousands, except shares)	Common Stock Shares	Common Stock Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total Deficit
Balance at July 1, 2019	14,171,561	$ 142	$ 954,904	$ (956,074)	$ (20,412)	$ 2,059	$ (19,381)
Comprehensive income (loss):							
Net (loss) income	—	—	—	(3,723)		394	(3,329)
Translation adjustment	—	—	—		(1,028)	(169)	(1,197)
Stock-based compensation expense	—	—	905	—	—	—	905
Exercise of stock options	58,400	—	26	—	—	—	26
Vesting of restricted stock units/awards	1,066	—	—	—	—	—	—
Vested restricted stock cancelled for employee minimum income taxes	(29,377)	—	(130)	—	—	—	(130)
Balance at September 30, 2019	14,201,650	$ 142	$ 955,705	$ (959,797)	$ (21,440)	$ 2,284	$ (23,106)

	Nine Months Ended September 30, 2019						
	Common Stock						
(In thousands, except shares)	Shares	Amount	Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total Deficit
Balance at January 1, 2019	14,015,615	$ 140	$ 952,626	$ (926,092)	$ (20,442)	$ 1,592	$ 7,824
Comprehensive income (loss):							
Net (loss) income	—	—	—	(33,705)	—	841	(32,864)
Translation adjustment	—	—	—	—	(998)	(149)	(1,147)
Stock-based compensation expense	—	—	3,736	—	—	—	3,736
Exercise of stock options	82,900	1	102	—	—	—	103
Vesting of restricted stock units/awards	202,697	2	(2)	—	—	—	—
Vested restricted stock cancelled for employee minimum income taxes	(99,562)	(1)	(757)	—	—	—	(758)
Balance at September 30, 2019	14,201,650	$ 142	$ 955,705	$ (959,797)	$ (21,440)	$ 2,284	$ (23,106)

See accompanying Footnotes to Condensed Consolidated Financial Statements.

ION GEOPHYSICAL CORPORATION AND SUBSIDIARIES
FOOTNOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(UNAUDITED)

(1) Summary of Significant Accounting Policies

Basis of Presentation

The condensed consolidated balance sheet of ION Geophysical Corporation and its subsidiaries (collectively referred to as the “Company” or “ION,” unless the context otherwise requires) at December 31, 2019, has been derived from the Company’s audited consolidated financial statements at that date. The condensed consolidated balance sheet at September 30, 2020, and the condensed consolidated statements of operations, condensed consolidated statements of comprehensive loss, condensed consolidated statements of stockholders' deficit for the three and nine months ended September 30, 2020 and 2019 and the condensed consolidated statements of cash flows for the nine months ended September 30, 2020 and 2019, are unaudited. In the opinion of management, all adjustments of a normal recurring nature that are necessary for a fair presentation of the results of the interim period have been included. Interim results are not necessarily indicative of the operating results for a full year or of future operations. Intercompany transactions and balances have been eliminated.

The Company’s condensed consolidated financial statements reflect a non-redeemable noncontrolling interest in a majority-owned affiliate which is reported as a separate component of equity in “Noncontrolling interest” in the condensed consolidated balance sheets. Net (income) loss attributable to noncontrolling interest is stated separately in the condensed consolidated statements of operations. The activity for this noncontrolling interest relates to proprietary processing projects in Brazil.

These condensed consolidated financial statements have been prepared using accounting principles generally accepted in the United States (“GAAP”) for interim financial information and the instructions to Form 10-Q and applicable rules of Regulation S-X of the Securities and Exchange Commission (the “SEC”). Certain information and footnote disclosures normally included in annual financial statements presented in accordance with GAAP have been omitted. The accompanying condensed consolidated financial statements should be read in conjunction with the Company’s Annual Report on Form 10-K for the year ended December 31, 2019.

Overview

The COVID-19 pandemic caused the global economy to enter a recessionary period, which may be prolonged and severe, and significantly reduce the availability of capital and liquidity from banks and other providers of credit. The exploration and production (“E&P”) industry is facing the dual impact of demand deterioration from COVID-19 and market oversupply from increased production, which caused oil and natural gas prices to decline significantly since the start of the year. Brent crude oil prices, which are most relevant to ION’s internationally focused business, dropped 66% during the first quarter from $66 on January 1, 2020 to $23 on March 31, 2020. By the end of the second quarter, Brent crude oil prices rebounded to $41 per barrel benefiting from increased global demand as pandemic restrictions started to ease and decreased production. Brent crude oil prices have remained relatively stable at that level throughout the third quarter. While the consistency is beneficial, prices are significantly lower compared to the start of the year. The record production cut agreed to by OPEC and other oil producing countries was extended through December 2020 in an effort to stabilize oil prices by limiting supply.

The dramatic commodity price decline earlier this year triggered E&P companies to reduce budgets and delay near-term spending, but also provided a catalyst to drive necessary cost restructuring and digital transformation of the E&P ecosystem. ION is focused on offshore international markets, which have been less steeply impacted than onshore North America. However, exploration offerings and data purchases are often discretionary and, therefore, receive disproportionately higher reductions than overall budget cuts. There has been a material slowdown in offshore seismic spending during the second and third quarters, and while we are seeing signs that could improve during the fourth quarter, we expect the market to remain challenging into 2021.

The Company expects continued portfolio rationalization and high grading as E&P companies seek to find the best return on investment opportunities to meet oil and gas demand in the next decade. Near-term, due to the impact of the COVID-19, project high grading will likely be more acute due to budget reductions. Over the last several years, the Company has already strategically shifted its portfolio closer to the reservoir, where revenue tends to be higher and more consistent. New Venture data acquisition offshore and Software and related personnel-based offshore services are expected to continue to be most impacted by COVID-19 travel restrictions. While offshore operations have been temporarily impacted by travel restrictions, the Company believes the demand for digitalization technologies will remain strong. In some cases, ION technology is expected to be more relevant and valuable in the current environment (for instance, offerings that facilitate remote working).

While third quarter revenues came in lower than prior year due to the repercussions of the oil price volatility earlier this year and the ongoing uncertainty from the COVID-19 pandemic, the Company made progress executing its strategy. Backlog increased 77% sequentially, reversing several consecutive quarters of steady decline, driven by the strategic shift to enter the 3D new acquisition multi-client market. The Company continues to work closely with its clients to understand revised budgets and to scale its business appropriately. The Company partially mitigated the impact of the current macroeconomic environment by fully benefiting from the structural changes and associated cost reductions that were outlined in the first quarter. To further mitigate the impact of COVID-19 and oil price volatility, management implemented a plan to preserve cash and manage liquidity as follows:

- Scaled down personnel costs and operating expenses in April 2020 by another $18.0 million during the remaining nine months of 2020, building on the over $20.0 million of cuts made in January 2020. These further reductions are primarily through a variety of furlough programs and reduced compensation arrangements across the Company's worldwide workforce. The Company executives have taken a 20% base salary reduction and a tiered reduction scheme has been cascaded to the rest of the worldwide workforce. The Company's Board of Directors have taken a 20% reduction in directors' fees. In addition, the Company has curtailed use of external contractors, decreased travel and event costs and implemented new systems and processes that more efficiently support its business.
- Reduced capital expenditures to an estimated $25.0 million to $35.0 million (a portion of which will be pre-funded or underwritten by the customers), down from the original budget of $35.0 million to $50.0 million, to reflect both reduced seismic demand and travel/border restrictions impacting new data acquisition offshore. This provides flexibility to aggressively reduce cash outflows while shifting to significantly lower cost reimaging programs.
- Applied for and continue to explore various government assistance programs, of which approximately $7.0 million was received and applied against qualifying expenditures during the second quarter. Receipt of this assistance allowed the Company to avoid further staff reductions while supporting its ongoing operations.
- Re-negotiated existing lease agreements for its significant locations to obtain rent relief of approximately $4.0 million. The majority of the cash savings from the rent relief is expected to benefit the Company from July 2020 to March 2021. See Note 12 "*Lease Obligations*" for further details.
- Announced the sale of its 49% ownership interest in INOVA Geophysical Equipment Limited for $12.0 million, subject to regulatory approvals and other closing conditions. As the regulatory review is taking longer than anticipated, closing will likely extend into 2021.
- Entered into a settlement agreement with WesternGeco ending the decade-long patent litigation. See Note 9 "*Litigation*" for further details.

The Company believes that the above management plan, which includes the use of government assistance programs, along with the Company's existing cash balance and the undrawn remaining borrowing capacity under its Credit Facility will provide sufficient liquidity to meet the Company's anticipated cash needs for the next twelve months. At September 30, 2020, the Company's liquidity was $59.4 million, consisting of $51.1 million of cash (including net revolver borrowings of $22.5 million) and $8.3 million of remaining available borrowing capacity under the revolving credit facility, slightly below liquidity of $65.5 million from one year ago. The outlined management plan reflects the Company's continued focus on preserving cash and managing liquidity in the current uncertain macroeconomic environment. In the event the Company's customers experience more extensive budget reductions and capital constraints further reducing demand for its services and products, resulting in deterioration of its revenues below its current forecasted levels, management may be required to update its plan by implementing further cost reductions and delaying capital investments. Additionally, the Company is actively exploring a number of strategic options to optimally address the $121 million Second Lien Notes (as defined in Note 5, "*Long-term Debt*") ahead of its scheduled maturity on December 15, 2021. If by September 15, 2021 the Company has not (1) repaid the Second Lien Notes, (2) extended the maturity of the Second Lien Notes to a date not earlier than October 31, 2023, or (3) submitted a written proposal summarizing its plan to either repay or extend the notes to the agent for the lenders (as defined in Note 5, "*Long-term Debt*") of the Credit Facility that has been approved by the agent, then the Credit Facility shall immediately become due and payable on such date. If the written proposal is submitted and approved by the agent by September 15, 2021, but the Company is unable to execute the approved proposal on or before October 31, 2021, the Credit Facility shall immediately become due and payable on such date. The Company reviewed its debt covenants as of September 30, 2020, and expects that it will remain in compliance for the next twelve months (see Note 5, "*Long-term Debt*" for further discussion of our covenants).

Significant Accounting Policies

The Company's significant accounting policies are disclosed in Note 1 "*Summary of Significant Accounting Policies.*" of the Annual Report on Form 10-K for the year ended December 31, 2019. There have been no changes in such policies or the application of such policies during the nine months ended September 30, 2020 except as discussed in Note 2 "*Recent Accounting Pronouncements.*"

Use of Estimates

The preparation of condensed consolidated financial statements in conformity with GAAP requires the use of estimates and assumptions by management that affects the reported amounts in the condensed consolidated financial statements and accompanying notes. Areas involving significant estimates include, but are not limited to, accounts and unbilled receivables, inventory valuation, sales forecast related to multi-client data library, impairment of property, plant and equipment and goodwill and deferred taxes. Actual results could materially differ from those estimates.

(2) Recent Accounting Pronouncements

Accounting Pronouncements Recently Adopted

On January 1, 2020, the Company adopted Accounting Standards Update ("ASU") No. 2016-13, *"Financial Instruments - Credit Losses: Measurement of Credit Losses on Financial Instruments."* The guidance replaces the incurred loss impairment methodology under the current GAAP with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates referred to as the current expected credit loss ("CECL") methodology. The measurement of expected credit losses under the CECL methodology is applicable to financial assets ranging from short-term accounts receivables to long-term receivable financing. The Company adopted the standard using the prospective transition approach for its trade receivables and unbilled receivables. The adoption of the standard had no material impact on the Company's condensed consolidated financial statements.

On January 1, 2020, the Company adopted ASU 2017-04, *"Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment."* This guidance simplifies the accounting for goodwill impairment by eliminating step 2 from the goodwill impairment test. As a result, an entity should recognize a goodwill impairment charge for the amount by which the reporting unit's carrying amount exceeds its fair value. If fair value exceeds the carrying amount, no impairment should be recorded. Any loss recognized should not exceed the total amount of goodwill allocated to that reporting unit. Impairment loss on goodwill cannot be reversed once recognized. The Company recognized an impairment charge related to the goodwill of its Optimization Software & Service reporting unit, included within Operations Optimization segment, of $4.2 million for the nine months ended September 30, 2020. See Note 10 "*Details of Selected Balance Sheet Accounts"* for details.

(3) Segment Information

The Company evaluates and reviews its results of operations based on two reporting segments: E&P Technology & Services and Operations Optimization. Refer to Item 2. "*Management's Discussion and Analysis of Financial Condition and Results of Operations"* for information about each business segment's business, products and services.

The segments represent components of the Company for which separate financial information is available that is utilized on a regular basis by the Chief Operating Decision Maker in determining how to allocate resources and evaluate performance. The Company measures segment operating results based on income (loss) from operations.

The following table is a summary of segment information (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
Net revenues:				
E&P Technology & Services:				
New Venture	$ 1,213	$ 5,905	$ 7,340	$ 24,394
Data Library	5,085	27,288	52,083	55,030
Total multi-client revenues	6,298	33,193	59,423	79,424
Imaging and Reservoir Services	3,795	7,048	12,410	16,443
Total	10,093	40,241	71,833	95,867
Operations Optimization:				
Optimization Software & Services	3,007	6,895	10,811	17,648
Devices	3,134	6,103	12,735	18,455
Total	6,141	12,998	23,546	36,103
Total net revenues	$ 16,234	$ 53,239	$ 95,379	$ 131,970
Gross profit (loss):				
E&P Technology & Services	$ (1,092)	$ 18,316	$ 24,902	$ 36,113
Operations Optimization	2,381	6,972	9,315	18,670
Total gross profit	$ 1,289	$ 25,288	$ 34,217	$ 54,783
Gross margin:				
E&P Technology & Services	(11)%	46 %	35 %	38 %
Operations Optimization	39 %	54 %	40 %	52 %
Total gross margin	8 %	47 %	36 %	42 %
Income (loss) from operations:				
E&P Technology & Services	$ (4,591)	$ 11,878	$ 13,803 [a]	$ 15,500
Operations Optimization	(232)	2,994	(3,965) [b]	5,808
Support and other	(6,341)	(11,014)	(20,148)	(35,940)
Income (loss) from operations	(11,164)	3,858	(10,310)	(14,632)
Interest expense, net	(3,669)	(3,155)	(10,304)	(9,378)
Other income (expense), net	(525)	(242)	6,675 [c]	(938)
Income (loss) before income taxes	$ (15,358)	$ 461	$ (13,939)	$ (24,948)

[a] Includes impairment of multi-client data library of $1.2 million for the nine months ended September 30, 2020.

[b] Includes impairment of goodwill of $4.2 million for the nine months ended September 30, 2020.

[c] Includes amortization of the government relief funding expected to be forgiven of $6.9 million for the nine months ended September 30, 2020.

Intersegment sales are insignificant for all periods presented.

(4) Revenue From Contracts With Customers

The Company derives revenue from the (i) sale or license of multi-client and proprietary data, imaging and reservoir services within its E&P Technologies & Services segment; (ii) sale, license and repair of seismic data acquisition systems and other equipment; and (iii) sale or license of seismic command and control software systems and software solutions for operations management within its Operations Optimization segment. All E&P Technology & Services' revenues and the services component of Optimization Software & Services' revenues under Operations Optimization segment are classified as service revenues. All other revenues are classified as product revenues.

The Company uses a five-step model to determine proper revenue recognition from customer contracts. Revenue is recognized when (i) a contract is approved by all parties; (ii) the goods or services promised in the contract are identified; (iii) the consideration the Company expects to receive in exchange for the goods or services promised is determined; (iv) the consideration is allocated to the goods and services in the contract; and (v) control of the promised goods or services is transferred to the customer. The Company is not required to disclose information about remaining contractual future performance obligations with an original term of one year or less. The Company does not have any contractual future performance obligations with an original term of over one year.

