



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended **June 30, 2022**

or

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

For the transition period from _____ to _____

Commission file number **1-442**

THE BOEING COMPANY

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

91-0425694

(I.R.S. Employer Identification No.)

929 Long Bridge Drive Arlington, VA

(Address of principal executive offices)

22202

(Zip Code)

(703) 414-6338

(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405/ of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large Accelerated Filer ☒
Non-accelerated filer ☐
Emerging growth company ☐

Accelerated filer ☐
Smaller reporting 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 ☒

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, \$5.00 Par Value	BA	New York Stock Exchange

As of July 20, 2022, there were 593,811,169 shares of common stock, \$5.00 par value, issued and outstanding.

THE BOEING COMPANY
FORM 10-Q
For the Quarter Ended June 30, 2022
INDEX

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Part I. Financial Information
Item 1. Financial Statements

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Operations
(Unaudited)

(Dollars in millions, except per share data)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Sales of products	\$25,436	\$26,672	\$14,009	\$14,154
Sales of services	5,236	5,543	2,672	2,844
Total revenues	30,672	32,215	16,681	16,998
Cost of products	(23,696)	(23,895)	(12,284)	(12,263)
Cost of services	(4,495)	(4,483)	(2,269)	(2,316)
Boeing Capital interest expense	(13)	(18)	(6)	(9)
Total costs and expenses	(28,204)	(28,396)	(14,559)	(14,588)
	2,468	3,819	2,122	2,410
(Loss)/income from operating investments, net	(3)	75	17	38
General and administrative expense	(1,531)	(2,072)	(668)	(1,040)
Research and development expense, net	(1,331)	(996)	(698)	(497)
Gain on dispositions, net	2	114	1	112
(Loss)/earnings from operations	(395)	940	774	1,023
Other income, net	434	389	253	199
Interest and debt expense	(1,280)	(1,352)	(650)	(673)
(Loss)/earnings before income taxes	(1,241)	(23)	377	549
Income tax benefit/(expense)	159	29	(217)	18
Net (loss)/earnings	(1,082)	6	160	567
Less: net loss attributable to noncontrolling interest	(56)	(44)	(33)	(20)
Net (loss)/earnings attributable to Boeing Shareholders	(\$1,026)	\$50	\$193	\$587
Basic (loss)/earnings per share	(\$1.73)	\$0.09	\$0.32	\$1.00
Diluted (loss)/earnings per share	(\$1.73)	\$0.09	\$0.32	\$1.00
Weighted average diluted shares (millions)	592.8	588.6	596.4	590.2

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Comprehensive Income
(Unaudited)

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Net (loss)/earnings	(\$1,082)	\$6	\$160	\$567
Other comprehensive income/(loss), net of tax:				
Currency translation adjustments	(52)	(22)	(76)	14
Unrealized (loss)/gain on derivative instruments:				
Unrealized (loss)/gain arising during period, net of tax of \$21, (\$17), \$49 and (\$14)	(74)	65	(168)	54
Reclassification adjustment for losses/(gains) included in net loss, net of tax of (\$8), \$0, \$1 and \$0	30	(2)	(5)	
Total unrealized (loss)/gain on derivative instruments, net of tax	(44)	63	(173)	54
Defined benefit pension plans and other postretirement benefits:				
Amortization of prior service credits included in net periodic pension cost, net of tax of \$12, \$12, \$6 and \$6	(46)	(45)	(23)	(22)
Net actuarial gain arising during the period, net of tax of \$0, (\$2), \$0 and (\$2)		7		7
Amortization of actuarial losses included in net periodic pension cost, net of tax of (\$84), (\$122), (\$44) and (\$57)	314	463	155	235
Settlements included in net (loss)/earnings, net of tax of \$0, (\$1), \$0 and (\$1)		3		2
Pension and postretirement cost related to our equity method investments, net of tax of \$0, (\$1), \$0 and \$0		3		1
Total defined benefit pension plans and other postretirement benefits, net of tax	268	431	132	223
Other comprehensive income/(loss), net of tax	172	472	(117)	291
Comprehensive (loss)/income, net of tax	(910)	478	43	858
Less: Comprehensive loss related to noncontrolling interest	(56)	(44)	(33)	(20)
Comprehensive (loss)/income attributable to Boeing Shareholders, net of tax	(\$854)	\$522	\$76	\$878

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Financial Position
(Unaudited)

<i>(Dollars in millions, except per share data)</i>	June 30 2022	December 31 2021
Assets		
Cash and cash equivalents	\$10,090	\$8,052
Short-term and other investments	1,358	8,192
Accounts receivable, net	2,996	2,641
Unbilled receivables, net	9,394	8,620
Current portion of customer financing, net	159	117
Inventories	79,917	78,823
Other current assets, net	2,086	2,221
Total current assets	106,000	108,666
Customer financing, net	1,542	1,695
Property, plant and equipment, net of accumulated depreciation of \$20,971 and \$20,538	10,617	10,918
Goodwill	8,055	8,068
Acquired intangible assets, net	2,431	2,562
Deferred income taxes	106	77
Investments	981	975
Other assets, net of accumulated amortization of \$864 and \$975	5,747	5,591
Total assets	\$135,479	\$138,552
Liabilities and equity		
Accounts payable	\$9,575	\$9,261
Accrued liabilities	17,752	18,455
Advances and progress billings	52,066	52,980
Short-term debt and current portion of long-term debt	5,406	1,296
Total current liabilities	84,799	81,992
Deferred income taxes	38	218
Accrued retiree health care	3,413	3,528
Accrued pension plan liability, net	8,335	9,104
Other long-term liabilities	1,891	1,750
Long-term debt	51,794	56,806
Total liabilities	150,270	153,398
Shareholders' equity:		
Common stock, par value \$5.00 — 1,200,000,000 shares authorized; 1,012,261,159 shares issued	5,061	5,061
Additional paid-in capital	9,475	9,052
Treasury stock, at cost - 418,809,934 and 423,343,707 shares	(51,319)	(51,861)
Retained earnings	33,382	34,408
Accumulated other comprehensive loss	(11,487)	(11,659)
Total shareholders' deficit	(14,888)	(14,999)
Noncontrolling interests	97	153
Total equity	(14,791)	(14,846)
Total liabilities and equity	\$135,479	\$138,552

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Cash Flows
(Unaudited)

(Dollars in millions)

	Six months ended June 30	
	2022	2021
Cash flows – operating activities:		
Net (loss)/earnings	(\$1,082)	\$6
Adjustments to reconcile net (loss)/earnings to net cash used by operating activities:		
Non-cash items –		
Share-based plans expense	352	493
Treasury shares issued for 401(k) contribution	612	628
Depreciation and amortization	984	1,087
Investment/asset impairment charges, net	72	38
Customer financing valuation adjustments	42	(1)
Gain on dispositions, net	(2)	(114)
Other charges and credits, net	260	(1)
Changes in assets and liabilities –		
Accounts receivable	(350)	(523)
Unbilled receivables	(758)	(1,207)
Advances and progress billings	(907)	251
Inventories	(1,260)	413
Other current assets	144	324
Accounts payable	395	(2,035)
Accrued liabilities	(835)	(2,613)
Income taxes receivable, payable and deferred	(238)	(130)
Other long-term liabilities	(64)	(127)
Pension and other postretirement plans	(695)	(576)
Customer financing, net	50	83
Other	145	134
Net cash used by operating activities	(3,135)	(3,870)
Cash flows – investing activities:		
Payments to acquire property, plant and equipment	(612)	(513)
Proceeds from disposals of property, plant and equipment	16	51
Contributions to investments	(2,471)	(20,108)
Proceeds from investments	9,296	24,989
Other	2	4
Net cash provided by investing activities	6,231	4,423
Cash flows – financing activities:		
New borrowings	15	9,826
Debt repayments	(1,013)	(9,882)
Stock options exercised	34	29
Employee taxes on certain share-based payment arrangements	(34)	(40)
Net cash used by financing activities	(998)	(67)
Effect of exchange rate changes on cash and cash equivalents	(71)	(14)
Net increase in cash & cash equivalents, including restricted	2,027	472
Cash & cash equivalents, including restricted, at beginning of year	8,104	7,835
Cash & cash equivalents, including restricted, at end of period	10,131	8,307
Less restricted cash & cash equivalents, included in Investments	41	36
Cash and cash equivalents at end of period	\$10,090	\$8,271

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Equity
For the six months ended June 30, 2022 and 2021
(Unaudited)

<i>(Dollars in millions)</i>	Boeing shareholders					Non-controlling Interests	Total
	Common Stock	Additional Paid-In Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss		
Balance at January 1, 2021	\$5,061	\$7,787	(\$52,641)	\$38,610	(\$17,133)	\$241	(\$18,075)
Net earnings				50		(44)	6
Other comprehensive income, net of tax of (\$131)					472		472
Share-based compensation		493					493
Treasury shares issued for stock options exercised, net		(19)	48				29
Treasury shares issued for other share-based plans, net		(76)	38				(38)
Treasury shares issued for 401(k) contribution		296	332				628
Balance at June 30, 2021	\$5,061	\$8,481	(\$52,223)	\$38,660	(\$16,661)	\$197	(\$16,485)
Balance at January 1, 2022	\$5,061	\$9,052	(\$51,861)	\$34,408	(\$11,659)	\$153	(\$14,846)
Net loss				(1,026)		(56)	(1,082)
Other comprehensive income, net of tax of (\$59)					172		172
Share-based compensation		352					352
Treasury shares issued for stock options exercised, net		(21)	56				35
Treasury shares issued for other share-based plans, net		(72)	38				(34)
Treasury shares issued for 401(k) contribution		164	448				612
Balance at June 30, 2022	\$5,061	\$9,475	(\$51,319)	\$33,382	(\$11,487)	\$97	(\$14,791)

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Condensed Consolidated Statements of Equity
For the three months ended June 30, 2022 and 2021
(Unaudited)

	Boeing shareholders					Non-controlling Interests	Total
	Common Stock	Additional Paid-In Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Loss		
<i>(Dollars in millions, except per share data)</i>							
Balance at April 1, 2021	\$5,061	\$8,155	(\$52,395)	\$38,073	(\$16,952)	\$217	(\$17,841)
Net earnings				587		(20)	567
Other comprehensive income, net of tax of (\$68)					291		291
Share-based compensation		172					172
Treasury shares issued for stock options exercised, net		(3)	9				6
Treasury shares issued for other share-based plans, net		(3)	1				(2)
Treasury shares issued for 401(k) contribution		160	162				322
Balance at June 30, 2021	\$5,061	\$8,481	(\$52,223)	\$38,660	(\$16,661)	\$197	(\$16,485)
Balance at April 1, 2022	\$5,061	\$9,295	(\$51,573)	\$33,189	(\$11,370)	\$130	(\$15,268)
Net earnings				193		(33)	160
Other comprehensive loss, net of tax of \$12					(117)		(117)
Share-based compensation		149					149
Treasury shares issued for stock options exercised, net		(2)	7				5
Treasury shares issued for other share-based plans, net		(5)	2				(3)
Treasury shares issued for 401(k) contribution		38	245				283
Balance at June 30, 2022	\$5,061	\$9,475	(\$51,319)	\$33,382	(\$11,487)	\$97	(\$14,791)

See Notes to the Condensed Consolidated Financial Statements.

The Boeing Company and Subsidiaries
Notes to Condensed Consolidated Financial Statements
Summary of Business Segment Data
(Unaudited)

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues:				
Commercial Airplanes	\$10,380	\$10,284	\$6,219	\$6,015
Defense, Space & Security	11,674	14,061	6,191	6,876
Global Services	8,612	7,816	4,298	4,067
Boeing Capital	98	138	52	78
Unallocated items, eliminations and other	(92)	(84)	(79)	(38)
Total revenues	\$30,672	\$32,215	\$16,681	\$16,998
Earnings/(loss) from operations:				
Commercial Airplanes	(\$1,101)	(\$1,328)	(\$242)	(\$472)
Defense, Space & Security	(858)	1,363	71	958
Global Services	1,360	972	728	531
Boeing Capital	(9)	57	27	36
Segment operating (loss)/earnings	(608)	1,064	584	1,053
Unallocated items, eliminations and other	(354)	(662)	(94)	(298)
FAS/CAS service cost adjustment	567	538	284	268
(Loss)/earnings from operations	(395)	940	774	1,023
Other income, net	434	389	253	199
Interest and debt expense	(1,280)	(1,352)	(650)	(673)
(Loss)/earnings before income taxes	(1,241)	(23)	377	549
Income tax benefit/(expense)	159	29	(217)	18
Net (loss)/earnings	(1,082)	6	160	567
Less: Net loss attributable to noncontrolling interest	(56)	(44)	(33)	(20)
Net (loss)/earnings attributable to Boeing Shareholders	(\$1,026)	\$50	\$193	\$587

This information is an integral part of the Notes to the Condensed Consolidated Financial Statements. See Note 17 for further segment results.

The Boeing Company and Subsidiaries
Notes to the Condensed Consolidated Financial Statements
(Dollars in millions, except otherwise stated)
(Unaudited)

Note 1 – Basis of Presentation

The condensed consolidated interim financial statements included in this report have been prepared by management of The Boeing Company (herein referred to as “Boeing”, the “Company”, “we”, “us”, or “our”). In the opinion of management, all adjustments (consisting of normal recurring accruals) necessary for a fair presentation are reflected in the interim financial statements. The results of operations for the period ended June 30, 2022 are not necessarily indicative of the operating results for the full year. The interim financial statements should be read in conjunction with the audited Consolidated Financial Statements, including the notes thereto, included in our 2021 Annual Report on Form 10-K.

Liquidity Matters

During the first six months of 2022, net cash used by operating activities was \$3.1 billion. Our operating cash flows continue to be impacted by lower commercial airplane deliveries and concessions paid to 737 MAX customers. We expect a negative impact on our operating cash flows until commercial deliveries ramp up. As a result, our cash and short-term investment balance was \$11.4 billion at June 30, 2022, down from \$16.2 billion at December 31, 2021. Our debt balance of \$57.2 billion at June 30, 2022 is down from \$58.1 billion at December 31, 2021. Short-term debt and the current portion of long-term debt increased to \$5.4 billion at June 30, 2022 from \$1.3 billion at December 31, 2021. The current portion of long-term debt includes term notes of \$0.3 billion maturing in the fourth quarter of 2022, \$1.7 billion maturing in the first quarter of 2023, and \$3.4 billion maturing in the second quarter of 2023.

As of June 30, 2022, our unused borrowing capacity on revolving credit agreements is \$14.7 billion, unchanged from December 31, 2021. We anticipate that these credit lines will remain undrawn and primarily serve as back-up liquidity to support our general corporate borrowing needs. Our borrowing capacity includes \$6.3 billion scheduled to expire in October 2022, of which \$3.1 billion has a one-year term out option that allows us to extend the maturity of any borrowings one additional year.

Our short-term and long-term credit ratings remained unchanged during the first half of 2022. There is risk for future downgrades.

At June 30, 2022 and December 31, 2021, trade payables included \$2.4 billion and \$2.3 billion payable to suppliers who have elected to participate in supply chain financing programs. We do not believe that future changes in the availability of supply chain financing will have a significant impact on our liquidity.

Based on our current best estimates of market demand, planned production rates, timing of cash receipts and expenditures, our ability to successfully implement further actions to improve liquidity, as well as our ability to access additional liquidity, if needed, we believe it is probable that we will be able to fund our operations for the foreseeable future.

Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles (GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. We believe that the accounting estimates and assumptions are appropriate, however, given the increased uncertainties surrounding the severity and duration of the impacts of the COVID-19 pandemic actual results could differ from those estimates.

Long-term Contracts

Changes in estimated revenues, cost of sales, and the related effect on operating income are recognized using a cumulative catch-up adjustment which recognizes in the current period the cumulative effect of the changes on current and prior periods based on a long-term contract's percentage-of-completion. When the current estimates of total sales and costs for a long-term contract, and/or contractual options that are probable of exercise, indicate a loss, a provision for the entire loss is recognized.

Net cumulative catch-up adjustments to prior periods' revenue and earnings, including certain losses, across all long-term contracts were as follows:

<i>(In millions - except per share amounts)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
(Decrease)/increase to Revenue	(\$885)	\$230	(\$273)	\$223
(Decrease)/increase to (Loss)/earnings from operations	(\$1,541)	\$58	(\$411)	\$234
(Decrease)/increase to Diluted EPS	(\$2.27)	(\$0.03)	(\$0.29)	\$0.41

Note 2 – Earnings Per Share

Basic and diluted earnings per share are computed using the two-class method, which is an earnings allocation method that determines earnings per share for common shares and participating securities. The undistributed earnings are allocated between common shares and participating securities as if all earnings had been distributed during the period. Participating securities and common shares have equal rights to undistributed earnings.

Basic earnings per share is calculated by taking net earnings, less earnings available to participating securities, divided by the basic weighted average common shares outstanding.

Diluted earnings per share is calculated by taking net earnings, less earnings available to participating securities, divided by the diluted weighted average common shares outstanding.

The elements used in the computation of basic and diluted earnings per share were as follows:

<i>(In millions - except per share amounts)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Net (loss)/earnings attributable to Boeing Shareholders	(\$1,026)	\$50	\$193	\$587
Less: earnings available to participating securities				
Net (loss)/earnings available to common shareholders	(\$1,026)	\$50	\$193	\$587
Basic				
Basic weighted average shares outstanding	592.8	586.4	594.0	587.5
Less: participating securities ⁽¹⁾	0.3	0.4	0.3	0.4
Basic weighted average common shares outstanding	592.5	586.0	593.7	587.1
Diluted				
Basic weighted average shares outstanding	592.8	586.4	594.0	587.5
Dilutive potential common shares ⁽²⁾		2.2	2.4	2.7
Diluted weighted average shares outstanding	592.8	588.6	596.4	590.2
Less: participating securities ⁽¹⁾	0.3	0.4	0.3	0.4
Diluted weighted average common shares outstanding	592.5	588.2	596.1	589.8
Net (loss)/earnings per share:				
Basic	(\$1.73)	\$0.09	\$0.32	\$1.00
Diluted	(1.73)	0.09	0.32	1.00

(1) Participating securities include certain instruments in our deferred compensation plan.

(2) Diluted earnings per share includes any dilutive impact of stock options, restricted stock units, performance-based restricted stock units and performance awards.

As a result of incurring a net loss for the six months ended June 30, 2022, 3.0 million potential common shares were excluded from diluted loss per share because the effect would have been antidilutive. In addition, the following table includes the number of shares that may be dilutive potential common shares in the future. These shares were not included in the computation of diluted loss per share because the effect was either antidilutive or the performance condition was not met.

<i>(Shares in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Performance awards	1.9	2.7	2.3	2.8
Performance-based restricted stock units	0.4	0.8	0.4	0.8
Restricted stock units	1.2	0.7	2.0	
Stock options	0.7	0.3	0.8	0.3

Note 3 – Income Taxes

Our income tax expense or benefit for interim periods is normally determined using an estimate of our annual effective tax rate, adjusted for discrete items. In the second quarter of 2022, we determined that we could not make a reliable estimate of the annual effective tax rate primarily due to the sensitivity of the estimated annual tax rate to changes in forecasted pre-tax earnings in relation to significant permanent differences. As a result, the effective tax rate for the six months ended June 30, 2022 was calculated based on 2022 year-to-date results. We recorded a tax benefit of \$159 for the six months ended June 30, 2022 primarily reflecting the 2022 operating losses. The difference between the 2022 year-to-date effective tax rate of 12.8% and the current federal tax rate of 21% is primarily driven by increases to the valuation allowance in 2022, which reduced our recorded income tax benefit.

As of December 31, 2021, the Company had recorded valuation allowances of \$2,423 primarily for certain federal deferred tax assets, as well as for certain federal and state net operating loss and tax credit carryforwards. To measure the valuation allowance, the Company estimated in what year each of its deferred tax assets and liabilities would reverse using systematic and logical methods to estimate the reversal patterns. Based on these methods, deferred tax liabilities are assumed to reverse and generate taxable income over the next 5 to 10 years while deferred tax assets related to pension and other postretirement benefit obligations are assumed to reverse and generate tax deductions over the next 15 to 20 years. The valuation allowance primarily results from not having sufficient income from deferred tax liability reversals in the appropriate future periods to support the realization of deferred tax assets.

Federal income tax audits have been settled for all years prior to 2018. The Internal Revenue Service (IRS) began the 2018-2019 federal tax audit in the first quarter of 2021 and added tax year 2020 to the audit in the fourth quarter of 2021. We are also subject to examination in major state and international jurisdictions for the 2008-2020 tax years. We believe appropriate provisions for all outstanding tax issues have been made for all jurisdictions and all open years.

Note 4 – Allowances for Losses on Financial Assets

The changes in allowances for expected credit losses for the six months ended June 30, 2022 and 2021 consisted of the following:

	Accounts receivable	Unbilled receivables	Other current assets	Customer financing	Other assets	Total
Balance at January 1, 2021	(\$444)	(\$129)	(\$72)	(\$17)	(\$140)	(\$802)
Changes in estimates	16		(3)	1	(36)	(22)
Write-offs	15		1			16
Balance at June 30, 2021	(\$413)	(\$129)	(\$74)	(\$16)	(\$176)	(\$808)
Balance at January 1, 2022	(\$390)	(\$91)	(\$62)	(\$18)	(\$186)	(\$747)
Changes in estimates	(5)	18	1	(42)	(27)	(55)
Write-offs	242	47			133	422
Recoveries	5					5
Balance at June 30, 2022	(\$148)	(\$26)	(\$61)	(\$60)	(\$80)	(\$375)

Note 5 – Inventories

Inventories consisted of the following:

	June 30 2022	December 31 2021
Long-term contracts in progress	\$637	\$872
Commercial aircraft programs	69,481	68,106
Commercial spare parts, used aircraft, general stock materials and other	9,799	9,845
Total	\$79,917	\$78,823

Commercial spare parts, used aircraft, general stock materials and other includes capitalized precontract costs of \$763 at June 30, 2022 and \$648 at December 31, 2021 primarily related to KC-46A Tanker and Commercial Crew. See Note 9.

Commercial Aircraft Programs

The increase in commercial aircraft programs inventory during 2022 reflects a continued buildup of 787 aircraft, as well as growth in 777X inventory. Commercial aircraft programs inventory includes approximately 290 737 MAX aircraft and 120 787 aircraft at June 30, 2022 as compared with 335 737 MAX aircraft and 110 787 aircraft at December 31, 2021.

A number of customers have requested to defer deliveries or to cancel orders. We are currently remarketing certain aircraft and may have to remarket additional aircraft in future periods. If we are unable to successfully remarket the aircraft, determine further production rate reductions are necessary, and/or contract the program accounting quantities, future earnings may be reduced and/or additional reach-forward losses may have to be recorded.

At June 30, 2022 and December 31, 2021, commercial aircraft programs inventory included the following amounts related to the 737 program: deferred production costs of \$1,594 and \$1,296 and unamortized tooling and other non-recurring costs of \$649 and \$617. At June 30, 2022, \$2,230 of 737 deferred production costs, unamortized tooling and other non-recurring costs are expected to be recovered from units included in the program accounting quantity that have firm orders and \$13 is expected to be recovered from units included in the program accounting quantity that represent expected future orders.

At June 30, 2022 and December 31, 2021, commercial aircraft programs inventory included the following amounts related to the 777X program: deferred production costs of \$1,194 and \$652 and \$3,625 and \$3,521 of unamortized tooling and other non-recurring costs. In April 2022, we decided to pause production of the 777X-9 during 2022 and 2023. The production pause is resulting in abnormal production costs that are being expensed as incurred until 777X-9 production resumes. We expensed abnormal production costs of \$102 during the three months ended June 30, 2022. The 777X program has near break-even margins at June 30, 2022. The level of profitability on the 777X program will be subject to a number of factors. These factors include continued market uncertainty, the impacts of COVID-19 on our production system as well as impacts on our supply chain and customers, further production rate adjustments for the 777X or other commercial aircraft programs, any contraction of the accounting quantity and potential risks associated with the testing program and the timing of aircraft certification. One or more of these factors could result in additional reach-forward losses on the 777X program in future periods.

During the fourth quarter of 2021, we determined that estimated costs to complete the 787 program plus costs already included in 787 inventory exceeded estimated revenues from the program. The resulting reach-forward loss of \$3,460 was recorded as a reduction to deferred production costs. At June 30, 2022 and December 31, 2021, commercial aircraft programs inventory included the following amounts related to the 787 program: deferred production costs of \$12,056 and \$11,693, \$1,931 and \$1,907 of supplier advances, and \$1,822 and \$1,815 of unamortized tooling and other non-recurring costs. At June 30, 2022, \$9,018 of 787 deferred production costs, unamortized tooling and other non-recurring costs are expected to be recovered from units included in the program accounting quantity that have firm orders

and \$4,860 is expected to be recovered from units included in the program accounting quantity that represent expected future orders. We expensed abnormal production costs of \$595 during the six months ended June 30, 2022.

Commercial aircraft programs inventory included amounts credited in cash or other consideration (early issue sales consideration) to airline customers totaling \$3,354 and \$3,290 at June 30, 2022 and December 31, 2021.

Note 6 – Contracts with Customers

Unbilled receivables increased from \$8,620 at December 31, 2021 to \$9,394 at June 30, 2022, primarily driven by revenue recognized at Defense, Space & Security (BDS) and Global Services (BGS) in excess of billings.

Advances and progress billings decreased from \$52,980 at December 31, 2021 to \$52,066 at June 30, 2022, primarily driven by revenue recognized at BDS, Commercial Airplanes (BCA), and BGS and the return of BCA customer advances, partially offset by advances on orders received.

Revenues recognized during the six months ended June 30, 2022 and 2021 from amounts recorded as Advances and progress billings at the beginning of each year were \$6,814 and \$7,315. Revenues recognized during the three months ended June 30, 2022 and 2021 from amounts recorded as Advances and progress billings at the beginning of each year were \$3,413 and \$2,597.

