UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 2016

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 1-16411

NORTHROP GRUMMAN CORPORATION

(Exact name of registrant as specified in its charter)

DELAWARE	**80-0640649**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification Number)
2980 Fairview Park Drive **Falls Church, Virginia**	**22042**
(Address of principal executive offices)	(Zip code)

(703) 280-2900

(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, $1 par value	New York Stock Exchange

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act.

Yes ☐ No ☒

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 such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant’s knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

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

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

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

Yes ☐ No ☒

As of June 30, 2016, the aggregate market value of the common stock (based upon the closing price of the stock on the New York Stock Exchange) of the registrant held by non-affiliates was approximately $39.5 billion.

As of January 26, 2017, 174,599,406 shares of common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of Northrop Grumman Corporation’s Proxy Statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A for the 2017 Annual Meeting of Stockholders are incorporated by reference in Part III of this Form 10-K.

NORTHROP GRUMMAN CORPORATION

TABLE OF CONTENTS

PART III

PART IV

PART I

Item 1. Business

HISTORY AND ORGANIZATION

History

Northrop Grumman Corporation (herein referred to as “Northrop Grumman,” the “company,” “we,” “us,” or “our”) is a leading global security company. We offer a broad portfolio of capabilities and technologies that enable us to deliver innovative products, systems and solutions for applications that range from undersea to outer space and into cyberspace. We provide products, systems and solutions in autonomous systems; cyber; command, control, communications and computers, intelligence, surveillance, and reconnaissance (C4ISR); strike; and logistics and modernization. We participate in many high-priority defense and government programs in the United States (U.S.) and abroad. We conduct most of our business with the U.S. Government, principally the Department of Defense (DoD) and intelligence community. We also conduct business with foreign, state and local governments, as well as commercial customers. For a discussion of risks associated with our operations, see “Risk Factors.”

The company originally was formed in Hawthorne, California in 1939, as Northrop Aircraft Incorporated and was reincorporated in Delaware in 1985, as Northrop Corporation. Northrop Aircraft Incorporated was a principal developer of flying wing technology, including the B-2 Spirit bomber. The company developed into one of the largest defense contractors in the world through a series of acquisitions, as well as organic growth. In 1994, we acquired Grumman Corporation (Grumman), after which time the company was renamed Northrop Grumman Corporation. Grumman was a premier military aircraft systems integrator and builder of the Lunar Module that first delivered humans to the surface of the moon. In 1996, we acquired the defense and electronics businesses of Westinghouse Electric Corporation, a world leader in the development and production of sophisticated radar and other electronic systems for the nation’s defense, civil aviation, and other U.S. and international applications. In 2001, we acquired Litton Industries, a global electronics and information technology company, and one of the nation's leading full service shipbuilders. Also in 2001, we acquired Newport News Shipbuilding, a leading designer and builder of nuclear-powered aircraft carriers and submarines. In 2002, we acquired TRW Inc., a leading developer of military and civil space systems and payloads, as well as a leading global integrator of complex, mission-enabling systems and services. In 2011, we completed the spin-off to our shareholders of Huntington Ingalls Industries, Inc. (HII). HII operates our former Shipbuilding business, comprised largely of a part of Litton Industries and Newport News Shipbuilding.

Organization

From time to time, we acquire or dispose of businesses and realign contracts, programs or businesses among and within our operating segments. Internal realignments are typically designed to leverage existing capabilities more fully and to enhance development and delivery of products and services. The operating results for all periods presented have been revised to reflect any such changes made through December 31, 2016. We are currently aligned in three operating sectors, which also comprise our reportable segments: Aerospace Systems, Mission Systems and Technology Services. See Note 3 to our consolidated financial statements for further information.

AEROSPACE SYSTEMS

Aerospace Systems, headquartered in Redondo Beach, California, is a leader in the design, development, integration and production of manned aircraft, autonomous systems, spacecraft, high-energy laser systems, microelectronics and other systems/subsystems. Aerospace Systems' customers, primarily the DoD and other U.S. Government agencies, use these systems in mission areas including intelligence, surveillance and reconnaissance (ISR), strike operations, communications, earth observation, space science and space exploration. The sector is reported in three business areas, which reflect our core capabilities: Autonomous Systems, Manned Aircraft and Space.