Revenue by Geographic Area

The following table is a summary of net revenues by geographic area (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
North America	$ 479	$ 12,182	$ 37,920	$ 32,984
Latin America	7,925	22,720	22,695	50,572
Asia Pacific	3,777	2,744	15,696	8,287
Europe	3,011	8,335	12,997	24,850
Middle East	306	3,899	2,202	6,364
Africa	344	2,874	1,939	7,541
Other	392	485	1,930	1,372
Total	$ 16,234	$ 53,239	$ 95,379	$ 131,970

See Note 3*"Segment Information"* for net revenue by segment for the three and nine months ended September 30, 2020 and 2019.

Unbilled Receivables

Unbilled receivables balances relate to revenues recognized on multi-client surveys, imaging and reservoir services and devices equipment repairs on a proportionate basis, and on licensing of multi-client data for which invoices have not yet been presented to the customer. The following table is a summary of unbilled receivables (in thousands):

	September 30, 2020	December 31, 2019
New Venture	$ 4,144	$ 5,222
Imaging and Reservoir Services	3,705	6,539
Devices	1,780	54
Total	$ 9,629	$ 11,815

The changes in unbilled receivables are as follows (in thousands):

Unbilled receivables at December 31, 2019	$ 11,815
Recognition of unbilled receivables [(a)]	91,024
Revenues billed to customers [(a)]	(93,210)
Unbilled receivables at September 30, 2020	$ 9,629

[(a)] Includes all gross revenue recognition and related billing activity of the Company. As a matter of process, all net revenue recognized is initially reflected as an unbilled receivable and subsequently billed to customers, as applicable, including net revenue for all of software and a portion of devices within the Operations Optimization segment, although they are billed at the time of recognition.

Deferred Revenue

Billing practices are governed by the terms of each contract based upon achievement of milestones or pre-agreed schedules. Billing does not necessarily correlate with revenue recognized on a proportionate basis as work is performed and control is transferred to the customer. Deferred revenue represents cash received in excess of revenue recognized as of the reporting period but to be recognized in future periods. The following table is a summary of deferred revenues (in thousands):

	September 30, 2020	December 31, 2019
New Venture	$ 500	$ 1,956
Imaging and Reservoir Services	608	1,501
Optimization Software & Services	1,000	642
Devices	48	452
Total	$ 2,156	$ 4,551

The changes in deferred revenues are as follows (in thousands):

Deferred revenue at December 31, 2019	$	4,551
Cash collected in excess of revenue recognized		1,961
Recognition of deferred revenue [a]		(4,356)
Deferred revenue at September 30, 2020	$	2,156

[a] The majority of deferred revenue recognized relates to Company's Ventures group.

The Company expects to recognize the majority of deferred revenue within the next 12 months.

Credit Risks

For the nine months ended September 30, 2020 and 2019, the Company had one customer with sales that exceeded 10% of the Company's consolidated net revenues. Revenues related to each of these customers are included within the E&P Technology & Services segment.

At September 30, 2020, the Company had two customers with balances that accounted for 39% of the Company's total combined accounts receivable and unbilled receivable balances. The Company routinely evaluates the financial stability and creditworthiness of its customers. At September 30, 2019, the Company had two customers with a combined balance that accounted for 40% of the Company's total combined accounts receivable and unbilled receivable balances.

The Company routinely evaluates the financial stability and creditworthiness of its customers. The Company has a corporate credit policy that is intended to minimize the risk of financial loss due to a customer's inability to pay. Credit coverage decisions for customers are based on references, payment histories, financial and other data. The Company utilizes a third party trade credit insurance policy. The Company has historically not extended long-term credit to its customers.

(5) Long-term Debt

The following table is a summary of long-term debt (in thousands):

	September 30, 2020	December 31, 2019
Senior secured second-priority lien notes *(maturing December 15, 2021)*	$ 120,569	$ 120,569
Revolving credit facility *(maturing August 16, 2023)* [a]	22,500	—
Equipment finance leases (Note 12)	1,027	1,869
Other debt	—	972
Costs associated with issuances of debt	(1,220)	(1,951)
Total	142,876	121,459
Current maturities of long-term debt	(23,527)	(2,107)
Long-term debt, net of current maturities	$ 119,349	$ 119,352

[a] The maturity of the Credit Facility will accelerate if the Company is unable to repay or extend the maturity of the Second Lien Notes (see detailed discussion below in "*Revolving Credit Facility*").

Revolving Credit Facility

On August 16, 2018, ION Geophysical Corporation and its material U.S. subsidiaries — GX Technology Corporation, ION Exploration Products (U.S.A) Inc. and I/O Marine Systems Inc. (the "Material U.S. Subsidiaries") — along with GX Geoscience Corporation, S. de R.L. de C.V., a limited liability company (Sociedad de Responsibilidad Limitada de Capital Variable) organized under the laws of Mexico, and a subsidiary of the Company (the "Mexican Subsidiary") (the Material U.S. Subsidiaries and the Mexican Subsidiary are collectively, the "Subsidiary Borrowers", together with ION Geophysical Corporation are the "Borrowers") — the financial institutions party thereto, as lenders, and PNC Bank, National Association ("PNC"), as agent for the lenders, entered into that certain Third Amendment and Joinder to Revolving Credit and Security Agreement (the "Third Amendment"), amending the Revolving Credit and Security Agreement, dated as of August 22, 2014 (as previously amended by the First Amendment to Revolving Credit and Security Agreement, dated as of August 4, 2015 and the Second Amendment to Revolving Credit and Security Agreement, dated as of April 28, 2016, the "Credit Agreement"). The Credit Agreement, as amended by the First Amendment, the Second Amendment and the Third Amendment is herein called the "Credit Facility"). The Credit Facility is available to provide for the Borrowers' general corporate needs, including working capital requirements, capital expenditures, surety deposits and acquisition financing.

The Credit Facility matures on August 16, 2023 and is subject to the Company's retirement or extension of the maturity date of ION Geophysical Corporation's 9.125% Senior Secured Second Priority Notes due December 2021 (the "Second Lien Notes"). If by September 15, 2021 the Company has not (1) repaid the Second Lien Notes, (2) extended the maturity of the Second Lien Notes to a date not earlier than October 31, 2023, or (3) submitted a written proposal to PNC summarizing its plan to either repay or extend the notes that has been approved by PNC, then the Credit Facility shall immediately become due and payable on such date. If the written proposal is submitted and approved by PNC by September 15, 2021, but the Company is unable to execute the approved proposal on or before October 31, 2021, the Credit Facility shall immediately become due and payable on such date.

The maximum interest rate is 3.00% per annum for domestic rate loans and 4.00% per annum for LIBOR rate loans with a minimum interest rate of 2.00% for domestic rate loans and 3.00% for LIBOR rate loans based on a leverage ratio for the preceding four-quarter period. The terms include a minimum excess borrowing availability threshold (excess borrowing availability less than $6.25 million for five consecutive days or $5.0 million on any given day), which (if the Borrowers have minimum excess borrowing availability below any such threshold) triggers the agent’s right to exercise dominion over cash and deposit accounts.

The maximum amount available under the Credit Facility is the lesser of $50.0 million or a monthly borrowing base. The borrowing base under the Credit Facility will increase or decrease monthly using a formula based on certain eligible receivables, eligible inventory and other amounts, including a percentage of the net orderly liquidation value of the Borrowers’ multi-client library (not to exceed $28.5 million for the multi-client data library component). The borrowing base calculation includes the eligible billed receivables of the Mexican Subsidiary up to a maximum of $5.0 million. At September 30, 2020, there was $22.5 million outstanding indebtedness under the Credit Facility and the undrawn remaining borrowing base capacity was $8.3 million.

The obligations of Borrowers under the Credit Facility are secured by a first-priority security interest in 100% of the stock of the Subsidiary Borrowers and 65% of the equity interest in ION International Holdings L.P., and by substantially all other assets of the Borrowers. However, the first-priority security interest in the other assets of the Mexican Subsidiary is capped to a maximum exposure of $5.0 million.

The Credit Facility contains covenants that, among other things, limit or prohibit the Borrowers, subject to certain exceptions and qualifications, from incurring additional indebtedness in excess of permitted indebtedness (including finance lease obligations), repurchasing equity, paying dividends or distributions, granting or incurring additional liens on the Borrowers’ properties, pledging shares of the Borrowers’ subsidiaries, entering into certain merger transactions, entering into transactions with the Company’s affiliates, making certain sales or other dispositions of the Borrowers’ assets, making certain investments, acquiring other businesses and entering into sale-leaseback transactions with respect to the Borrowers’ property. The Credit Facility contains customary event of default provisions (including a “change of control” event affecting ION Geophysical Corporation).

The Credit Facility requires that the Borrowers maintain a minimum fixed charge coverage ratio of 1.1 to 1.0 as of the end of each fiscal quarter during the existence of a covenant testing trigger event. The fixed charge coverage ratio is defined as the ratio of (i) ION Geophysical Corporation’s earnings before interest, taxes, depreciation and amortization (“EBITDA”), minus unfunded capital expenditures made during the relevant period, minus distributions (including tax distributions) and dividends made during the relevant period, minus cash taxes paid during the relevant period, to (ii) certain debt payments made during the relevant period. A covenant testing trigger event occurs upon (a) the occurrence and continuance of an event of default under the Credit Facility or (b) by a two-step process based on (i) a minimum excess borrowing availability threshold (excess borrowing availability less than $6.25 million for five consecutive days or $5.0 million on any given day), and (ii) the Borrowers’ unencumbered cash maintained in a PNC deposit account is less than the Borrowers’ then outstanding obligations.

At September 30, 2020, the Company was in compliance with all of the covenants under the Credit Facility.

Senior Secured Notes

The Second Lien Notes are senior secured second-priority obligations guaranteed by the Material U.S. Subsidiaries and the Mexican Subsidiary (each as defined above and herein below, with the reference to the Second Lien Notes, the “Guarantors”). Interest on the Second Lien Notes is payable semiannually in arrears on June 15 and December 15 of each year during their term, except that the interest payment otherwise payable on June 15, 2021 will be payable on December 15, 2021.

The April 2016 indenture governing the Second Lien Notes contains certain covenants that, among other things, limits or prohibits ION Geophysical Corporation’s ability and the ability of its restricted subsidiaries to take certain actions or permit certain conditions to exist during the term of the Second Lien Notes, including among other things, incurring additional indebtedness in excess of permitted indebtedness, creating liens, paying dividends and making other distributions in respect of ION Geophysical Corporation’s capital stock, redeeming ION Geophysical Corporation’s capital stock, making investments or certain other restricted payments, selling certain kinds of assets, entering into transactions with affiliates, and effecting mergers or consolidations. These and other restrictive covenants contained in the Second Lien Notes Indenture are subject to certain exceptions and qualifications. All of ION Geophysical Corporation’s subsidiaries are currently restricted subsidiaries.

At September 30, 2020, the Company was in compliance with all of the covenants under the Second Lien Notes.

On or after December 15, 2019, the Company may, on one or more occasions, redeem all or a part of the Second Lien Notes at the redemption prices set forth below, plus accrued and unpaid interest and special interest, if any, on the Second Lien Notes redeemed during the twelve-month period beginning on December 15th of the years indicated below:

Date	Percentage
2019	105.50%
2020	103.50%
2021	100.00%

(6) Government Relief Funding

On April 11, 2020, the Company entered into a Note Agreement (“Note”) with PNC amounting to $6.9 million pursuant to the Coronavirus Aid, Relief, and Economic Security Act’s (“CARES Act”) Paycheck Protection Program (“PPP”). Amounts outstanding under this Note will bear interest at 1% per annum as of the date of disbursement. Interest will be calculated based on the actual number of days that principal is outstanding over a year of 360 days. The Note matures in two years after the receipt of the loan proceeds.

The Company is in the process of applying to PNC for forgiveness of the amount due on this Note in an amount based on the sum of the following costs incurred by the Company’s US operations during the 24-week period beginning on the date of first disbursement (For payroll costs, it is beginning on the date of the first pay period following disbursement. For non-payroll costs, it is beginning on the date of first disbursement.) of this Note: (a) payroll costs; (b) any payment on a covered rent obligation; and (c) any covered utility payment. The amount of forgiveness shall be calculated (and may be reduced) in accordance with the requirements of the PPP, including the provisions of Section 1106 of the CARES Act. The forgiveness amount will be subject to the Small Business Administration’s review. Any outstanding principal amount under this Note that is not forgiven under the PPP shall convert to an amortizing term loan.

The Company recognized the Note following the government grant accounting by analogy to International Accounting Standards (“IAS”) 20, “Accounting for Government Grants and Disclosure of Government Assistance” (“IAS 20”). In accordance with IAS 20, a deferred income liability is recognized for the principal amount estimated to be forgiven and is amortized to other income on a systematic and rational basis. Any outstanding principal amount not expected to be forgiven is recognized as other debt. As the Company expects that the full amount of the Note will be forgiven, the entire $6.9 million was recognized as a deferred income liability during second quarter and fully amortized to other income in the condensed consolidated income statements for the six months ended June 30, 2020, as the related expenses it was intended to offset were incurred from April 2020 to June 2020. If, despite the Company’s good-faith belief that given its circumstances the Company satisfied all eligible requirements for the PPP Loan, the Company is later determined to have not been in compliance with these requirements or it is otherwise determined that it was ineligible to receive the PPP Loan, the Company may be required to repay the PPP Loan in its entirety and/or be subject to additional penalties. Should the Company be audited or reviewed by federal or state regulatory authorities as a result of filing an application for forgiveness of the PPP Loan or otherwise, such audit or review could result in a change in the Company’s estimate of the amount of forgiveness recorded in the condensed consolidated financial statements.

(7) Net Loss Per Share

Basic net loss per share is computed by dividing net loss attributable to ION by the weighted average number of common shares outstanding during the period. In computing diluted net loss per share, basic net loss per share is adjusted based on the assumption that dilutive restricted stock and restricted stock unit awards have vested and outstanding dilutive stock options have been exercised and the aggregate proceeds were used to reacquire common stock using the average price of such common stock for the period. The total number of shares issuable pursuant to outstanding stock options at September 30, 2020 and 2019 of 569,673 and 700,759, respectively, were excluded as their inclusion would have an anti-dilutive effect. The total number of shares issuable pursuant to restricted stock unit awards outstanding at September 30, 2020 and 2019 of 762,277 and 926,917, respectively, were excluded as their inclusion would have an anti-dilutive effect.

(8) Income Taxes

The Company maintains a valuation allowance for substantially all of its deferred tax assets. A valuation allowance is established or maintained when it is “more likely than not” that all or a portion of deferred tax assets will not be realized. The Company will continue to record a valuation allowance for the substantial majority of its deferred tax assets until there is sufficient evidence to warrant reversal.

The tax provision for the nine months ended September 30, 2020 has been calculated using the Company's overall estimated annual effective tax rate based on projected 2020 full year results. The Company's effective tax rates for the three and nine months ended September 30, 2020 and 2019 were negatively impacted by the change in valuation allowance related to U.S. operating losses for which the Company cannot currently recognize a tax benefit. The Company's effective tax rates for the nine months ended September 30, 2020 were also negatively impacted by the valuation allowance related to certain foreign losses. Due to the impact of the valuation allowances on tax expense, the Company's effective tax rates are not meaningful for all periods presented. The Company's income tax expense for the nine months ended September 30, 2020 of $10.0 million primarily relates to results from the Company's non-U.S. businesses, including $2.2 million of valuation allowance. The valuation allowance was established as a result of a change in the expectation of future revenues after entering into the settlement agreement with WesternGeco described in Note 9 "*Litigation*".

In response to the global pandemic related to COVID-19, the President of the United States signed into law the CARES Act on March 27, 2020. The CARES Act provides numerous relief provisions for corporate tax payers, including modification of the utilization limitations on net operating losses, favorable expansions of the deduction for business interest expense under Internal Revenue Code Section 163(j), and the ability to accelerate timing of refundable AMT credits. For the nine months ended September 30, 2020, there were no material tax impacts to our condensed consolidated financial statements as it relates to COVID-19 measures. The Company received an AMT credit refund of $0.8 million for the nine months ended September 30, 2020. The Company continues to monitor additional guidance issued by the U.S. Treasury Department, the Internal Revenue Service and others.