Note 7 – Customer Financing

Customer financing primarily relates to the Boeing Capital (BCC) segment. Financing arrangements typically range in terms from 1 to 12 years and may include options to extend or terminate leases. Certain leases include provisions to allow the lessee to purchase the underlying aircraft at a specified price.

Customer financing consisted of the following:

	June 30 2022	December 31 2021
Financing receivables:		
Investment in sales-type/finance leases	\$875	\$944
Notes	403	412
Total financing receivables	1,278	1,356
Less allowance for losses on receivables	(60)	(18)
Financing receivables, net	1,218	1,338
Operating lease equipment, at cost, less accumulated depreciation of \$72 and \$58	483	474
Total	\$1,701	\$1,812

At June 30, 2022 and December 31, 2021, \$406 and \$378 were determined to be uncollectible financing receivables and placed on non-accrual status. The increase in the allowance for losses on receivables during the six months ended June 30, 2022 was primarily due to impacts of the war in Ukraine. Customer financing interest income received was \$6 and \$3 for the six and three months ended June 30, 2022 and \$11 and \$5 for the six and three months ended June 30, 2021.

Our financing receivable balances at June 30, 2022 by internal credit rating category and year of origination consisted of the following:

Rating categories	Current	2021	2020	2019	2018	Prior	Total
BBB						\$82	\$82
BB	\$26	\$227	\$116	\$41	\$13	118	541
B		35				187	222
CCC			7	22		404	433
Total carrying value of financing receivables	\$26	\$262	\$123	\$63	\$13	\$791	\$1,278

At June 30, 2022, our allowance for losses related to receivables with ratings of CCC, B, BB, and BBB. We applied default rates that averaged 90.9%, 25.8%, 3.0%, and 0.1%, respectively, to the exposure associated with those receivables.

Customer Financing Exposure

The majority of our customer financing portfolio is concentrated in the following aircraft models:

	June 30 2022	December 31 2021
717 Aircraft (\$55 and \$62 accounted for as operating leases)	\$580	\$603
747-8 Aircraft (accounted for as sales-type finance leases)	394	435
737 Aircraft (\$184 and \$145 accounted for as operating leases)	196	163
777 Aircraft (\$211 and \$225 accounted for as operating leases)	218	233
MD-80 Aircraft (accounted for as sales-type finance leases)	139	142
757 Aircraft (accounted for as sales-type finance leases)	118	126
747-400 Aircraft (\$0 and \$1 accounted for as operating leases)	48	50

Operating lease equipment primarily includes large commercial jet aircraft.

Lease income recorded in revenue on the Condensed Consolidated Statements of Operations for the six months ended June 30, 2022 and 2021 included \$36 and \$25 from sales-type/finance leases, and \$32 and \$37 from operating leases, of which \$5 and \$5 related to variable operating lease payments. Lease income recorded in revenue on the Condensed Consolidated Statements of Operations for the three months ended June 30, 2022 and 2021 included \$18 and \$12 from sales-type/finance leases, and \$17 and \$19 from operating leases, of which \$1 and \$3 related to variable operating lease payments.

Profit at the commencement of sales-type leases was recorded in revenue for the six months ended June 30, 2022 and 2021 in the amount of \$12 and \$36. Profit at the commencement of sales-type leases was recorded in revenue for the three months ended June 30, 2022 and 2021 in the amount of \$8 and \$20.

Note 8 – Investments

Our investments, which are recorded in Short-term and other investments or Investments, consisted of the following:

	June 30 2022	December 31 2021
Equity method investments ⁽¹⁾	\$942	\$930
Time deposits	869	7,676
Available for sale debt instruments	447	464
Equity and other investments	40	45
Restricted cash & cash equivalents ⁽²⁾	41	52
Total	\$2,339	\$9,167

⁽¹⁾ Dividends received were \$43 and \$16 during the six and three months ended June 30, 2022 and \$43 and \$38 during the same periods in the prior year.

⁽²⁾ Reflects amounts restricted in support of our property sales, workers' compensation programs, and insurance premiums.

Allowance for losses on available for sale debt instruments are assessed quarterly. All instruments are considered investment grade and, as such, we have not recognized an allowance for credit losses as of June 30, 2022.

Note 9 – Commitments and Contingencies**737 MAX Grounding**

Over 190 countries have approved the resumption of 737 MAX operations. The 737 MAX has yet to return to service in China and a small number of other countries. The Civil Aviation Administration of China issued an airworthiness directive in the fourth quarter of 2021 outlining actions required for airlines to return to service. While we expect 737 MAX deliveries to our customers in China to resume in 2022, subject to final regulatory approvals, risk remains around the timing and rate of those deliveries.

We increased the production rate to 31 per month in 2022, and expect to implement further gradual production rate increases based on market demand and supply chain capacity. We expensed abnormal production costs of \$188 during the three months ended March 31, 2022.

We have approximately 290 airplanes in inventory as of June 30, 2022 and we anticipate delivering most of these aircraft by the end of 2023. We continue to work with a small number of customers who have requested to defer deliveries or to cancel orders for 737 MAX aircraft, and we are remarketing and/or delaying deliveries of certain aircraft included within inventory. Approximately half the aircraft in inventory are designated for customers in China. In the event that we are unable to resume aircraft deliveries in China and/or ramp up deliveries consistent with our assumptions, our expectation of delivery timing and our expectation regarding future gradual production rate increases could be impacted.

The following table summarizes changes in the 737 MAX customer concessions and other considerations liability during the six months ended June 30, 2022 and 2021.

	2022	2021
Beginning balance – January 1	\$2,940	\$5,537
Reductions for payments made	(844)	(1,538)
Reductions for concessions and other in-kind considerations	(5)	(27)
Changes in estimates	17	(8)
Ending balance – June 30	\$2,108	\$3,964

The liability balance of \$2.1 billion at June 30, 2022 includes \$1.7 billion of contracted customer concessions and other liabilities and \$0.4 billion that remains subject to negotiation with customers. The contracted amount includes \$0.9 billion expected to be liquidated by lower customer delivery payments, \$0.6 billion expected to be paid in cash and \$0.2 billion in other concessions. Of the cash payments to customers, we expect to pay \$0.5 billion in 2022. The type of consideration to be provided for the remaining \$0.4 billion will depend on the outcomes of negotiations with customers.

Environmental

The following table summarizes environmental remediation activity during the six months ended June 30, 2022 and 2021.

	2022	2021
Beginning balance – January 1	\$605	\$565
Reductions for payments made, net of recoveries	(11)	(24)
Changes in estimates	131	41
Ending balance – June 30	\$725	\$582

The liabilities recorded represent our best estimate or the low end of a range of reasonably possible costs expected to be incurred to remediate sites, including operation and maintenance over periods of up to 30 years. It is reasonably possible that we may incur charges that exceed these recorded amounts because of regulatory agency orders and directives, changes in laws and/or regulations, higher than expected costs and/or the discovery of new or additional contamination. As part of our estimating process, we develop a range of reasonably possible alternate scenarios that includes the high end of a range of reasonably possible cost estimates for all remediation sites for which we have sufficient information based on our experience and existing laws and regulations. There are some potential remediation obligations where the costs of remediation cannot be reasonably estimated. At June 30, 2022 and December 31, 2021, the high end of the estimated range of reasonably possible remediation costs exceeded our recorded liabilities by \$1,015 and \$1,094.

Product Warranties

The following table summarizes product warranty activity recorded during the six months ended June 30, 2022 and 2021.

	2022	2021
Beginning balance – January 1	\$1,900	\$1,527
Additions for current year deliveries	89	48
Reductions for payments made	(220)	(100)
Changes in estimates	261	293
Ending balance – June 30	\$2,030	\$1,768

Commercial Aircraft Commitments

In conjunction with signing definitive agreements for the sale of new aircraft, we have entered into trade-in commitments with certain customers that give them the right to trade in used aircraft at a specified price. The probability that trade-in commitments will be exercised is determined by using both quantitative information from valuation sources and qualitative information from other sources. The probability of exercise is assessed quarterly, or as events trigger a change, and takes into consideration the current economic and airline industry environments. Trade-in commitments, which can be terminated by mutual consent with the customer, may be exercised only during the period specified in the agreement, and require advance notice by the customer.

Trade-in commitment agreements at June 30, 2022 have expiration dates from 2022 through 2029. At June 30, 2022 and December 31, 2021 total contractual trade-in commitments were \$1,270 and \$612. As of June 30, 2022 and December 31, 2021, we estimated that it was probable we would be obligated to perform on certain of these commitments with net amounts payable to customers totaling \$349 and \$283 and the fair value of the related trade-in aircraft was \$346 and \$283.

Financing Commitments

Financing commitments related to aircraft on order, including options and those proposed in sales campaigns, and refinancing of delivered aircraft, totaled \$13,081 and \$12,905 as of June 30, 2022 and December 31, 2021. The estimated earliest potential funding dates for these commitments as of June 30, 2022 are as follows:

	Total
July through December 2022	\$1,209
2023	3,700
2024	2,277
2025	2,666
2026	1,327
Thereafter	1,902
	\$13,081

As of June 30, 2022, all of these financing commitments relate to customers we believe have less than investment-grade credit. We have concluded that no reserve for future potential losses is required for these financing commitments based upon the terms, such as collateralization and interest rates, under which funding would be provided.

Funding Commitments

We have commitments to make additional capital contributions of \$243 to joint ventures over the next five years.

Standby Letters of Credit and Surety Bonds

We have entered into standby letters of credit and surety bonds with financial institutions primarily relating to the guarantee of our future performance on certain contracts. Contingent liabilities on outstanding letters of credit agreements and surety bonds aggregated approximately \$3,410 and \$3,634 as of June 30, 2022 and December 31, 2021.

Recoverable Costs on Government Contracts

Our final incurred costs for each year are subject to audit and review for allowability by the U.S. government, which can result in payment demands related to costs they believe should be disallowed. We work with the U.S. government to assess the merits of claims and where appropriate reserve for amounts disputed. If we are unable to satisfactorily resolve disputed costs, we could be required to record an earnings charge and/or provide refunds to the U.S. government.

Fixed-Price Contracts

Substantially all contracts at BDS and the majority of contracts at BGS Government are long-term contracts. Long-term contracts that are contracted on a fixed-price basis could result in losses in future periods. Certain of the fixed-price contracts are for the development of new products, services and related technologies. This development work scope is inherently uncertain and subject to significant variability in estimates of the cost and time required to complete the work by us and our suppliers. The operational and technical complexities of fixed-price development contracts create financial risk, which could trigger additional earnings charges, termination provisions, order cancellations, or other financially significant exposure.

VC-25B Presidential Aircraft

The Company's firm fixed-price contract for the Engineering, Manufacturing, and Development (EMD) effort on the U.S. Air Force's (USAF) VC-25B Presidential Aircraft, commonly known as Air Force One, is a \$4.3 billion program to develop and modify two 747-8 commercial aircraft. During the first half of 2022, the reach-forward loss on the contract increased by \$686 driven by higher supplier costs, higher costs to finalize certain technical requirements and schedule delays. Risk remains that we may be required to record additional losses in future periods.

T-7A Red Hawk EMD Contract & Production Options

In 2018, we were awarded the T-7A Red Hawk program. The EMD portion of the contract is a \$860 fixed-price contract and includes five aircraft and seven simulators. In the first half of 2022, we recorded earnings charges of \$103 related to the T-7A Red Hawk fixed-price EMD contract, which has a reach-forward loss at June 30, 2022, primarily due to customer testing requirements, supply chain delays and hardware qualification issues. The production portion of the contract includes 11 production lots for aircraft and related services. In 2018, we recorded a loss of \$400 associated with the 11 production lots and associated support options for 346 T-7A Red Hawk aircraft that we believe are probable of being exercised. The first production and support contract option is expected to be exercised in 2023. The estimated loss increased by \$351 during the first half of 2022 primarily driven by ongoing supply chain negotiations which are impacted by supply chain constraints, COVID-19, and inflationary pressures. Risk remains that we may be required to record additional losses in future periods.

MQ-25

In the third quarter of 2018, we were awarded the MQ-25 EMD contract by the U.S. Navy. The contract is a fixed-price contract that now includes development and delivery of seven aircraft and test articles at a contract price of \$890. In connection with winning the competition, we recognized a reach-forward loss of \$291 in the third quarter of 2018. The period of performance runs from 2018 through 2024. During the first half of 2022, we increased the MQ-25 reach-forward loss by \$225 primarily driven by additional testing and certification activities, supplier quality, and engineering design challenges. Risk remains that we may be required to record additional losses in future periods.

KC-46A Tanker

In 2011, we were awarded a contract from the USAF to design, develop, manufacture, and deliver four next generation aerial refueling tankers. This EMD contract is a fixed-price incentive fee contract and involves highly complex designs and systems integration. Since 2016, the USAF has authorized seven low rate initial production (LRIP) lots for a total of 94 aircraft. The EMD contract and authorized LRIP lots total approximately \$19 billion as of June 30, 2022. As of June 30, 2022, we had approximately \$295 of capitalized precontract costs and \$866 of potential termination liabilities to suppliers. During the first half of 2022, we increased the reach-forward loss on the KC-46A Tanker program by \$209 primarily reflecting higher supply chain and production disruption costs. Risk remains that we may be required to record additional losses in future periods.

Note 10 – Arrangements with Off-Balance Sheet Risk

We enter into arrangements with off-balance sheet risk in the normal course of business, primarily in the form of guarantees.

The following table provides quantitative data regarding our third party guarantees. The maximum potential payments represent a “worst-case scenario,” and do not necessarily reflect amounts that we expect to pay. Estimated proceeds from collateral and recourse represent the anticipated values of assets we could liquidate or receive from other parties to offset our payments under guarantees. The carrying amount of liabilities represents the amount included in Accrued liabilities.

	Maximum Potential Payments		Estimated Proceeds from Collateral/Recourse		Carrying Amount of Liabilities	
	June 30 2022	December 31 2021	June 30 2022	December 31 2021	June 30 2022	December 31 2021
Contingent repurchase commitments	\$545	\$548	\$545	\$548		
Credit guarantees	90	90		28	\$46	\$24

Contingent Repurchase Commitments The commercial aircraft repurchase price specified in contingent repurchase commitments is generally lower than the expected fair value at the specified repurchase date. Estimated proceeds from collateral/recourse in the table above represent the lower of the contracted repurchase price or the expected fair value of each aircraft at the specified repurchase date.

Credit Guarantees We have issued credit guarantees where we are obligated to make payments to a guaranteed party in the event that the original lessee or debtor does not make payments or perform certain specified services. Generally, these guarantees have been extended on behalf of guaranteed parties with less than investment-grade credit and are collateralized by certain assets. We record a liability for the fair value of guarantees and the expected contingent loss amount, which is reviewed quarterly. Current outstanding credit guarantees expire through 2036.

Other Indemnifications In conjunction with our sales of Electron Dynamic Devices, Inc. and Rocketdyne Propulsion and Power businesses and our BCA facilities in Wichita, Kansas and Tulsa and McAlester, Oklahoma, we agreed to indemnify, for an indefinite period, the buyers for costs relating to pre-closing environmental conditions and certain other items. We are unable to assess the potential number of future claims that may be asserted under these indemnifications, nor the amounts thereof (if any). As a result, we cannot estimate the maximum potential amount of future payments under these indemnities and therefore, no liability has been recorded. To the extent that claims have been made under these indemnities and/or are probable and reasonably estimable, liabilities associated with these indemnities are included in the environmental liability disclosure in Note 9.

Note 11 – Postretirement Plans

The components of net periodic benefit (income)/cost were as follows:

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Pension Plans				
Service cost	\$2	\$2	\$1	\$1
Interest cost	1,041	995	521	497
Expected return on plan assets	(1,895)	(1,931)	(948)	(965)
Amortization of prior service credits	(41)	(40)	(21)	(20)
Recognized net actuarial loss	454	620	227	310
Settlement/curtailment loss		4		3
Net periodic benefit income	(\$439)	(\$350)	(\$220)	(\$174)
Net periodic benefit cost included in (Loss)/earnings from operations	\$2	\$2	\$1	\$1
Net periodic benefit income included in Other income, net	(441)	(352)	(221)	(175)
Net periodic benefit income included in (Loss)/earnings before income taxes	(\$439)	(\$350)	(\$220)	(\$174)
	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Other Postretirement Plans				
Service cost	\$36	\$44	\$18	\$22
Interest cost	49	45	25	22
Expected return on plan assets	(5)	(3)	(3)	(1)
Amortization of prior service credits	(17)	(17)	(8)	(8)
Recognized net actuarial gain	(56)	(35)	(28)	(18)
Net periodic benefit cost	\$7	\$34	\$4	\$17
Net periodic benefit cost included in (Loss)/earnings from operations	\$39	\$44	\$20	\$22
Net periodic benefit cost included in Other income, net	(29)	(10)	(14)	(5)
Net periodic benefit cost included in (Loss)/earnings before income taxes	\$10	\$34	\$6	\$17

Note 12 – Share-Based Compensation and Other Compensation Arrangements

Stock Options

On February 16, 2022, we granted 348,769 premium-priced stock options to our executive officers as part of our long-term incentive program. These stock options have an exercise price equal to 120% of the fair market value of our stock on the date of grant. If certain performance measures are met, the exercise price is reduced to 110% of the grant date fair market value of our stock. The stock options are scheduled to vest and become exercisable three years after the grant date and expire ten years after the grant date. If an executive terminates employment because of retirement, layoff, disability, or death, the executive (or beneficiary) may receive some or all of their stock options depending on certain age and service conditions. The fair value of the stock options granted was \$83.04 per unit and was estimated using a Monte-Carlo simulation model using the following assumptions: expected life 6.76 years, expected volatility 36.6%, risk free interest rate 2.0% and no expected dividend yield.

Restricted Stock Units

On February 16, 2022, we granted 1,804,541 restricted stock units (RSU) to our executives as part of our long-term incentive program. The RSUs granted under this program have a grant date fair value of \$217.48 per unit. The RSUs granted under this program will generally vest and settle in common stock (on a one-for-one basis) on the third anniversary of the grant date. If an executive terminates employment because of retirement, layoff, disability, or death, the executive (or beneficiary) may receive some or all of their stock units depending on certain age and service conditions. In all other cases, the RSUs will not vest and all rights to the stock units will terminate.

Note 13 – Shareholders' Equity

Accumulated Other Comprehensive Loss

Changes in Accumulated other comprehensive loss (AOCI) by component for the six and three months ended June 30, 2022 and 2021 were as follows:

	Currency Translation Adjustments	Unrealized Gains and Losses on Certain Investments	Unrealized Gains and Losses on Derivative Instruments	Defined Benefit Pension Plans & Other Postretirement Benefits	Total ⁽¹⁾
Balance at January 1, 2021	(\$30)	\$1	(\$43)	(\$17,061)	(\$17,133)
Other comprehensive (loss)/income before reclassifications	(22)		65	10	53
Amounts reclassified from AOCI			(2)	421 ⁽²⁾	419
Net current period Other comprehensive (loss)/income	(22)		63	431	472
Balance at June 30, 2021	(\$52)	\$1	\$20	(\$16,630)	(\$16,661)
Balance at January 1, 2022	(\$105)	\$1	\$6	(\$11,561)	(\$11,659)
Other comprehensive loss before reclassifications	(52)		(74)		(126)
Amounts reclassified from AOCI			30 ⁽³⁾	268 ⁽²⁾	298
Net current period Other comprehensive (loss)/income	(52)		(44)	268	172
Balance at June 30, 2022	(\$157)	\$1	(\$38)	(\$11,293)	(\$11,487)
Balance at March 31, 2021	(\$66)	\$1	(\$34)	(\$16,853)	(\$16,952)
Other comprehensive income before reclassifications	14		54	8	76
Amounts reclassified from AOCI				215 ⁽²⁾	215
Net current period Other comprehensive income	14		54	223	291
Balance at June 30, 2021	(\$52)	\$1	\$20	(\$16,630)	(\$16,661)
Balance at March 31, 2022	(\$81)	\$1	\$135	(\$11,425)	(\$11,370)
Other comprehensive loss before reclassifications	(76)		(168)		(244)
Amounts reclassified from AOCI			(5)	132 ⁽²⁾	127
Net current period Other comprehensive (loss)/income	(76)		(173)	132	(117)
Balance at June 30, 2022	(\$157)	\$1	(\$38)	(\$11,293)	(\$11,487)

⁽¹⁾ Net of tax.

⁽²⁾ Primarily relates to amortization of actuarial losses for the six and three months ended June 30, 2022 of \$314 and \$155 (net of tax of (\$84) and (\$44)) and the six and three months ended June 30, 2021 totaling \$463 and \$235 (net of tax of (\$122) and (\$57)). These are included in the net periodic pension cost.

⁽³⁾ Includes losses of \$39 (net of tax of (\$11)) from cash flow hedges reclassified to Other income, net because the forecasted transactions are no longer probable of occurring.

Note 14 – Derivative Financial Instruments

Cash Flow Hedges

Our cash flow hedges include foreign currency forward contracts, commodity swaps and commodity purchase contracts. We use foreign currency forward contracts to manage currency risk associated with certain transactions, specifically forecasted sales and purchases made in foreign currencies. Our foreign currency contracts hedge forecasted transactions through 2031. We use commodity derivatives, such as fixed-price purchase commitments and swaps to hedge against potentially unfavorable price changes for commodities used in production. Our commodity contracts hedge forecasted transactions through 2029.

Derivative Instruments Not Receiving Hedge Accounting Treatment

We have entered into agreements to purchase and sell aluminum to address long-term strategic sourcing objectives and non-U.S. business requirements. These agreements are derivative instruments for accounting purposes. The quantities of aluminum in these agreements offset and are priced at prevailing market prices. We also hold certain foreign currency forward contracts and commodity swaps which do not qualify for hedge accounting treatment.

Notional Amounts and Fair Values

The notional amounts and fair values of derivative instruments in the Condensed Consolidated Statements of Financial Position were as follows:

	Notional amounts ⁽¹⁾		Other assets		Accrued liabilities	
	June 30 2022	December 31 2021	June 30 2022	December 31 2021	June 30 2022	December 31 2021
Derivatives designated as hedging instruments:						
Foreign exchange contracts	\$2,550	\$2,630	\$14	\$30	(\$112)	(\$52)
Commodity contracts	388	500	75	88	(9)	(18)
Derivatives not receiving hedge accounting treatment:						
Foreign exchange contracts	688	361	12	2	(50)	(3)
Commodity contracts	670	760	9	8	(2)	(7)
Total derivatives	\$4,296	\$4,251	\$110	\$128	(\$173)	(\$80)
Netting arrangements			(31)	(30)	31	30
Net recorded balance			\$79	\$98	(\$142)	(\$50)

⁽¹⁾ Notional amounts represent the gross contract/notional amount of the derivatives outstanding.

Gains/(losses) associated with our hedging transactions and forward points recognized in Other comprehensive income are presented in the following table:

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Recognized in Other comprehensive income, net of taxes:				
Foreign exchange contracts	(\$104)	(\$6)	(\$96)	\$13
Commodity contracts	30	71	(72)	41

Gains/(losses) associated with our hedging transactions and forward points reclassified from AOCI to earnings are presented in the following table:

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Foreign exchange contracts				
Costs and expenses	\$10	\$3	\$5	\$3
General and administrative expense	(7)	9	(6)	6
Commodity contracts				
Costs and expenses	7	(13)	6	(10)
General and administrative expense	2	3	1	1

Losses from cash flow hedges reclassified from AOCI to Other income, net because it is probable the forecasted transactions will not occur were \$50 and \$0 for the six months ended June 30, 2022 and 2021. Losses related to undesignated derivatives on foreign exchange and commodity cash flow hedging transactions recognized in Other income, net were insignificant for the six and three months ended June 30, 2022 and 2021.

Based on our portfolio of cash flow hedges, we expect to reclassify gains of \$25 (pre-tax) out of Accumulated other comprehensive loss into earnings during the next 12 months.

We have derivative instruments with credit-risk-related contingent features. For foreign exchange contracts with original maturities of at least five years, our derivative counterparties could require settlement if we default on our five-year credit facility. For certain commodity contracts, our counterparties could require collateral posted in an amount determined by our credit ratings. The fair value of foreign exchange and commodity contracts that have credit-risk-related contingent features that are in a net liability position at June 30, 2022 was \$25. At June 30, 2022, there was no collateral posted related to our derivatives.

Note 15 – Fair Value Measurements

The fair value hierarchy has three levels based on the reliability of the inputs used to determine fair value. Level 1 refers to fair values determined based on quoted prices in active markets for identical assets. Level 2 refers to fair values estimated using significant other observable inputs and Level 3 includes fair values estimated using significant unobservable inputs. The following table presents our assets and liabilities that are measured at fair value on a recurring basis and are categorized using the fair value hierarchy.

	June 30, 2022			December 31, 2021		
	Total	Level 1	Level 2	Total	Level 1	Level 2
Assets						
Money market funds	\$1,573	\$1,573		\$1,370	\$1,370	
Available-for-sale debt investments:						
Commercial paper	301		\$301	225		\$225
Corporate notes	178		178	262		262
U.S. government agencies	20		20	1		1
Other equity investments	13	13		20	20	
Derivatives	79		79	98		98
Total assets	\$2,164	\$1,586	\$578	\$1,976	\$1,390	\$586
Liabilities						
Derivatives	(\$142)		(\$142)	(\$50)		(\$50)
Total liabilities	(\$142)		(\$142)	(\$50)		(\$50)

Money market funds, available-for-sale debt investments and equity securities are valued using a market approach based on the quoted market prices or broker/dealer quotes of identical or comparable instruments.