Autonomous Systems - designs, develops, manufactures, and integrates ISR autonomous systems for tactical and strategic missions. Key ISR programs include the Global Hawk system, a proven high-altitude long-endurance system providing near real-time high resolution imagery of large geographical areas; the Triton system providing real-time ISR over vast ocean and coastal regions; the North Atlantic Treaty Organization (NATO) Alliance Ground Surveillance (AGS) system for multinational theater operations; the Fire Scout system providing situational awareness and precision targeting support; and the Navy Unmanned Combat Air System demonstrating an unmanned combat air vehicle for carrier-based operations.

Manned Aircraft - designs, develops, manufactures, and integrates airborne C4ISR, long-range strike aircraft systems, tactical aircraft systems and directed energy systems. Key airborne C4ISR programs include the E-2D Advanced Hawkeye and Joint Surveillance Target Attack Radar System (JSTARS). Key long-range strike aircraft programs include the B-21 Raider long-range strike bomber and modernization and sustainment services for the B-2 Spirit bomber. Tactical aircraft includes the design, development, manufacture and integration of F-35 Lightning II center fuselage and F/A-18 Super Hornet aft fuselage sections. Directed energy involves the design, development, and integration of laser weapon systems for air, ground, and sea platforms, and production of the Airborne Laser Mine Detection System for the U.S. Navy and international rotary wing customers.

Space - designs, develops, manufactures, and integrates spacecraft systems, subsystems, sensors and communications payloads in support of space C4ISR and science. Key programs include the James Webb Space Telescope, a large infrared telescope being built for the National Aeronautics and Space Administration that will be deployed in space to study the origins of the universe; Advanced Extremely High Frequency payloads providing survivable, protected communications to U.S. forces; Space-Based Infrared System payloads providing data for missile surveillance, missile defense, technical intelligence and battlespace characterization; and restricted programs.

MISSION SYSTEMS

Mission Systems, headquartered in Linthicum, Maryland, is a leader in advanced end-to-end mission solutions and multifunction systems for DoD, intelligence community, international, federal civil and commercial customers. Major products and services include C4ISR systems; radar, electro-optical/infrared (EO/IR) and acoustic sensors; electronic warfare systems; cyber solutions; space systems; intelligence processing systems; air and missile defense (AMD) integration; navigation; and shipboard missile and encapsulated payload launch systems. The sector is reported in three business areas, which reflect our core capabilities: Sensors and Processing, Cyber and ISR, and Advanced Capabilities.

Sensors and Processing - delivers products, systems and services that support ground-based and airborne fixed and rotary wing platforms with radar, electronic warfare, communications, command and control (C2), Signals Intelligence (SIGINT), and situational awareness mission systems. Competencies include targeting, surveillance, air defense, and early warning & control radar systems; EO/IR and radio frequency (RF) self-protection, targeting and surveillance systems; electronic attack and electronic support systems; net-enabled battle management; communications and intelligence systems; digitized cockpits; and multi-sensor processing. Key programs include the Airborne Early Warning & Control (AEW&C) and air-to-ground sensors; Battlefield Airborne Communications Node (BACN); F-35 fire control radar, Distributed Aperture System (DAS), and the Communications, Navigation and Identification (CNI) integrated avionics system; Ground/Air Task Oriented Radar (G/ATOR); Large Aircraft Infrared Countermeasures (LAIRCM); Common Infrared Countermeasures (CIRCM); Scalable Agile Beam Radar (SABR); and the UH-60V Black Hawk integrated mission equipment package.

Cyber and ISR - delivers products, systems and services that support full-spectrum cyber solutions, space-based payload and exploitation systems, space-based C2 and processing systems, and enterprise integration of multi-intelligence mission data across all domains. Competencies include cyber mission management; large-scale cyber solutions for national security applications; missile warning and defense systems; weather and satellite communications; ground software systems; and geospatial intelligence and data fusion, specializing in the collection, processing, and exploitation of data. Key programs include exploitation and cyber programs; operational services to the United States Computer Emergency Readiness Team (US-CERT); worldwide IT coverage and support services through the Solutions for the Information Technology Enterprise (SITE); the Enterprise Application Development Integration and Sustainment (EADIS) program; and restricted programs.