At September 30, 2020, the Company has approximately $0.4 million of unrecognized tax benefits and does not expect to recognize significant increases in unrecognized tax benefits during the next twelve-month period. Interest and penalties, if any, related to unrecognized tax benefits are recorded in income tax expense.

At September 30, 2020, the Company's U.S. federal tax returns for 2016 and subsequent years remain subject to examination by tax authorities. In the Company's foreign tax jurisdictions, tax returns for 2014 and subsequent years generally remain open to examination.

(9) Litigation

WesternGeco

Settlement

On April 7, 2020, the Company entered into a settlement agreement with WesternGeco that ended the ongoing litigation.

Pursuant to the settlement agreement, WesternGeco granted the Company a license to the underlying patents, lifted the injunction that prevented the Company from manufacturing DigiFIN® in the United States and, on April 13, 2020, the District Court permanently dismissed the pending lawsuit.

In exchange, the Company agreed to pay WesternGeco a settlement based on future revenues from the Company's multi-client data library, consisting of (1) small percentage of 2D multi-client data library sales for a ten-year period, and (2) the transfer of a majority of the Company's future revenue share relating to the parties' existing joint multi-client reimaging programs offshore Mexico.

Background

In June 2009, WesternGeco L.L.C. ("WesternGeco") filed a lawsuit against the Company in the United States District Court for the Southern District of Texas (the "District Court"). In the lawsuit, styled *WesternGeco L.L.C. v. ION Geophysical Corporation*, WesternGeco alleged that the Company had infringed four of their patents concerning marine seismic surveys.

Trial began in July 2012, and the jury returned a verdict in August 2012. The jury found that the Company infringed the six "claims" contained in four of WesternGeco's patents by supplying the Company's DigiFIN lateral streamer control units from the United States. (In patent law, a "claim" is a technical legal term; an infringer infringes on one or more "claims" of a given patent.)

In May 2014, the District Court entered a Final Judgment against the Company in the amount of $123.8 million. The Final Judgment also enjoined the Company from supplying DigiFINs or any parts unique to DigiFINs in or from the United States.

As of 2018, the Company had paid WesternGeco the $25.8 million of the Final Judgment (the portion of the judgment representing reasonable royalty damages and enhanced damages, plus interest).

The balance of the judgment against the Company ($98.0 million), representing lost profits from surveys performed by the Company's customers outside of the United States, plus interest) was vacated by the United States Court of Appeals for the Federal Circuit (the award of lost profit damages was vacated because the Patent Trial and Appeal Board of the Patent and Trademark Office invalidated four of the five patent claims that could have supported an award of lost profit), and a new trial ordered, to determine what lost profit damages, if any, WesternGeco was entitled to.

As noted above, the lawsuit has been dismissed in accordance with the parties' settlement agreement.

Other Litigation

In July 2018, the Company prevailed in an arbitration that it initiated against the Indian Directorate General of Hydrocarbons ("DGH") relating to the Company's ability to continue to license data under the Company's IndiaSPAN program. The DGH filed a lawsuit in court in India to vacate the arbitration award; in connection with that lawsuit, the Company was ordered to escrow approximately $4.5 million in sales proceeds that it had received in respect of sales from the IndiaSPAN program, pending the outcome of the DGH's challenge to the arbitration award. The Company challenged the escrow order, but on December 9, 2019, the Supreme Court of India ordered the Company to comply with it. The Company prepared a petition to file with the court to request that a March 2020 deadline to deposit approximately $4.5 million in escrow in early 2020 be extended due to the changes to the Company's business, and to the markets, that have been spurred by the COVID-19 pandemic. The Company was unable to file the application because the courts in India were closed due to the pandemic (other than for emergencies), and were not accepting filings at that time. The Company served a copy of its draft petition on the DGH's counsel and intends to file it in advance of the next hearing, which has been repeatedly delayed due to the COVID-19 pandemic. The Company prevailed on the merits in the arbitration and expects to have that award upheld in Indian court, which would result in release of the Company's portion of the escrowed money. The DGH's request to vacate the arbitration award is currently scheduled to be heard by the court in India on January 18, 2021. The Company has not escrowed the money as of September 30, 2020.

The Company has been named in various other lawsuits or threatened actions that are incidental to its ordinary business. Litigation is inherently unpredictable. Any claims against the Company, whether meritorious or not, could be time-consuming, cause the Company to incur costs and expenses, require significant amounts of management time and result in the diversion of significant operational resources. The results of these lawsuits and actions cannot be predicted with certainty. The Company currently believes that the ultimate resolution of these matters will not have a material adverse effect on its financial condition or results of operations.

(10) Details of Selected Balance Sheet Accounts

Inventories

A summary of inventories follows (in thousands):	September 30, 2020	December 31, 2019
Raw materials and subassemblies	$ 18,622	$ 18,509
Work-in-process	1,372	2,079
Finished goods	4,652	4,932
Less: reserve for excess and obsolete inventories	(12,773)	(13,333)
Inventories, net	$ 11,873	$ 12,187

Property, Plant and Equipment

A summary of property, plant and equipment follows (in thousands):

	September 30, 2020	December 31, 2019
Buildings	$ 15,739	$ 15,486
Machinery and equipment	133,900	133,048
Seismic rental equipment	1,851	1,669
Furniture and fixtures	3,164	3,347
Other [(a)]	30,269	31,142
Total	184,923	184,692
Less: accumulated depreciation	(137,143)	(134,951)
Less: impairment of long-lived assets	(36,553)	(36,553)
Property, plant and equipment, net	$ 11,227	$ 13,188

[(a)] Consists primarily of cable-based ocean bottom acquisition technologies that were fully impaired.

Total depreciation expense, including amortization of assets recorded under equipment finance leases, for both the nine months ended September 30, 2020 and 2019 was $2.8 million and $2.4 million, respectively. No impairment charge was recognized during the nine months ended September 30, 2020 and 2019.

Multi-client Data Library

The change in multi-client data library are as follows (in thousands):

	September 30, 2020	December 31, 2019
Gross costs of multi-client data creation	$ 1,018,509	$ 1,007,762
Less: accumulated amortization	(833,075)	(816,401)
Less: impairments to multi-client data library	(132,145)	(130,977)
Multi-client data library, net	$ 53,289	$ 60,384

Total amortization expense for the nine months ended September 30, 2020 and 2019 was $16.7 million and $29.8 million, respectively. For the nine months ended September 30, 2020, the Company recognized an impairment to multi-client data library of $1.2 million. No impairment to multi-client data library was recognized during the nine months ended September 30, 2019.

Goodwill	E&P Technology & Services	Optimization Software & Services	Total
		(In thousands)	
Balance at January 1, 2019	$ 2,943	$ 19,972	$ 22,915
Impact of foreign currency translation adjustments	—	670	670
Balance at December 31, 2019	2,943	20,642	23,585
Impairment of goodwill	—	(4,150)	(4,150)
Impact of foreign currency translation adjustments	—	(751)	(751)
Balance at September 30, 2020	$ 2,943	$ 15,741	$ 18,684

The Company, following the qualitative consideration, assessed the relevant events and circumstances in evaluating whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. During the first quarter of 2020, markets for oil and gas, as well as other commodities and equities, experienced significant volatility and price declines amid concerns over the economic effects of the COVID-19 pandemic. As a result, the Company's stock price experienced a significant decline. Based on these facts, the Company performed a goodwill impairment test at March 31, 2020 to determine if it was more likely than not that the fair value of certain reporting units was less than their carrying value.

The Company, following the quantitative consideration, compared the fair value of each reporting unit against its carrying value. If the carrying value of the reporting unit exceeds the fair value, an impairment loss shall be recognized in an amount equal to that excess. The fair value of each reporting unit at March 31, 2020 was determined using a discounted cash flow model. The Company utilized a discount rate of 19% for both reporting units. The Company used reasonable assumptions based on historical data supplemented by anticipated market conditions and estimated growth rates. However, given the uncertainty in determining the assumptions underlying a discounted cash flow analysis, actual results may differ which could result in additional impairment charges in the future.

As a result of this assessment, the Company recorded an impairment charge of $4.2 million for the nine months ended September 30, 2020 related to its Optimization Software & Services reporting unit, which is included within the Operations Optimization segment. No impairment charge was recognized for the E&P Technology Services reporting unit for the nine months ended September 30, 2020.

(11) Stockholder's Equity and Stock-Based Compensation Expense

Stock-Based Compensation

The total number of shares issued or reserved for future issuance under outstanding stock options at September 30, 2020 and 2019 was 569,673 and 700,759, respectively, and the total number of shares of restricted stock and shares reserved for restricted stock units outstanding at September 30, 2020 and 2019 was 762,277 and 926,917, respectively. The total number of stock appreciation rights (“SARs”) awards outstanding at September 30, 2020 and 2019 was 811,415 and 963,013, respectively. The following table presents a summary of the activity related to stock options, restricted stock, restricted stock unit awards and SARs awards for the nine months ended September 30, 2020:

	Stock Options	Restricted Stock and Unit Awards	Stock Appreciation Rights
	Number of Shares		
Outstanding at December 31, 2019	689,209	908,754	954,679
Granted	—	67,500	—
Stock options and SARs exercised/restricted stock and unit awards vested	(5,000)	(128,183)	—
Cancelled/forfeited	(114,536)	(85,794)	(143,264)
Outstanding at September 30, 2020	569,673	762,277	811,415

Stock-based compensation expense recognized for the nine months ended September 30, 2020 and 2019, totaled $1.6 million and $3.7 million, respectively. SARs (credit) expense recognized for the nine months ended September 30, 2020 and 2019, totaled $(1.0) million and $2.7 million, respectively.

SARs awards are considered liability awards as they are ultimately settled in cash. As such, these amounts are incrementally accrued in the liability section of the condensed consolidated balance sheets over the service period. All of the Company’s currently outstanding SARs awards achieve vesting through both a market condition and a service condition. SARs awards that are fully vested under both conditions are measured at intrinsic value (i.e. the difference between the market price on the last day of the quarter and the strike price of the awards times the number of awards vested and outstanding) and marked to market each quarter until settled. SARs awards that are not fully vested are incrementally accrued over the service period and adjusted to their fair value each quarter until settled based on a valuation model. The Company calculated the fair value of each award at September 30, 2020 and December 31, 2019 using a Monte Carlo simulation model. The following assumptions were used:

Risk-free interest rates	1.9 %
Expected lives (in years)	5.31
Expected dividend yield	— %
Expected volatility	79 %

(12) Lease Obligations

The Company leases offices, processing centers, warehouse spaces and, to a lesser extent, certain equipment. These leases have remaining terms of 1 year to 10 years, some of which have options to extend for up to 10 years and/or options to terminate within 1 year. The options to renew are not recognized as part of the Company's right-of-use assets and operating lease liabilities as the Company is not reasonably certain that it will exercise these options.

In January 2020, the Company amended its existing Houston, Texas headquarters lease agreement by extending the lease term from September 30, 2023 to June 30, 2029 and surrendering back to the landlord floors for which the Company had previously vacated. In July 2020, the Company re-negotiated the above-mentioned lease agreement to modify the rent abatement period from October 2023 through February 2024 to July 2020 through March 2021.

In May 2020, the Company amended its Houston data center lease agreement to reflect changes in the monthly base rent throughout the term of the lease and extend the lease term three months to December 2025. The execution of this amendment and the amendment to the Houston, Texas headquarters lease resulted in the Company obtaining rent relief of approximately $4.0 million.

Total operating lease expense, including short-term lease expense was $8.1 million and $8.9 million for the nine months ended September 30, 2020 and 2019, respectively.

Equipment Finance Leases

The Company has entered into equipment finance leases that are due in installments for the purpose of financing the purchase of computer equipment through August 2021. Interest accrues under these leases at a rate of 8.7% per annum, and the leases are collateralized by liens on the computer equipment. The assets are amortized over the lesser of their related lease terms or their estimated useful lives and such charges are reflected within depreciation expense.

(13) Supplemental Cash Flow Information and Non-cash Activity

Supplemental disclosure of cash flow information are as follows (in thousands):

	Nine Months Ended September 30,	
	2020	2019
Cash paid during the period for:		
Interest	$ 6,628	$ 6,085
Income taxes	6,759	7,607
Non-cash items from investing and financing activities:		
Investment in multi-client data library in accounts payable and accrued expenses	—	4,741

The following table is a reconciliation of cash, cash equivalents, and restricted cash to the condensed consolidated balance sheets:

	September 30,	
	2020	2019
	(In thousands)	
Cash and cash equivalents	$ 51,056	$ 27,894
Restricted cash included in prepaid expenses and other assets	2,326 [a]	303
Total cash, cash equivalents, and restricted cash shown in statements of cash flows	$ 53,382	$ 28,197

[a] Relates to letters of credit issued during third quarter 2020, primarily in connection with the Houston office lease deposit.

(14) Fair Value of Financial Instruments

Authoritative guidance on fair value measurements defines fair value, establishes a framework for measuring fair value and stipulates the related disclosure requirements. The Company follows a three-level hierarchy, under which the fair value hierarchy prioritizes the inputs used to measure fair value. The three-tiered hierarchy is summarized as follows:

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

Level 2—Other significant observable inputs including quoted prices or other market data for similar assets and liabilities in active markets or quoted prices for identical or similar assets and liabilities in less active markets.

Level 3—Significant unobservable inputs that require significant judgment for which there is little or no market data.

Due to their highly liquid nature, the amount of the Company's other financial instruments, including cash and cash equivalents, restricted cash, accounts and unbilled receivables, accounts payable and accrued multi-client data library royalties, represent their approximate fair value.

The carrying amounts of the Company's Second Lien Notes at September 30, 2020 and December 31, 2019 were $120.6 million compared to its fair values of $87.9 million and $113.8 million at September 30, 2020 and December 31, 2019, respectively. Market conditions could cause an instrument to be reclassified from Level 1 to Level 2, or Level 2 to Level 3. The fair value of the Second Lien Notes was reclassified from Level 1 to Level 2 during the nine months ended September 30, 2020 resulting from less active market trading. The fair value of the Second Lien Notes was calculated using Level 2 inputs using significant observable data points for similar liabilities where estimated values are determined from observable transactions.

The carrying amount of any borrowings outstanding under the Credit Facility approximate fair value, as the interest rate is variable based on LIBOR and reflective of market rates.

Fair value measurements are applied with respect to non-financial assets and liabilities when possible indicators of impairment exist, which would consist primarily of goodwill, multi-client data library and property, plant and equipment. The fair value of these assets is determined based on valuation techniques using the best information available and may include market comparables and discounted cash flow projections.

(15) Condensed Consolidating Financial Information

The Second Lien Notes were issued by ION Geophysical Corporation and are guaranteed by Guarantors, all of which are wholly owned subsidiaries. The Guarantors have fully and unconditionally guaranteed the payment obligations of ION Geophysical Corporation with respect to the Second Lien Notes. The following condensed consolidating financial information presents the results of operations, financial position and cash flows for:

- ION Geophysical Corporation and the Guarantors (in each case, reflecting investments in subsidiaries utilizing the equity method of accounting).
- All other subsidiaries of ION Geophysical Corporation that are not Guarantors.
- The consolidating adjustments necessary to present ION Geophysical Corporation's results on a consolidated basis.

This condensed consolidating financial information should be read in conjunction with the accompanying condensed consolidated financial statements and footnotes. For additional information pertaining to the Second Lien Notes, See Item 2. "*Management's Discussion and Analysis of Financial Condition and Results of Operations*" in Part II of this Form 10-Q.