Derivatives include foreign currency and commodity contracts. Our foreign currency forward contracts are valued using an income approach based on the present value of the forward rate less the contract rate multiplied by the notional amount. Commodity derivatives are valued using an income approach based on the present value of the commodity index prices less the contract rate multiplied by the notional amount.

Certain assets have been measured at fair value on a nonrecurring basis using significant unobservable inputs (Level 3). The following table presents the nonrecurring losses recognized for the six months ended June 30 due to long-lived asset impairment and the fair value and asset classification of the related assets as of the impairment date:

	2022		2021	
	Total	Total Losses	Total	Total Losses
Investments		(\$31)		(\$7)
Customer financing assets	\$44	(2)	\$15	(12)
Property, plant and equipment		(19)	28	(19)
Other Assets and Acquired intangible assets	1	(20)		
Total	\$45	(\$72)	\$43	(\$38)

Investments, Property, plant and equipment, Other assets and Acquired intangible assets were primarily valued using an income approach based on the discounted cash flows associated with the underlying assets. The fair value of the impaired customer financing assets includes operating lease equipment and investments in sales type-leases/finance leases and is derived by calculating a median collateral value from a consistent group of third party aircraft value publications. The values provided by the third party aircraft publications are derived from their knowledge of market trades and other market factors.

Management reviews the publications quarterly to assess the continued appropriateness and consistency with market trends. Under certain circumstances, we adjust values based on the attributes and condition of the specific aircraft or equipment, usually when the features or use of the aircraft vary significantly from the more generic aircraft attributes covered by third party publications, or on the expected net sales price for the aircraft.

For Level 3 assets that were measured at fair value on a nonrecurring basis during the period ended June 30, 2022, the following table presents the fair value of those assets as of the measurement date, valuation techniques and related unobservable inputs of those assets.

	Fair Value	Valuation Technique(s)	Unobservable Input	Range Median or Average
Customer financing assets	\$44	Market approach	Aircraft value publications	\$34 - \$43 ⁽¹⁾ Median \$39
			Aircraft condition adjustments	\$0 - \$5 ⁽²⁾ Net \$5

⁽¹⁾ The range represents the sum of the highest and lowest values for all aircraft subject to fair value measurement, according to the third party aircraft valuation publications that we use in our valuation process.

⁽²⁾ The negative amount represents the sum, for all aircraft subject to fair value measurement, of all downward adjustments based on consideration of individual aircraft attributes and condition. The positive amount represents the sum of all such upward adjustments.

Fair Value Disclosures

The fair values and related carrying values of financial instruments that are not required to be remeasured at fair value on the Condensed Consolidated Statements of Financial Position were as follows:

June 30, 2022					
	Carrying Amount	Total Fair Value	Level 1	Level 2	Level 3
Assets					
Notes receivable, net	\$403	\$420		\$420	
Liabilities					
Debt, excluding finance lease obligations	(57,009)	(52,730)		(52,730)	
December 31, 2021					
	Carrying Amount	Total Fair Value	Level 1	Level 2	Level 3
Assets					
Notes receivable, net	\$412	\$485		\$485	
Liabilities					
Debt, excluding finance lease obligations	(57,921)	(65,724)		(65,724)	

The fair values of notes receivable are estimated with discounted cash flow analysis using interest rates currently offered on loans with similar terms to borrowers of similar credit quality. The fair value of our debt that is traded in the secondary market is classified as Level 2 and is based on current market yields. For our debt that is not traded in the secondary market, the fair value is classified as Level 2 and is based on our indicative borrowing cost derived from dealer quotes or discounted cash flows. The fair values of our debt classified as Level 3 are based on discounted cash flow models using the implied yield from similar securities. With regard to other financial instruments with off-balance sheet risk, it is not practicable to estimate the fair value of our indemnifications and financing commitments because the amount and timing of those arrangements are uncertain. Items not included in the above disclosures include cash, restricted cash, time deposits and other deposits, commercial paper, money market funds, Accounts

receivable, Unbilled receivables, Other current assets, Accounts payable and long-term payables. The carrying values of those items, as reflected in the Condensed Consolidated Statements of Financial Position, approximate their fair value at June 30, 2022 and December 31, 2021. The fair value of assets and liabilities whose carrying value approximates fair value is determined using Level 2 inputs, with the exception of cash (Level 1).

Note 16 – Legal Proceedings

Various legal proceedings, claims and investigations related to products, contracts, employment and other matters are pending against us.

In addition, we are subject to various U.S. government inquiries and investigations from which civil, criminal or administrative proceedings could result or have resulted in the past. Such proceedings involve or could involve claims by the government for fines, penalties, compensatory and treble damages, restitution and/or forfeitures. Under government regulations, a company, or one or more of its operating divisions or subdivisions, can also be suspended or debarred from government contracts, or lose its export privileges, based on the results of investigations. Except as described below, we believe, based upon current information, that the outcome of any such legal proceeding, claim, or government dispute and investigation will not have a material effect on our financial position, results of operations, or cash flows. Where it is reasonably possible that we will incur losses in excess of recorded amounts in connection with any of the matters set forth below, we will disclose either the amount or range of reasonably possible losses in excess of such amounts or, where no such amount or range can be reasonably estimated, the reasons why no such estimate can be made.

Multiple legal actions have been filed against us as a result of the October 29, 2018 accident of Lion Air Flight 610 and the March 10, 2019 accident of Ethiopian Airlines Flight 302. During the fourth quarter of 2021, we entered into a proposed settlement with plaintiffs in a shareholder derivative lawsuit. In March 2022, the court entered an order approving the proposed settlement and the Company committed to making certain governance changes. As a result of the settlement, the Company received \$219 in the second quarter of 2022. Further, we are subject to, and cooperating with ongoing governmental and regulatory investigations and inquiries relating to the accidents and the 737 MAX. Among these is an ongoing investigation by the Securities and Exchange Commission, the outcome of which may be material. We cannot reasonably estimate a range of loss, if any, not covered by available insurance that may result given the current status of the pending lawsuits, investigations, and inquiries related to the 737 MAX.

During 2019, we entered into agreements with Embraer S.A. (Embraer) to establish joint ventures that included the commercial aircraft and services operations of Embraer, of which we were expected to acquire an 80 percent ownership stake for \$4,200, as well as a joint venture to promote and develop new markets for the C-390 Millennium. In 2020, we exercised our contractual right to terminate these agreements based on Embraer's failure to meet certain required closing conditions. Embraer has disputed our right to terminate the agreements, and the dispute is currently in arbitration. We cannot reasonably estimate a range of loss, if any, that may result from the arbitration.

Note 17 – Segment and Revenue Information

Our primary profitability measurements to review a segment's operating results are Earnings/(loss) from operations and operating margins. We operate in four reportable segments: BCA, BDS, BGS, and BCC. All other activities fall within Unallocated items, eliminations and other. See page 7 for the Summary of Business Segment Data, which is an integral part of this note.

BCA develops, produces and markets commercial jet aircraft principally to the commercial airline industry worldwide. Revenue on commercial aircraft contracts is recognized at the point in time when an aircraft is completed and accepted by the customer.

BDS engages in the research, development, production and modification of the following products and related services: manned and unmanned military aircraft and weapons systems, surveillance and engagement, strategic defense and intelligence systems, satellite systems and space exploration. BDS revenue is generally recognized over the contract term (over time) as costs are incurred.

BGS provides parts, maintenance, modifications, logistics support, training, data analytics and information-based services to commercial and government customers worldwide. BGS segment revenue and costs include certain services provided to other segments. Revenue on commercial spare parts contracts is recognized at the point in time when a spare part is delivered to the customer. Revenue on other contracts is generally recognized over the contract term (over time) as costs are incurred.

BCC facilitates, arranges, structures and provides selective financing solutions for our customers.

The following tables present BCA, BDS and BGS revenues from contracts with customers disaggregated in a number of ways, such as geographic location, contract type and the method of revenue recognition. We believe these best depict how the nature, amount, timing and uncertainty of our revenues and cash flows are affected by economic factors.

BCA revenues by customer location consist of the following:

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenue from contracts with customers:				
Europe	\$2,233	\$1,553	\$1,208	\$680
Latin America and Caribbean	1,136	868	308	337
Asia	2,025	1,772	1,297	1,409
Middle East	1,088	513	770	384
Other non-U.S.	568	131	387	86
Total non-U.S. revenues	7,050	4,837	3,970	2,896
United States	3,314	5,418	2,212	3,065
Estimated potential concessions and other considerations to 737 MAX customers, net	(17)	8	17	38
Total revenues from contracts with customers	10,347	10,263	6,199	5,999
Intersegment revenues eliminated on consolidation	33	21	20	16
Total segment revenues	\$10,380	\$10,284	\$6,219	\$6,015
Revenue recognized on fixed-price contracts	100 %	100 %	100 %	100 %
Revenue recognized at a point in time	100 %	100 %	100 %	100 %

BDS revenues on contracts with customers, based on the customer's location, consist of the following:

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenue from contracts with customers:				
U.S. customers	\$8,782	\$10,631	\$4,634	\$5,111
Non-U.S. customers ⁽¹⁾	2,892	3,430	1,557	1,765
Total segment revenue from contracts with customers	\$11,674	\$14,061	\$6,191	\$6,876
Revenue recognized over time	99 %	99 %	99 %	99 %
Revenue recognized on fixed-price contracts	62 %	69 %	61 %	68 %
Revenue from the U.S. government ⁽¹⁾	89 %	89 %	89 %	89 %

⁽¹⁾ Includes revenues earned from foreign military sales through the U.S. government.

BGS revenues consist of the following:

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenue from contracts with customers:				
Commercial	\$4,637	\$3,431	\$2,361	\$1,806
Government	3,810	4,272	1,842	2,202
Total revenues from contracts with customers	8,447	7,703	4,203	4,008
Intersegment revenues eliminated on consolidation	165	113	95	59
Total segment revenues	\$8,612	\$7,816	\$4,298	\$4,067
Revenue recognized at a point in time	49 %	44 %	49 %	45 %
Revenue recognized on fixed-price contracts	88 %	87 %	88 %	86 %
Revenue from the U.S. government ⁽¹⁾	34 %	42 %	33 %	41 %

⁽¹⁾ Includes revenues earned from foreign military sales through the U.S. government.

Backlog

Our total backlog includes contracts that we and our customers are committed to perform. The value in backlog represents the estimated transaction prices on performance obligations to our customers for which work remains to be performed. Backlog is converted into revenue, primarily based on the cost incurred or at delivery and acceptance of products, depending on the applicable revenue recognition model.

Our backlog at June 30, 2022 was \$371,730. We expect approximately 29% to be converted to revenue through 2023 and approximately 81% through 2026, with the remainder thereafter. There is significant uncertainty regarding the timing of when backlog will convert into revenue due to 787 production issues and associated rework, timing of 737 MAX delivery resumption in China, timing of entry into service of the 777X, 737 MAX 7 and/or 737 MAX 10, and the lingering effects of the COVID-19 pandemic.

Unallocated Items, Eliminations and other

Unallocated items, eliminations and other include common internal services that support Boeing's global business operations, intercompany guarantees provided to BCC and eliminations of certain sales between segments. Such sales include airplanes sold to our BCC segment that are leased by BCC to customers under operating leases and considered transferred to the BCC segment. We generally allocate costs to business segments based on the U.S. federal cost accounting standards (CAS). Components of Unallocated items, eliminations and other (expense)/income are shown in the following table.

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Share-based plans	(\$108)	(\$142)	(\$25)	(\$14)
Deferred compensation	166	(94)	124	(42)
Amortization of previously capitalized interest	(47)	(44)	(24)	(22)
Research and development expense, net	(118)	(85)	(66)	(43)
Eliminations and other unallocated items	(247)	(297)	(103)	(177)
Unallocated items, eliminations and other	(\$354)	(\$662)	(\$94)	(\$298)
Pension FAS/CAS service cost adjustment	\$413	\$384	\$205	\$191
Postretirement FAS/CAS service cost adjustment	154	154	79	77
FAS/CAS service cost adjustment	\$567	\$538	\$284	\$268

Pension and Other Postretirement Benefit Expense

Pension costs, comprising GAAP service and prior service costs, are allocated to BCA and the commercial operations at BGS. Pension costs are allocated to BDS and BGS businesses supporting government customers using CAS, which employ different actuarial assumptions and accounting conventions than GAAP. These costs are allocable to government contracts. Other postretirement benefit costs are allocated to business segments based on CAS, which is generally based on benefits paid. FAS/CAS service cost adjustment represents the difference between the Financial Accounting Standards (FAS) pension and postretirement service costs calculated under GAAP and costs allocated to the business segments. Non-operating pension and postretirement expenses represent the components of net periodic benefit costs other than service cost. These expenses are included in Other income, net.

Assets

Segment assets are summarized in the table below:

	June 30 2022	December 31 2021
Commercial Airplanes	\$76,860	\$75,863
Defense, Space & Security	15,491	14,974
Global Services	16,347	16,397
Boeing Capital	1,628	1,735
Unallocated items, eliminations and other	25,153	29,583
Total	\$135,479	\$138,552

Assets included in Unallocated items, eliminations and other primarily consist of Cash and cash equivalents, Short-term and other investments, tax assets, capitalized interest and assets managed centrally on behalf of the four principal business segments and intercompany eliminations.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of
The Boeing Company
Arlington, Virginia

Results of Review of Interim Financial Information

We have reviewed the accompanying condensed consolidated statement of financial position of The Boeing Company and subsidiaries (the "Company") as of June 30, 2022, the related condensed consolidated statements of operations, comprehensive income, and equity for the three-month and six-month periods ended June 30, 2022 and 2021, and of cash flows for the six-month periods ended June 30, 2022 and 2021, and the related notes (collectively referred to as the "condensed consolidated interim financial information"). Based on our reviews, we are not aware of any material modifications that should be made to the accompanying condensed consolidated interim financial information for it to be in conformity with accounting principles generally accepted in the United States of America.

We have previously audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (the "PCAOB"), the consolidated statement of financial position of the Company as of December 31, 2021, and the related consolidated statements of operations, comprehensive income, equity, and cash flows for the year then ended (not presented herein); and in our report dated January 31, 2022, we expressed an unqualified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying condensed consolidated statement of financial position as of December 31, 2021, is fairly stated, in all material respects, in relation to the consolidated statement of financial position from which it has been derived.

Basis for Review Results

This condensed consolidated interim financial information is the responsibility of the Company's management. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our reviews in accordance with standards of the PCAOB. A review of interim financial information consists principally of applying analytical procedures and making inquiries of persons responsible for financial and accounting matters. It is substantially less in scope than an audit conducted in accordance with the standards of the PCAOB, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, we do not express such an opinion.

/s/ Deloitte & Touche LLP

Chicago, Illinois

July 27, 2022

FORWARD-LOOKING STATEMENTS

This report contains “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as “may,” “should,” “expects,” “intends,” “projects,” “plans,” “believes,” “estimates,” “targets,” “anticipates” and similar expressions generally identify these forward-looking statements. Examples of forward-looking statements include statements relating to our future financial condition and operating results, as well as any other statement that does not directly relate to any historical or current fact.

Forward-looking statements are based on expectations and assumptions that we believe to be reasonable when made, but that may not prove to be accurate. These statements are not guarantees and are subject to risks, uncertainties and changes in circumstances that are difficult to predict. Many factors could cause actual results to differ materially and adversely from these forward-looking statements. Among these factors are risks related to:

- (1) the COVID-19 pandemic and related industry impacts, including with respect to our operations and access to suppliers, our liquidity, the health of our customers and suppliers, and future demand for our products and services;
- (2) the 737 MAX, including the timing and conditions of remaining 737 MAX regulatory approvals, lower than planned production rates and/or delivery rates, and additional considerations to customers and suppliers;
- (3) general conditions in the economy and our industry, including those due to regulatory changes;
- (4) our reliance on our commercial airline customers;
- (5) the overall health of our aircraft production system, planned commercial aircraft production rate changes, our commercial development and derivative aircraft programs, and our aircraft being subject to stringent performance and reliability standards;
- (6) changing budget and appropriation levels and acquisition priorities of the U.S. government;
- (7) our dependence on U.S. government contracts;
- (8) our reliance on fixed-price contracts;
- (9) our reliance on cost-type contracts;
- (10) uncertainties concerning contracts that include in-orbit incentive payments;
- (11) our dependence on our subcontractors and suppliers as well as the availability of raw materials;
- (12) changes in accounting estimates;
- (13) changes in the competitive landscape in our markets;
- (14) our non-U.S. operations, including sales to non-U.S. customers;
- (15) threats to the security of our, our customers' and/or our suppliers' information;
- (16) potential adverse developments in new or pending litigation and/or government investigations;
- (17) customer and aircraft concentration in our customer financing portfolio;

- (18) changes in our ability to obtain debt financing on commercially reasonable terms and at competitive rates;
- (19) realizing the anticipated benefits of mergers, acquisitions, joint ventures, strategic alliances or divestitures;
- (20) the adequacy of our insurance coverage to cover significant risk exposures;
- (21) potential business disruptions, including those related to physical security threats, information technology or cyber attacks, epidemics, sanctions or natural disasters;
- (22) work stoppages or other labor disruptions;
- (23) substantial pension and other postretirement benefit obligations;
- (24) potential environmental liabilities; and
- (25) effects of climate change and legal, regulatory or market responses to such change.

Additional information concerning these and other factors can be found in our filings with the Securities and Exchange Commission, including our most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K. Any forward-looking information speaks only as of the date on which it is made, and we assume no obligation to update or revise any forward-looking statement, whether as a result of new information, future events, or otherwise, except as required by law.

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

Consolidated Results of Operations and Financial Condition

Overview

The lingering effects of the COVID-19 pandemic, 787 production issues and associated rework, and the residual impacts of the 737 MAX grounding continue to have significant adverse impacts on our business and are expected to continue to negatively impact revenue, earnings and operating cash flow in future quarters.

We expect domestic travel to continue to recover faster than international travel, and we expect the narrow-body market to continue to recover faster than the wide-body market. The pace of the commercial market recovery is heavily dependent on COVID-19 infection rates and resultant government restrictions. We are seeing a strong recovery in travel demand for our airline customers in North and South America, the Middle East, and Europe. Demand for dedicated freighters continues to be strong, underpinned by a strong recovery in global trade and overall air cargo growth.

In addition, we and our suppliers are experiencing supply chain disruptions as a result of the impacts of COVID-19, global supply chain constraints, and labor shortages. We and our suppliers are also experiencing inflationary pressures. We continue to monitor the health and stability of the supply chain as we ramp up production. These measures and disruptions have reduced overall productivity and adversely impacted our financial position, results of operations and cash flows.

Airline financial performance, which influences demand for new capacity, has been adversely impacted by the COVID-19 pandemic. According to the International Air Transport Association (IATA), net losses for the airline industry were \$138 billion in 2020 and are estimated to be \$42 billion in 2021. IATA also forecasts \$9.7 billion of losses for the industry globally in 2022, with approximately \$8.8 billion of profits in North America driven by the robust domestic market being more than offset by losses in other regions. While the outlook continues to improve, we continue to face a challenging environment in the near- to medium-term as airlines are facing increased fuel and other costs, and the global economy is experiencing high inflation. The current environment is also affecting the financial viability of some airlines.

During the first quarter of 2022, we made adjustments to our estimates regarding timing of 777X-9 entry into service. We now anticipate that the first 777X-9 delivery will be delayed until 2025, based on an updated assessment of the time required to meet certification requirements. During the first quarter of 2022, we launched the 777X-8 freighter, and we expect first delivery to be in 2027.

The 737 MAX 7 and MAX 10 models are also currently going through Federal Aviation Administration (FAA) certification activities. The 737 MAX 7 is expected to be certified in 2022 and enter service in 2023. The 737 MAX 10 is expected to begin FAA certification flight testing later in 2022 and enter service in 2023. Section 116 of the December 2020 Aircraft Certification, Safety and Accountability Act (ACSAA) prohibits the FAA from issuing a type certificate to aircraft after December 27, 2022 unless the aircraft's flight crew alerting system meets certain requirements. We are working closely with the FAA on implementation of ACSAA legislation and expect any necessary actions to be defined later this year. If we are unable to achieve certification and/or entry into service consistent with our current assumptions, future revenues, earnings and cash flows will be adversely impacted.

Deliveries of the 737 MAX resumed in the fourth quarter of 2020, when the FAA rescinded the order that grounded 737 MAX aircraft in the U.S. Over 190 countries have approved the resumption of 737 MAX operations. The 737 MAX has yet to return to service in China and a small number of other countries. The Civil Aviation Administration of China issued an airworthiness directive in the fourth quarter of 2021 outlining actions required for airlines to return to service. While we expect 737 MAX deliveries to our customers in China to resume in 2022, subject to final regulatory approvals, risk remains around the timing and rate of those deliveries.

Deliveries and production have also been impacted by production issues and associated rework. For example, deliveries of the 787 are currently paused and the production rate has been reduced while we focus on rework of undelivered aircraft and continue to engage in detailed discussions with the FAA regarding required actions for resuming deliveries. Risk remains that these issues may continue to impact the timing of airplane deliveries in inventory and/or our ability to achieve planned production rates. Revenues, earnings and cash flows will continue to be impacted until we are able to resume timely deliveries.

The long-term outlook for the industry remains positive due to the fundamental drivers of air travel demand: economic growth, increasing propensity to travel due to increased trade, globalization and improved airline services driven by liberalization of air traffic rights between countries. Our Commercial Market Outlook forecast projects a 3.8% growth rate for passenger and cargo traffic over a 20 year period. Based on long-term global economic growth projections of 2.6% average annual gross domestic product (GDP) growth, we project demand for approximately 41,170 new airplanes over the next 20 years. The industry remains vulnerable to exogenous developments including fuel price spikes, credit market shocks, acts of terrorism, natural disasters, conflicts, epidemics, pandemics and increased global environmental regulations.

While commercial services volume at Global Services (BGS) is recovering, it remains below pre-pandemic levels. We expect the impacts of the COVID-19 pandemic to continue to have an adverse impact on BGS commercial revenues in future quarters until the commercial airline industry fully recovers. The demand outlook for our government services business remains stable.

At Defense, Space & Security (BDS), we continue to see stable demand reflecting the important role our products and services have in ensuring our national security. Outside of the U.S., we are seeing similar solid demand as governments prioritize security, defense technology and global cooperation given evolving threats. We continue to experience near-term production disruptions and inefficiencies due to COVID-19 impacts, supplier disruption and factory performance.

On July 24, 2022, employees represented by the International Association of Machinists and Aerospace Workers (IAM) District 837 voted to reject Boeing's compensation and benefits offer. The Collective Bargaining agreement expired on July 25, 2022. The IAM District 837, which represents approximately 2,500 of Boeing's employees, announced that the employees plan to go on strike effective August 1, 2022. While we currently do not expect a material impact to our business, a prolonged strike could disrupt our St. Louis based operations and adversely impact revenues, earnings and cash flows.

As a result of the war in Ukraine, we recorded earnings charges totaling \$212 million during the first quarter of 2022, primarily related to asset impairments. We have closed our facilities in Ukraine and Russia. We are focused on the safety of our employees and retaining the strength of our engineering talent through voluntary transfers to other countries. We have also suspended our business in Russia, including parts, maintenance and technical support for Russian airlines, and purchases from Russian suppliers. We are complying with U.S. and international sanctions and export control restrictions. We have sufficient material and parts to avoid production disruptions in the near-term, but future impacts to our production from disruptions in our supply chain are possible. The war in Ukraine continues to impact our airline and lessor customers. We continue to monitor developments and potential Boeing impacts, and take mitigating actions as appropriate.

Consolidated Results of Operations

The following table summarizes key indicators of consolidated results of operations:

(Dollars in millions, except per share data)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$30,672	\$32,215	\$16,681	\$16,998
GAAP				
(Loss)/earnings from operations	(\$395)	\$940	\$774	\$1,023
Operating margins	(1.3)%	2.9 %	4.6 %	6.0 %
Effective income tax rate	12.8 %	126.1 %	57.6 %	(3.3)%
Net (loss)/earnings attributable to Boeing Shareholders	(\$1,026)	\$50	\$193	\$587
Diluted (loss)/earnings per share	(\$1.73)	\$0.09	\$0.32	\$1.00
Non-GAAP ⁽¹⁾				
Core operating (loss)/earnings	(\$962)	\$402	\$490	\$755
Core operating margins	(3.1)%	1.2 %	2.9 %	4.4 %
Core (loss)/earnings per share	(\$3.11)	(\$1.12)	(\$0.37)	\$0.40

⁽¹⁾ These measures exclude certain components of pension and other postretirement benefit expense. See pages 51-53 for important information about these non-GAAP measures and reconciliations to the most comparable GAAP measures.

Revenues

The following table summarizes Revenues:

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Commercial Airplanes	\$10,380	\$10,284	\$6,219	\$6,015
Defense, Space & Security	11,674	14,061	6,191	6,876
Global Services	8,612	7,816	4,298	4,067
Boeing Capital	98	138	52	78
Unallocated items, eliminations and other	(92)	(84)	(79)	(38)
Total	\$30,672	\$32,215	\$16,681	\$16,998

Revenues for the six months ended June 30, 2022 decreased by \$1,543 million compared with the same period in 2021 driven by lower revenues at BDS, partially offset by higher revenues at BGS and Commercial Airplanes (BCA). BDS revenues decreased by \$2,387 million primarily due to lower revenue on the KC-46A Tanker program from new orders for 27 aircraft received during the first quarter of 2021, lower P-8 volume as production was reduced to one per month, and timing of material receipts. BDS revenues for the six months ended June 30, 2022 also decreased due to charges on development programs discussed below, unfavorable performance across other programs, and the absence of revenue recorded in the second quarter of 2021 related to a favorable adjustment on a non-U.S. contract. BGS revenues increased by \$796 million primarily due to higher commercial services volume, partially offset by lower government services volume. BCA revenues increased by \$96 million primarily driven by higher 737 MAX deliveries, partially offset by lower 787 deliveries.