Balance Sheet	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	September 30, 2020				
	(In thousands)				
ASSETS					
Current assets:					
Cash and cash equivalents	$ 32,106	$ 31	$ 18,919	$ —	$ 51,056
Accounts receivable, net	—	4,985	3,303	—	8,288
Unbilled receivables	—	7,186	2,443	—	9,629
Inventories, net	—	7,182	4,691	—	11,873
Prepaid expenses and other current assets	3,858	1,006	997	—	5,861
Total current assets	35,964	20,390	30,353	—	86,707
Deferred income tax asset	—	7,982	110	—	8,092
Property, plant and equipment, net	1,439	6,550	3,238	—	11,227
Multi-client data library, net	—	44,957	8,332	—	53,289
Investment in subsidiaries	847,775	280,647	—	(1,128,422)	—
Goodwill	—	—	18,684	—	18,684
Intercompany receivables	—	279,010	118,944	(397,954)	—
Right-of-use assets	20,656	12,770	4,304	—	37,730
Other assets	1,300	786	50	—	2,136
Total assets	$ 907,134	$ 653,092	$ 184,015	$ (1,526,376)	$ 217,865
LIABILITIES AND (DEFICIT) EQUITY					
Current liabilities:					
Current maturities of long-term debt	$ 22,500	$ 1,027	$ —	$ —	$ 23,527
Accounts payable	1,948	31,401	1,758	—	35,107
Accrued expenses	14,917	7,544	6,736	—	29,197
Accrued multi-client data library royalties	—	20,319	215	—	20,534
Deferred revenue	—	1,143	1,013	—	2,156
Current maturities of operating lease liabilities	1,938	3,630	1,159	—	6,727
Total current liabilities	41,303	65,064	10,881	—	117,248
Long-term debt, net of current maturities	119,349	—	—	—	119,349
Operating lease liabilities, net of current maturities	22,227	14,359	3,794	—	40,380
Intercompany payables	784,937	—	—	(784,937)	—
Other long-term liabilities	377	35	—	—	412
Total liabilities	968,193	79,458	14,675	(784,937)	277,389
(Deficit) Equity:					
Common stock	144	290,460	47,776	(338,236)	144
Additional paid-in capital	958,189	180,700	203,909	(384,609)	958,189
Accumulated earnings (deficit)	(998,380)	398,464	26,645	(425,109)	(998,380)
Accumulated other comprehensive income (loss)	(21,012)	4,238	(23,770)	19,532	(21,012)
Due from ION Geophysical Corporation	—	(300,228)	(86,755)	386,983	—
Total stockholders' (deficit) equity	(61,059)	573,634	167,805	(741,439)	(61,059)
Noncontrolling interest	—	—	1,535	—	1,535
Total (deficit) equity	(61,059)	573,634	169,340	(741,439)	(59,524)
Total liabilities and (deficit) equity	$ 907,134	$ 653,092	$ 184,015	$ (1,526,376)	$ 217,865

Balance Sheet	December 31, 2019 ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	(In thousands)				
ASSETS					
Current assets:					
Cash and cash equivalents	$ 8,426	$ 26	$ 24,613	$ —	$ 33,065
Accounts receivable, net	8	19,493	10,047	—	29,548
Unbilled receivables	—	7,314	4,501	—	11,815
Inventories, net	—	6,902	5,285	—	12,187
Prepaid expenses and other current assets	3,292	1,513	1,207	—	6,012
Total current assets	11,726	35,248	45,653	—	92,627
Deferred income tax asset	402	8,417	(85)	—	8,734
Property, plant and equipment, net	786	8,112	4,290	—	13,188
Multi-client data library, net	—	54,479	5,905	—	60,384
Investment in subsidiaries	841,522	279,327	—	(1,120,849)	—
Goodwill	—	—	23,585	—	23,585
Intercompany receivables	—	287,692	99,884	(387,576)	—
Right-of-use assets	11,934	15,802	4,810	—	32,546
Other assets	1,171	905	54	—	2,130
Total assets	$ 867,541	$ 689,982	$ 184,096	$ (1,508,425)	$ 233,194
LIABILITIES AND (DEFICIT) EQUITY					
Current liabilities:					
Current maturities of long-term debt	$ 972	$ 1,135	$ —	$ —	$ 2,107
Accounts payable	2,259	44,641	2,416	—	49,316
Accrued expenses	9,933	9,982	10,413	—	30,328
Accrued multi-client data library royalties	—	18,616	215	—	18,831
Deferred revenue	—	3,465	1,086	—	4,551
Current maturities of operating lease liabilities	4,429	5,469	1,157	—	11,055
Total current liabilities	17,593	83,308	15,287	—	116,188
Long-term debt, net of current maturities	118,618	734	—	—	119,352
Operating lease liabilities, net of current maturities	11,208	15,346	4,279	—	30,833
Intercompany payables	755,524	—	—	(755,524)	—
Other long-term liabilities	1,418	35	—	—	1,453
Total liabilities	904,361	99,423	19,566	(755,524)	267,826
(Deficit) Equity:					
Common stock	142	290,460	47,776	(338,236)	142
Additional paid-in capital	956,647	180,700	203,909	(384,609)	956,647
Accumulated earnings (deficit)	(974,291)	396,793	18,837	(415,630)	(974,291)
Accumulated other comprehensive income (loss)	(19,318)	4,281	(21,907)	17,626	(19,318)
Due from ION Geophysical Corporation	—	(281,675)	(86,273)	367,948	—
Total stockholders' (deficit) equity	(36,820)	590,559	162,342	(752,901)	(36,820)
Noncontrolling interest	—	—	2,188	—	2,188
Total (deficit) equity	(36,820)	590,559	164,530	(752,901)	(34,632)
Total liabilities and (deficit) equity	$ 867,541	$ 689,982	$ 184,096	$ (1,508,425)	$ 233,194

Income Statement	Three Months Ended September 30, 2020				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	(In thousands)				
Net revenues	$ —	$ 9,799	$ 6,435	$ —	$ 16,234
Cost of sales	—	11,326	3,619	—	14,945
Gross profit (loss)	—	(1,527)	2,816	—	1,289
Total operating expenses	6,335	4,270	1,848	—	12,453
Income (loss) from operations	(6,335)	(5,797)	968	—	(11,164)
Interest expense, net	(3,368)	(322)	21	—	(3,669)
Intercompany interest, net	(247)	(1,425)	1,672	—	—
Equity in earnings (losses) of investments	(6,081)	1,722	—	4,359	—
Other expense, net	(4)	(282)	(239)	—	(525)
Net income (loss) before income taxes	(16,035)	(6,104)	2,422	4,359	(15,358)
Income tax expense	572	185	299	—	1,056
Net income (loss)	(16,607)	(6,289)	2,123	4,359	(16,414)
Net income attributable to noncontrolling interest	—	—	(193)	—	(193)
Net income (loss) attributable to ION	$ (16,607)	$ (6,289)	$ 1,930	$ 4,359	$ (16,607)
Comprehensive net income (loss)	$ (15,786)	$ (6,289)	$ 2,746	$ 3,687	$ (15,642)
Comprehensive income attributable to noncontrolling interest	—	—	(144)	—	(144)
Comprehensive net income (loss) attributable to ION	$ (15,786)	$ (6,289)	$ 2,602	$ 3,687	$ (15,786)

Income Statement	Three Months Ended September 30, 2019				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
	(In thousands)				
Net revenues	$ —	$ 21,474	$ 31,765	$ —	$ 53,239
Cost of sales	—	20,165	7,786	—	27,951
Gross profit	—	1,309	23,979	—	25,288
Total operating expenses	9,514	7,976	3,940	—	21,430
Income (loss) from operations	(9,514)	(6,667)	20,039	—	3,858
Interest expense, net	(3,197)	(49)	91	—	(3,155)
Intercompany interest, net	65	(2,077)	2,012	—	—
Equity in earnings of investments	8,988	18,398	—	(27,386)	—
Other income (expense), net	16	(55)	(203)	—	(242)
Net income (loss) before income taxes	(3,642)	9,550	21,939	(27,386)	461
Income tax expense (benefit)	81	(403)	4,112	—	3,790
Net income (loss)	(3,723)	9,953	17,827	(27,386)	(3,329)
Net income attributable to noncontrolling interest	—	—	(394)	—	(394)
Net income (loss) attributable to ION	$ (3,723)	$ 9,953	$ 17,433	$ (27,386)	$ (3,723)
Comprehensive net income (loss)	$ (4,751)	$ 9,953	$ 16,403	$ (25,962)	$ (4,357)
Comprehensive income attributable to noncontrolling interest	—	—	(394)	—	(394)
Comprehensive net income (loss) attributable to ION	$ (4,751)	$ 9,953	$ 16,009	$ (25,962)	$ (4,751)

Income Statement	Nine Months Ended September 30, 2020				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
			(In thousands)		
Net revenues	$ —	$ 61,969	$ 33,410	$ —	$ 95,379
Cost of sales	—	46,357	13,638	—	59,995
Impairment of multi-client data library	—	1,167	—	—	1,167
Gross profit	—	14,445	19,772	—	34,217
Total operating expenses	19,787	13,974	6,616	—	40,377
Impairment of goodwill	—	—	4,150	—	4,150
Income (loss) from operations	(19,787)	471	9,006	—	(10,310)
Interest expense, net	(9,923)	(484)	103	—	(10,304)
Intercompany interest, net	(705)	(4,884)	5,589	—	—
Equity in earnings (losses) of investments	1,865	7,614	—	(9,479)	—
Other expense, net	8,139	(276)	(1,188)	—	6,675
Net income (loss) before income taxes	(20,411)	2,441	13,510	(9,479)	(13,939)
Income tax expense	3,678	770	5,534	—	9,982
Net income (loss)	(24,089)	1,671	7,976	(9,479)	(23,921)
Net income attributable to noncontrolling interest	—	—	(168)	—	(168)
Net income (loss) attributable to ION	$ (24,089)	$ 1,671	$ 7,808	$ (9,479)	$ (24,089)
Comprehensive net income (loss)	$ (25,783)	$ 1,628	$ 6,113	$ (7,622)	$ (25,664)
Comprehensive income attributable to noncontrolling interest	—	—	(119)	—	(119)
Comprehensive net income (loss) attributable to ION	$ (25,783)	$ 1,628	$ 5,994	$ (7,622)	$ (25,783)

Income Statement	Nine Months Ended September 30, 2019				
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Consolidating Adjustments	Total Consolidated
			(In thousands)		
Net revenues	$ —	$ 65,552	$ 66,418	$ —	$ 131,970
Cost of sales	—	56,106	21,081	—	77,187
Gross profit	—	9,446	45,337	—	54,783
Total operating expenses	31,330	26,204	11,881	—	69,415
Income (loss) from operations	(31,330)	(16,758)	33,456	—	(14,632)
Interest expense, net	(9,560)	(156)	338	—	(9,378)
Intercompany interest, net	588	521	(1,109)	—	—
Equity in earnings of investments	7,330	26,786	—	(34,116)	—
Other income (expense), net	4	(265)	(677)	—	(938)
Net income (loss) before income taxes	(32,968)	10,128	32,008	(34,116)	(24,948)
Income tax expense (benefit)	737	(532)	7,711	—	7,916
Net income (loss)	(33,705)	10,660	24,297	(34,116)	(32,864)
Net income attributable to noncontrolling interests	—	—	(841)	—	(841)
Net income (loss) applicable to ION	$ (33,705)	$ 10,660	$ 23,456	$ (34,116)	$ (33,705)
Comprehensive net income (loss)	$ (34,703)	$ 10,617	$ 22,444	$ (32,220)	$ (33,862)
Comprehensive income attributable to noncontrolling interest	—	—	(841)	—	(841)
Comprehensive net income (loss) attributable to ION	$ (34,703)	$ 10,617	$ 21,603	$ (32,220)	$ (34,703)

Statement of Cash Flows	Nine Months Ended September 30, 2020			
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	(In thousands)			
Cash flows from operating activities:				
Net cash provided by operating activities	$ 3,917	$ 2,253	$ 6,998	$ 13,168
Cash flows from investing activities:				
Cash invested in multi-client data library	—	(8,344)	(11,497)	(19,841)
Purchase of property, plant and equipment	(35)	(415)	(415)	(865)
Net cash used in investing activities	(35)	(8,759)	(11,912)	(20,706)
Cash flows from financing activities:				
Borrowings under revolving line of credit	27,000	—	—	27,000
Payments under revolving line of credit	(4,500)	—	—	(4,500)
Proceeds from government relief funding	6,923	—	—	6,923
Payments on notes payable and long-term debt	(972)	(842)	—	(1,814)
Intercompany lending	(6,289)	7,353	(1,064)	—
Dividend payment to non-controlling interest	—	—	(217)	(217)
Other financing activities	(91)	—	—	(91)
Net cash provided by (used in) financing activities	22,071	6,511	(1,281)	27,301
Effect of change in foreign currency exchange rates on cash, cash equivalents and restricted cash	—	—	501	501
Net increase (decrease) in cash, cash equivalents and restricted cash	25,953	5	(5,694)	20,264
Cash, cash equivalents and restricted cash at beginning of period	8,479	26	24,613	33,118
Cash, cash equivalents and restricted cash at end of period	$ 34,432	$ 31	$ 18,919	$ 53,382

The following table is a reconciliation of cash and cash equivalents to total cash, cash equivalents, and restricted cash:

	September 30, 2020			
	ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	(In thousands)			
Cash and cash equivalents	$ 32,106	$ 31	$ 18,919	$ 51,056
Restricted cash included in prepaid expenses and other assets	2,326	—	—	2,326
Total cash, cash equivalents, and restricted cash shown in statements of cash flows	$ 34,432	$ 31	$ 18,919	$ 53,382

Statement of Cash Flows	Nine Months Ended September 30, 2019 ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	(In thousands)			
Cash flows from operating activities:				
Net cash provided by operating activities	$ 8,955	$ 9,619	$ 730	$ 19,304
Cash flows from investing activities:				
Investment in multi-client data library	—	(15,197)	(6,028)	(21,225)
Purchase of property, plant and equipment	(259)	(118)	(895)	(1,272)
Net cash used in investing activities	(259)	(15,315)	(6,923)	(22,497)
Cash flows from financing activities:				
Borrowings under revolving line of credit	15,000	—	—	15,000
Payments under revolving line of credit	(15,000)	—	—	(15,000)
Payments on notes payable and long-term debt	(1,159)	(801)	—	(1,960)
Intercompany lending	(13,511)	6,495	7,016	—
Other financing activities	(655)	—	—	(655)
Net cash provided by (used in) financing activities	(15,325)	5,694	7,016	(2,615)
Effect of change in foreign currency exchange rates on cash, cash equivalents and restricted cash	—	—	151	151
Net increase (decrease) in cash, cash equivalents and restricted cash	(6,629)	(2)	974	(5,657)
Cash, cash equivalents and restricted cash at beginning of period	14,085	47	19,722	33,854
Cash, cash equivalents and restricted cash at end of period	$ 7,456	$ 45	$ 20,696	$ 28,197

The following table is a reconciliation of cash and cash equivalents to total cash, cash equivalents, and restricted cash:

	September 30, 2019 ION Geophysical Corporation	The Guarantors	All Other Subsidiaries	Total Consolidated
	(In thousands)			
Cash and cash equivalents	$ 7,153	$ 45	$ 20,696	$ 27,894
Restricted cash included in prepaid expenses and other current assets	303	—	—	303
Total cash, cash equivalents, and restricted cash shown in statement of cash flows	$ 7,456	$ 45	$ 20,696	$ 28,197

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

In this Form 10-Q, "ION Geophysical," "ION," "the company" (or, "the Company"), "we," "our," "ours" and "us" refer to ION Geophysical Corporation and its consolidated subsidiaries, except where the context otherwise requires or as otherwise indicated.

The information contained in this Quarterly Report on Form 10-Q contains references to trademarks, service marks and registered marks of ION and our subsidiaries, as indicated. Except where stated otherwise or unless the context otherwise requires, the term "DigiFIN" refers to DigiFIN®, a registered mark owned by ION or its affiliates, and the terms "Gemini", "Marlin SmartPort", "SailWing", and "4Sea" refers to the Gemini™, Marlin SmartPort™, SailWing™ and 4Sea™ trademarks and service marks owned by ION.