Revenues for the three months ended June 30, 2022 decreased by \$317 million compared with the same period in 2021 driven by lower revenues at BDS, partially offset by higher revenues at BGS and BCA. BDS revenues decreased by \$685 million due to charges on development programs discussed below,

unfavorable performance across other programs, lower P-8 volume, and the absence of revenue recorded in the prior year quarter related to a favorable adjustment on a non-U.S. contract. BGS revenues increased by \$231 million due to higher commercial services volume, partially offset by lower government services volume. BCA revenues increased by \$204 million driven by higher 737 MAX deliveries, partially offset by lower 787 deliveries.

Revenues will continue to be significantly impacted until the global supply chain stabilizes, labor shortages diminish, deliveries ramp up, and the commercial airline industry recovers from the lingering impacts of the COVID-19 pandemic.

Loss/Earnings From Operations

The following table summarizes (Loss)/earnings from operations:

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Commercial Airplanes	(\$1,101)	(\$1,328)	(\$242)	(\$472)
Defense, Space & Security	(858)	1,363	71	958
Global Services	1,360	972	728	531
Boeing Capital	(9)	57	27	36
Segment operating (loss)/earnings	(608)	1,064	584	1,053
Pension FAS/CAS service cost adjustment	413	384	205	191
Postretirement FAS/CAS service cost adjustment	154	154	79	77
Unallocated items, eliminations and other	(354)	(662)	(94)	(298)
(Loss)/earnings from operations (GAAP)	(\$395)	\$940	\$774	\$1,023
FAS/CAS service cost adjustment *	(567)	(538)	(284)	(268)
Core operating (loss)/earnings (Non-GAAP) **	(\$962)	\$402	\$490	\$755

* The FAS/CAS service cost adjustment represents the difference between the FAS pension and postretirement service costs calculated under GAAP and costs allocated to the business segments.

** Core operating earnings/(loss) is a Non-GAAP measure that excludes the FAS/CAS service cost adjustment. See pages 51-53.

Loss from operations for the six months ended June 30, 2022 was \$395 million compared with earnings of \$940 million during the same period in 2021. BDS had a loss from operations of \$858 million, compared with earnings of \$1,363 million during the same period in 2021, primarily due to charges on the VC-25B, T-7A Red Hawk, KC-46A Tanker, and MQ-25 programs totaling \$1,270 million recorded in the first quarter of 2022 as well as the year over year decrease in second quarter earnings of \$887 million discussed below. BGS earnings from operations increased by \$388 million primarily due to higher commercial services volume and favorable mix. BCA loss from operations decreased by \$227 million primarily due to higher 737 MAX deliveries and lower abnormal production costs, partially offset by higher research and development spending, charges related to the war in Ukraine and other period expenses.

Earnings from operations for the three months ended June 30, 2022 decreased by \$249 million compared with the same period in 2021. BDS earnings from operations decreased by \$887 million. The year over year decrease reflects a number of factors including charges in the second quarter of 2022 on MQ-25 (\$147 million), Commercial Crew (\$93 million), T-7A Red Hawk Production Options (\$51 million), and T-7A Red Hawk Engineering, Manufacturing, and Development (EMD) (\$36 million). Other programs recorded lower earnings during the second quarter of 2022 due to lower volumes, supplier disruption and factory performance. BCA loss from operations decreased by \$230 million due to higher 737 MAX deliveries and lower abnormal production costs, partially offset by higher research and development spending and other period expenses. BGS earnings from operations increased by \$197 million due to higher commercial services volume and favorable mix.

Core operating losses for the six months ended June 30, 2022 were \$962 million compared with core operating earnings of \$402 million for the same period in 2021. Core operating earnings for the three months ended June 30, 2022 decreased by \$265 million compared with the same period in 2021. The changes in core operating (loss)/earnings were primarily due to changes in Segment operating (loss)/earnings as described above.

For discussion related to Postretirement Plans, see Note 11 to our Condensed Consolidated Financial Statements.

Unallocated Items, Eliminations and Other

The most significant items included in Unallocated items, eliminations and other are shown in the following table:

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Share-based plans	(\$108)	(\$142)	(\$25)	(\$14)
Deferred compensation	166	(94)	124	(42)
Amortization of previously capitalized interest	(47)	(44)	(24)	(22)
Research and development expense, net	(118)	(85)	(66)	(43)
Eliminations and other unallocated items	(247)	(297)	(103)	(177)
Unallocated items, eliminations and other	(\$354)	(\$662)	(\$94)	(\$298)

Share-based plans expense for the six months ended June 30, 2022 decreased by \$34 million compared with the same period in 2021 due to expenses incurred in 2021 associated with a grant of restricted stock units to most employees in December 2020. Share-based plans expense for the three months ended June 30, 2022 was consistent with the same period in 2021.

Deferred compensation income was \$166 million and \$124 million for the six and three months ended June 30, 2022 compared with expense of \$94 million and \$42 million in the same periods in 2021 primarily driven by broad market conditions and changes in our stock price.

Unallocated research and development expense for the six and three months ended June 30, 2022 increased by \$33 million and \$23 million compared with the same periods in 2021 due to higher enterprise investments in product development.

Other Earnings Items

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
(Loss)/earnings from operations	(\$395)	\$940	\$774	\$1,023
Other income, net	434	389	253	199
Interest and debt expense	(1,280)	(1,352)	(650)	(673)
(Loss)/earnings before income taxes	(1,241)	(23)	377	549
Income tax benefit/(expense)	159	29	(217)	18
Net (loss)/earnings from continuing operations	(1,082)	6	160	567
Less: Net loss attributable to noncontrolling interest	(56)	(44)	(33)	(20)
Net (loss)/earnings attributable to Boeing Shareholders	(\$1,026)	\$50	\$193	\$587

For the six months ended June 30, 2022 and 2021, non-operating pension income included in Other income, net was \$441 million and \$352 million. The increased income was primarily due to lower amortization of net actuarial losses, partially offset by higher interest cost and lower expected return on plan assets. Non-operating postretirement income was \$29 million and \$10 million during the six months ended June 30, 2022 and 2021. Other income, net also included losses of \$50 million during the six months ended June 30, 2022 reclassified in the first quarter of 2022 from Accumulated other comprehensive loss (AOCI) associated with certain cash flow hedges because it is probable the forecasted transactions will not occur.

For the three months ended June 30, 2022 and 2021, non-operating pension income included in Other income, net was \$221 million and \$175 million. The increased income was primarily due to lower amortization of net actuarial losses, partially offset by higher interest cost and lower expected return on plan assets. Non-operating postretirement income was \$14 million and \$5 million during the three months ended June 30, 2022 and 2021.

Interest and debt expense for the six and three months ended June 30, 2022 was lower compared with the same period in the prior year primarily as a result of lower debt balances.

For discussion related to Income Taxes, see Note 3 to our Condensed Consolidated Financial Statements.

Total Costs and Expenses ("Cost of Sales")

Cost of sales, for both products and services, consists primarily of raw materials, parts, sub-assemblies, labor, overhead and subcontracting costs. Our BCA segment predominantly uses program accounting to account for cost of sales. Under program accounting, cost of sales for each commercial airplane program equals the product of (i) revenue recognized in connection with customer deliveries and (ii) the estimated cost of sales percentage applicable to the total remaining program. For long-term contracts, the amount reported as cost of sales is recognized as incurred. Substantially all contracts at our BDS segment and certain contracts at our BGS segment are long-term contracts with the U.S. government and other customers that generally extend over several years. Costs on these contracts are recorded as incurred. Cost of sales for commercial spare parts is recorded at average cost.

The following table summarizes cost of sales:

<i>(Dollars in millions)</i>	Six months ended June 30			Three months ended June 30		
	2022	2021	Change	2022	2021	Change
Cost of sales	\$28,204	\$28,396	(\$192)	\$14,559	\$14,588	(\$29)
Cost of sales as a % of Revenues	92.0 %	88.1 %	3.9 %	87.3 %	85.8 %	1.5 %

Cost of sales for the six months ended June 30, 2022 decreased by \$192 million, or 1% compared with the same period in 2021, primarily due to lower revenues at BDS in 2022, partially offset by charges recorded at BDS in 2022. Cost of sales as a percentage of Revenues increased during the six months ended June 30, 2022 compared with the same period in 2021 primarily due to higher charges recorded at BDS in 2022 than in 2021.

Cost of sales for the three months ended June 30, 2022 was consistent with the same period in 2021. Cost of sales as a percentage of Revenues increased during the three months ended June 30, 2022 compared with the same period in 2021 primarily due to higher charges recorded at BDS in 2022 than in 2021, partially offset by lower abnormal production costs at BCA.

Research and Development

Research and development expense, net is summarized in the following table:

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Commercial Airplanes	\$693	\$524	\$372	\$255
Defense, Space & Security	466	337	233	174
Global Services	54	50	27	25
Other	118	85	66	43
Total	\$1,331	\$996	\$698	\$497

Research and development expense increased by \$335 million and \$201 million during the six and three months ended June 30, 2022 compared to the same periods in 2021. The increase at BCA is due to higher spending on the 777X Freighter. The increase at BDS reflects higher research and product development expenditures.

Backlog

<i>(Dollars in millions)</i>	June 30 2022	December 31 2021
Commercial Airplanes	\$297,044	\$296,882
Defense, Space & Security	55,401	59,828
Global Services	18,960	20,496
Unallocated items, eliminations and other	325	293
Total Backlog	\$371,730	\$377,499
Contractual backlog	\$351,242	\$356,362
Unobligated backlog	20,488	21,137
Total Backlog	\$371,730	\$377,499

Contractual backlog of unfilled orders excludes purchase options, announced orders for which definitive contracts have not been executed, orders where customers have the unilateral right to terminate, and unobligated U.S. and non-U.S. government contract funding. The decrease in contractual backlog at BDS and BGS during the six months ended June 30, 2022 was partially offset by an increase in contractual backlog at BCA. If 787 aircraft deliveries continue to be paused, we remain unable to deliver 737 MAX aircraft in China for an extended period of time, and/or entry into service of the 777X, 737 MAX 7 and/or 737 MAX 10 is further delayed, we may experience additional reductions to backlog and/or significant order cancellations.

Unobligated backlog includes U.S. and non-U.S. government definitive contracts for which funding has not been authorized. The decrease in unobligated backlog during the six months ended June 30, 2022 was primarily due to reclassifications to contractual backlog related to BDS and BGS contracts, partially offset by contract awards.

Additional Considerations

Global Trade We continually monitor the global trade environment in response to geopolitical economic developments, as well as changes in tariffs, trade agreements, or sanctions that may impact the Company.

The current state of U.S.-China relations remains an ongoing watch item. China is a significant market for commercial airplanes. Boeing has long-standing relationships with our Chinese customers, who represent a key component of our commercial airplanes backlog. Since 2018, the U.S. and China have imposed

tariffs on each other's imports. Certain aircraft parts and components that Boeing procures are subject to these tariffs. Overall, the U.S.-China trade relationship remains stalled as economic and national security concerns continue to be a challenge. We continue monitoring developments for any adverse impacts to the Company.

Beginning in June 2018, the U.S. Government has imposed tariffs on steel and aluminum imports. In response to these tariffs, several major U.S. trading partners have imposed, or announced their intention to impose, tariffs on U.S. goods. In May 2019, the U.S. Government, Mexico and Canada reached an agreement to end the steel and aluminum tariffs between these countries. Implementation of the U.S./Mexico/Canada Free Trade Agreement (USMCA) will also result in lower tariffs. The U.S. Government has also reached agreements to ease steel and/or aluminum tariffs with the United Kingdom, the European Union (EU) and Japan. We continue to monitor the potential for any extra costs that may result from the remaining global tariffs.

We are complying with all U.S. and other government export control restrictions and sanctions imposed on certain businesses and individuals in Russia. We continue to monitor and evaluate additional sanctions and export restrictions that may be imposed by the U.S. Government or other governments, as well as any responses from Russia that could affect our supply chain, business partners or customers, for any additional impacts to our business.

Segment Results of Operations and Financial Condition

Commercial Airplanes

Business Environment and Trends

See Overview to Management's Discussion and Analysis of Financial Condition and Results of Operations for a discussion of the impacts of COVID-19 on the airline industry environment.

Results of Operations

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$10,380	\$10,284	\$6,219	\$6,015
Loss from operations	(\$1,101)	(\$1,328)	(\$242)	(\$472)
Operating margins	(10.6)%	(12.9)%	(3.9)%	(7.8)%

Revenues

BCA revenues increased by \$96 million and \$204 million for the six and three months ended June 30, 2022 compared with the same periods in 2021 primarily due to higher 737 MAX deliveries partially offset by lower 787 deliveries.

We resumed deliveries of 737 MAX aircraft in December 2020 following rescission by the FAA of its grounding order. While most non-U.S. jurisdictions have approved return to service of the 737 MAX, the 737 MAX has yet to return to service in China and deliveries have not yet resumed. Labor shortages and supplier issues contributed to lower deliveries of both stored and produced aircraft during the six months ended June 30, 2022. 787 deliveries have been paused since May 2021. Revenues will continue to be impacted until deliveries of the 737 MAX further ramp up, deliveries of the 787 resume and the commercial airline industry recovers from the lingering effects of impacts of COVID-19.

Commercial airplane deliveries, including intercompany deliveries, were as follows:

	737	*	747	767	*	777	787	Total
Deliveries during the first six months of 2022	189	(8)	3	12	(7)	12		216
Deliveries during the first six months of 2021	113	(8)	2	13	(4)	14	14	156
Deliveries during the second quarter of 2022	103	(3)	2	7	(4)	9		121
Deliveries during the second quarter of 2021	50	(3)	1	8	(3)	8	12	79
Cumulative deliveries as of 6/30/2022	7,934		1,570	1,250		1,689	1,006	
Cumulative deliveries as of 12/31/2021	7,745		1,567	1,238		1,677	1,006	

* Intercompany deliveries identified by parentheses.

Loss From Operations

BCA loss from operations was \$1,101 million for the six months ended June 30, 2022 compared with \$1,328 million in the same period in 2021 reflecting higher 737 MAX deliveries and lower abnormal production costs, partially offset by higher research and development spending, charges related to the war in Ukraine and other period expenses. Abnormal production costs for the six months ended June 30, 2022 were \$885 million including \$595 million related to the 787 program, \$188 million related to 737 MAX and \$102 million related to the 777X program. Abnormal production costs for the six months ended June 30, 2021 were \$1,083 million related to 737 MAX.

BCA loss from operations was \$242 million for the three months ended June 30, 2022 compared with \$472 million in the same period in 2021 reflecting higher 737 MAX deliveries and lower abnormal production costs, partially offset by higher research and development spending and other period expenses. Abnormal production costs for the three months ended June 30, 2022 were \$385 million, including \$283 million related to the 787 program and \$102 million related to the 777X program. Abnormal production costs for the three months ended June 30, 2021 were \$515 million related to 737 MAX.

Backlog

Our total backlog represents the estimated transaction prices on unsatisfied and partially satisfied performance obligations to our customers where we believe it is probable that we will collect the consideration due and where no contingencies remain before we and the customer are required to perform. Backlog does not include prospective orders where customer controlled contingencies remain, such as the customer receiving approval from its board of directors, shareholders or government or completing financing arrangements. All such contingencies must be satisfied or have expired prior to recording a new firm order even if satisfying such conditions is highly certain. Backlog excludes options and Boeing Capital (BCC) orders as well as orders where customers have the unilateral right to terminate. A number of our customers may have contractual remedies, including rights to reject individual airplane deliveries if the actual delivery date is significantly later than the contractual delivery date. We address customer claims and requests for other contractual relief as they arise. The value of orders in backlog is adjusted as changes to price and schedule are agreed to with customers and is reported in accordance with the requirements of Accounting Standards Codification (ASC) 606.

BCA total backlog increased from \$296,882 million as of December 31, 2021 to \$297,044 million at June 30, 2022 reflecting new orders in excess of deliveries and price escalation, offset by order cancellations and by an increase in the value of existing orders that in our assessment do not meet the accounting requirements of ASC 606 for inclusion in backlog. Aircraft order cancellations during the six months ended June 30, 2022 totaled \$7,524 million and primarily relate to 737 MAX and 787 aircraft. The net ASC 606 adjustments for the six months ended June 30, 2022 resulted in a decrease to backlog of \$4,916 million primarily due to a net increase of 777X aircraft in the ASC 606 reserve, partially offset by net decreases in 737 MAX and 787 aircraft in the ASC 606 reserve. ASC 606 adjustments include consideration of aircraft orders where a customer controlled contingency may exist, as well as an assessment of whether the customer is committed to perform, impacts of geopolitical events or related sanctions, or whether it is probable that the customer will pay the full amount of consideration when it is

due. If 787 aircraft deliveries continue to be paused, we are unable to ramp up deliveries of 737 MAX aircraft, and/or if entry into service of the 777X, 737 MAX 7 and/or 737 MAX 10 is further delayed, we may experience additional reductions to backlog and/or significant order cancellations.

Accounting Quantity

The following table provides details of the accounting quantities and firm orders by program. Cumulative firm orders represent the cumulative number of commercial jet aircraft deliveries plus undelivered firm orders. Firm orders include military derivative aircraft that are not included in program accounting quantities. All revenues and costs associated with military derivative aircraft production are reported in the BDS segment.

	Program						
As of 6/30/2022	737	747	767	777	777X	787	†
Program accounting quantities	10,800	1,574	1,255	1,790	400	1,500	
Undelivered units under firm orders	3,431	3	96	71	231	407	(11)
Cumulative firm orders	11,365	1,573	1,346	1,760	231	1,413	

As of 12/31/2021	737	747	767	777	777X	787	†
Program accounting quantities	10,400	1,574	1,243	1,750	350	1,500	
Undelivered units under firm orders	3,414	6	108	58	253	411	(14)
Cumulative firm orders	11,159	1,573	1,346	1,735	253	1,417	

† Aircraft ordered by BCC are identified in parentheses.

Program Highlights

737 Program The accounting quantity for the 737 program increased by 400 units during the three months ended March 31, 2022 due to the program's normal progress of obtaining additional orders and delivering airplanes. See further discussion of the 737 MAX in Note 9 to our Condensed Consolidated Financial Statements.

747 Program We are currently producing at a rate of 0.5 aircraft per month. We expect to complete production of the 747 in the fourth quarter of 2022. We believe that ending production of the 747 will not have a material impact on our financial position, results of operations or cash flows.

767 Program The accounting quantity for the 767 program increased by 12 units during the three months ended March 31, 2022 due to the program's normal progress of obtaining additional orders and delivering airplanes. The 767 assembly line includes the commercial program and a derivative to support the tanker program. The commercial program has near break-even gross margins. We are currently producing at a rate of 3 aircraft per month.

777 and 777X Programs During the first quarter of 2022, we launched the 777X-8 freighter with first delivery expected in 2027. The accounting quantity for the 777X program increased by 50 units during the three months ended March 31, 2022 reflecting the launch of the 777X-8 freighter.

During the first quarter of 2022, we revised the estimated first delivery date of the 777X-9, previously expected in late 2023, and now expect it will occur in 2025, based on an updated assessment of the time required to meet certification requirements. We are working towards Type Inspection Authorization (TIA) which will enable us to begin FAA certification flight testing. The timing of TIA and certification will ultimately be determined by the regulators, and further determinations with respect to anticipated

certification requirements could result in additional delays in entry into service and/or additional cost increases.

In April 2022, we decided to pause production of the 777X-9 during 2022 and 2023. We implemented the production pause during the second quarter of 2022, and it is expected to result in abnormal production costs of approximately \$1.5 billion that are being expensed as incurred until 777X-9 production resumes.

The 777X program has near break-even gross margins at June 30, 2022. The level of profitability on the 777X program will be subject to a number of factors. These factors include continued market uncertainty, the impacts of COVID-19 on our production system as well as impacts on our supply chain and customers, customer negotiations, further production rate adjustments for the 777X or other commercial aircraft programs, contraction of the accounting quantity and potential risks associated with the testing program and the timing of aircraft certification. One or more of these factors could result in additional reach-forward losses on the 777X program in future periods.

The accounting quantity for the 777 program increased by 40 and 10 units during the six and three months ended June 30, 2022 due to the program's normal progress of obtaining additional orders and delivering airplanes. The production rate for the combined 777/777X program is expected to increase from 2 per month to 3 per month in the second half of 2022.

787 Program At June 30, 2022 we have approximately 120 aircraft in inventory. Deliveries remain paused due to production quality issues. We continue to conduct inspections and rework on undelivered aircraft and engage in detailed discussions with the FAA regarding required actions for resuming delivery of the 787. We are currently producing at very low rates and expect that to continue until deliveries resume, gradually returning to 5 per month over time. In the third quarter of 2021, we determined that in the current environment production rates below 5 per month represent abnormally low production rates and result in abnormal production costs, and that inspections and rework costs on inventoried aircraft are excessive and should also be accounted for as abnormal production costs that are required to be expensed as incurred. As a result of these impacts, we continue to expect to incur approximately \$2 billion of abnormal production costs on a cumulative basis with most being incurred by the end of 2023. We continue to work with customers and suppliers regarding timing of future deliveries and production rate changes. We are also continuing to implement changes in the production process designed to ensure that newly-built airplanes meet our specifications and do not require further inspections and rework.

During the fourth quarter of 2021, we recorded a loss of \$3.5 billion on the program primarily due to the additional rework, as well as other actions required to resume 787 deliveries taking longer than expected. These impacts have resulted in longer than expected delivery delays and associated customer considerations.

The timing of the resumption of deliveries and future production rates will depend upon rework, ongoing customer and supplier engagement, production stability and our activities with the FAA. China is a significant market for the 787 program, and if the program is unable to obtain additional orders from China in future quarters, we may be required to further adjust production rate assumptions. If we are required to further reduce the accounting quantity and/or production rates, experience further delivery delays or experience other factors that result in lower margins, the program could record additional losses and higher abnormal production costs in future periods.

Additional Considerations

The development and ongoing production of commercial aircraft is extremely complex, involving extensive coordination and integration with suppliers and highly-skilled labor from employees and other partners. Meeting or exceeding our performance and reliability standards, as well as those of customers and regulators, can be costly and technologically challenging, such as the 787 production issues and associated rework. In addition, the introduction of new aircraft and derivatives, such as the 777X and 737 MAX derivatives, involves increased risks associated with meeting development, production and certification schedules. These challenges include increased global regulatory scrutiny of all development

aircraft in the wake of the 737 MAX accidents. As a result, our ability to deliver aircraft on time, satisfy performance and reliability standards and achieve or maintain, as applicable, program profitability is subject to significant risks. Factors that could result in lower margins (or a material charge if an airplane program has or is determined to have reach-forward losses) include the following: changes to the program accounting quantity, customer and model mix, production costs and rates, changes to price escalation factors due to changes in the inflation rate or other economic indicators, performance or reliability issues involving completed aircraft, capital expenditures and other costs associated with increasing or adding new production capacity, learning curve, additional change incorporation, achieving anticipated cost reductions, the addition of regulatory requirements in connection with certification in one or more jurisdictions, flight test and certification schedules, costs, schedule and demand for new airplanes and derivatives and status of customer claims, supplier claims or assertions and other contractual negotiations. While we believe the cost and revenue estimates incorporated in the consolidated financial statements are appropriate, the technical complexity of our airplane programs creates financial risk as additional completion costs may become necessary or scheduled delivery dates could be extended, which could trigger termination provisions, order cancellations or other financially significant exposure.

Defense, Space & Security

Business Environment and Trends

United States Government Defense Environment Overview

The Consolidated Appropriations Act, 2022, enacted in March 2022, provided fiscal year 2022 (FY22) appropriations for government departments and agencies, including \$742.3 billion for the United States Department of Defense (U.S. DoD) and \$24 billion for the National Aeronautics and Space Administration (NASA). The enacted FY22 appropriations included funding for Boeing's major programs, including the F/A-18 Super Hornet, F-15EX, CH-47 Chinook, AH-64 Apache, V-22 Osprey, KC-46A tanker, and the Space Launch System.

In April 2022, the U.S. government released details of the President's budget request for fiscal year 2023 (FY23), which included requests for \$773 billion in funding for the U.S. DoD and \$26 billion for NASA. The FY23 defense budget requests funding for many of Boeing's programs, but does not request funding for F/A-18, CH-47F Block II, V-22, or P-8 production aircraft. These programs also continue to pursue non-U.S. sales opportunities. There is ongoing uncertainty with respect to program-level appropriations for U.S. DoD, NASA and other government agencies for FY23 and beyond. Future budget cuts or investment priority changes, including changes associated with the authorizations and appropriations process, could result in reductions, cancellations, and/or delays of existing contracts or programs. Any of these impacts could have a material effect on our results of operations, financial position, and/or cash flows.

Results of Operations

<i>(Dollars in millions)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$11,674	\$14,061	\$6,191	\$6,876
(Loss)/earnings from operations	(\$858)	\$1,363	\$71	\$958
Operating margins	(7.3 %)	9.7 %	1.1 %	13.9 %

Since our operating cycle is long-term and involves many different types of development and production contracts with varying delivery and milestone schedules, the operating results of a particular period may not be indicative of future operating results. In addition, depending on the customer and their funding sources, our orders might be structured as annual follow on contracts, or as one large multi-year order or long-term award. As a result, period-to-period comparisons of backlog are not necessarily indicative of future workloads. The following discussions of comparative results among periods should be viewed in this context.