Executive Summary

Overview

The COVID-19 pandemic caused the global economy to enter a recessionary period, which may be prolonged and severe, and significantly reduce the availability of capital and liquidity from banks and other providers of credit. The exploration and production ("E&P") industry is facing the dual impact of demand deterioration from COVID-19 and market oversupply from increased production, which caused oil and natural gas prices to decline significantly since the start of the year. Brent crude oil prices, which are most relevant to our internationally focused business, dropped 66% during the first quarter from $66 on January 1, 2020 to $23 on March 31, 2020. By the end of the second quarter, Brent crude oil prices rebounded to $41 per barrel from increased global demand as pandemic restrictions started to ease and decreased production and remained relatively stable at that level throughout the third quarter. While the consistency is beneficial, prices are significantly lower compared to the start of the year. The record production cut agreed to by OPEC and other oil producing countries was extended through December 2020 in an effort to stabilize oil prices by limiting supply.

While commodity prices can be volatile, the sharp decline earlier this year triggered E&P companies to reduce budgets and delay near-term spending, but is also a catalyst to drive necessary cost restructuring and digital transformation of the E&P ecosystem. However, exploration offerings and data purchases are often discretionary and, therefore, receive disproportionately higher reductions than overall budget cuts. There has been a material slowdown in offshore seismic spending during the second and third quarters, and while we are seeing signs that could improve during the fourth quarter, we expect the market to remain challenging into 2021.

ION management expects continued portfolio rationalization and high grading as E&P companies seek to find the best return on investment opportunities to meet oil and gas demand in the next decade. Near-term, due to the impact of the COVID-19, project high grading will likely be more acute due to budget reductions. Over the last several years, we have already strategically shifted our portfolio closer to the reservoir, where revenue tends to be higher and more consistent. New Venture data acquisition offshore and Software and related personnel-based offshore services are expected to continue to be most impacted by COVID-19 travel restrictions. While offshore operations have been temporarily impacted by travel restrictions, we believe the demand for digitalization technologies will remain strong. In some cases, ION technology is expected to be more relevant and valuable in the current environment (for instance, offerings that facilitate remote working).

While third quarter revenues came in lower than prior year due to the repercussions of the oil price volatility earlier this year and the ongoing uncertainty from the COVID-19 pandemic, we made progress executing our strategy. Backlog increased 77% sequentially, reversing several consecutive quarters of steady decline due to the strategic shift to enter the 3D new acquisition multi-client market. We continue to work closely with our clients to understand their revised budgets and to scale our business appropriately. We partially mitigated the impact of the current macroeconomic environment by fully benefiting from the structural changes and associated cost reductions that were outlined in the first quarter. To further mitigate the impact of COVID-19 and oil price volatility, management implemented a plan to preserve cash and manage liquidity as follows:

- Scaled down personnel costs and operating expenses in April 2020 by another $18.0 million during the remaining nine months of 2020, building on the over $20.0 million of cuts made in January 2020. These further reductions are primarily through a variety of furlough programs and reduced compensation arrangements across our worldwide workforce. Our executives took a 20% base salary reduction and a tiered reduction scheme has been cascaded to the rest of the worldwide workforce. Our Board of Directors took a 20% reduction in directors' fees. In addition, we have curtailed use of external contractors, decreased travel and event costs and implemented new systems and processes that more efficiently support our business.
- Reduced capital expenditures to an estimated $25.0 million to $35.0 million (a portion of which will be pre-funded or underwritten by our customers), down from the original budget of $35.0 million to $50.0 million, to reflect both reduced seismic demand and travel/border restrictions impacting new data acquisition offshore. The majority of capital expenditures relate to investments in multi-client data. This provides flexibility to aggressively reduce cash outflows while shifting to significantly lower cost reimaging programs.

- Applied for and continue to explore various government assistance programs, of which approximately $7.0 million was received and applied against qualifying expenditures during the second quarter. Receipt of this assistance allowed us to avoid further staff reductions while supporting our ongoing operations.
- Re-negotiated existing lease agreements for our significant locations to obtain rent relief of approximately $4.0 million. The majority of the cash savings from the rent relief is expected to benefit us from July 2020 to March 2021. See Note 12 "*Lease Obligations*" of *Footnotes to Condensed Consolidated Financial Statements"* for further details.
- Announced the sale of our 49% ownership interest in INOVA Geophysical joint venture (defined below in "*Our Business*") for $12.0 million subject to regulatory approvals and other closing conditions. As the regulatory review is taking longer than anticipated, closing will likely extend into 2021.
- Entered into a settlement agreement with WesternGeco ending the decade-long patent litigation. See Note 9 "*Litigation*" of *Footnotes to Condensed Consolidated Financial Statements"* for further details.

We believe that the above management plan, which includes the use of government assistance programs, along with our existing cash balance and the undrawn remaining borrowing capacity under our Credit Facility will provide sufficient liquidity to meet our anticipated cash needs for the next twelve months. At September 30, 2020, our liquidity was $59.4 million, consisting of $51.1 million of cash (including net revolver borrowings of $22.5 million) and $8.3 million of remaining available borrowing capacity under the revolving credit facility, slightly below liquidity of $65.5 million from one year ago. The outlined management plan reflects our continued focus on preserving cash and managing liquidity in the current uncertain macroeconomic environment. In the event our customers experience more extensive budget reductions and capital constraints further reducing demand for our services and products, resulting in deterioration of our revenues below our current forecasted levels, management may be required to update its plan by implementing further cost reductions and delaying capital investments. Additionally, we are actively exploring a number of strategic options to optimally address ION Geophysical Corporation's 9.125% Senior Secured Second Priority Notes due December 2021 (the "Second Lien Notes"), which mature on December 15, 2021. If by September 15, 2021 we have not (1) repaid the Second Lien Notes, (2) extended the maturity of the Second Lien Notes to a date not earlier than October 31, 2023, or (3) submitted a written proposal summarizing our plan to either repay or extend the notes to the agent for the lenders (as defined in Note 5, "*Long-term Debt*" of *Footnotes to Condensed Consolidated Financial Statements*") of the Credit Facility that has been approved by the agent, then the Credit Facility shall immediately become due and payable on such date. If the written proposal is submitted and approved by the agent by September 15, 2021, but we are unable to execute the approved proposal on or before October 31, 2021, the Credit Facility shall immediately become due and payable on such date. We reviewed our debt covenants as of September 30, 2020, and expect to remain in compliance for the next twelve months (see Note 5, "*Long-term Debt"* of *Footnotes to Condensed Consolidated Financial Statements*" for further discussion of our covenants).

Our three and nine month results were consistent with our expectations of customer spend contraction related to COVID-19 demand deterioration and oil oversupply weighing on the commodity price early this year. Our backlog significantly improved compared to the prior quarter. In addition, we are fully benefiting from our cost reduction measures taken earlier in the year. Active priorities were further limited to improve focus and execution on strategic initiatives, and ultimately deliver better results to shareholders. Management believes we are better positioned to mitigate some of the immediate impacts of the market disruption given our lower cost basis and strategy execution progress.

Our Business

ION is an innovative, asset light global technology company that delivers powerful data-driven decision-making offerings to offshore energy, ports and defense industries. We are entering a fourth industrial revolution where technology is fundamentally changing how decisions are made. Decision-making is shifting from what was historically an art to a science. Data, analytics and digitalization provide a step-change opportunity to translate information into insights, enabling our clients to enhance decisions, gain a competitive edge and deliver superior returns.

We have been a leading technology innovator for over 50 years. While the traditional focus of our cutting-edge technology has been on the E&P industry, we are now broadening and diversifying our business into relevant adjacent markets such as offshore logistics, ports and harbors, defense and marine robotics. Our offerings are focused on improving subsurface knowledge to enhance E&P decision-making and improving situational awareness to optimize offshore operations. We serve customers in most major energy producing regions of the world from strategically located offices.

The Company is publicly listed on the New York Stock Exchange under the ticker IO. We are headquartered in Houston, Texas with regional offices around the world. We have approximately 450 employees, 42% of whom are in technical roles and 20% have advanced degrees.

We provide our services and products through two business segments: E&P Technology & Services and Operations Optimization. In addition, we have a 49% ownership interest in INOVA Geophysical Equipment Limited (“INOVA Geophysical” or “INOVA”), a joint venture with BGP Inc. (“BGP”), a subsidiary of China National Petroleum Corporation. BGP owns the remaining 51% equity interest in INOVA. We wrote our investment in INOVA down to zero in 2014. See further discussion below on our agreement to sell our interest in INOVA.

Our E&P Technology & Services segment creates digital data assets and delivers services to help E&P companies improve decision-making, reduce risk and maximize value. Across the E&P lifecycle, our E&P offerings focus on driving customer decisions, such as which blocks to bid on and for how much, how to maximize portfolio value, where to drill wells or how to optimize production.

Our Operations Optimization segment develops mission-critical subscription offerings and provides engineering services that enable operational control and optimization offshore. This segment is comprised of our Optimization Software & Services and Devices offerings. While we primarily sell to service providers, we began selling existing technology to new customers in E&P, ports and harbors, defense and academic industries.

We historically conducted our land seismic equipment business through INOVA, which manufactures land seismic data acquisition systems, digital sensors, vibroseis vehicles (i.e., vibrator trucks), and energy source controllers.

E&P Technology & Services. Our offerings are designed to help E&P companies improve decision-making, reduce risk and maximize value. Within our E&P Technology and Services segment, there are two synergistic groups: Imaging and Reservoir Services and Ventures.

Our Imaging and Reservoir Services group provides advanced data processing, imaging and reservoir services designed to maximize image quality and subsurface insights, helping E&P companies reduce exploration and production risk, evaluate and develop reservoirs, and increase production. Imaging and Reservoir Services continually develops and applies proprietary processing algorithms via its cutting-edge imaging engine to data owned or licensed by our customers to translate raw data into subsurface images. We continually enhance our novel workflows and maintain leading-edge infrastructure to efficiently deliver the best image quality.

While our Imaging and Reservoir Services group processes and images data for customers on a proprietary basis, most of these resources support our higher potential return multi-client business. The proprietary work we take on is complex where our advanced technology is valued and where we closely collaborate with our customers to solve their toughest challenges. We maintain approximately 19 petabytes of digital seismic data storage through our global data centers, including a core data center located in Houston. We utilize a globally distributed network of Linux-cluster processing centers in combination with our major hubs in Houston and London to process seismic data using advanced, proprietary algorithms and workflows.

Our Ventures group leverages the geoscience skills of the Imaging and Reservoir Services group to create global digital data assets that are licensed to multiple E&P companies to optimize their investment decisions. Our global data library consists of over 740,000 km of 2D and over 355,000 sq. km of 3D multi-client seismic data in virtually all major offshore petroleum provinces. Ventures provides services to manage multi-client or proprietary surveys, from survey planning and design to data acquisition and management, to final subsurface imaging and reservoir characterization. We focus on the technologically intensive components of the image development process, such as survey planning and design, and data processing and interpretation, while outsourcing asset-intensive components (such as field acquisition) to experienced contractors.

We offer our services to customers on both a proprietary and multi-client (non-exclusive) basis. In both cases, a majority of our survey expenses are generally pre-funded by our customers, limiting our cost exposure. The period during which our multi-client surveys are being designed, acquired or processed is referred to as the “New Venture” phase. Once the New Venture phase is completed, the program becomes part of our Data Library. For proprietary services, the customer has exclusive ownership of the data. For multi-client surveys, we generally retain ownership of our long-term exclusive marketing rights to the data and receive ongoing revenue from subsequent data license sales.

Our E&P Technology & Services segment net revenues decreased compared to the third quarter of 2019 due to decline in multi-client data library sales. We invested $19.8 million in our multi-client data library during the first nine months of 2020 and we expect investments in our multi-client data library to be in the range of $25.0 million to $30.0 million for 2020 (a portion of which will be pre-funded or underwritten by our customers) compared to the $28.8 million invested in 2019 and down from the $30.0 million to $40.0 million initial range for 2020 due to COVID-19.

At September 30, 2020, our E&P Technology & Services segment backlog, which consists of commitments for (i) imaging and reservoir services work and (ii) new venture projects (both multi-client and proprietary) by our Ventures group underwritten by our customers, was $17.7 million compared to $10.0 million at June 30, 2020, $18.9 million at December 31, 2019 and $24.8 million at September 30, 2019. We anticipate that most of our backlog will be recognized as revenue over the next twelve months.

In the E&P Technology & Services segment, to accelerate our shift in portfolio weighting from 2D to 3D, we restructured our multi-client business development and streamlined our product delivery strategy.

Over the last five years, we have made an effort to diversify our offerings across the E&P life cycle and move closer to the reservoir, where capital investment tends to be higher and more consistent. Historically, our data library was largely 2D exploration focused. We had not materially participated in 3D multi-client projects. As a result, our 3D revenues and data volumes only accounted for 3% of the market, giving us substantial upside growth potential. In 2019, we grew our 3D multi-client data library 56% to 350,000 sq. km. through cost effective, contiguous reimaging of existing data. 37% of our 2019 multi-client revenue was from 3D data, an offering that barely registered just four years ago. Our successful foray into 3D reimaging has given us credibility and experience in the 3D market segment, creating a pipeline of opportunities for new 3D towed streamer and/or seabed programs we have not seen prior. We also completed development of enabling technologies like our Gemini enhanced frequency source and 4Sea ocean bottom platform to further increase the likelihood of our participation success in new 3D multi-client programs.

Operations Optimization. Our Operations Optimization segment develops mission-critical subscription offerings and provides engineering services that enable operational control and optimization offshore. Our advanced systems improve situational awareness, communication and risk management to enable rapid and informed decisions in challenging offshore environments. Our industry-leading mission management, navigation, communications and sensing technologies enable the operations of modern 3D operations.

This segment is comprised of our Optimization Software & Services and Devices offerings. While we primarily sell to oil and gas service providers, we began selling existing technology to new customers in E&P, ports and harbors, defense and academic industries. Service providers rely on our industry-leading marine imaging systems and services to acquire the highest quality data - safely and efficiently - in both towed streamer and seabed operations. Our integrated technology platforms combined with advanced prediction tools enable survey optimization.

We also leverage our core competencies to develop custom solutions. Our capabilities include data management, navigation, software development, acoustics, sensing, telemetry, fluid dynamics, positioning and control devices and electrical and mechanical engineering expertise.

Our Optimization Software & Services group provides survey design, command and control software systems and related services for marine towed streamer and seabed operations. We are market leaders in our core business and adapted our platform to more broadly optimize operations. Our software offerings leverage a leading data integration platform to control and optimize operations. Engineering services experts deliver in-field optimization services, equipment maintenance and training to maximize value from our offerings.

Our Devices group develops intelligent equipment controlled by our software to optimize operations. Our Devices group develops, manufactures and repairs marine towed streamer and seabed data acquisition technology, sensors and compasses which have been deployed in marine robotics, defense, E&P and other commercial applications.

Our Operations Optimization net revenues decreased compared to the third quarter of 2019 resulting from COVID-19 reduced seismic activity and vessel stacking. When E&P companies reviewed their 2020 exploration plans and budgets in light of lower commodity prices, many contracts were postponed or canceled, and tender activity dropped dramatically.

It is our view that technologies that provide a competitive advantage through improved imaging, lower costs, higher productivity, or enhanced safety will continue to be valued in the market. We believe our newest technologies will continue to attract customer interest because these technologies are designed to deliver those desirable attributes.

INOVA Geophysical. INOVA manufactures land acquisition systems, land source products, vibroseis vehicles, and source controllers and multicomponent sensors.

In March 2020, we announced an agreement to sell our 49% ownership interest in INOVA Geophysical joint venture for $12.0 million, subject to regulatory approvals and other closing conditions. As the regulatory review is taking longer than anticipated, closing will likely extend into 2021.

WesternGeco Litigation Settlement

On April 7, 2020, we entered into a settlement agreement with WesternGeco that ended the ongoing litigation.

Pursuant to the settlement agreement, WesternGeco granted us a license to the underlying patents, lifted the injunction that prevented us from manufacturing DigiFIN in the United States and, on April 13, 2020, the District Court permanently dismissed the pending lawsuit.

In exchange, we agreed to pay WesternGeco a settlement based on future revenues from our multi-client data library, consisting of 1) small percentage of 2-D multi-client data library sales for a ten-year period, and 2) the transfer of a majority of our revenue share relating to the parties’ existing joint multi-client reimaging programs offshore Mexico.

See Note 9 "*Litigation*" of *Footnotes to Condensed Consolidated Financial Statements"* and Part II - Item 1. *"Legal Proceedings"* for further details.

Key Financial Metrics

The table below provides an overview of key financial metrics for our company as a whole and our two business segments for the three and nine months ended September 30, 2020, compared to the same period of 2019.

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2020	2019	2020	2019
	(in thousands, except share data)			
Net revenues:				
E&P Technology & Services:				
New Venture	$ 1,213	$ 5,905	$ 7,340	$ 24,394
Data Library	5,085	27,288	52,083	55,030
Total multi-client revenues	6,298	33,193	59,423	79,424
Imaging and Reservoir Services	3,795	7,048	12,410	16,443
Total	10,093	40,241	71,833	95,867
Operations Optimization:				
Optimization Software & Services	3,007	6,895	10,811	17,648
Devices	3,134	6,103	12,735	18,455
Total	6,141	12,998	23,546	36,103
Total net revenues	$ 16,234	$ 53,239	$ 95,379	$ 131,970
Gross profit (loss):				
E&P Technology & Services	$ (1,092)	$ 18,316	$ 24,902 (a)	$ 36,113
Operations Optimization	2,381	6,972	9,315	18,670
Total gross profit	$ 1,289	$ 25,288	$ 34,217	$ 54,783
Gross margin:				
E&P Technology & Services	(11)%	46 %	35 %	38 %
Operations Optimization	39 %	54 %	40 %	52 %
Total gross margin	8 %	47 %	36 %	42 %
Income (loss) from operations:				
E&P Technology & Services	$ (4,591)	$ 11,878	$ 13,803 (a)	$ 15,500
Operations Optimization	(232)	2,994	(3,965) (b)	5,808
Support and other	(6,341)	(11,014)	(20,148) (c)	(35,940)
Income (loss) from operations	$ (11,164)	$ 3,858	$ (10,310)	$ (14,632)
Operating margin:				
E&P Technology & Services	(45)%	30 %	19 %	16 %
Operations Optimization	(4)%	23 %	(17)%	16 %
Support and other	(39)%	(21)%	(21)%	(27)%
Total operating margin	(69)%	7 %	(11)%	(11)%
Net loss	(16,414)	(3,329)	(23,921)	(32,864)
Less: Net income attributable to noncontrolling interest	(193)	(394)	(168)	(841)
Net loss attributable to ION	$ (16,607)	$ (3,723)	$ (24,089)	$ (33,705)
Net loss per share:				
Basic	$ (1.16)	$ (0.26)	$ (1.69)	$ (2.39)
Diluted	$ (1.16)	$ (0.26)	$ (1.69)	$ (2.39)
Weighted average number of common shares outstanding:				
Basic	14,278	14,181	14,255	14,104
Diluted	14,278	14,181	14,255	14,104

[a] Includes impairment of multi-client data library of $1.2 million.

[b] Includes impairment of goodwill of $4.2 million for the nine months ended September 30, 2020.

[c] Includes amortization of the government relief funding expected to be forgiven of $6.9 million for the nine months ended September 30, 2020.

For a discussion of factors that could impact our future operating results and financial condition, see (i) Item 1A. "*Risk Factors*" in our Annual Report on Form 10-K for the year ended December 31, 2019, and (ii) Item 1A. "*Risk Factors*" in Part II of this Form 10-Q.

Results of Operations

Three Months Ended September 30, 2020 Compared to Three Months Ended September 30, 2019

Our consolidated net revenues of $16.2 million for the three months ended September 30, 2020 (the "Current Quarter") decreased by $37.0 million, or 70%, compared to consolidated net revenues of $53.2 million for the three months ended September 30, 2019 (the "Comparable Quarter"). Our total gross margin was 8% in the Current Quarter, as compared to 47% in the Comparable Quarter. For the Current Quarter, our loss from operations was $11.2 million, compared to an income of $3.9 million for the Comparable Quarter.

Net loss attributable to ION for the Current Quarter was $16.6 million, or $1.16 loss per share, compared to a Net loss attributable to ION of $3.7 million, or $0.26 loss per share, for the Comparable Quarter.

Net Revenues, Gross Profits and Gross Margins

E&P Technology & Services — Net revenues for the Current Quarter decreased by $30.1 million, or 75%, to $10.1 million, compared to $40.2 million for the Comparable Quarter. Within the E&P Technology & Services segment, total multi-client net revenues were $6.3 million, a decrease of 81% primarily due to lower volume of ION's global library sales, as well as a decline in new venture revenues due to completing acquisition of a large new program in Comparable Quarter compared to revenues from smaller reimaging programs in the Current Quarter. Imaging and Reservoir Services net revenues were $3.8 million, a $3.3 million decrease compared to the Comparable Quarter due to lower proprietary tender activity, and consistent with our strategy to preferentially utilize these resources to generate higher margin multi-client reimaging products. The Current Quarter reflects a gross profit of $1.1 million, representing an (11)% gross margin, compared to a gross profit of $18.3 million, or 46% gross margin, in the Comparable Quarter. Changes in gross profit and margin were due to decrease in our net revenues as discussed above, as well as the cost cutting initiatives implemented earlier in the year.

Operations Optimization — Net revenues for the Current Quarter decreased by $6.9 million, or 53% to $6.1 million, compared to $13.0 million for the Comparable Quarter. Optimization Software & Services net revenues for the Current Quarter decreased by $3.9 million, or 57% to $3.0 million, compared to $6.9 million for the Comparable Quarter due to reduced seismic activity and associated services demand resulting from COVID-19. Devices net revenues for the Current Quarter decreased by $3.0 million, or 49%, to $3.1 million, compared to $6.1 million for the Comparable Quarter primarily due to lower sales of towed streamer equipment spares and repairs. The Current Quarter reflects a gross profit of $2.4 million, representing a 39% gross margin compared to a gross profit of $7.0 million, representing a 54% gross margin for the Comparable Quarter. Changes in gross profit and margin were due to the decline in our net revenues as discussed above.

Operating Expenses

Research, Development and Engineering — Research, development and engineering expense were $2.9 million for the Current Quarter, a decrease of $2.0 million, or 41% compared to $4.9 million for the Comparable Quarter primarily due to the cost cutting initiative implemented following the COVID-19 related market impact.

Marketing and Sales — Marketing and sales expense were $2.8 million for the Current Quarter, a decrease of $2.8 million, or 50% compared to $5.6 million for the Comparable Quarter primarily due to the reduction of commission expense resulting from reduced revenues during the Current Quarter, as well as the cost cutting initiatives implemented earlier in the year.

General, Administrative and Other Operating Expenses — General, administrative and other operating expenses were $6.7 million for the Current Quarter, a decrease of $4.3 million, or 39% compared to $11.0 million for the Comparable Quarter primarily due to the reduction in expenses resulting from our cost cutting initiatives, including lower compensation, travel, rent and professional services expenses.

Other Items

Interest Expense, Net — Interest expense, net, was $3.7 million for the Current Quarter compared to $3.2 million for the Comparable Quarter, due to increased borrowings during the Current Quarter. For additional information, please refer to "*Liquidity and Capital Resources — Sources of Capital*" below.

Income Tax Expense — Income tax expense for the Current Quarter was $1.1 million compared to $3.8 million for the Comparable Quarter. The income tax expense for the Current Quarter and Comparable Quarter primarily relates to results generated by our non-U.S. businesses in Latin America. Our effective tax rates for the Current Quarter and Comparable Quarter were negatively impacted by the change in valuation allowances related to U.S and certain foreign operating losses. Due to the impact of the valuation allowances on tax expense, our effective tax rates are not meaningful for all periods presented. See further discussion of establishment of the deferred tax valuation allowance at Note 8 "*Income Taxes*" of *Footnotes to Condensed Consolidated Financial Statements.*

Nine Months Ended September 30, 2020 Compared to Nine Months Ended September 30, 2019

Our consolidated net revenues of $95.4 million for the nine months ended September 30, 2020 (the "Current Period") decreased by $36.6 million, or 28%, compared to total net revenues of $132.0 million for the nine months ended September 30, 2019 (the "Comparable Period"). Our total gross margin for the Current Period was 36%, compared to 42%, for the Comparable Period. For the Current Period, our loss from operations was $10.3 million, compared to a loss of $14.6 million, for the Comparable Period.

Net loss attributable to ION for the Current Period was $24.1 million, or $1.69 loss per share, compared to a Net loss attributable to ION of $33.7 million, or $2.39 loss per share, in the Comparable Period.

Net Revenues, Gross Profits and Gross Margins

E&P Technology & Services — Net revenues for the Current Period decreased by $24.1 million, or 25%, to $71.8 million, compared to $95.9 million for the Comparable Period. Within E&P Technology & Services segment, multi-client net revenues were $59.4 million, a decrease of 25%. This result was predominantly driven by decreased new venture net revenues due to reduced new program activity during the Current Period. Data library revenues were fairly consistent with the Comparable Period largely due to increased sales of global 2D data library in the first quarter of 2020. Imaging and Reservoir Services net revenues were $12.4 million, a decrease of 24% from the Comparable period due to lower proprietary tender activity, and consistent with our strategy to preferentially utilize these resources to generate higher margin multi-client reimaging products. Gross profit decreased by $11.2 million to $24.9 million, or 35% gross margin, compared to $36.1 million, or 38% gross margin, in the Comparable Period. This decline in gross profit and margin resulted from the decrease in new venture revenues, as well as the $1.2 million impairment of the multi-client data library in the Current Period.

Operations Optimization — Net revenues for the Current Period decreased by $12.6 million or 35%, to $23.5 million compared to $36.1 million for the Comparable Period. Optimization Software & Services net revenues for the Current Period decreased by $6.8 million, or 39%, to $10.8 million compared to $17.6 million for the Comparable Period. Devices net revenues for the Current Period decreased by $5.8 million, or 31%, to $12.7 million, compared to $18.5 million. The change in net revenues during the Current Period is consistent with the changes described for the Current Quarter discussed above. Gross profit decreased by $9.4 million to $9.3 million, representing a 40% gross margin, for the Current Period compared to $18.7 million, representing a 52% gross margin, for the Comparable Period due to the decline in our net revenues.

Operating Expenses

Research, Development and Engineering — Research, development and engineering expense was $9.9 million for the Current Period, a decrease of $5.5 million, or 36%, compared to $15.4 million for the Comparable Period due to primarily due to the cost cutting initiative implemented in January 2020 and following the COVID-19 related market impact.

Marketing and Sales — Marketing and sales expense was $8.9 million for the Current Period, a decrease of $8.5 million, or 49%, compared to $17.4 million, for the Comparable Period, primarily due to the reduction of commission expense resulting from reduced revenues during the Current Period, as well as the cost cutting initiative implemented earlier in the year.

General, Administrative and Other Operating Expenses — General, administrative and other operating expenses were $21.5 million for the Current Period, a decrease of $15.1 million, or 41%, compared to $36.6 million for the Comparable Period. This decrease was primarily due to the reduction in compensation, travel, rent and professional services expenses resulting from our cost cutting initiatives.

Impairment of Goodwill — Impairment of goodwill was $4.2 million for the Current Period compared to zero for the Comparable Period resulting from impairment charge recognized during the first quarter of 2020. See further discussion at Note 10 "*Details of Selected Balance Sheet Accounts*" of *Footnotes to Condensed Consolidated Financial Statements.*

Other Items

Interest Expense, net — Interest expense, net, was $10.3 million for the Current Period compared to $9.4 million for the Comparable Period due to increased borrowings during the Current Period. For additional information, please refer to "*Liquidity and Capital Resources — Sources of Capital*" below.

Income Tax Expense — Income tax expense for the Current Period was $10.0 million compared to $7.9 million for the Comparable Period. Our income tax expense for the Current Period and Comparable Period, were primarily related to results from our non-US businesses in Latin America. The income tax expense for the Current Period includes $2.2 million of valuation allowance related to our non-U.S. businesses. Our effective tax rate for the Current Period and Comparable Period was negatively impacted by the change in valuation allowance related to U.S. operating losses for which we cannot currently recognize a tax benefit. Due to the impact of the valuation allowances on tax expense, our effective tax rates are not meaningful for all periods presented. See further discussion of establishment of the deferred tax valuation allowance at Note 8 "*Income Taxes*" of *Footnotes to Condensed Consolidated Financial Statements.*

Other income (expense), net — Other income for the Current Period was $6.7 million compared to other expense of $0.9 million for the Comparable Period, an increase of $7.9 million primarily due to the amortization of government relief funding expected to be forgiven of $6.9 million. See further discussion at Note 6 "*Government Relief Funding*" of *Footnotes to Condensed Consolidated Financial Statements.*

Liquidity and Capital Resources

Sources of Capital

At September 30, 2020, we had total liquidity of $59.4 million, consisting of $51.1 million of cash on hand and $8.3 million of remaining borrowing capacity under our Credit Facility. In response to the market uncertainty resulting from the COVID-19 pandemic combined with weaker oil and gas prices, we drew under our Credit Facility during the first quarter 2020, of which $22.5 million remains outstanding and in our cash balances as of September 30, 2020.

Our cash requirements include working capital requirements and cash required for our debt service payments, multi-client seismic data acquisition activities and capital expenditures. As of September 30, 2020, we had negative working capital of $30.5 million compared to negative working capital of $23.6 million as of December 31, 2019. Working capital requirements are primarily driven by our investment in our multi-client data library ($19.8 million in the Current Period and $25.0 million to $30.0 million expected, for the full year, a portion of which will be pre-funded or underwritten by our customers) and royalty payments for multi-client sales. Whether remaining planned expenditures will actually be spent in 2020 depends on industry conditions, project approvals and schedules, and careful monitoring of our levels of liquidity.

Our headcount has traditionally been a significant driver of our working capital needs. Our headcount decreased to approximately 450 employees as of September 30, 2020 from approximately 520 employees as of December 31, 2019 resulting from our cost reduction initiative earlier this year, a significant portion of which is reduction in our personnel costs. As a significant portion of our business is involved in the planning, processing and interpretation of seismic data services, one of our largest investments is in our employees, which requires cash expenditures for their salaries, bonuses, payroll taxes and related compensation expenses, including stock appreciation awards, typically in advance of related revenue billings and collections.

Our working capital requirements may change from time to time depending upon many factors, including our operating results and adjustments in our operating plan in response to industry conditions, competition and unexpected events. In recent years, our primary sources of funds have been cash flows generated from operations, existing cash balances, debt and equity issuances and borrowings under our Credit Facility.

Revolving Credit Facility

On August 16, 2018, we and our material U.S. subsidiaries — GX Technology Corporation, ION Exploration Products (U.S.A), Inc. and I/O Marine Systems, Inc. (the "Material U.S. Subsidiaries") — along with GX Geoscience Corporation, S. de R.L. de C.V., a limited liability company (Sociedad de Responsibilidad Limitada de Capital Variable) organized under the laws of Mexico, and a subsidiary of the Company (the "Mexican Subsidiary") (the Material U.S. Subsidiaries and the Mexican Subsidiary are collectively, the "Subsidiary Borrowers", together with ION Geophysical Corporation are the "Borrowers") — the financial institutions party thereto, as lenders, and PNC Bank, National Association ("PNC"), as agent for the lenders, entered into that certain Third Amendment and Joinder to Revolving Credit and Security Agreement (the "Third Amendment"), amending the Revolving Credit and Security Agreement, dated as of August 22, 2014 (as previously amended by the First Amendment to Revolving Credit and Security Agreement, dated as of August 4, 2015 and the Second Amendment to Revolving Credit and Security Agreement, dated as of April 28, 2016, the "Credit Agreement"). The Credit Agreement, as amended by the First Amendment, the Second Amendment and the Third Amendment is herein called the "Credit Facility").