Deliveries of units for new-build production aircraft, including remanufactures and modifications, were as follows:

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
F/A-18 Models	8	11	4	7
F-15 Models	5	8	4	5
CH-47 Chinook (New)	9	6	5	3
CH-47 Chinook (Renewed)	4	4	1	1
AH-64 Apache (New)	13	15	6	6
AH-64 Apache (Remanufactured)	28	31	13	16
P-8 Models	6	6	3	3
KC-46 Tanker	8	4	4	2
Total	81	85	40	43

Revenues

BDS revenues for the six months ended June 30, 2022 decreased by \$2,387 million compared with the same period in 2021, primarily due to lower revenue on the KC-46A Tanker program from new orders for 27 aircraft received during the first quarter of 2021, lower P-8 volume as production was reduced to one per month, and timing of material receipts. BDS revenues for the six months ended June 30, 2022 also decreased due to charges on development programs discussed below, unfavorable performance across other programs, and the absence of revenue recorded in the second quarter of 2021 related to a favorable adjustment on a non-U.S. contract. Cumulative contract catch-up adjustments for the six months ended June 30, 2022 were \$1,018 million more unfavorable than the comparable period in the prior year largely due to charges on VC-25B, KC-46A Tanker, and MQ-25 and the prior year favorable contract adjustment.

BDS revenues for the three months ended June 30, 2022 decreased by \$685 million compared with the same period in 2021, due to charges on development programs discussed below, unfavorable performance across other programs, lower P-8 volume, and the absence of revenue recorded in the prior year quarter related to a favorable adjustment on a non-U.S. contract. Cumulative contract catch-up adjustments were \$448 million more unfavorable than the comparable period in the prior year largely due to charges on development programs, the prior year favorable contract adjustment and other program performance.

Loss/Earnings From Operations

BDS loss from operations was \$858 million for the six months ended June 30, 2022 compared with earnings from operations of \$1,363 million in the same period in 2021 primarily due to charges on the VC-25B, T-7A Red Hawk, KC-46A Tanker, and MQ-25 programs totaling \$1,270 million recorded in the first quarter of 2022 as well as the year over year decrease in second quarter earnings of \$887 million discussed below. The net unfavorable cumulative contract catch-up adjustments for the six months ended June 30, 2022 were \$1,510 million higher than the comparable period in the prior year.

BDS earnings from operations was \$71 million for the three months ended June 30, 2022 compared with earnings from operations of \$958 million in the same period in 2021. The year over year decrease reflects a number of factors including charges in the second quarter of 2022 on MQ-25 (\$147 million), Commercial Crew (\$93 million), T-7A Red Hawk Production Options (\$51 million), and T-7A Red Hawk EMD (\$36 million). Other programs recorded lower earnings during the second quarter of 2022 due to lower volumes, supplier disruption and factory performance. Net unfavorable cumulative contract catch-up adjustments for the three months ended June 30, 2022 were \$620 million higher than the comparable period in the prior year reflecting the charges and performance issues described above. The year over

year decrease also reflects the absence of gains recorded in the prior year quarter largely related to a favorable adjustment on a non-U.S. contract.

See further discussion of fixed-price contracts in Note 9 to our Condensed Consolidated Financial Statements.

BDS loss/earnings from operations includes equity earnings of \$40 million and \$13 million for the six and three months ended June 30, 2022 compared with equity earnings of \$37 million and \$30 million for the same periods in 2021. The year over year variances reflect changes in earnings from our United Launch Alliance joint venture.

Backlog

BDS backlog decreased from \$59,828 million as of December 31, 2021 to \$55,401 million at June 30, 2022, primarily due to revenue recognized on contracts awarded in prior periods.

Additional Considerations

Our BDS business includes a variety of development programs which have complex design and technical challenges. Many of these programs have cost-type contracting arrangements. In these cases, the associated financial risks are primarily in reduced fees, lower profit rates or program cancellation if cost, schedule or technical performance issues arise. Examples of these programs include Ground-based Midcourse Defense, Proprietary and Space Launch System programs.

Some of our development programs are contracted on a fixed-price basis and BDS customers are increasingly seeking fixed-price proposals for new programs. Examples of significant fixed-price development programs include Commercial Crew, KC-46A Tanker, MQ-25, T-7A Red Hawk, VC-25B, and commercial and military satellites. New programs could also have risk for reach-forward loss upon contract award and during the period of contract performance. Many development programs have highly complex designs. As technical, quality or similar issues in the supply chain arise during development, we may experience schedule delays and cost impacts, which could increase our estimated cost to perform the work or reduce our estimated price, either of which could result in a material charge or otherwise adversely affect our financial condition. These programs are ongoing, and while we believe the cost and fee estimates incorporated in the financial statements are appropriate, the technical complexity of these programs creates financial risk as additional completion costs may become necessary or scheduled delivery dates could be extended, which could trigger termination provisions, the loss of satellite in-orbit incentive payments, or other financially significant exposure. These programs have risk for reach-forward losses if our estimated costs exceed our estimated contract revenues.

Global Services

Results of Operations

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$8,612	\$7,816	\$4,298	\$4,067
Earnings from operations	\$1,360	\$972	\$728	\$531
Operating margins	15.8 %	12.4 %	16.9 %	13.1 %

Revenues

BGS revenues for the six months ended June 30, 2022 increased by \$796 million compared with the same period in 2021 primarily due to higher commercial services volume, partially offset by lower government services volume. The decrease in government services volume is partly driven by the discontinuation of an engine distribution agreement in the second quarter of 2022. The net favorable impact of cumulative contract catch-up adjustments for the six months ended June 30, 2022 was \$97 million lower than the comparable period in the prior year.

BGS revenues for the three months ended June 30, 2022 increased by \$231 million compared with the same period in 2021 primarily due to higher commercial services volume, partially offset by lower government services volume. The decrease in government services volume is partly driven by the discontinuation of an engine distribution agreement. The net unfavorable impact of cumulative contract catch-up adjustments for the three months ended June 30, 2022 was \$48 million higher than the comparable period in the prior year.

Earnings From Operations

BGS earnings from operations for the six months ended June 30, 2022 increased by \$388 million compared with the same period in 2021, primarily due to higher commercial services volume and favorable mix. The net favorable impact of cumulative contract catch-up adjustments for the six months ended June 30, 2022 was \$89 million lower than the comparable period in the prior year.

BGS earnings from operations for the three months ended June 30, 2022 increased by \$197 million compared with the same period in 2021, primarily due to higher commercial services volume and favorable mix. The net favorable impact of cumulative contract catch-up adjustments for the three months ended June 30, 2022 was \$25 million lower than the comparable period in the prior year.

Backlog

BGS backlog decreased from \$20,496 million as of December 31, 2021 to \$18,960 million at June 30, 2022, primarily due to revenue recognized on contracts awarded in prior years.

Boeing Capital

Results of Operations

(Dollars in millions)

	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$98	\$138	\$52	\$78
(Loss)/earnings from operations	(\$9)	\$57	\$27	\$36
Operating margins	(9.2)%	41.3 %	51.9 %	46.2 %

Revenues

BCC segment revenues consist principally of lease income from equipment under operating lease, interest income from financing receivables and notes, and other income. BCC's revenues for the six and three months ended June 30, 2022 decreased by \$40 million and \$26 million compared with the same periods in 2021 primarily due to lower gains on re-lease of assets and lower commitment fee income.

Loss/Earnings From Operations

BCC's earnings from operations is presented net of interest expense, provision for (recovery of) losses, asset impairment expense, depreciation on leased equipment and other operating expenses. For the six months ended June 30, 2022, BCC had a loss from operations of \$9 million, compared with earnings from operations of \$57 million during the same period in 2021, primarily due to an increase in the allowance for losses on receivables as a result of the war in Ukraine and lower revenues. Earnings from operations during the three months ended June 30, 2022 and 2021 were \$27 million and \$36 million due to lower revenues.

Financial Position

The following table presents selected financial data for BCC:

<i>(Dollars in millions)</i>	June 30 2022	December 31 2021
Customer financing and investment portfolio, net	\$1,613	\$1,720
Other assets, primarily cash and short-term investments	418	462
Total assets	\$2,031	\$2,182
Other liabilities, primarily deferred income taxes	\$203	\$347
Debt, including intercompany loans	1,525	1,525
Equity	303	310
Total liabilities and equity	\$2,031	\$2,182
Debt-to-equity ratio	5-to-1	4.9-to-1

BCC's customer financing and investment portfolio at June 30, 2022 decreased \$107 million from December 31, 2021 primarily due to an increase in the allowance for losses and portfolio run-off, partially offset by new volume.

BCC enters into certain intercompany transactions with other Boeing segments, reflected in Unallocated items, eliminations and other, in the form of intercompany guarantees and other subsidies that mitigate the effects of certain credit quality or asset impairment issues on the BCC segment.

Liquidity and Capital Resources

Cash Flow Summary

(Dollars in millions)

	Six months ended June 30	
	2022	2021
Net (loss)/earnings	(\$1,082)	\$6
Non-cash items	2,320	2,130
Changes in assets and liabilities	(4,373)	(6,006)
Net cash used by operating activities	(3,135)	(3,870)
Net cash provided by investing activities	6,231	4,423
Net cash used by financing activities	(998)	(67)
Effect of exchange rate changes on cash and cash equivalents	(71)	(14)
Net increase in cash & cash equivalents, including restricted	2,027	472
Cash & cash equivalents, including restricted, at beginning of year	8,104	7,835
Cash & cash equivalents, including restricted, at end of period	\$10,131	\$8,307

Operating Activities Net cash used by operating activities was \$3.1 billion during the six months ended June 30, 2022, compared with \$3.9 billion during the same period in 2021. Net loss for the six months ended June 30, 2022 was \$1.1 billion compared with net earnings of \$6 million during the same period in 2021. Changes in assets and liabilities for the six months ended June 30, 2022 were \$4.4 billion compared with \$6.0 billion during the same period in 2021 driven by changes in Accounts payable and Accrued liabilities, partially offset by Inventories and Advances and progress billings. Compensation payments to 737 MAX customers totaled \$0.8 billion and \$1.5 billion during the six months ended June 30, 2022 and 2021. In the first quarter of 2021, we paid \$0.7 billion consistent with the terms of the Deferred Prosecution Agreement between Boeing and the U.S. Department of Justice. Cash used by Advances and progress billings was \$0.9 billion in 2022, as compared with \$0.3 billion of cash provided in 2021. Cash used by Inventories was \$1.3 billion in 2022, as compared with \$0.4 billion of cash provided in 2021 primarily reflecting the continued build-up of 787 aircraft, as well as growth in 777X inventory. The pause in 787 deliveries and the residual impacts of the 737 MAX grounding are expected to continue to have a significant negative impact on our operating cash flows until 787 deliveries resume and 737 MAX deliveries ramp up.

Payables to suppliers who elected to participate in supply chain financing programs increased by \$0.1 billion during the six months ended June 30, 2022 and decreased by \$0.4 billion during the six months ended June 30, 2021. Supply chain financing is not material to our overall liquidity.

Investing Activities Cash provided by investing activities was \$6.2 billion during the six months ended June 30, 2022, compared with \$4.4 billion during the same period in 2021, primarily due to net proceeds from investments of \$6.8 billion in 2022 compared to \$4.9 billion in 2021. In the six months ended June 30, 2022 and 2021, capital expenditures were \$0.6 billion and \$0.5 billion. We expect capital expenditures in 2022 to be higher than in 2021.

Financing Activities Cash used by financing activities was \$1.0 billion during the six months ended June 30, 2022 compared with \$67 million during the same period in 2021. During the six months ended June 30, 2022, net repayments were \$1.0 billion compared with \$56 million in the same period in 2021.

As of June 30, 2022 the total debt balance was \$57.2 billion, down from \$58.1 billion at December 31, 2021. At June 30, 2022, \$5.4 billion of debt was classified as short-term. Debt, including intercompany loans, attributable to BCC totaled \$1.5 billion, \$0.3 billion of which was classified as short-term.

Capital Resources The impacts of the COVID-19 pandemic, 787 production issues and associated rework, and residual impacts of the 737 MAX grounding are having a significant negative impact on our liquidity and ongoing operations and creating significant uncertainty. We have and are continuing to take

significant actions to manage and preserve our liquidity. For further discussion see Liquidity Matters in Note 1 to our Condensed Consolidated Financial Statements.

At June 30, 2022, we had \$10.1 billion of cash and \$1.4 billion of short-term investments. At June 30, 2022, we had \$14.7 billion of unused borrowing capacity on revolving credit line agreements, of which \$6.3 billion expires in October 2022, \$5.3 billion expires in March 2023, and \$3.2 billion expires in October 2024. Of the \$6.3 billion scheduled to expire in October 2022, \$3.1 billion has a one-year term out option that allows us to extend the maturity of any borrowings one additional year. We anticipate that these credit lines will remain undrawn and primarily serve as back-up liquidity to support our general corporate borrowing needs.

Any future borrowings may affect our credit ratings and are subject to various debt covenants. At June 30, 2022, we were in compliance with the covenants for our debt and credit facilities. The most restrictive covenants include a limitation on mortgage debt and sale and leaseback transactions as a percentage of consolidated net tangible assets (as defined in the credit agreements), and a limitation on consolidated debt as a percentage of total capital (as defined). When considering debt covenants, we continue to have substantial borrowing capacity.

Customer Financing commitments totaled \$13.1 billion and \$12.9 billion at June 30, 2022 and December 31, 2021. The increase relates to the addition of new financing commitments in excess of expirations. We anticipate that we will not be required to fund a significant portion of our financing commitments as we continue to work with third party financiers to provide alternative financing to customers. Historically, we have not been required to fund significant amounts of outstanding commitments. However, there can be no assurances that we will not be required to fund greater amounts than historically required.

Off-Balance Sheet Arrangements

We are a party to certain off-balance sheet arrangements including certain guarantees. For discussion of these arrangements, see Note 10 to our Condensed Consolidated Financial Statements.

Contingent Obligations

We have significant contingent obligations that arise in the ordinary course of business, which include the following:

Legal Various legal proceedings, claims and investigations are pending against us. Legal contingencies are discussed in Note 16 to our Condensed Consolidated Financial Statements.

Environmental Remediation We are involved with various environmental remediation activities and have recorded a liability of \$725 million at June 30, 2022. For additional information, see Note 9 to our Condensed Consolidated Financial Statements.

Non-GAAP Measures

Core Operating Earnings, Core Operating Margin and Core Earnings Per Share

Our unaudited condensed consolidated interim financial statements are prepared in accordance with Generally Accepted Accounting Principles in the United States of America (GAAP) which we supplement with certain non-GAAP financial information. These non-GAAP measures should not be considered in isolation or as a substitute for the related GAAP measures, and other companies may define such measures differently. We encourage investors to review our financial statements and publicly-filed reports in their entirety and not to rely on any single financial measure. Core operating earnings, core operating margin and core earnings per share exclude the FAS/CAS service cost adjustment. The FAS/CAS service cost adjustment represents the difference between the Financial Accounting Standards (FAS) pension and postretirement service costs calculated under GAAP and costs allocated to the business segments. Core earnings per share excludes both the FAS/CAS service cost adjustment and non-

operating pension and postretirement expenses. Non-operating pension and postretirement expenses represent the components of net periodic benefit costs other than service cost. Pension costs, comprising service and prior service costs computed in accordance with GAAP are allocated to BCA and certain BGS businesses supporting commercial customers. Pension costs allocated to BDS and BGS businesses supporting government customers are computed in accordance with U.S. Government Cost Accounting Standards (CAS), which employ different actuarial assumptions and accounting conventions than GAAP. CAS costs are allocable to government contracts. Other postretirement benefit costs are allocated to all business segments based on CAS, which is generally based on benefits paid.

The Pension FAS/CAS service cost adjustments recognized in (Loss)/earnings from operations were benefits of \$413 million and \$205 million for the six and three months ended June 30, 2022, compared with benefits of \$384 million and \$191 million for the same periods in 2021. The higher benefits in 2022 were primarily due to increases in allocated pension cost year over year. The non-operating pension expenses included in Other income, net were benefits of \$441 million and \$221 million for the six and three months ended June 30, 2022, compared with benefits of \$352 million and \$175 million for the same periods in 2021. The higher benefits in 2022 were primarily due to lower amortization of actuarial losses, partially offset by higher interest cost and lower expected return on plan assets.

For further discussion of pension and other postretirement costs see the Management's Discussion and Analysis on page 39 of this Form 10-Q and on page 29 of our 2021 Annual Report on Form 10-K. Management uses core operating earnings, core operating margin and core earnings per share for purposes of evaluating and forecasting underlying business performance. Management believes these core earnings measures provide investors additional insights into operational performance as unallocated pension and other postretirement benefit costs primarily represent costs driven by market factors and costs not allocable to U.S. government contracts.

Reconciliation of GAAP Measures to Non-GAAP Measures

The table below reconciles the non-GAAP financial measures of core operating earnings/(loss), core operating margin and core earnings/(loss) per share with the most directly comparable GAAP financial measures of earnings/(loss) from operations, operating margins and diluted earnings/(loss) per share.

<i>(Dollars in millions, except per share data)</i>	Six months ended June 30		Three months ended June 30	
	2022	2021	2022	2021
Revenues	\$30,672	\$32,215	\$16,681	\$16,998
(Loss)/earnings from operations, as reported	(\$395)	\$940	\$774	\$1,023
Operating margins	(1.3)%	2.9 %	4.6 %	6.0 %
Pension FAS/CAS service cost adjustment ⁽¹⁾	(\$413)	(\$384)	(\$205)	(\$191)
Postretirement FAS/CAS service cost adjustment ⁽¹⁾	(154)	(154)	(79)	(77)
FAS/CAS service cost adjustment ⁽¹⁾	(\$567)	(\$538)	(\$284)	(\$268)
Core operating (loss)/earnings (non-GAAP)	(\$962)	\$402	\$490	\$755
Core operating margins (non-GAAP)	(3.1)%	1.2 %	2.9 %	4.4 %
Diluted (loss)/earnings per share, as reported	(\$1.73)	\$0.09	\$0.32	\$1.00
Pension FAS/CAS service cost adjustment ⁽¹⁾	(0.70)	(0.65)	(0.35)	(0.32)
Postretirement FAS/CAS service cost adjustment ⁽¹⁾	(0.26)	(0.26)	(0.13)	(0.13)
Non-operating pension expense ⁽²⁾	(0.74)	(0.60)	(0.37)	(0.30)
Non-operating postretirement expense ⁽²⁾	(0.05)	(0.02)	(0.02)	(0.01)
Provision for deferred income taxes on adjustments ⁽³⁾	0.37	0.32	0.18	0.16
Core (loss)/earnings per share (non-GAAP)	(\$3.11)	(\$1.12)	(\$0.37)	\$0.40
Weighted average diluted shares (in millions)	592.8	588.6	596.4	590.2

⁽¹⁾ FAS/CAS service cost adjustment represents the difference between the FAS pension and postretirement service costs calculated under GAAP and costs allocated to the business segments. This adjustment is excluded from Core operating earnings/(loss) (non-GAAP).

⁽²⁾ Non-operating pension and postretirement expenses represent the components of net periodic benefit costs other than service cost. These expenses are included in Other income, net and are excluded from Core earnings/(loss) per share (non-GAAP).

⁽³⁾ The income tax impact is calculated using the U.S. corporate statutory tax rate.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We have financial instruments that are subject to interest rate risk, principally fixed- and floating-rate debt obligations, and customer financing assets and liabilities. The investors in our fixed-rate debt obligations do not generally have the right to demand we pay off these obligations prior to maturity. Therefore, exposure to interest rate risk is not believed to be material for our fixed-rate debt. As of June 30, 2022, we do not have any significant floating-rate debt obligations. Historically, we have not experienced material gains or losses on our customer financing assets and liabilities due to interest rate changes.

There have been no significant changes to our foreign currency exchange rate or commodity price risk since December 31, 2021.

Item 4. Controls and Procedures

(a) Evaluation of Disclosure Controls and Procedures.

Our Chief Executive Officer and Chief Financial Officer have evaluated our disclosure controls and procedures as of June 30, 2022 and have concluded that these disclosure controls and procedures are effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and is accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

(b) Changes in Internal Control Over Financial Reporting.

There were no changes in our internal control over financial reporting that occurred during the second quarter of 2022 that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

Part II. Other Information**Item 1. Legal Proceedings**

Currently, we are involved in a number of legal proceedings. For a discussion of contingencies related to legal proceedings, see Note 16 to our Condensed Consolidated Financial Statements, which is hereby incorporated by reference.

Item 1A. Risk Factors

There have been no material changes in our risk factors from those disclosed in Part I, Item 1A. Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2021.

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

The following table provides information about purchases we made during the quarter ended June 30, 2022 of equity securities that are registered by us pursuant to Section 12 of the Exchange Act:

(Dollars in millions, except per share data)

	(a)	(b)	(c)	(d)
	Total Number of Shares Purchased ⁽¹⁾	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet be Purchased Under the Plans or Programs
4/1/2022 thru 4/30/2022	7,197	\$197.00		
5/1/2022 thru 5/31/2022	2,068	146.60		
6/1/2022 thru 6/30/2022	1,285	136.28		
Total	10,550	\$179.72		

⁽¹⁾ A total of 10,550 shares were transferred to us from employees in satisfaction of minimum tax withholding obligations associated with the vesting of restricted stock units during the period. We did not purchase any shares of our common stock in the open market pursuant to a repurchase program.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

Not applicable.

Item 6. Exhibits

3.2	By-Laws of The Boeing Company, as amended and restated, effective June 28, 2022
15	Letter from Independent Registered Public Accounting Firm regarding unaudited interim financial information
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	The cover page for the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, has been formatted in Inline XBRL.

Signature

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

THE BOEING COMPANY

(Registrant)

July 27, 2022

(Date)

/s/ Carol J. Hibbard

Carol J. Hibbard

Senior Vice President and Controller

**BY-LAWS
OF
THE BOEING COMPANY**

(as amended and restated effective June 28, 2022)

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ARTICLE I

Stockholders' Meetings

SECTION 1. Annual Meetings.

Each annual meeting of stockholders shall be held on such date and at such time as the Board of Directors shall determine for the election of directors and the transaction of such other business as may properly be brought before the meeting.

SECTION 2. Special Meetings.

A special meeting of stockholders may be called at any time by the Board of Directors, and the Board of Directors shall call a special meeting upon written request to the Secretary by stockholders entitled to vote and dispose of at least twenty-five percent (25%) of the outstanding shares of the Corporation. Any such written request must be signed by each requesting holder, stating the number of shares owned by each such holder, and shall specify the purpose of the proposed meeting (including the text of any resolutions proposed for consideration and, in the event that such business includes a proposal to amend these By-Laws or the Certificate of Incorporation, the language of the proposed amendment). Business transacted at any special meeting of stockholders shall be limited to the purposes stated in the notice provided pursuant to Article I, Section 4 of these By-Laws; provided, however, that nothing in these By-Laws shall prohibit the Board of Directors from submitting matters to the stockholders at any special meeting requested by stockholders.

SECTION 3. Place of Meetings.

All meetings of stockholders shall be held at such place or places, if any, within or without the State of Delaware as may from time to time be fixed by the Board of Directors or as shall be specified or fixed in the respective notices or waivers of notice thereof.

SECTION 4. Notice of Meetings.

Except as otherwise required by statute and as set forth below, notice of each annual or special meeting of stockholders shall be given by the Corporation personally, by mail or by electronic transmission to each stockholder of record entitled to vote at such meeting not less than thirty (30) nor more than sixty (60) (or the maximum number permitted by applicable law) days before the meeting date. Except as otherwise required by statute, no publication of any notice of a meeting of stockholders shall be required. Every notice of a meeting of stockholders shall state the place, if any (or the means of remote communication, if any, by which stockholders and proxy holders may be deemed to be present in person), date, and hour of the meeting and, in the case of a special meeting, the purpose or purposes for which the meeting is called (including any purpose set forth in a request by stockholders properly made pursuant to Article I, Section 2 of these By-Laws). Notices are deemed given by the Corporation (i) if by mail, when deposited in the United States mail, postage prepaid, directed to the stockholder at such stockholder's address as it appears on the records of the Corporation, or, if a stockholder shall have filed with the Secretary a written request that notices to such stockholder be mailed to some other address, then directed to such stockholder at such other address; (ii) if by facsimile, when directed to a number at which the stockholder has consented to receive notice; (iii) if by electronic mail, when directed to an electronic mail address at which the stockholder has consented to receive such notice; (iv) if by posting on an electronic network together with a separate notice to the stockholder of such specific posting, upon the later to occur of (A) such posting and (B) the giving of such separate notice of such posting; and (v) if by any other form of electronic transmission, when directed to the stockholder as required by law and, to the extent required by applicable law, in the manner consented to by the stockholder. An affidavit of the mailing or other means of giving any notice of any stockholders' meeting, executed by the Secretary, Assistant Secretary or any transfer agent of the Corporation giving the notice, shall be prima facie evidence of the giving of such notice. Notice shall be deemed to have been given to all stockholders of record who share an address if notice is given in accordance with the "householding" rules set forth in Rule 14a-3(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and Section 233 of the Delaware General Corporation Law. Any previously scheduled meeting of stockholders may be postponed by resolution of the Board of Directors upon public notice given prior to the time previously scheduled for such meeting of stockholders.

SECTION 5. Waivers of Notice.

Whenever any notice is required to be given to any stockholder under the provisions of these By-Laws, the Certificate of Incorporation, or the Delaware General Corporation Law, a waiver thereof in writing signed by the person or persons entitled to such notice or a waiver by electronic transmission, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. The attendance of a stockholder at a meeting, in person or by proxy shall constitute a waiver of notice of such meeting, except when a stockholder attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

SECTION 6. Quorum; Required Vote.