The maximum amount available under the Credit Facility is the lesser of $50.0 million or a monthly borrowing base. The borrowing base under the Credit Facility will increase or decrease monthly using a formula based on certain eligible receivables, eligible inventory and other amounts, including a percentage of the net orderly liquidation value of the Borrowers' multi-client data library. At September 30, 2020, there was $22.5 million outstanding indebtedness under the Credit Facility and the undrawn remaining borrowing base capacity was $8.3 million. The maturity of the Credit Facility will accelerate to October 31, 2021 if we are unable to repay or extend the maturity of the Second Lien Notes.

The Credit Facility requires us to maintain compliance with various covenants. At September 30, 2020, we were in compliance with all of the covenants under the Credit Facility. For further information regarding our Credit Facility, see above Note 5 "*Long-term Debt*" of *Footnotes to Condensed Consolidated Financial Statements*.

Senior Secured Notes

As of September 30, 2020, ION Geophysical Corporation's 9.125% Senior Secured Second Priority Notes due December 2021 (the "Second Lien Notes") had an outstanding aggregate principal amount of $120.6 million and are senior secured second-priority obligations guaranteed by the Material U.S. Subsidiaries and the Mexican Subsidiary. Interest on the Second Lien Notes is payable semiannually in arrears on June 15 and December 15 of each year during their term, except that the interest payment otherwise payable on June 15, 2021 will be payable on December 15, 2021.

The April 2016 indenture governing the Second Lien Notes contains certain covenants that, among other things, limits or prohibits our ability and the ability of our restricted subsidiaries to take certain actions or permit certain conditions to exist during the term of the Second Lien Notes, including among other things, incurring additional indebtedness in excess of permitted indebtedness, creating liens, paying dividends and making other distributions in respect of our capital stock, redeeming our capital stock, making investments or certain other restricted payments, selling certain kinds of assets, entering into transactions with affiliates, and effecting mergers or consolidations. These and other restrictive covenants contained in the Second Lien Notes Indenture are subject to certain exceptions and qualifications. All of our subsidiaries are currently restricted subsidiaries.

At September 30, 2020, we were in compliance with all of the covenants under the Second Lien Notes.

On or after December 15, 2019, we may, on one or more occasions, redeem all or a part of the Second Lien Notes at the redemption prices set forth below, plus accrued and unpaid interest and special interest, if any, on the Second Lien Notes redeemed during the twelve-month period beginning on December 15th of the years indicated below:

Date	Percentage
2019	105.50%
2020	103.50%
2021	100.00%

Government Relief Funding

On April 11, 2020, we entered into a Note Agreement ("Note") with PNC amounting to $6.9 million pursuant to the Coronavirus Aid, Relief, and Economic Security Act's ("CARES Act") Paycheck Protection Program ("PPP"). Amounts outstanding under this Note will bear interest at 1% per annum beginning on the six-month anniversary of the date of the Note. Interest will be calculated based on the actual number of days that principal is outstanding over a year of 360 days. The Note matures in two years after the receipt of the loan proceeds.

We are in the process of applying to PNC for forgiveness of the amount due on this Note in an amount based on the sum of the following costs incurred by our US operations during the 24-week period beginning on the date of first disbursement (for payroll costs, beginning on the date of the first pay period following disbursement; for non-payroll costs, beginning on the date of first disbursement) of this Note: (a) payroll costs; (b) any payment on a covered rent obligation; and (c) any covered utility payment. The amount of forgiveness shall be calculated (and may be reduced) in accordance with the requirements of the PPP, including the provisions of Section 1106 of the CARES Act. The forgiveness amount will be subject to the Small Business Administration's review. Any outstanding principal amount under this Note that is not forgiven under the PPP shall convert to an amortizing term loan.

We recognized the Note following the government grant accounting by analogy to International Accounting Standards ("IAS") 20, "Accounting for Government Grants and Disclosure of Government Assistance" ("IAS 20"). In accordance with IAS 20, a deferred income liability is recognized for the principal amount estimated to be forgiven and is amortized to other income on a systematic and rational basis. Any outstanding principal amount not expected to be forgiven is recognized as other debt. As we expect that the full amount of the Note will be forgiven, the entire $6.9 million was recognized as a deferred income liability during second quarter and fully amortized to other income in the condensed consolidated income statements for the six months ended June 30, 2020, as the related expenses it was intended to offset were incurred from April 2020 to June 2020. If, despite our good-faith belief that given our circumstances we satisfied all eligible requirements for the PPP Loan, we are later determined to have not been in compliance with these requirements or it is otherwise determined that we were ineligible to receive the PPP Loan, we may be required to repay the PPP Loan in its entirety and/or be subject to additional penalties. Should we be audited or reviewed by federal or state regulatory authorities as a result of filing an application for forgiveness of the PPP Loan or otherwise, such audit or review could result in the diversion of management's time and attention and the incurrence of additional costs.

Meeting our Liquidity Requirements

At September 30, 2020, our total outstanding indebtedness (including equipment finance leases) was approximately $142.9 million, consisting primarily of approximately $120.6 million outstanding Second Lien Notes, $1.0 million of equipment finance leases and other short-term debt, partially offset by $1.2 million of debt issuance costs. In response to the market uncertainty resulting from COVID-19 pandemic combined with weaker oil and gas prices, we drew under our Credit Facility during the first quarter 2020, of which $22.5 million remains outstanding and in our cash balances as of September 30, 2020.

For the Current Period, total capital expenditures, including the investments in our multi-client data library, were $20.7 million. We expect that our total capital expenditures, primarily related to investments in our multi-client data library, this year to be in the range of $25.0 million to $35.0 million, a portion of which will be pre-funded or underwritten by our customers. Whether remaining planned expenditures will actually be spent in 2020 depends on industry conditions, project approvals and schedules, and careful monitoring of our levels of liquidity.

While Current Quarter revenues came in lower than prior year due to the repercussions of the oil price volatility earlier this year and the ongoing uncertainty from the COVID-19 pandemic, we made progress executing our strategy. Backlog increased 77% sequentially, reversing several consecutive quarters of steady decline due to the strategic shift to enter the 3D new acquisition multi-client market. We continue to work closely with our clients to understand their revised budgets and to scale our business appropriately. We partially mitigated the impact of the current macroeconomic environment by fully benefiting from the structural changes and associated cost reductions that were outlined in the first quarter. To further mitigate the impact of COVID-19 and oil price volatility, management implemented a plan to preserve cash and manage liquidity as follows:

- Scaled down personnel costs and operating expenses in April 2020 by another $18.0 million during the remaining nine months of 2020, building on the over $20.0 million of cuts made in January 2020. These further reductions are primarily through a variety of furlough programs and reduced compensation arrangements across our worldwide workforce. Our executives took a 20% base salary reduction and a tiered reduction scheme has been cascaded to the rest of the worldwide workforce. Our board of directors took a 20% reduction in directors' fees. In addition, we have curtailed use of external contractors, decreased travel and event costs and implemented new systems and processes that more efficiently support our business.
- Reduced capital expenditures to an estimated $25.0 million to $35.0 million (a portion of which will be pre-funded or underwritten by our customers), down from the original budget of $35.0 million to $50.0 million, to reflect both reduced seismic demand and travel/border restrictions impacting new data acquisition offshore. The majority of capital expenditures relate to investments in multi-client data. This provides flexibility to aggressively reduce cash outflows while shifting to much lower cost reimaging programs.
- Applied for and continue to explore various government assistance programs, of which approximately $7.0 million was received and applied against qualifying expenditures during the period. Receipt of this assistance allowed us to avoid further staff reductions while supporting our ongoing operations.
- Re-negotiated existing lease agreements for our significant locations to obtain rent relief of approximately $4.0 million. The majority of the cash savings from the rent relief is expected to benefit us from July 2020 to March 2021. See Note 12 "*Lease Obligations*" for further details.
- Announced the sale of our 49% ownership interest in INOVA Geophysical joint venture for $12.0 million subject to regulatory approvals and other closing conditions. As the regulatory review is taking longer than anticipated, closing will likely extend into 2021.
- Entered into a settlement agreement with WesternGeco ending the decade-long patent litigation. See Note 9 "*Litigation*" for further details.

We believe that the above management plan, which includes the use of government assistance programs, along with our existing cash balance and the undrawn remaining borrowing capacity under our Credit Facility will provide sufficient liquidity to meet our anticipated cash needs for the next twelve months. At September 30, 2020, our liquidity was $59.4 million, slightly below liquidity of $65.5 million from one year ago. The outlined management plan reflects our continued focus on preserving cash and managing liquidity in the current uncertain macroeconomic environment. In the event our customers experience more extensive budget reductions and capital constraints further reducing demand for our services and products, resulting in deterioration of our revenues below our current forecasted levels, management may be required to update its plan by implementing further cost reductions and delaying capital investments. Additionally, we are actively exploring a number of strategic options to optimally address the Second Lien Notes, which mature on December 15, 2021. If by September 15, 2021 we have not (1) repaid the Second Lien Notes, (2) extended the maturity of the Second Lien Notes to a date not earlier than October 31, 2023, or (3) submitted a written proposal summarizing our plan to either repay or extend the notes to the agent for the lenders (as defined in Note 5, "*Long-term Debt*" of *Footnotes to Condensed Consolidated Financial Statements*") of the Credit Facility that has been approved by the agent, then the Credit Facility shall immediately become due and payable on such date. If the written proposal is submitted and approved by the agent by September 15, 2021, but we are unable to execute the approved proposal on or before October 31, 2021, the Credit Facility shall immediately become due and payable on such date. We reviewed our debt covenants as of September 30, 2020, and expect to remain in compliance for the next twelve months (see Note 5, "*Long-term Debt*" of *Footnotes to Condensed Consolidated Financial Statements*" for further discussion of our covenants).

Cash Flow from Operations

In the Current Period, we generated cash from operating activities of $13.2 million compared to cash generated from operating activities of $19.3 million for the Comparable Period. The decrease was driven primarily by a reduction in net revenues during the Current Period, partially offset by a reduction of operating expenses due to cost savings initiatives fully realized during the Current Period, as well as collection of our accounts receivables in the second quarter of 2020.

Cash Flow from Investing Activities

Cash used in investing activities was $20.7 million in the Current Period compared to $22.5 million for the Comparable Period. The principal uses of cash in our investing activities during the Current Period were $19.8 million invested in our multi-client data library and $0.9 million for capital expenditures related to property, plant and equipment.

The principal use of cash in our investing activities during the Comparable Period were $21.2 million invested in our multi-client data library and $1.3 million for capital expenditures related to property, plant and equipment.

Cash Flow from Financing Activities

Net cash provided by financing activities was $27.3 million in the Current Period, compared to net cash used in financing activities of $2.6 million for the Comparable Period. Cash provided by financing activities during the Current Period was related to a $22.5 million net drawdown on our credit facility, $6.9 million of government relief funding, partially offset by $1.8 million of payments of long-term debt, including equipment finance leases.

The net cash used in financing activities during the Comparable Period was related to $2.0 million of payments of long-term debt, including equipment finance leases in the Comparable Period.

Inflation and Seasonality

Inflation in recent years has not had a material effect on our cost of goods or labor, or the prices for our products or services. Traditionally, our business has been seasonal, with strongest demand often occurring in the second half of our fiscal year.

Critical Accounting Policies and Estimates

Refer to our Annual Report on Form 10-K for the year ended December 31, 2019, for a complete discussion of our significant accounting policies and estimates.

Foreign Sales Risks

The majority of our foreign sales are denominated in U.S. dollars. Product revenues are allocated to geographical locations on the basis of the ultimate destination of the equipment, if known. If the ultimate destination of such equipment is not known, product revenues are allocated to the geographical location of initial shipment. Service revenues, which primarily relate to our E&P Technology & Services segment, are allocated based upon the billing location of the customer. For the Current and Comparable Periods, international sales comprised 60% and 75%, respectively, of total net revenues.

	Nine Months Ended September 30,	
	2020	2019
Net revenues by geographic area:	(In thousands)	
North America	$ 37,920	$ 32,984
Latin America	22,695	50,572
Asia Pacific	15,696	8,287
Europe	12,997	24,850
Middle East	2,202	6,364
Africa	1,939	7,541
Other	1,930	1,372
Total	$ 95,379	$ 131,970

Credit Risks

For the nine months ended September 30, 2020 and 2019, we had one customer with sales that exceeded 10% of the Company's consolidated net revenues.

At September 30, 2020, we had two customers with balances that accounted for 39% of our total combined accounts receivable and unbilled receivable balances. At September 30, 2019, we had two customers with a combined balance that accounted for 40% of our total combined accounts receivable and unbilled receivable balances.

The loss of these customers or deterioration in our relationship with these customers could have a material adverse effect on our results of operations and financial condition.

We routinely evaluate the financial stability and creditworthiness of our customers. We have a corporate credit policy that is intended to minimize the risk of financial loss due to a customer's inability to pay. Credit coverage decisions for customers are based on references, payment histories, financial and other data. We utilize a third party trade credit insurance policy. We have historically not extended long-term credit to its customers.

Item 3. *Quantitative and Qualitative Disclosures about Market Risk*

For the three and nine months ended September 30, 2020, we recorded net foreign currency translation losses of approximately $0.5 million and $1.8 million, respectively, primarily due to currency fluctuations related to our operations in Brazil.

Refer to Item 7A of our Annual Report on Form 10-K for the year ended December 31, 2019 for a discussion regarding our quantitative and qualitative disclosures about market risk. There have been no material changes to those disclosures during the Current Period.

Item 4. *Controls and Procedures*

Disclosure Controls and Procedures. Disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file with or submit to the SEC under the Securities Exchange Act of 1934, as amended (the "Exchange Act") is recorded, processed, summarized and reported within the time period specified by the SEC's rules and forms. Disclosure controls and procedures are defined in Rule 13a-15(e) under the Exchange Act, and they include, without limitation, controls and procedures designed to ensure that information required to be disclosed under the Exchange Act is accumulated and communicated to management, including the principal executive officer and the principal financial officer, as appropriate, to allow timely decisions regarding required disclosure.

Our management carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of September 30, 2020. Based upon that evaluation, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures were effective as of September 30, 2020.

Changes in Internal Control over Financial Reporting. There was not any change in our internal control over financial reporting that occurred during the three months ended September 30, 2020, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II — OTHER INFORMATION

Item 1. *Legal Proceedings*

WesternGeco

Settlement

On April 7, 2020, we entered into a settlement agreement with WesternGeco that ended the ongoing litigation.

Pursuant to the settlement agreement, WesternGeco granted us a license to the underlying patents, lifted the injunction that prevented us from manufacturing DigiFIN in the United States and, on April 13, 2020, the District Court permanently dismissed the pending lawsuit.

In exchange, we agreed to pay WesternGeco a settlement based on future revenues from our multi-client data library, consisting of 1) small percentage of 2-D multi-client data library sales for a ten-year period, and 2) the transfer of a majority of our revenue share relating to the parties' existing joint multi-client reimaging programs offshore Mexico.

Background

In June 2009, WesternGeco L.L.C. ("WesternGeco") filed a lawsuit against us in the United States District Court for the Southern District of Texas (the "District Court"). In the lawsuit, styled *WesternGeco L.L.C. v. ION Geophysical Corporation*, WesternGeco alleged that we infringed four of their patents concerning marine seismic surveys.

Trial began in July 2012, and the jury returned a verdict in August 2012. The jury found that we infringed the six "claims" contained in four of WesternGeco's patents by supplying our DigiFIN lateral streamer control units from the United States. (In patent law, a "claim" is a technical legal term; an infringer infringes on one or more "claims" of a given patent.)