At all meetings of stockholders, except when otherwise provided by applicable law, the Certificate of Incorporation or these By-Laws, the presence, in person or by proxy, of the holders of one-third of the outstanding shares of stock entitled to vote shall constitute a quorum for the transaction of business; and except as otherwise provided by the Certificate of Incorporation, these By-Laws, the rules and regulations of any stock exchange applicable to the Corporation, or applicable law or pursuant to any regulation applicable to the Corporation or its securities, the affirmative vote of the holders of a majority of the shares present in person or by proxy at the meeting and entitled to vote on the subject matter shall be the act of and binding upon all stockholders. Whether a quorum exists or not, the chair of the meeting or a majority of the shares present in person or by proxy and entitled to vote may adjourn any meeting to another place and time. At any such adjourned meeting at which a quorum shall be present, any business may be transacted which might have been transacted at the meeting as originally called. Unless otherwise provided by statute, no notice of an adjourned meeting need be given.

SECTION 7. Proxies.

7.1 Appointment.

Each stockholder entitled to vote at a meeting of stockholders or to express consent or dissent to corporate action in writing without a meeting may authorize another person or persons to act for such stockholder by proxy. Such authorization may be accomplished by the stockholder or such stockholder's authorized officer, director, employee, or agent executing a writing or causing his or her signature to be affixed to such writing by any reasonable means, including facsimile signature or by electronic transmission to the intended holder of the proxy or to a proxy solicitation firm, proxy support service, or similar agent duly authorized by the intended proxy holder to receive such transmission.

7.2 Delivery to Corporation; Duration.

A proxy shall be filed with the Secretary before or at the time of the meeting or the delivery to the Corporation of the consent to corporate action in writing. A proxy shall become invalid three (3) years after the date of its execution, unless otherwise provided in the proxy. A proxy with respect to a specified meeting shall entitle the holder thereof to vote at any reconvened meeting following adjournment of such meeting but shall not be valid after the final adjournment thereof. A proxy shall be irrevocable if it states that it is irrevocable and if, and only as long as, it is coupled with an interest sufficient in law to support an irrevocable power. A stockholder may revoke any proxy which is not irrevocable by attending the meeting and voting in person or by delivering to the Secretary a revocation of the proxy or a new proxy bearing a later date.

SECTION 8. Inspectors of Election.

8.1 Appointment.

In advance of any meeting of stockholders, the Board of Directors shall appoint one or more persons to act as inspectors of election at such meeting and any adjournment thereof and to make a written report thereof. The Board of Directors may designate one or more persons to serve as alternate inspectors to serve in place of any inspector who is unable or fails to act. If no inspector or alternate is able to act at a meeting of stockholders, the chair of such meeting shall appoint one or more persons to act as inspector at such meeting. Inspectors may be employees of the Corporation, but no director or candidate for director may act as an inspector of an election of directors.

8.2 Duties.

The inspectors of election shall (a) ascertain the number of shares of the Corporation outstanding and the voting power of each such share; (b) determine the shares represented at the meeting and the validity of proxies and ballots; (c) count all votes and ballots; (d) determine and retain for a reasonable period of time a record of the disposition of any challenges made to any determination by them; and (e) certify their determination of the number of shares represented at the meeting and their count of the votes and ballots. Each inspector shall, before entering upon the discharge of his or her duties, take and sign an oath to faithfully execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors may appoint or retain other persons or entities to assist them in the performance of their duties.

8.3 Determination of Proxy Validity.

The validity of any proxy or ballot executed for a meeting of stockholders shall be determined by the inspectors of election in accordance with the Delaware General Corporation Law.

SECTION 9. Fixing the Record Date.

9.1 Meetings.

For the purpose of determining stockholders entitled to notice of and to vote at any meeting of stockholders or any adjournment thereof, the Board of Directors may fix a record date, which record date shall not precede the date on which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall be not fewer than thirty (30) nor more than sixty (60) (or the maximum number permitted by applicable law) days before the date of such meeting. If no record date is fixed by the Board of Directors, the record date for determining stockholders entitled to notice of and to vote at a meeting of stockholders shall be at the close of business on the day next preceding the day on which notice is given, or, if notice is waived, at the close of business on the day next preceding the day on which the meeting is held. A determination of stockholders of record entitled to notice of and to vote at a meeting of stockholders shall apply to any adjournment of the meeting; provided, however, that the Board of Directors may fix a new record date for the adjourned meeting.

9.2 Consent to Corporate Action Without a Meeting.

For the purpose of determining the stockholders entitled to consent to corporate action in writing without a meeting, the Board of Directors may fix a record date, which record date shall not precede the date on which the resolution fixing the record date is adopted by the Board of Directors, and which record date shall not be more than ten (10) (or the maximum number permitted by applicable law) days after the date on which the resolution fixing the record date is adopted by the Board of Directors. Any stockholder of record seeking to have the stockholders authorize or take corporate action by written consent pursuant to Article I, Section 10 of these By-Laws shall, by written notice to the Secretary, request that the Board of Directors fix a record date, which notice shall include the text of any proposed resolutions. If no record date has been fixed by the Board of Directors pursuant to this Section 9.2 or otherwise within ten (10) days of receipt of a valid request by a stockholder, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting, when no prior action by the Board of Directors is required pursuant to applicable law, shall be the first date on which a signed written consent setting forth the action taken or proposed to be taken is delivered to the Corporation pursuant to Article I, Section 10 of these By-Laws; provided, however, that if prior action by the Board of Directors is required by applicable law, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting shall in such an event be at the close of business on the day on which the Board of Directors adopts the resolution taking such prior action.

9.3 Dividends, Distributions, and Other Rights.

For the purpose of determining the stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights or the stockholders entitled to exercise any rights in respect of any change, conversion, or exchange of stock, or for the purpose of any other lawful action, the Board of Directors may fix a record date, which record date shall not precede the date on which the resolution fixing the record date is adopted, and which record date shall be not more than sixty (60) (or the maximum number permitted by applicable law) days prior to such action. If no record date is fixed, the record date for determining stockholders for any such purpose shall be at the close of business on the day on which the Board of Directors adopts the resolution relating thereto.

9.4 Voting List.

The officer who has charge of the stock ledger shall prepare and make, at least ten (10) days before each meeting of stockholders, a complete list of the stockholders entitled to vote at such meeting, arranged in alphabetical order, and showing the address of each stockholder and the number of shares registered in the name of each stockholder. This list shall be open to examination by any stockholder, for any purpose germane to the meeting, for a period of ten (10) days prior to the meeting, either (i) on a reasonably accessible electronic network, provided that the information required to gain access to such list is provided with the notice of meeting, or (ii) during ordinary business hours at the principal place of business of the Corporation.

SECTION 10. Action by Stockholders Without a Meeting.

Subject to the provisions of Article EIGHTH of the Certificate of Incorporation and Article I, Section 9.2 of these By-Laws, any action which could be taken at any annual or special meeting of stockholders may be taken without a meeting, without prior notice, and without a vote, if a consent or consents in writing, setting forth the action so taken, are (a) signed by the holders of outstanding stock having not fewer than the minimum number of votes that would be necessary to authorize or take such action at a meeting at which all shares entitled to vote thereon were present and voted and (b) delivered to the Corporation by delivery to its registered office in the State of Delaware, its principal place of business, or an officer or agent of the Corporation having custody of the records of proceedings of meetings of stockholders. Delivery made to the Corporation's registered office shall be by hand or by certified mail or registered mail, return receipt requested. Every written consent shall bear the date of signature of each stockholder who signs the consent, and no written consent shall be effective to take the corporate action referred to therein unless written consents signed by a sufficient number of stockholders to take such action are delivered to the Corporation, in the manner required by this Section 10, within sixty (60) (or the maximum number permitted by applicable law) days of the date of the earliest dated consent delivered to the Corporation in the manner required by this Section 10. The validity of any consent executed by a proxy for a stockholder pursuant to an electronic transmission transmitted to such proxy holder by or upon the authorization of the stockholder shall be determined by or at the direction of the Secretary. A written record of the information upon which the person making such determination relied shall be made and kept in the records of the proceedings of the stockholders. Any such consent shall be inserted in the minute book as if it were the minutes of a meeting of stockholders. Prompt notice of the taking of the corporate action without a meeting by less than unanimous written consent shall be given to those stockholders who have not consented in writing.

In the event of the delivery, in the manner provided by this Section 10 and applicable law, to the Corporation of written consent or consents to take corporate action and/or any related revocation or revocations, the Corporation shall engage independent inspectors of election for the purpose of performing promptly a ministerial review of the validity of the consents and revocations. For the purpose of permitting the inspectors to perform such review, no action by written consent and without a meeting shall be effective until such inspectors have completed their review, determined that the requisite number of valid and unrevoked consents delivered to the Corporation in accordance with this Section 10 and applicable law have been obtained to authorize or take the action specified in the consents, and certified such determination for entry in the records of the Corporation kept for the purpose of recording the proceedings of meetings of stockholders. Nothing contained in this Section 10 shall in any way be construed to suggest or imply that the Board of Directors or any stockholder shall not be entitled to contest the validity of any consent or revocation thereof, whether before or after such certification by the independent inspectors, or to take any other action (including, without limitation, the commencement, prosecution or defense of any litigation with respect thereto, and the seeking of injunctive relief in such litigation).

SECTION 11. Notice of Nominations and Other Stockholder Business; Required Vote for Directors; Director Qualification; Inclusion of Stockholder Director Nominations in the Corporation's Proxy Materials.

11.1 Notice of Nominations and Other Stockholder Business.

A. Annual Meetings of Stockholders.

(1) Nominations of persons for election to the Board of Directors and the proposal of other business to be considered by the stockholders may be made at an annual meeting of stockholders (a) as specified in the Corporation's notice of meeting (or any supplement thereto); (b) by or at the direction of the Board of Directors or any committee thereof; (c) by any stockholder of the Corporation who (i) was a stockholder of record at the time the notice provided for in this By-Law is delivered to the Secretary, (ii) is entitled to vote at the meeting, and (iii) complies with the notice procedures and conditions set forth in this By-Law as to such nomination or other business; or (d) by any Eligible Stockholder (as defined in Section 11.4 below) whose Stockholder Nominee (as defined in Section 11.4 below) is included in the Company's proxy materials for the relevant annual meeting; clauses (c) and (d) shall be the exclusive means for a stockholder to make director nominations, and clause (c) shall be the exclusive means for a stockholder to submit proposals for other business (other than matters properly brought under Rule 14a-8 under the Exchange Act and included in the Corporation's proxy statement that has been prepared to solicit proxies for such annual meeting) before an annual meeting of stockholders.

(2) Without qualification, for any nominations or any other business to be properly brought before an annual meeting by a stockholder pursuant to Section 11.1.A(1)(c), the stockholder must have given timely notice thereof in writing to the Secretary and any such proposed business (other than the nominations of persons for election to the Board of Directors) must constitute a proper matter for stockholder action. To be timely for nominations pursuant to Section 11.1.A(1)(c), a stockholder's notice shall be delivered to the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the one hundred and twentieth (120th) day and not later than the close of business on the ninetieth (90th) day prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event that the date of the annual meeting is more than thirty (30) days before or more than seventy (70) days after such anniversary date, notice by the stockholder to be timely must be so delivered not earlier than the close of business on the one hundred and twentieth (120th) day prior to such annual meeting and not later than the close of business on the later of the ninetieth (90th) day prior to such annual meeting and the tenth (10th) day following the day on which public announcement of the date of such annual meeting is first made by the Corporation. To be timely for nominations pursuant to Section 11.1.A(1)(d), such notice must be delivered in accordance with the requirements of Section 11.4. In no event shall the adjournment or postponement of an annual meeting (or any public announcement thereof) commence a new time period (or extend any time period) for the giving of a stockholder's notice as described above. To be in proper form, such stockholder's notice (whether given pursuant to this Section 11.1.A(2) or Section 11.1.B) to the Secretary must: (a) set forth, as to the stockholder giving the notice and the beneficial owner, if any, on whose behalf the nomination or proposal for other business is made (i) the name and address of such stockholder, as they appear on the Corporation's books, and of such beneficial owner, if any, (ii) (A) the class or series and number of shares of the Corporation which are, directly or indirectly, owned beneficially and of record by such stockholder and such beneficial owner, if any, (B) a description of any option, warrant, convertible security, stock appreciation right, or similar right with an exercise or conversion privilege or a settlement payment or mechanism at a price related to any class or series of shares of the Corporation or with a value derived in whole or in part from the value of any class or series of shares of the Corporation, whether or not such instrument or right shall be subject to settlement in the underlying class or series of shares of the Corporation or otherwise (a "Derivative Instrument") directly or indirectly owned beneficially by such stockholder and such beneficial owner, if any, and any other direct or indirect opportunity to profit or share in any profit derived from any increase or decrease in the value of shares of the Corporation, (C) a description of any proxy, contract, arrangement, understanding, or relationship pursuant to which such stockholder and such beneficial owner, if any, has a right to vote any shares of any security of the Corporation, (D) any short interest in any security of the Corporation (for purposes of this By-Law a person shall be deemed to have a short interest in a security if such person directly or indirectly, through any contract, arrangement, understanding, relationship or otherwise, has the opportunity to profit or share in any profit derived from any decrease in the value of the subject security), (E) any rights to dividends on the shares of the Corporation owned beneficially by such stockholder and such beneficial owner, if any, that are separated or separable from the underlying shares of the Corporation, (F) any proportionate interest in shares of the Corporation or Derivative Instruments held, directly or indirectly, by a general or limited partnership in which such

stockholder and such beneficial owner, if any, is a general partner or, directly or indirectly, beneficially owns an interest in a general partner, and (G) any performance-related fees (other than an asset-based fee) that such stockholder and such beneficial owner, if any, is entitled to based on any increase or decrease in the value of shares of the Corporation or Derivative Instruments, if any, all such information to be provided as of the date of such notice, including, without limitation, any such interests held by members of such stockholder's and such beneficial owner's, if any, immediate family sharing the same household (which information shall be supplemented by such stockholder and such beneficial owner, if any, not later than ten (10) days after the record date for the annual meeting to disclose such ownership as of the record date), (iii) any other information relating to such stockholder and beneficial owner, if any, that would be required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for, as applicable, the proposal of other business and/or for the election of directors in a contested election pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder, (iv) a representation (A) that the stockholder is a holder of record of stock of the Corporation entitled to vote at such annual meeting and intends to appear in person or by proxy at the annual meeting to propose such business or nomination and (B) whether the stockholder or the beneficial owner, if any, intends or is part of a group which intends (x) to deliver a proxy statement and/or form of proxy to holders of at least the percentage of the Corporation's outstanding capital stock required to approve or adopt the proposal or elect the nominee and/or (y) otherwise to solicit proxies or votes from stockholders in support of such proposal or nomination, and if so, the name of each participant (as defined in Item 4 of Schedule 14A of the Exchange Act), and (v) an undertaking by the stockholder and beneficial owner, if any, to notify the Corporation in writing of any change in the information called for by clauses (i), (ii), (iii) and (iv) as of the record date for such meeting, by notice received by the Secretary at the principal executive offices of the Corporation not later than the tenth (10th) day following such record date; (b) if the notice relates to any business other than the nomination of a director or directors that the stockholder proposes to bring before the annual meeting, set forth (i) a brief description of the business desired to be brought before the annual meeting, the text of the proposal or business (including the text of any resolutions proposed for consideration and in the event that such business includes a proposal to amend these By-Laws, the language of the proposed amendment), the reasons for conducting such business at the annual meeting and any substantial interest of such stockholder and beneficial owner, if any, in such business and (ii) a description of all agreements, arrangements, and understandings between such stockholder and beneficial owner, if any, and their respective affiliates and associates, and any other person or persons (including their names) acting in concert therewith in connection with the proposal of such business by such stockholder; (c) set forth, as to each person, if any, whom the stockholder proposes to nominate for election or reelection to the Board of Directors (i) all information relating to such person that would be required to be disclosed, whether in a proxy statement, other filings required to be made in connection with solicitations of proxies for election of directors in a contested election, or otherwise, in each case pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder, (ii) such person's written consent to being named in the proxy statement as a nominee and to serving as a director if elected and a statement whether such person, if elected, intends to tender, promptly following such person's election or reelection, an irrevocable resignation effective upon such person's failure to receive the required vote for reelection at the next meeting at which such person would face reelection and upon acceptance of such resignation by the Board of Directors, (iii) a description of all direct and indirect compensation and other material monetary agreements, arrangements and understandings during the past three (3) years, and any other material relationships, between or among such stockholder and beneficial owner, if any, and their respective affiliates and associates, or any other person or persons (including their names) acting in concert therewith, on the one hand, and each proposed nominee, and his or her respective affiliates and associates, or any other person or persons (including their names) acting in concert therewith, on the other hand, including, without limitation, all information that would be required to be disclosed pursuant to Item 404 promulgated under Regulation S-K if the stockholder making the nomination and any beneficial owner on whose behalf the nomination is made, if any, or any affiliate or associate thereof or person acting in concert therewith, were the "registrant" for purposes of such rule and the nominee were a director or executive officer of such registrant, (iv) any information that such person would be required to disclose pursuant to Section 11.1.A(2)(a)(ii) if such person were a stockholder purporting to make a nomination or propose business pursuant to Section 11.1.A(1)(c), and (v) an undertaking to notify the Corporation in writing of any change in the information called for by clauses (i), (ii), (iii) and (iv) as of the record date for such meeting, by notice received by the Secretary at the principal executive offices of the Corporation not later than the tenth (10th) day following such record date; and (d) with respect to each nominee for election or reelection to the Board of Directors, include the completed and signed questionnaire, representation and agreement required by Section 11.3, together with a description of any prior instance in which such nominee was denied (and not subsequently granted) a security clearance by the U.S. Federal government. The Corporation may also, as a

condition of any such nomination being deemed properly brought before an annual meeting, require any proposed nominee to furnish (i) any information required pursuant to any undertaking delivered pursuant to this Section 11.1.A(2) and (ii) such other information as may reasonably be required by the Corporation to determine the eligibility of such proposed nominee to serve as an independent director of the Corporation (consistent with the rules of the Securities and Exchange Commission and with any director independence standards set forth in the Corporation's Corporate Governance Principles) or that could be material to a reasonable stockholder's understanding of the independence, or lack thereof, of such nominee.

(3) Notwithstanding anything in the second sentence of Section 11.1.A(2) to the contrary, in the event that the number of directors to be elected to the Board of Directors at the annual meeting of stockholders is increased effective after the time period for which nominations would otherwise be due under Section 11.1.A(2) and there is no public announcement by the Corporation naming all of the nominees for the additional directorships at least one hundred (100) days prior to the first anniversary of the preceding year's annual meeting, a stockholder's notice required by this By-Law shall also be considered timely, but only with respect to nominees for any new positions created by such increase, if it shall be delivered to the Secretary at the principal executive offices of the Corporation not later than the close of business on the tenth (10th) day following the day on which such public announcement is first made by the Corporation.

B. Special Meetings of Stockholders.

Only such business shall be conducted at a special meeting of stockholders as shall have been brought before the special meeting pursuant to the Corporation's notice of meeting. Nominations of persons for election to the Board of Directors may be made at a special meeting at which directors are to be elected pursuant to the Corporation's notice of special meeting (a) by or at the direction of the Board of Directors or any committee thereof or stockholders pursuant to Article 1, Section 2 hereof, or (b) provided that the Board of Directors or stockholders pursuant to Article 1, Section 2 hereof has determined that directors shall be elected at such special meeting, by any stockholder of the Corporation who (i) is a stockholder of record at the time the notice provided for in this By-Law is delivered to the Secretary and at the time of the special meeting, (ii) is entitled to vote at the special meeting, and (iii) complies with the notice procedures and conditions set forth in this By-Law (including the information and eligibility requirements in Section 11.1.A(2)) as to such nomination. For the avoidance of doubt, the foregoing clause (b) of this Section 11.1.B shall be the exclusive means for a stockholder to propose nominations of persons for election to the Board of Directors at a special meeting of stockholders at which directors are to be elected. In the event the Corporation calls a special meeting for the purpose of electing one or more directors to the Board of Directors, any such stockholder may nominate a person or persons (as the case may be) for election to such position(s) as specified in the Corporation's notice of meeting, if the stockholder's notice required by Section 11.1.A(2) (including the completed and signed questionnaire, representation and agreement required by Section 11.3) shall be delivered to the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the one hundred and twentieth (120th) day prior to such special meeting and not later than the close of business on the later of the ninetieth (90th) day prior to such special meeting and the tenth (10th) day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by the Board of Directors to be elected at such special meeting. In no event shall the adjournment or postponement of a special meeting as to which notice has been sent to stockholders, or any public announcement with respect thereto, commence a new time period (or extend any time period) for the giving of a stockholder's notice as described above.

C. General.

(1) Only such persons who (a) are nominated in accordance with the procedures and have satisfied the conditions set forth in Section 11.1 or Section 11.4 and (b) have delivered and are in compliance with the applicable requirements of these By-Laws shall be eligible to be elected as directors at an annual or special meeting of stockholders and, if properly elected, to serve as directors and only such business shall be conducted at a meeting of stockholders as shall have been brought before the meeting in accordance with the procedures set forth in this By-Law. Except as otherwise provided by law, the Certificate of Incorporation or these By-Laws, the chair of the meeting shall have the power and duty (a) to determine whether a nomination or any other business proposed to be brought before the meeting was made or proposed, as the case may be, in accordance with the procedures set forth in this By-Law (including whether the stockholder or beneficial owner, if any, on whose behalf the nomination or proposal is made solicited (or is part of a group which solicited) or did not so solicit, as the case may be, proxies in support of such stockholder's nominee or proposal in compliance with such stockholder's representation as required

by Section 11.1.A(2)(a)(iv)) and (b) if any proposed nomination or business was not made or proposed in compliance with this By-Law, to declare that such nomination shall be disregarded or that such proposed business shall not be transacted. Notwithstanding the foregoing provisions of this By-Law, unless otherwise required by law, if the stockholder (or a qualified representative of the stockholder) does not appear at the annual or special meeting of stockholders of the Corporation to present a nomination or proposed business, such nomination shall be disregarded and such proposed business shall not be transacted, notwithstanding that proxies in respect of such vote may have been received by the Corporation. For purposes of this By-Law, to be considered a qualified representative of the stockholder, a person must be (i) a duly authorized officer, manager, or partner of such stockholder or (ii) authorized, by a writing executed by such stockholder or an electronic transmission delivered by such stockholder, to act for such stockholder as proxy at the annual or special meeting and such person attending the meeting must produce such writing or electronic transmission, or a reliable reproduction of the writing or electronic transmission, at the annual or special meeting.

(2) For purposes of this Section 11, “public announcement” shall mean disclosure in a press release reported by the Dow Jones News Service, Associated Press, or comparable national news service or in a document publicly filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Exchange Act and the rules and regulations promulgated thereunder.

(3) Notwithstanding the foregoing provisions of this By-Law, a stockholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations promulgated thereunder with respect to the matters set forth in this By-Law; provided, however, that any references in these By-Laws to the Exchange Act or to the rules or regulations promulgated thereunder are not intended to and shall not limit the requirements applicable to any nominations or proposals as to any other business to be considered pursuant to this By-Law (including Section 11.1.A(1)(c) or Section 11.1.B). Nothing in this By-Law shall be deemed to affect any rights (a) of stockholders to request inclusion of proposals in the Corporation’s proxy statement pursuant to Rule 14a-8 under the Exchange Act or (b) of the holders of any series of Preferred Stock if and to the extent provided for under law, the Certificate of Incorporation, or these By-Laws.

11.2 Required Vote for Directors.

A nominee for director shall be elected to the Board of Directors if the votes cast for such nominee’s election exceed the votes cast against such nominee’s election; provided, however, that the directors shall be elected by a plurality of the votes cast at any meeting of stockholders for which (i) the Secretary receives a notice that a stockholder has nominated a person for election to the Board of Directors in compliance with the advance notice requirements for stockholder nominees for director set forth in Section 11.1 and (ii) such nomination has not been withdrawn by such stockholder on or prior to the tenth day preceding the date the Corporation first mails its notice of meeting for such meeting to stockholders. If directors are to be elected by a plurality of the votes cast, stockholders shall not be permitted to vote against a nominee. Votes cast shall exclude abstentions with respect to that director’s election.

11.3 Director Qualification: Submission of Questionnaire, Representation, and Agreement.

To be eligible to be a nominee for election or reelection as a director of the Corporation, a person must deliver (in accordance with the time periods prescribed for delivery of notice under Section 11.1 or Section 11.4, as applicable) to the Secretary at the principal executive offices of the Corporation a written questionnaire with respect to the background and qualification of such person and the background of any other person or entity on whose behalf the nomination is being made (which questionnaire shall be provided by the Secretary upon written request) and a written representation and agreement (in the form provided by the Secretary upon written request), that such person (a) is not and will not become a party to (i) any agreement, arrangement, or understanding, whether written or oral, with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a director of the Corporation, will act or vote on any issue or question or issues or questions generally (a “Voting Commitment”) that has not been disclosed in writing to the Corporation or (ii) any Voting Commitment that could limit or interfere with such person’s ability to comply, if elected as a director of the Corporation, with such person’s fiduciary duties under applicable law; (b) is not and will not become a party to any agreement, arrangement, or understanding, whether written or oral, with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement, or indemnification in connection with service or action as a director that has not been disclosed in writing to the Corporation; (c) agrees to, promptly following election as a director, submit to and reasonably cooperate with all processes required in order to obtain (and, once obtained, to maintain) all U.S. Federal government security clearances deemed by the Corporation as necessary or appropriate for a

director of the Corporation; and (d) in such person's individual capacity and on behalf of any person or entity on whose behalf the nomination is being made, would be in compliance, if elected as a director of the Corporation, and will comply with all applicable law and with the Corporation's Corporate Governance Principles and Code of Ethical Business Conduct for Members of the Board of Directors, as well as all other applicable publicly disclosed corporate governance, ethics, conflict of interest, confidentiality and stock ownership and trading policies and guidelines of the Corporation. In addition, to be eligible to be a nominee for election or reelection as a director of the Corporation, a person must not be a named subject of a criminal proceeding (excluding traffic violations and other minor offenses) pending as of the date the Corporation first mails to the stockholders its notice of meeting that includes the name of the nominee and, within ten years preceding such date, must not have been convicted in such a criminal proceeding.