In May 2014, the District Court entered a Final Judgment against the Company in the amount of $123.8 million. The Final Judgment also enjoined the Company from supplying DigiFINs or any parts unique to DigiFINs in or from the United States.

As of 2018, we paid WesternGeco the $25.8 million of the Final Judgment (the portion of the judgment representing reasonable royalty damages and enhanced damages, plus interest).

The balance of the judgment against us ($98.0 million, representing lost profits from surveys performed by our customers outside of the United States, plus interest) was vacated by the United States Court of Appeals for the Federal Circuit (the award of lost profit damages was vacated because the Patent Trial and Appeal Board of the Patent and Trademark Office invalidated four of the five patent claims that could have supported an award of lost profit), and a new trial ordered, to determine what lost profit damages, if any, WesternGeco was entitled to.

As noted above, the lawsuit has been dismissed in accordance with the parties' settlement agreement.

Our assessments disclosed in this Quarterly Report on Form 10-Q or elsewhere are based on currently available information and involve elements of judgment and significant uncertainties. See Note 9 "*Litigation*" of *Notes to Condensed Consolidated Financial Statements.*

Other Litigation

In July 2018, we prevailed in an arbitration that we initiated against the Indian Directorate General of Hydrocarbons ("DGH") relating our ability to continue to license data under our IndiaSPAN program. The DGH filed a lawsuit in court in India to vacate the arbitration award; in connection with that lawsuit, we were ordered to escrow approximately $4.5 million in sales proceeds that we had received in respect of sales from our IndiaSPAN program, pending the outcome of the DGH's challenge to the arbitration award. We challenged the escrow order, but on December 9, 2019, the Supreme Court of India ordered us to comply with it. We prepared a petition to file with the court to request that a March 2020 deadline to deposit approximately $4.5 million in escrow in early 2020 be extended due to the changes to our business, and to the markets, that have been spurred by the COVID-19 pandemic. We were unable to file the application because the courts in India were closed due to the pandemic (other than for emergencies), and were not accepting filings at that time. We served a copy of our draft petition on the DGH's counsel and intend to file it in advance of the next hearing, which has been repeatedly delayed due to the COVID-19 pandemic. We prevailed on the merits in the arbitration and expect to have that award upheld in Indian court, which would result in release of our portion of the escrowed money. The DGH's request to vacate the arbitration award is currently scheduled to be heard by the court in India on January 18, 2021. We have not escrowed the money as of September 30, 2020.

We have been named in various other lawsuits or threatened actions that are incidental to our ordinary business. Litigation is inherently unpredictable. Any claims against us, whether meritorious or not, could be time-consuming, cause us to incur costs and expenses, require significant amounts of management time and result in the diversion of significant operational resources. The results of these lawsuits and actions cannot be predicted with certainty. We currently believe that the ultimate resolution of these matters will not have a material adverse effect on our financial condition or results of operations or our liquidity.

Item 1A. ***Risk Factors***

This report contains or incorporates by reference statements concerning our future results and performance and other matters that are "forward-looking" statements within the meaning of Section 27A of the Securities Act of 1933, as amended ("Securities Act"), and Section 21E of the Securities Exchange Act of 1934, as amended ("Exchange Act"). These statements involve known and unknown risks, uncertainties, and other factors that may cause our or our industry's results, levels of activity, performance, or achievements to be materially different from any future results, levels of activity, performance, or achievements expressed or implied by such forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "will," "would," "should," "intend," "expect," "plan," "anticipate," "believe," "estimate," "predict," "potential," or "continue" or the negative of such terms or other comparable terminology. Examples of other forward-looking statements contained or incorporated by reference in this report include statements regarding:

- the impact of the COVID-19 pandemic on our business, financial condition, and results of operations;
- future levels of our capital expenditures and of our customers for seismic activities;
- future oil and gas commodity prices;
- the effects of current and future worldwide economic conditions (particularly in developing countries) and demand for oil and natural gas and seismic equipment and services;
- future implication of our negative working capital and stockholders' deficit, including future cash needs and availability of cash, to fund our operations and pay our obligations;
- the effects of current and future unrest in the Middle East, North Africa and other regions;
- the timing of anticipated revenues and the recognition of those revenues for financial accounting purposes;
- the effects of ongoing and future industry consolidation;
- the timing of future revenue realization of anticipated orders for multi-client survey projects and data processing work in our E&P Technology & Services segment;
- future government laws or regulations pertaining to the oil and gas industry, including trade restrictions, embargoes and sanctions imposed by the U.S government or laws curtailing the exploration for, or use of; hydrocarbons;
- future government actions that may result in the deprivation of our contractual rights, including the potential for adverse decisions by judicial or administrative bodies in foreign countries with unpredictable or corrupt judicial systems;
- expected net revenues, gross margins, income from operations and net income for our services and products;
- future seismic industry fundamentals, including future demand for seismic services and equipment;
- future benefits to our customers to be derived from new services and products;
- future benefits to be derived from our investments in technologies, joint ventures and acquired companies;
- future growth rates for our services and products;
- the degree and rate of future market acceptance of our new services and products;
- expectations regarding E&P companies and seismic contractor end-users purchasing our more technologically-advanced services and products;
- anticipated timing and success of commercialization and capabilities of services and products under development and start-up costs associated with their development, including 4Sea and Marlin SmartPort;
- future opportunities for new products and projected research and development expenses;
- expected continued compliance with our debt financial covenants;
- expectations regarding realization of deferred tax assets;
- expectations regarding the impact of the U.S. Tax Cuts, Jobs Act and CARES Act;
- expectations regarding the approval of our request for forgiveness of the PPP loan.
- anticipated results with respect to certain estimates we make for financial accounting purposes;
- future success dependent on our continuing ability to identify, hire, develop, motivate and retain skilled personnel for all areas of our organization;
- breaches to our systems could lead to loss of intellectual property, dissemination of highly confidential information, increased costs and impairment of our ability to conduct our operations;

- evolving cybersecurity risks, such as those involving unauthorized access or control, denial-of-service attacks, malicious software, data privacy breaches by employees, insiders or others with authorized access, cyber or phishing-attacks, ransomware, malware, social engineering, physical breaches or other actions;
- compliance with the U.S. Foreign Corrupt Practices Act and other applicable U.S. and foreign laws prohibiting corrupt payments to government officials and other third parties; and
- anticipated approval of the INOVA sale by applicable regulators

The COVID-19 pandemic has adversely affected our business; the ultimate effect on our operations and financial condition will depend on future developments that are highly uncertain.

The COVID-19 pandemic has adversely affected the global economy. It has disrupted supply chains, caused downward pressure on stock prices, depressed the demand for many goods and services, and created significant volatility in the financial markets. The pandemic has also resulted in travel restrictions, business closures and other restrictions on movement and interactions in many locations. There has been a significant reduction in the demand for oil, and a significant drop in the price of oil. If the reduced demand and reduced prices continue for a prolonged period, our operations, financial condition, and cash flows may be materially and adversely affected.

Our operations also may be adversely affected if significant portions of our workforce are unable to work effectively, whether because of illness, quarantines, government actions, or other restrictions in connection with the pandemic.

We have already implemented workplace restrictions, including guidance for our employees to work remotely if able, in our offices and work sites for health and safety reasons and are continuing to monitor national, state and local government directives where we have operations. Currently the majority of our workforce is working from home. The extent to which the COVID-19 pandemic will adversely affect our business, results of operations, and financial condition will depend on future developments that are highly uncertain. The course, scope and duration of the pandemic, and actions taken by governmental authorities and other third parties in response to the pandemic, cannot be predicted.

Crude oil prices have declined significantly in 2020 and, if oil prices fail to rebound, our operations and financial condition will be materially and adversely affected.

During the first nine months of 2020, crude oil prices fell dramatically due to significantly decreased demand as a result of the COVID-19 pandemic and an increase in global production. While members of OPEC and other oil producing countries agreed to production cuts in April 2020 that were extended through December 2020, these cuts are not expected to offset near-term demand loss attributable to the COVID-19 pandemic. If crude oil prices fail to rebound for a prolonged period, or if demand for our products and services does not rebound commensurately with oil prices, our operations, financial condition, and cash flows will be materially and adversely affected.

We face a significant debt maturity in December 2021 and if not addressed as contemplated by our Credit Facility, all amounts outstanding under our Credit Facility shall immediately become due and payable.

Our $120.6 million aggregate principal amount of Senior Secured Second-Priority Lien notes mature on December 15, 2021. If our cash flows from operations and other capital resources are insufficient to pay off or if we are unable to re-negotiate such notes, we may face substantial liquidity problems and may be forced to reduce or delay investments, dispose of material assets or operations, or issue additional debt or equity. We may not be able to take such actions, if necessary, on commercially reasonable terms or at all. In addition, if by September 15, 2021 we have not (1) repaid the Second Lien Notes, (2) extended the maturity of the Second Lien Notes to a date not earlier than October 31, 2023, or (3) submitted a written proposal summarizing our plan to either repay or extend the notes to the agent for the lenders (as defined in Note 5, "*Long-term Debt*" of *Footnotes to Condensed Consolidated Financial Statements*") of the Credit Facility that has been approved by the agent, then the Credit Facility shall immediately become due and payable on such date. If the written proposal is submitted and approved by the agent by September 15, 2021, but we are unable to execute the approved proposal on or before October 31, 2021, the Credit Facility shall immediately become due and payable on such date. Our inability to generate sufficient cash flows to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results or operations.

We may not be entitled to forgiveness of our Paycheck Protection Program (PPP) Loan, and our application for it could be determined by the government to have been impermissible.

On April 15, 2020, we received loan proceeds of approximately $6.9 million (the "PPP Loan") pursuant to the Paycheck Protection Program under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") administered by the U.S. Small Business Administration (the "SBA"). We used the PPP Loan proceeds in accordance with the provisions of the CARES Act. The PPP Loan bears interest at a rate of 1.00% per annum, and is subject to the standard terms and conditions applicable to loans administered by the SBA under the CARES Act.

Under the CARES Act, as amended in June 2020, loan forgiveness is generally available for the sum of documented payroll costs, covered rent payments, covered mortgage interest and covered utilities during the Covered Period, which is 8 weeks or 24 weeks (at the election of the Company) beginning on the date of the first disbursement of the PPP Loan. The amount of the PPP Loan eligible to be forgiven may be reduced in certain circumstances, including as a result of certain headcount or salary reductions. We will be required to repay any portion of the outstanding principal that is not forgiven, along with accrued interest.

In order to apply for the PPP Loan, we were required to certify, among other things, that the current economic uncertainty made the PPP Loan request necessary to support our ongoing operations. We made this certification in good faith after analyzing, among other things, the maintenance of our workforce, our need for additional funding to continue operations, and our ability to access alternative forms of capital in the current market environment to offset the effects of the COVID-19 pandemic. Following this analysis, we believe that we satisfied all eligibility criteria for the PPP Loan, and that our receipt of the PPP Loan is consistent with the broad objectives of the CARES Act.

On April 23, 2020, the SBA issued guidance stating that it is unlikely that a public company with substantial market value and access to capital markets will be able to make the required certification in good faith. The lack of clarity regarding loan eligibility under the Paycheck Protection Program has resulted in significant media coverage and controversy with respect to public companies applying for and receiving loans. If, despite our good-faith belief that given our circumstances we satisfied all eligible requirements for the PPP Loan, we are later determined to have not been in compliance with these requirements or it is otherwise determined that we were ineligible to receive the PPP Loan, we may be required to repay the PPP Loan in its entirety and/or be subject to additional penalties. Should we be audited or reviewed by federal or state regulatory authorities as a result of filing an application for forgiveness of the PPP Loan or otherwise, such audit or review could result in the diversion of management’s time and attention and the incurrence of additional costs. Any of these events could have a material adverse effect on our business, results of operations and financial condition.

The disruption and uncertainty spurred by COVID-19 has created new avenues for phishing and other cyberattacks, which may impact us to a greater extent as we allow a significant number of our employees to work remotely.

The United States Department of Homeland Security’s Cybersecurity and Infrastructure Security Agency (“CISA”) has warned that cybercriminals will take advantage of the disruption and uncertainty created by the COVID-19 pandemic in their cyberattacks. Increased exposure of our employees to phishing and other scams by cybercriminals in this environment could increase the risk of malicious software being installed on our system, and increase our risk of surrendering sensitive or confidential information. In response to COVID-19, we have been allowing a significant portion of our workforce to work from home. In line with this response, we have provided some employees with expanded remote network access options which enable them to work outside of our physical office locations, and, in this environment, more of our employees use their own personal devices, which can further increase these and other cybersecurity risks. A significant disruption of our information technology systems, unauthorized loss of, or dissemination of, confidential information, or legal claims resulting from our violation of privacy laws, could each have a material adverse effect on our business.

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

(c) *Purchase of Equity Securities by the Issuer and Affiliated Purchasers*

During the three months ended September 30, 2020, in connection with the vesting of (or lapse of restrictions on) shares of our restricted stock held by certain employees, we acquired shares of our common stock in satisfaction of tax withholding obligations that were incurred on the vesting date. The date of acquisition, number of shares and average effective acquisition price per share were as follows:

Period	(a) Total Number of Shares Acquired	(b) Average Price Paid Per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Program	(d) Maximum Number (or Approximate Dollar Value) of Shares That May Yet Be Purchased Under the Plans or Program
July 1, 2020 to July 31, 2020	—	$ —	Not applicable	Not applicable
August 1, 2020 to August 31, 2020	—	$ —	Not applicable	Not applicable
September 1, 2020 to September 30, 2020	41,470	$ 2.39	Not applicable	Not applicable
Total	41,470	$ 2.39		

Item 5. ***Other Information***

None.

Item 6. ***Exhibits***

31.1	Certification of Chief Executive Officer
31.2	Certification of Chief Financial Officer
32.1	Certification of Chief Executive Officer
32.2	Certification of Chief Financial Officer
101	The following materials are formatted in Extensible Business Reporting Language (XBRL): (i) Condensed Consolidated Balance Sheets as of September 30, 2020 and December 31, 2019, (ii) Condensed Consolidated Statements of Operations for the three- and nine-months ended September 30, 2020 and 2019, (iii) Condensed Consolidated Statements of Comprehensive Loss for the three- and nine-months ended September 30, 2020 and 2019, (iv) Condensed Consolidated Statements of Cash Flows for the nine months ended September 30, 2020 and 2019, (v) Condensed Consolidated Statements of Stockholders' Deficit for the three- and nine-months ended September 30, 2020 and 2019 and (vi) Footnotes to Condensed Consolidated Financial Statements.
104	Cover page interactive Data File

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.

ION GEOPHYSICAL CORPORATION
(Registrant)

By /s/ Mike Morrison

Mike Morrison
Executive Vice President and Chief Financial Officer

Date: November 5, 2020

EXHIBIT 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO RULE 13a-14(a) OR RULE 15d-14(a)

I, Christopher Usher, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the period ended September 30, 2020, of ION Geophysical Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2020

/s/ Christopher Usher

Christopher Usher
President and Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO RULE 13a-14(a) OR RULE 15d-14(a)

I, Mike Morrison, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q for the period ended September 30, 2020, of ION Geophysical Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 5, 2020

/s/ Mike Morrison

Mike Morrison
Executive Vice President and Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER
PURSUANT TO 18 U.S.C. §1350

In connection with the Quarterly Report of ION Geophysical Corporation (the “Company”) on Form 10-Q for the period ended September 30, 2020, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Christopher Usher, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to my knowledge that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 5, 2020

/s/ Christopher Usher

Christopher Usher
President and Chief Executive Officer

EXHIBIT 32.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER
PURSUANT TO 18 U.S.C. §1350

In connection with the Quarterly Report of ION Geophysical Corporation (the "Company") on Form 10-Q for the period ended September 30, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Mike Morrison, Executive Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, to my knowledge, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 5, 2020

/s/ Mike Morrison

Mike Morrison
Executive Vice President and Chief Financial Officer