11.4 Inclusion of Stockholder Director Nominations in the Corporation's Proxy Materials.

A. Subject to the provisions of these By-Laws, the Corporation shall include in its proxy statement and on its form of proxy for an annual meeting of stockholders, the name of, and shall include in any such proxy statement the Additional Information (as defined below) relating to, any eligible person nominated for election as a director of the Corporation (a "Stockholder Nominee") by any stockholder or group of no more than 20 stockholders that satisfies the requirements of this Section 11.4 (such person or group, an "Eligible Stockholder") and that includes in the written notice required by this Section 11.4 (the "Notice of Proxy Access Nomination") a written statement electing to have its nominee included in the Corporation's proxy materials. For purposes of this Section 11.4, "Additional Information" shall consist of (1) information concerning the Stockholder Nominee and the Eligible Stockholder that the Corporation determines is required to be disclosed in the Corporation's proxy statement by Section 14 of the Exchange Act and/or the rules and regulations promulgated thereunder and (2) if the Eligible Stockholder so elects, a statement set forth in the Notice of Proxy Access Nomination for inclusion in the proxy statement in support of such nomination (subject, without limitation, to Section 11.4.F).

B. The Corporation shall not be required to include in any proxy materials for an annual meeting of stockholders a number of Stockholder Nominees greater than 20% of the number of directors in office as of the last day on which a Notice of Proxy Access Nomination may be delivered pursuant to this Section 11.4 (the "Proxy Access Nomination Deadline"), rounded down to the nearest whole number but not less than two (the "Maximum Number of Nominees"). Notwithstanding the foregoing, the Maximum Number of Nominees shall be reduced by the number of (1) Stockholder Nominees that are subsequently withdrawn or that the Board of Directors itself decides to nominate at such annual meeting of stockholders, (2) incumbent directors who were Stockholder Nominees at any of the preceding three annual meetings of stockholders and whose reelection at the upcoming annual meeting of stockholders is being recommended by the Board of Directors, and (3) director candidates for which the Corporation shall have received a notice (whether or not subsequently withdrawn) pursuant to Section 11.1.A(1)(c) hereof that a stockholder intends to nominate a candidate for director at the annual meeting of stockholders and such stockholder does not expressly elect at the time of providing the notice to have its nominee included in the Corporation's proxy materials pursuant to this Section 11.4. In the event that one or more vacancies for any reason occurs on the Board of Directors after the Proxy Access Nomination Deadline but prior to the date of the annual meeting of stockholders, and the Board of Directors resolves to reduce the size of the Board of Directors in connection therewith, the Maximum Number of Nominees shall be calculated based on the number of directors in office as so reduced. In the event that the number of Stockholder Nominees submitted by Eligible Stockholders pursuant to this Section 11.4 exceeds the Maximum Number of Nominees, each Eligible Stockholder shall select one Stockholder Nominee for inclusion in the Corporation's proxy statement until the Maximum Number of Nominees is reached, going in the order of the amount (greatest to least) of voting power of the Corporation's common stock entitled to vote on the election of directors as disclosed in the Notice of Proxy Access Nomination submitted to the Corporation. If the Maximum Number of Nominees is not reached after each Eligible Stockholder has selected one Stockholder Nominee, this selection process shall continue as many times as necessary, following the same order each time, until the Maximum Number of Nominees is reached. If any Stockholder Nominee selected pursuant to such determination later (i) withdraws from the election (or his or her nomination is withdrawn by the Eligible Stockholder) or (ii) is determined not to satisfy the requirements of this Section 11.4, no other nominee or nominees (other than any Stockholder Nominees already determined to be included in the Corporation's proxy materials who continue to satisfy the requirements of this Section 11.4) shall be included in the Corporation's proxy materials or otherwise be eligible for election pursuant to this Section 11.4.

C. In order to make a nomination pursuant to this Section 11.4 and in order for such nomination to be voted upon, an Eligible Stockholder must have owned at least 3% of the Corporation's outstanding common stock as of the most

recent date for which such amount is given in any filing by the Corporation with the Securities and Exchange Commission prior to the submission of the Notice of Proxy Access Nomination (the “Required Shares”) continuously for a period of three years as of both the date the Notice of Proxy Access Nomination is received by the Secretary in accordance with this Section 11.4 and the record date for determining the stockholders eligible to vote at the annual meeting of stockholders, and must continue to own the Required Shares through the annual meeting date. For purposes of this Section 11.4, an Eligible Stockholder shall be deemed to “own” only those outstanding shares of the Corporation’s common stock as to which the stockholder possesses both (1) the full voting and investment rights pertaining to the shares and (2) the full economic interest in (including the opportunity for profit and risk of loss on) such shares; provided, however, that the number of shares calculated in accordance with clauses (1) and (2) shall not include any shares (a) sold by or on behalf of such stockholder or any of its affiliates in any transaction that has not yet settled or closed, including any short sale, (b) borrowed by or on behalf of such stockholder or any of its affiliates for any purposes or purchased by such stockholder or any of its affiliates pursuant to an agreement to resell, or (c) subject to any option, warrant, forward contract, swap, contract of sale, other derivative or similar instrument or agreement entered into by or on behalf of such stockholder or any of its affiliates, whether any such instrument or agreement is to be settled with shares or with cash based on the notional amount or value of outstanding shares of the Corporation, in any such case which instrument or agreement has, is intended to have, or if exercised by either party thereto would have, the purpose or effect of (i) reducing in any manner, to any extent or at any time in the future, such stockholder’s or any of its affiliates’ full right to vote or direct the voting of any such shares, and/or (ii) hedging, offsetting or altering to any degree gain or loss arising from the full economic ownership of such shares by such stockholder or any of its affiliates. Notwithstanding the foregoing, an Eligible Stockholder “owns” shares held in the name of a nominee or other intermediary so long as the Eligible Stockholder retains the right to instruct how the shares are voted with respect to the election of directors and possesses the full economic interest in the shares. An Eligible Stockholder’s ownership of shares shall be deemed to continue during any period in which the stockholder has (1) loaned such shares, provided that such stockholder has the power to recall such shares on not more than five business days’ notice, has recalled such loaned shares as of the record date for the annual meeting of stockholders (and holds any voting power over such shares) and holds such shares (and voting power) through the date of the annual meeting of stockholders or (2) delegated any voting power over such shares by means of a proxy, power of attorney or other instrument or arrangement, provided that such stockholder has the power to revoke such delegation at any time without condition and has revoked such delegation as of the record date for the annual meeting of stockholders. The terms “owned,” “ownership,” “owning” and other variations of the word “own” shall have correlative meanings.

D. For the purpose of calculating the number of stockholders that constitutes an “Eligible Stockholder” for purposes of this Section 11.4, a group of funds that are (1) under common management and investment control, (2) under common management and funded primarily by the same employer, or (3) a “group of investment companies,” as such term is defined in Section 12(d)(1)(G)(ii) of the Investment Company Act of 1940, as amended, (or any successor rule) (a “Qualifying Fund”) shall be treated as one stockholder, provided that (a) each fund included with a Qualifying Fund otherwise meets the requirements set forth in this Section 11.4 and (b) such group of funds shall provide, together with the Notice of Proxy Access Nomination, documentation evidencing such group’s status as a Qualifying Fund. No stockholder, alone or together with any of its affiliates, may be a member of more than one group constituting an Eligible Stockholder, and if any person appears as a member of more than one group, it shall be deemed to be a member of the group that has the largest ownership of shares of common stock of the Corporation. In the event of a nomination pursuant to this Section 11.4 by a group of stockholders, each provision in this Section 11.4 that requires the Eligible Stockholder to provide any written statements, representations, undertakings, agreements or other instruments or to meet any other conditions shall be deemed to require each stockholder that is a member of such group to provide such statements, representations, undertakings, agreements or other instruments and to meet any other conditions; provided, however, that the requirement to own the Required Shares shall apply to the ownership of the group in the aggregate. Should any stockholder withdraw from, or be deemed ineligible to participate in, a group constituting an Eligible Stockholder at any time prior to the annual meeting of stockholders, such group shall only be deemed to own the shares held by the remaining members of the group. A breach of any obligation, agreement, representation or warranty under this Section 11.4 by any member of a group constituting an Eligible Stockholder shall be deemed a breach by the Eligible Stockholder.

E. To be timely, the Eligible Stockholder must, not earlier than the close of business on the one hundred and fiftieth (150th) day and not later than the close of business on the one hundred and twentieth (120th) day prior to the first anniversary of the date (as stated in the Corporation’s proxy materials) the definitive proxy statement was first distributed to stockholders in connection with the preceding year’s annual meeting of stockholders, deliver to the

Secretary at the principal executive offices of the Corporation the Notice of Proxy Access Nomination; provided, however, that in the event that the date of the annual meeting of stockholders is more than thirty (30) days before or after the first anniversary of the most recent annual meeting of stockholders, the Notice of Proxy Access Nomination to be timely must be so delivered not earlier than the close of business on the one hundred and fiftieth (150th) day prior to such annual meeting of stockholders and not later than the close of business on the later of the one hundred and twentieth (120th) day prior to such annual meeting of stockholders and the tenth (10th) day following the day on which public announcement of the date of such annual meeting of stockholders is first made by the Corporation. In no event shall the adjournment or postponement of an annual meeting of stockholders (or any public announcement thereof) commence a new time period (or extend any time period) for the giving of a Notice of Proxy Access Nomination. To be in proper form, the Notice of Proxy Access Nomination shall set forth or be submitted with the following:

- (1) A copy of the Schedule 14N relating to the Stockholder Nominee that has been or concurrently is filed with the Securities and Exchange Commission in accordance with Rule 14a-18 under the Exchange Act (or any successor rule thereto);
- (2) Written notice of nomination of the Stockholder Nominee, which notice includes the following additional information, agreements, representations and warranties by the Eligible Stockholder: (a) all information required from nominating stockholders and stockholder nominees with respect to the nomination of directors pursuant to Section 11.1.A(2)(a) and 11.1.A(2)(c) hereof, as if the nomination of the Stockholder Nominee were being submitted pursuant to Section 11.1.A(1)(c) hereof; (b) the details of any relationship that existed within the three years preceding the submission of the Notice of Proxy Access Nomination and that would have been required to be described pursuant to Item 6(e) of Schedule 14N (or any successor item) if such relationship existed on the date of the submission of the Schedule 14N; (c) a description of any agreement, arrangement or understanding with respect to the nomination between or among such stockholder and/or any beneficial owner, if any, on whose behalf the nomination is made, any of their respective affiliates or associates, and any others acting in concert with any of the foregoing; (d) the details of any position of the Stockholder Nominee as an officer or director of any competitor (that is, any entity that produces products or provides services that compete with or are alternatives to the products produced or services provided by the Corporation or its affiliates) or significant supplier or customer of the Corporation within the three years preceding the submission of the Notice of Proxy Access Nomination; (e) a representation and warranty that the Eligible Stockholder (i) acquired the Required Shares in the ordinary course of business and neither acquired, nor is holding, such shares for the purpose or with the effect of influencing or changing control of the Corporation; (ii) has not engaged in, and will not engage in, and has not and will not be a “participant” in another person’s, “solicitation” within the meaning of Rule 14a-1(l) under the Exchange Act (without reference to the exception in Section 14a-1(2)(iv)) (or any successor rules) with respect to the annual meeting of stockholders, other than with respect to nominees of such Eligible Stockholder or the Board of Directors; (iii) has not nominated and will not nominate for election to the Board of Directors any person other than the Stockholder Nominee(s); (iv) agrees to comply with all laws, rules and regulations applicable to the use, if any, of soliciting material; (v) will provide facts, statements and other information in all communications with the Company and its stockholders that are or will be, as applicable, true and correct in all material respects and do not and will not omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading; (vi) meets the eligibility requirements set forth in these By-Laws; and (vii) will maintain qualifying ownership of the Required Shares at least through the date of the annual meeting of stockholders; (f) a representation that, within five business days after each of the date of the Notice of Proxy Access Nomination and the record date for the annual meeting of stockholders, the Eligible Stockholder will provide documentary evidence from each record holder of the Required Shares (and from each intermediary through which the Required Shares are or have been held during the requisite three-year holding period) evidencing the continuous ownership by the Eligible Stockholder of the Required Shares for at least three years as of the date of the Notice of Proxy Access Nomination and the record date, respectively; (g) a representation that the Stockholder Nominee: (i) qualifies as independent (including with respect to all committees of the Board of Directors) under the listing standards and rules of each exchange upon which the Corporation’s common stock is listed, any applicable rules of the Securities and Exchange Commission and any publicly disclosed standards used by the Board of Directors in determining and disclosing independence of the Corporation’s directors; (ii) is a “non-employee director” for the purposes of Rule 16b-3 under the Exchange Act (or any successor rule); (iii) is an “outside director” for the purposes of Section 162(m) of the Internal Revenue Code (or any successor provision); (iv) meets the director qualification requirements set forth in Section 11.3 of these By-Laws; and (v) is not and has not been subject to any event specified in Rule 506(d)(1) of Regulation D (or any successor rule) under the Securities Act of 1933 or Item 401(f)

of Regulation S-K (or any successor rule) under the Exchange Act, without reference to whether the event is material to an evaluation of the ability or integrity of the Stockholder Nominee; (h) a representation that the Schedule 14N relating to the Stockholder Nominee and provided in accordance with Section 11.4.E(1) is accurate and complete, and fully complies with the requirements of Schedule 14N under the Exchange Act; and (i) a representation and warranty that the Stockholder Nominee's candidacy will not and, if elected, the Stockholder Nominee's membership on the Board of Directors would not, violate applicable state or federal law or the listing standards or rules of any exchange upon which the Corporation's common stock is listed;

(3) An executed agreement pursuant to which the Eligible Stockholder agrees: (a) to comply with all applicable laws, rules, regulations and listing standards in connection with the nomination, solicitation and election of the Stockholder Nominee; (b) to file any written solicitation or other communication with the Corporation's stockholders relating to one or more of the Corporation's directors or director nominees or any Stockholder Nominee with the Securities and Exchange Commission, regardless of whether any such filing is required under rule or regulation or whether any exemption from filing is available for such materials under any rule or regulation; (c) to refrain from distributing any form of proxy for the annual meeting of stockholders other than the form distributed by the Corporation; (d) to assume all liability stemming from any action, suit or proceeding concerning any actual or alleged legal or regulatory violation arising out of any communication by the Eligible Stockholder with the Corporation, its stockholders or any other person in connection with the nomination or election of directors, including the Notice of Proxy Access Nomination; (e) to indemnify and hold harmless (jointly with all other group members, in the case of a group member) the Corporation and each of its directors, officers and employees individually against any liability, loss, damages, expenses or other costs (including attorneys' fees) incurred in connection with any threatened or pending action, suit or proceeding, whether legal, administrative or investigative, against the Corporation or any of its directors, officers or employees arising out of or relating to any nomination, solicitation, or other activity by the Eligible Stockholder in connection with its efforts to elect a Stockholder Nominee pursuant to this Section 11.4; (f) in the event that any information included in the Notice of Proxy Access Nomination, or any other communication by the Eligible Stockholder (including with respect to any group member), with the Corporation, its stockholders or any person in connection with the nomination or election of directors ceases to be true and accurate in all material respects (or due to a subsequent development omits a material fact necessary to make the statements made not misleading), or that the Eligible Stockholder (including any group member) has failed to continue to satisfy the eligibility requirements described in Section 11.4.C, to promptly (and in any event within 48 hours of discovering such misstatement or omission) notify the Corporation and any other recipient of such communication of the misstatement or omission in such previously provided information and of the information that is required to correct the misstatement or omission; it being understood that providing any such notification shall not be deemed to cure any such defect or limit the Corporation's right to omit a Stockholder Nominee from its proxy materials pursuant to this Section 11.4;

(4) An executed agreement pursuant to which the Stockholder Nominee consents to being named in the Corporation's proxy statement and form of proxy (and will not agree to be named in any other person's proxy statement or form of proxy with respect to the annual meeting of stockholders) as a nominee and to serving as a director of the Corporation if elected, and represents and agrees that such Stockholder Nominee meets the director qualification requirements set forth in Section 11.3 of these By-Laws;

(5) If desired, a statement for inclusion in the proxy statement in support of the Stockholder Nominee's candidacy, provided that such statement (a) shall not exceed 500 words, (b) shall fully comply with Section 14 of the Exchange Act and the rules and regulations thereunder, including Rule 14a-9, and (c) is provided at the same time as the relevant Notice of Proxy Access Nomination; and

(6) In the case of a nomination by a group constituting an Eligible Stockholder, the designation by all group members of one group member as the exclusive member to interact with the Corporation on behalf of all members of the group for purposes of this Section 11.4 and to act on behalf of all group members with respect to matters relating to the nomination, including withdrawal of the nomination.

The information, statements, representations, undertakings, agreements, documents and other obligations required by this Section 11.4.E shall be provided (i) with respect to and executed by each group member, in the case of a group, and (ii) with respect to the persons specified in Instruction 1 to Items 6(c) and (d) of Schedule 14N (or any successor item) in the case of an Eligible Stockholder or group member that is an entity. The Notice of Proxy Access Nomination shall be deemed submitted on the date on which all information and documents referred to in this Section 11.4.E (other than such information and documents explicitly contemplated in this Section 11.4.E to be provided after the date the Notice of Proxy Access Nomination) have been delivered to, or, if sent by mail, received

by the Secretary at the principal executive offices of the Corporation. Notwithstanding any other provision of these By-Laws, the Corporation may in its sole discretion solicit against, and include in the proxy statement its own statements or other information relating to, any Eligible Stockholder and/or Stockholder Nominee, including any information provided to the Corporation with respect to the foregoing.

F. Notwithstanding anything to the contrary, the Corporation may omit from its proxy materials any information not timely provided in accordance with these By-Laws or any information that is provided pursuant to this Section 11.4, including all or any portion of the statement in support of the Stockholder Nominee included in the Notice of Proxy Access Nomination, to the extent that: (1) such information directly or indirectly impugns the character, integrity or personal reputation of, or directly or indirectly makes charges concerning improper, illegal or immoral conduct or associations, without factual foundation, with respect to, any person; or (2) the inclusion of such information in the proxy materials would otherwise violate any applicable law, rule or regulation.

G. Notwithstanding anything to the contrary in this Section 11.4, the Corporation shall not be required to include in its proxy materials any Stockholder Nominee or information concerning such Stockholder Nominee, nor shall a vote be required to occur with respect to any such Stockholder Nominee at any such meeting (notwithstanding that proxies in respect of such vote may have been received by the Corporation), if: (1) the Stockholder Nominee or the Eligible Stockholder has engaged in or is engaged in, or has been or is a “participant” in another person’s, “solicitation” within the meaning of Rule 14a-1(l) under the Exchange Act (without reference to the exception in Section 14a-1(l)(2)(iv)) (or any successor rules) with respect to the annual meeting of stockholders, other than with respect to nominees of such Eligible Stockholder or the Board of Directors; (2) if another person is engaging in a “solicitation” within the meaning of Rule 14a-1(l) under the Exchange Act (without reference to the exception in Section 14a-1(l)(2)(iv)) (or any successor rules) with respect to the annual meeting of stockholders, other than with respect to nominees of the Board of Directors; (3) the Stockholder Nominee’s nomination or election to the Board of Directors would cause the Corporation to be in violation of the Corporation’s By-Laws or Certificate of Incorporation, the listing standards or rules of any exchange upon which the Corporation’s common stock is listed, or any applicable law, rule or regulation; (4) the Stockholder Nominee was nominated for election to the Board of Directors pursuant to this Section 11.4 at one of the Corporation’s two preceding annual meetings of stockholders and either withdrew or became ineligible or unavailable or did not receive a number of votes cast in favor of his or her election at least equal to 25% of the shares present in person or by proxy and entitled to vote at such meeting; (5) the Stockholder Nominee is or has been within the past three years, an officer or director of a competitor, as defined in Section 8 of the Clayton Antitrust Act of 1914, as amended; (6) the Stockholder Nominee is subject to any order of the type specified in Rule 506(d) of regulations promulgated under the Securities Act of 1933; (7) the Eligible Stockholder has failed to continue to satisfy the eligibility requirements described in Section 11.4.C, any of the representations and warranties made in the Notice of Proxy Access Nomination is not or ceases to be true and accurate in all material respects (or omits a material fact necessary to make the statement not misleading), the Stockholder Nominee becomes unwilling or unable to serve on the Board of Directors, or any violation or breach occurs of the obligations, agreements, representations or warranties of the Eligible Stockholder or the Stockholder Nominee under this Section 11.4; (8) the Stockholder Nominee is not independent (including with respect to any committees of the Board of Directors) under the listing standards or rules of any exchange upon which the Corporation’s common stock is listed, any applicable rules of the Securities and Exchange Commission, or any publicly disclosed standards used by the Board of Directors in determining and disclosing the independence of the Corporation’s directors; or (9) the Eligible Stockholder or, in the case of a nomination by a group, the designated lead group member, fails to appear at the annual meeting of stockholders to present any nomination submitted by such stockholder or group pursuant to this Section 11.4. Notwithstanding the foregoing, if any of the conditions set forth in clause (1) are satisfied, then no Stockholder Nominees shall be included in the proxy materials and no Stockholder Nominee shall be eligible or qualified for director election. In addition, any Eligible Stockholder (or any member of a group constituting an Eligible Stockholder) whose Stockholder Nominee is elected as a director at an annual meeting of stockholders will not be eligible to nominate or participate in the nomination of a Stockholder Nominee for the following two annual meetings, other than the nomination of any such previously elected Stockholder Nominee.

H. The Board of Directors (and any other person or body authorized by the Board of Directors) shall have the power and authority to interpret this Section 11.4 and to make any and all determinations necessary or advisable to apply this Section 11.4 to any persons, facts or circumstances, including the power to determine (1) whether a person or group of persons qualifies as an Eligible Stockholder; (2) whether outstanding shares of the Corporation’s capital stock are “owned” for purposes of meeting the ownership requirements of this Section 11.4; (3) whether any and all requirements of this Section 11.4 have been satisfied, including a Notice of Proxy Access Nomination; (4) whether a

person satisfies the qualifications and requirements to be a Stockholder Nominee; and (5) whether inclusion of the Additional Information in the corporation's proxy statement is consistent with all applicable laws, rules, regulations and listing standards. Any such interpretation or determination adopted in good faith by the Board of Directors (or any other person or body authorized by the Board of Directors) shall be conclusive and binding on all persons, including the Corporation and all record or beneficial owners of stock of the Corporation. This Section 11.4 shall be the exclusive means for stockholders to include nominees for election as a director of the Corporation in the Corporation's proxy statement and on its form of proxy for an annual meeting of stockholders. For avoidance of doubt, the provisions of this Section 11.4 shall not apply to a special meeting of stockholders, and the Corporation shall not be required to include a director nominee of a stockholder or any other person in the Corporation's proxy statement or form of proxy for any special meeting of stockholders.

SECTION 12. Notice to Corporation.

Any written notice or consent required to be delivered by a stockholder to the Corporation pursuant to Sections 9.2, 11.1 or 11.4 of this Article I or Section 2.1 of Article II must be given, either by personal delivery or by registered or certified mail, postage prepaid, to the Secretary at the Corporation's executive offices in the City of Arlington, State of Virginia, not later than 5:00 p.m., Eastern Time, with respect to any applicable deadline (unless otherwise stated in these By-Laws).

SECTION 13. Organization and Conduct of Meetings.

The Chair of the Board of Directors or, in the Chair's absence, a director or officer as a majority of the members of the Board may designate shall act as chair of meetings of stockholders. The Secretary shall act as secretary of meetings of stockholders, but in his or her absence the chair of the meeting may appoint any person to act as secretary of the meeting. Except to the extent inconsistent with any rules and regulations for the conduct of any meeting of stockholders as adopted by the Board of Directors, the chair of any meeting of stockholders shall have the right and authority to convene and (for any or no reason) to adjourn the meeting, to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chair, are appropriate for the proper conduct of the meeting.

ARTICLE II Board of Directors

SECTION 1. Number and Term of Office.

The number of directors shall be as established by a resolution adopted by the Board of Directors from time to time. The number of directors shall generally be between ten (10) and fourteen (14), but in no event less than three (3). At each annual meeting of stockholders, each director shall be elected to hold office until the next annual meeting or until his or her successor shall be elected and qualified or until his or her earlier death, disqualification, resignation or removal.

SECTION 2. Nomination and Election.

2.1 Nomination.

Only persons who are nominated in accordance with Article I, Section 11 of these By-Laws shall be eligible for election as directors.

2.2 Election.

At each election of directors by stockholders, the persons who are elected in accordance with Article I, Section 11 of these By-Laws shall be the directors.

SECTION 3. Place of Meeting.

Meetings of the Board of Directors, or of any committee thereof, may be held within or without the State of Delaware.

SECTION 4. Annual Meeting.

Each year the Board of Directors shall meet in connection with the annual meeting of stockholders for the purpose of electing officers and for the transaction of other business. No notice of such annual meeting of the Board of Directors is required. Such annual meeting may be held at any other time or place which shall be specified in a notice given as hereinafter provided for special meetings of the Board of Directors, or in a consent and waiver of notice thereof, signed by all the directors.

SECTION 5. Stated Meetings.

The Board of Directors may, by resolution adopted by affirmative vote of a majority of the whole Board of Directors, from time to time appoint the time and place for holding stated meetings of the Board of Directors, if by it deemed advisable; and such stated meetings shall thereupon be held at the time and place so appointed, without the giving of any special notice with regard thereto. Except as otherwise provided in these By-Laws, any and all business may be transacted at any stated meeting.

SECTION 6. Special Meetings.

6.1 Convenors and Notice.

Special meetings of the Board of Directors may be called by or at the request of the Chair of the Board of Directors or any two (2) directors. Notice of a special meeting of the Board of Directors, stating the place, day, and hour of the meeting, shall be given to each director in writing (by mail, electronic transmission or personal delivery) or orally (by telephone or in person).

6.2 Waiver of Notice.

With respect to a special meeting of the Board of Directors, a written waiver signed by a director or waiver by electronic transmission shall be deemed equivalent to notice to that director. A director's attendance at a meeting shall constitute that director's waiver of notice of such meeting, except when the director attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting was not lawfully called or convened. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board of Directors need be specified in the waiver of notice of such meeting.

SECTION 7. Quorum and Manner of Acting.

Except as herein otherwise provided, forty percent (40%) of the total number of directors fixed by or in the manner provided for in these By-Laws at the time of any stated or special meeting of the Board of Directors or, if vacancies exist on the Board of Directors, forty percent (40%) of such number of directors then in office; provided, however, that such number may not be less than one-third of the total number of directors fixed by or in the manner provided for in these By-Laws, shall constitute a quorum for the transaction of business; and, except as otherwise required by statute, the Certificate of Incorporation, or these By-Laws, the act of a majority of the directors present at any such meeting at which a quorum is present shall be the act of the Board of Directors. In the absence of a quorum, a majority of the directors present may adjourn any meeting, from time to time, until a quorum is present. No notice of any adjourned meeting need be given.

SECTION 8. Chair of the Board.

The Chair of the Board shall preside, when present, at all meetings of the Board of Directors, except as otherwise provided by law.

SECTION 9. Resignations.

Any director may resign at any time by giving written notice or notice by electronic transmission thereof to the Secretary. Such resignation shall take effect at the time specified therefor or if the time is not specified, upon delivery thereof; and, unless otherwise specified with respect thereto, the acceptance of such resignation shall not be necessary to make it effective.

SECTION 10. Removal of Directors.

Any director may be removed with or without cause by the affirmative vote of the holders of record of a majority of the outstanding shares of stock entitled to vote, at a duly constituted meeting of stockholders called for that purpose; and the vacancy on the Board of Directors caused by any such removal may be filled by the stockholders at such meeting or at any subsequent meeting.

SECTION 11. Filling of Vacancies Not Caused by Removal.

In case of any increase in the number of directors, or of any vacancy created by death, disqualification, or resignation, the additional director or directors may be elected or, as the case may be, the vacancy or vacancies may be filled, either (a) by the affirmative vote of a majority of the remaining directors, even if less than a quorum or (b) by the stockholders entitled to vote, either at a duly constituted annual meeting or special meeting thereof called for that purpose, by the affirmative vote of a majority of the outstanding shares entitled to vote at such meeting.

SECTION 12. Director Compensation.

The Board of Directors shall determine from time to time the amount of compensation that shall be paid to its members for their service on the Board of Directors or any committee thereof.

SECTION 13. Action Without a Meeting.

Any action required or permitted to be taken at any meeting of the Board of Directors or any committee thereof may be taken without a meeting if all members of the Board of Directors or committee, as the case may be, consent thereto in writing or by electronic transmission, and the writings or electronic transmissions are filed with the minutes of proceedings of the Board of Directors or committee so acting.

SECTION 14. Telephonic Meetings.

Members of the Board of Directors, or any committee designated by the Board of Directors, may participate in a meeting thereof by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and participation in a meeting by such means shall constitute presence in person at such meeting.

ARTICLE III Board of Directors Committees

SECTION 1. Audit Committee.

In addition to any committees appointed pursuant to Section 2 of this Article, there shall be an Audit Committee, appointed annually by the Board of Directors, consisting of at least three (3) directors who are not members of management. It shall be the responsibility of the Audit Committee to review the scope and results of the annual independent audit of books and records of the Corporation and its subsidiaries and to discharge such other responsibilities as may from time to time be assigned to it by the Board of Directors. The Audit Committee shall meet at such times and places as the members deem advisable, and shall make such recommendations to the Board of Directors as they consider appropriate.

SECTION 2. Other Committees.

2.1 Committee Powers.

The Board of Directors may appoint standing or temporary committees and invest such committees with such powers as it may see fit, with power to subdelegate such powers if deemed desirable by the Board of Directors; but no such committee shall have the power or authority of the Board of Directors to adopt, amend, or repeal these By-Laws or approve, adopt, or recommend to the stockholders any action or matter expressly required by the Certificate of Incorporation, these By-Laws or the Delaware General Corporation Law to be submitted to stockholders for approval.

2.2 Committee Members.

The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the committee. In the absence or disqualification of a member of a committee, the member or members thereof present at any meeting and not disqualified from voting, whether or not such member or members constitute a quorum, may unanimously appoint another member of the Board of Directors to act at the meeting in the place of any such absent or disqualified member.

SECTION 3. Quorum and Manner of Acting.

A majority of the number of directors composing any committee of the Board of Directors, as established and fixed by resolution of the Board of Directors, shall constitute a quorum for the transaction of business at any meeting of such committee but, if less than a majority are present at a meeting, a majority of such directors present may adjourn the meeting from time to time without further notice. The act of a majority of the members of a committee present at a meeting at which a quorum is present shall be the act of such committee.

ARTICLE IV

Officers and Agents: Terms, Compensation, Removal, Vacancies

SECTION 1. Officers.

The elected officers shall be a Chair of the Board of Directors, a Chief Executive Officer (who shall be a director), and, at the discretion of the Board of Directors, a President, one or more Vice Chairs, and one or more Vice Presidents (each of whom may be assigned by the Board of Directors or the Chief Executive Officer an additional title descriptive of the functions assigned to such officer and one or more of whom may be designated Executive or Senior Vice President). The Board of Directors shall appoint a Controller, a Secretary, and a Treasurer. Any number of offices, whether elective or appointive, may be held by the same person. The Chief Executive Officer may, by a writing filed with the Secretary, designate titles as officers for employees and agents and appoint Assistant Secretaries and Assistant Treasurers as, from time to time, may appear to be necessary or advisable in the conduct of the affairs of the Corporation and may, in the same manner, terminate or change such titles.

SECTION 2. Term of Office.

So far as practicable, all elected officers shall be elected annually by the Board of Directors at its first meeting held after each annual meeting of stockholders, and shall hold office until the Board of Directors' first meeting held after the annual meeting of stockholders in the next subsequent year and until their respective successors are elected or their death, resignation, retirement or removal. The Controller, Secretary, and Treasurer shall hold office at the pleasure of the Board of Directors.

SECTION 3. Salaries of Elected Officers.

The salaries paid to the elected officers of the Corporation shall be authorized or approved by the Board of Directors.

SECTION 4. Bonuses.

None of the officers, directors, or employees of the Corporation or any of its subsidiary corporations shall at any time be paid any bonus or share in the earnings or profits of the Corporation or any of its subsidiary corporations except pursuant to a plan approved by affirmative vote of two-thirds of the members of the Board of Directors.

SECTION 5. Removal or Resignation of Elected and Appointed Officers.

Any elected or appointed officer may be removed at any time, either for or without cause, by affirmative vote of a majority of the whole Board of Directors. Any elected or appointed officer may resign from such office (together with resignation from all management committees on which such officer serves) at any time by giving notice to the Board of Directors or the Corporation. Any such resignation shall be effective when the notice is given, unless the notice specifies a later date.

SECTION 6. Vacancies.

If any vacancy occurs in any office, the Board of Directors may elect or appoint a successor or successors to fill such vacancy for the remainder of the term.

ARTICLE V Officers' Duties and Powers

SECTION 1. Chair of the Board.

The Chair of the Board of Directors shall be an independent director of the Corporation (consistent with the rules of the New York Stock Exchange and with any director independence standards set forth in the Corporation's Corporate Governance Principles). The Chair shall preside, when present, at all meetings of stockholders and at all meetings of the Board of Directors, in each case except as required by law. The Chair shall have general power to execute bonds, deeds, and contracts in the name of the Corporation; to affix the corporate seal; to sign stock certificates; and to perform such other duties and services as shall be assigned to or required of the Chair by the Board of Directors.

SECTION 2. President.

The President shall have general power to execute bonds, deeds, and contracts in the name of the Corporation; to affix the corporate seal; to sign stock certificates; and to perform such other duties and services as shall be assigned to or required of the President by the Board of Directors; provided, that if the office of President is vacant, the Chief Executive Officer shall exercise the duties ordinarily exercised by the President until such time as a President is elected or appointed.

SECTION 3. Chief Executive Officer.

The officer designated by the Board of Directors as the Chief Executive Officer of the Corporation shall have general and active control of its business and affairs. The Chief Executive Officer shall have general power to execute bonds, deeds, and contracts in the name of the Corporation; to affix the corporate seal; to appoint or designate all employees and agents of the Corporation whose appointment or designation is not otherwise provided for and to fix the compensation thereof, subject to the provisions of these By-Laws; to remove or suspend any employee or agent who shall not have been elected or appointed by the Board of Directors or other body; to suspend for cause any employee, agent, or officer, pending final action by the body which shall have appointed such employee, agent, or officer; and to exercise all the powers usually pertaining to the office held by the Chief Executive Officer of a corporation.

SECTION 4. Vice Chairs, Vice Presidents and Controller.

Any Vice Chair, along with the several Vice Presidents and the Controller shall perform all such duties and services as shall be assigned to or required of them, from time to time, by the Board of Directors or the Chief Executive Officer, respectively.

SECTION 5. Secretary.

The Secretary shall attend to the giving of notice of all meetings of stockholders and of the Board of Directors and shall keep and attest true records of all such proceedings. The Secretary shall have charge of the corporate seal and have authority to attest any and all instruments or writings to which the same may be affixed and shall keep and account for all books, documents, papers, and records of the Corporation relating to its corporate organization. The Secretary shall have authority to sign stock certificates and shall generally perform all the duties usually pertaining to the office of secretary of a corporation. In the absence of the Secretary, an Assistant Secretary or Secretary pro tempore shall perform the duties of the Secretary.

SECTION 6. Treasurer.

The Treasurer shall have the care and custody of all moneys, funds, and securities of the Corporation, and shall deposit or cause to be deposited all funds of the Corporation in accordance with directions or authorizations of the Board of Directors or the Chief Executive Officer. The Treasurer shall have power to sign stock certificates, to indorse for deposit or collection, or otherwise, all checks, drafts, notes, bills of exchange, or other commercial paper

payable to the Corporation, and to give proper receipts or discharges therefor. In the absence of the Treasurer, an Assistant Treasurer shall perform the duties of the Treasurer.

SECTION 7. Additional Powers and Duties.

In addition to the foregoing especially enumerated duties and powers, the several officers of the Corporation shall perform such other duties and exercise such further powers as may be provided in these By-Laws or as the Board of Directors may from time to time determine, or as may be assigned to them by any superior officer.

SECTION 8. Emergency Powers of Acting Officers.

If the Chief Executive Officer is unable to perform the duties of that office due to death, incapacity, disaster, or emergency, (a) the powers and duties of the Chief Executive Officer shall be performed by the officer designated as President (or, if the office of President is vacant or if the Chief Executive Officer is also serving as President, the Chief Financial Officer unless another officer shall have been designated by resolution of the Board of Directors) of the Corporation, provided that such officer is available and capable of performing such powers and duties, until the Chief Executive Officer becomes capable of performing those duties or until the Board of Directors shall have elected a new Chief Executive Officer or designated another individual as Acting Chief Executive Officer; (b) such officer shall have the power, in addition to all other powers granted to the Chief Executive Officer by these By-Laws and by the Board of Directors, to appoint an acting President, acting Vice President - Finance, acting Controller, acting Secretary, and acting Treasurer, if any of the persons duly elected to any such office is not, by reason of such disaster or emergency, able to perform the duties of such office, each of such acting appointees to serve in such capacities until the officer for whom the appointee is acting becomes capable of performing the duties of such office or until the Board of Directors shall have designated another individual to perform such duties or have elected another person to fill such office; (c) any such acting officer so appointed shall be entitled to exercise all powers vested by these By-Laws or the Board of Directors in the duly elected officer for whom the acting officer is acting; and (d) anyone transacting business with the Corporation may rely upon a certification by any two (2) officers of the Corporation that a specified individual has succeeded to the powers of the Chief Executive Officer and that such person has appointed other acting officers as herein provided and any person, firm, corporation, or other entity to which such certification has been delivered by such officers may continue to rely upon it until notified of a change in writing signed by two (2) officers of the Corporation.

ARTICLE VI Stock and Transfers of Stock

SECTION 1. Stock Certificates; Uncertificated Shares.

The shares of the stock of the Corporation shall be represented by certificates, provided that the Board of Directors may provide by resolution or resolutions that some or all of any or all classes or series of stock shall be uncertificated shares. Any such resolution shall not apply to shares represented by certificate until such certificate is surrendered to the Corporation. Every holder of stock of the Corporation represented by a certificate shall be entitled to a certificate, signed by the Chair of the Board or the President or a Vice President and the Treasurer or an Assistant Treasurer or the Secretary or an Assistant Secretary, certifying the number of shares owned by the stockholder in the Corporation. Any and all of the signatures on a certificate may be a facsimile. If any officer, transfer agent, or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent, or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if he or she were such officer, transfer agent, or registrar at the date of issue.

SECTION 2. Transfer Agents and Registrars.

The Board of Directors may, in its discretion, appoint responsible banks or trust companies in the Borough of Manhattan, in the City of New York, State of New York, or in such other city or cities as the Board of Directors may deem advisable, from time to time, to act as transfer agents and registrars of the stock of the Corporation; and, when such appointments shall have been made, no stock certificate shall be valid until countersigned by one of such transfer agents and registered by one of such registrars.

SECTION 3. Transfers of Stock.

Shares of stock may be transferred by delivery of the certificates therefor, accompanied either by an assignment in writing on the back of the certificates or by written power of attorney to sell, assign, and transfer the same, signed by the record holder thereof (or, with respect to uncertificated shares, by delivery of duly executed instructions or in any other manner permitted by law), but no transfer shall affect the right of the Corporation to pay any dividend upon the stock to the holder of record thereof, or to treat the holder of record as the holder in fact thereof for all purposes, and no transfer shall be valid, except between the parties thereto, until such transfer shall have been made upon the books of the Corporation.

SECTION 4. Lost Certificates.

The Board of Directors may provide for the issuance of new certificates of stock or uncertificated shares to replace certificates of stock lost, stolen, mutilated, or destroyed, or alleged to be lost, stolen, mutilated, or destroyed, upon such terms and in accordance with such procedures as the Board of Directors shall deem proper and prescribe.

ARTICLE VII Miscellaneous

SECTION 1. Fiscal Year.

The fiscal year of the Corporation shall be the calendar year.

SECTION 2. Signing of Negotiable Instruments.

All bills, notes, checks, or other instruments for the payment of money shall be signed or countersigned by such officer or officers and in such manner as from time to time may be prescribed by resolution (whether general or special) of the Board of Directors.

SECTION 3. Indemnification.

3.1 Right to Indemnification.

Each person who was or is made a party to or is threatened to be made a party to or is otherwise involved or threatened to be involved (including, without limitation, as a witness) in any actual or threatened action, suit, or proceeding, whether civil, criminal, administrative, or investigative (hereinafter a "Proceeding"), by reason of the fact that he or she is or was a director or officer of the Corporation or, while serving as a director or officer of the Corporation, is or was serving at the request of the Corporation as a director, officer, employee, or agent of another corporation or a partnership, joint venture, trust, non-profit entity or other enterprise, including service with respect to an employee benefit plan (hereinafter an "Indemnitee"), whether the basis of such Proceeding is alleged action in an official capacity as such a director or officer or in any other capacity while serving as such a director or officer, shall be indemnified and held harmless by the Corporation to the fullest extent permitted by the Delaware General Corporation Law, or by other applicable law as then in effect, against all expense, liability, and loss (including attorneys' fees, judgments, fines, taxes or penalties, and amounts paid in settlement) actually and reasonably incurred or suffered by such Indemnitee in connection therewith, and such indemnification shall continue as to an Indemnitee who has ceased to be a director or officer and shall inure to the benefit of the Indemnitee's heirs, executors, administrators and legal representatives; provided, however, that except as provided in Article VII, Section 3.2 with respect to Proceedings seeking to enforce rights to indemnification hereunder, the Corporation shall indemnify any such Indemnitee in connection with a Proceeding (or part thereof) initiated by such Indemnitee only if the commencement of such Proceeding (or part thereof) was authorized in the specific case by the Board of Directors. The right to indemnification conferred in this Section 3.1 shall be a contract right and shall include the right, to the fullest extent permitted by law, to be paid by the Corporation the expenses incurred in defending any such Proceeding in advance of its final disposition (hereinafter an "Advancement of Expenses"); provided, however, that an Advancement of Expenses shall be made only upon delivery to the Corporation of an undertaking (hereinafter an "Undertaking"), by or on behalf of such Indemnitee, to repay all amounts so advanced if it shall ultimately be determined that such Indemnitee is not entitled to be indemnified for such expenses under this Section 3.1 or otherwise.

3.2 Right of Indemnatee to Bring Suit.

If a claim under Article VII, Section 3.1 for indemnification (following the final disposition of such Proceeding) is not paid in full by the Corporation within sixty (60) days after a written claim has been received by the Corporation, except in the case of a claim for an Advancement of Expenses, in which case the applicable period shall be twenty (20) days from the date a written request for Advancement of Expenses is received by the Corporation, the Indemnatee may at any time thereafter bring suit against the Corporation to recover any such unpaid amounts (excluding any amounts previously advanced and not returned). If successful in whole or in part in any such suit, the Indemnatee shall also be entitled to be paid the expenses of prosecuting or defending such suit to the fullest extent permitted by law. The Indemnatee shall be presumed to be entitled to indemnification under this Section 3 upon submission of a written claim in compliance herewith, and the Corporation shall have the burden of proof to overcome the presumption that the Indemnatee is so entitled. Neither the failure of the Corporation (including the Board of Directors, a committee thereof, independent legal counsel, or the stockholders) to have made a determination prior to the commencement of such suit that indemnification of the Indemnatee is proper in the circumstances, nor an actual determination by the Corporation (including the Board of Directors, a committee thereof, independent legal counsel, or the stockholders) that the Indemnatee is not entitled to indemnification shall be a defense to the suit or create a presumption that the Indemnatee is not so entitled.

3.3 Nonexclusivity of Rights.

The rights to indemnification and to Advancement of Expenses conferred in this Section 3 shall not be exclusive of any other right that any person may have or hereafter acquire under any statute, the Certificate of Incorporation, these By-Laws, any agreement, vote of stockholders or disinterested directors, or otherwise. Neither any amendment to or alteration or repeal of this Section 3 or of any of the procedures established by the Board of Directors pursuant to Article VII, Section 3.6, nor the adoption of any provision of the Certificate of Incorporation or these By-Laws, nor, to the fullest extent permitted by law, any modification of law, shall eliminate or reduce the effect of the right or protection of any Indemnatee to indemnification and to Advancement of Expenses in accordance with the provisions hereof and thereof with respect to any Proceeding (regardless of when such Proceeding is first threatened, commenced or completed) arising out of, or related to, any alleged acts or omissions by such Indemnatee occurring prior to such amendment, alteration or repeal.

3.4 Insurance, Contracts, and Funding.

The Corporation may maintain insurance, at its expense, on behalf of itself and any Indemnatee or any other person whom the Corporation has the power to indemnify pursuant to Article VII, Section 3.5 of these By-Laws against any expense, liability or loss, whether or not the Corporation would have the power to indemnify such person against such expense, liability or loss under the Delaware General Corporation Law or otherwise. The Corporation may, without stockholder approval, enter into contracts with any Indemnatee or any other person whom the Corporation has the power to indemnify pursuant to Article VII, Section 3.5 of these By-Laws in furtherance of the provisions of this Section 3 and may create a trust fund, grant a security interest, or use other means (including, without limitation, a letter of credit) to ensure the payment of such amounts as may be necessary to effect indemnification as provided in this Section 3.

3.5 Indemnification of Employees and Agents.

The Board of Directors may, or may authorize one or more officers to, indemnify and/or provide Advancement of Expenses to any current or former employee or agent of the Corporation or any of the Corporation's subsidiaries who is not an Indemnatee and was or is made a party to or is threatened to be made a party to or is otherwise involved or threatened to be involved (including, without limitation, as a witness) in any Proceeding, by reason of the fact that he or she is or was such an employee or agent or, while serving as an employee or agent, he or she is or was serving at the request of the Corporation as a director, officer, employee, or agent of another corporation or a partnership, joint venture, trust, non-profit entity or other enterprise, including service with respect to an employee benefit plan, of such scope and effect and subject to such terms as determined by the Board of Directors or such officer or officers, in each case as and to the extent permitted by applicable law.

3.6 Procedures for the Submission of Claims.

The Board of Directors may establish reasonable procedures for the submission of claims for indemnification pursuant to this Section 3, determination of the entitlement of any person thereto, and review of any such determination.

3.7 Other Sources of Indemnification or Advancement of Expenses.

Any indemnification or Advancement of Expenses by the Corporation to any Indemnitee or person indemnified by the Corporation pursuant to Article VII, Section 3.5 of these By-Laws who is or was serving at the request of the Corporation as a director, officer, employee or agent of another corporation or a partnership, joint venture, trust, non-profit entity or other enterprise shall be reduced by any amount such Indemnitee may collect as indemnification or Advancement of Expenses from such other corporation or partnership, joint venture, trust, non-profit entity or other enterprise.

SECTION 4. Forum for Adjudication of Disputes.

With respect to any action arising out of any act or omission occurring after the adoption of this By-Law, unless the Corporation consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of the Corporation, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Corporation to the Corporation or the Corporation's stockholders, (iii) any action asserting a claim arising pursuant to any provision of the Delaware General Corporation Law, the Certificate of Incorporation or these By-Laws, or (iv) any action asserting a claim governed by the internal affairs doctrine, in each case subject to the Court of Chancery of the State of Delaware having personal jurisdiction over the indispensable parties named as defendants therein.

ARTICLE VIII

Amendments

SECTION 1. Amendment of the By-Laws: General.

Except as herein otherwise expressly provided, these By-Laws may be altered or repealed in any particular and new By-Laws, not inconsistent with any provision of the Certificate of Incorporation or any provision of law, may be adopted, either by

A. the affirmative vote of the holders of record of a majority in number of the shares present in person or by proxy and entitled to vote at an annual meeting of stockholders or at a special meeting thereof, the notice of which special meeting shall include the form of the proposed alteration or repeal or of the proposed new By-Laws, or a summary thereof; or

B. either by

- i. the affirmative vote of a majority of the whole Board of Directors at any meeting thereof (or in accordance with Article II, Section 13), or
- ii. the affirmative vote of all the directors present at any meeting at which a quorum, less than a majority, is present;

provided that Article I, Section 11.2 of these By-Laws may be amended only as set forth in Section 1.A of this By-Law, except that any amendment required by law or necessary or desirable to cure an administrative or technical deficiency may be made as provided in Section 1.B of this By-Law.

SECTION 2. Amendments as to Compensation and Removal of Officers.

Notwithstanding anything contained in these By-Laws to the contrary, the affirmative vote of the holders of record of a majority of the Voting Stock, as defined in Article FOURTH of the Certificate of Incorporation, at a meeting of stockholders called for the purpose, shall be required to alter, amend, repeal, or adopt any provision inconsistent with Sections 3, 4 and 5 of Article IV of these By-Laws, notice of which meeting shall include the form of the proposed amendment, or a summary thereof.

ARTICLE IX
Emergency By-Laws

SECTION 1. Emergency By-Laws.

In the event of any emergency, disaster or catastrophe, as referred to in Section 110 of the Delaware General Corporation Law, or other similar condition as a result of which a quorum of the Board of Directors cannot readily be convened for action, three (3) directors shall constitute a quorum at any meeting of the Board of Directors.

LETTER IN LIEU OF CONSENT FOR REVIEW REPORT

July 27, 2022

To the Board of Directors and Shareholders of
The Boeing Company
Arlington, Virginia

We are aware that our report dated July 27, 2022, on our review of the interim financial information of The Boeing Company and subsidiaries appearing in this Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, is incorporated by reference in Registration Statement Nos. 33-25332, 33-31434, 33-43854, 33-58798, 33-52773, 333-16363, 333-26867, 333-32461, 333-32491, 333-32499, 333-32567, 333-41920, 333-54234, 333-73252, 333-107677, 333-140837, 333-156403, 333-160752, 333-163637, 333-195777, 333-228097, and 333-252770 on Form S-8 and Registration Statement Nos. 333-240300, 333-249827, and 333-250000 on Form S-3.

/s/ Deloitte & Touche LLP

Chicago, Illinois

**CERTIFICATION PURSUANT TO
RULE 13a-14 OF THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, David L. Calhoun, certify that:

1. I have reviewed this quarterly report on Form 10-Q of The Boeing Company;
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(s) 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(s) 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: July 27, 2022

/s/ David L. Calhoun

David L. Calhoun
President and Chief Executive Officer

**CERTIFICATION PURSUANT TO
RULE 13a-14 OF THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Brian J. West, certify that:

1. I have reviewed this quarterly report on Form 10-Q of The Boeing Company;
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(s) 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(s) 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: July 27, 2022

/s/ Brian J. West

Brian J. West
Executive Vice President and Chief Financial Officer

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of The Boeing Company (the "Company") on Form 10-Q for the period ending June 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, David L. Calhoun, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ David L. Calhoun

David L. Calhoun
President and Chief Executive Officer

July 27, 2022

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Quarterly Report of The Boeing Company (the "Company") on Form 10-Q for the period ending June 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Brian J. West, Executive Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ Brian J. West

Brian J. West
Executive Vice President and Chief Financial Officer

July 27, 2022