Advanced Capabilities - provides integration and interoperability of net-enabled battle management, sensors, targeting and surveillance systems; air and missile defense C2; and global battlespace awareness. It also delivers products, systems and services that support maritime platforms and embedded Global Positioning Systems (GPS) for a range of platforms including ships, aircraft, spacecraft and weapons. Competencies include advanced AMD integration with land, air and space assets; shipboard missile and encapsulated payload launch systems; unmanned maritime vehicles and high-resolution undersea sensors; and inertial navigation systems. Key programs include the Integrated Air and Missile Defense Battle Command System (IBCS); the Missile Defense Agency Joint National Integration Center Research and Development Contract (JRDC); Ground-based Midcourse Defense (GMD) system; Surface Electronic Warfare Improvement Program (SEWIP) Block III; and Trident and Virginia-Class payload launch systems.

TECHNOLOGY SERVICES

Technology Services, headquartered in Herndon, Virginia, is a leading provider of logistics solutions supporting the full life cycle of platforms and systems for global defense and federal-civil customers. We deliver innovative, technology-driven solutions and services to enable cost-effective improvements for customer mission effectiveness. We provide a full spectrum of offerings including software and system sustainment, modernization of platforms and associated subsystems, advanced training solutions, and integrated logistics support. The sector is reported in three business areas, which reflect our core capabilities: Global Logistics and Modernization; Advanced Defense Services; and System Modernization and Services.

Global Logistics and Modernization - provides global logistics support, sustainment, operations and modernization for more than 60 air, sea and ground systems and weapon system components. Competencies include aircraft, electronics and software sustainment and engineering; electronic warfare/attack and avionics/electronics subsystems modernization; supply chain management; deployed logistics support for manned and unmanned weapon systems; field services, on-going maintenance and technical assistance; and delivering rapid response in support of global customers. Portfolio capabilities are exhibited through: integration, delivery and global support of unmanned special mission aircraft solutions for platforms such as the MQ-5B Hunter, Global Hawk and Triton; subsystem and component-level depot repair for products such as AAQ-24, APN-241, and ALQ-135; missile sustainment and modernization solutions for products including the Intercontinental Ballistic Missile Minuteman III; and weapon systems sustainment, refurbishment, overhaul, modernization and contractor logistics support for several unique low-density/high-demand platforms, including the B-2 Spirit bomber, KC-10, JSTARS, KC-30A and UK Airborne Warning and Control System.

Advanced Defense Services - provides advanced defense and security services, including cyber; network operations and security; system and software modernization; land forces sustainment; and training to strengthen the national security of the U.S. and its allies. Key programs include the Marine Corps Network Operations and Security Center, which provides network defense services for the U.S. Marine Corps including analysis of network traffic, identification of malicious and unauthorized activity, and response to intrusion incidents; Ministry of the National Guard Training Support, through our interest in a joint venture for which we consolidate the financial results, which provides equipment fielding, training and maintenance, simulator training and operations, tactical exercise development, logistics and operations support and English language training to the Ministry of the National Guard in Saudi Arabia; the Enterprise Military Housing program, the software application used for the management of government housing; and the Mission Command Training Program, the Army's leadership and staff training exercise program at the tactical and operational level.

System Modernization and Services - provides full life cycle information systems modernization and sustainment, primarily in support of civil government agencies. Key capabilities reside in areas of analytics, mission information processing, cyber and secure networking, and software development. In support of the modernization of civil agency mission critical and mission enabling information systems, extensive system and software development capabilities allow this unit to offer fraud detection and compliance services, data analysis and decision support tools, and software system sustainment services. This business provides services to U.S. Government healthcare agencies, including benefits systems administration, fraud prevention and payment modernization. To strengthen national security and federal law enforcement, we provide information sharing and analysis solutions as well as engineer sophisticated enterprise-wide solutions to design, build and manage resilient and secure IT infrastructures. Our capabilities provide proactive network monitoring and desktop optimization to control and reduce overall operating costs.

SELECTED FINANCIAL DATA AND SEGMENT OPERATING RESULTS

For a more complete understanding of our business, see "Selected Financial Data." For a more complete understanding of our segment financial information, see "Segment Operating Results" in Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) and Note 3 to the consolidated financial statements.

CUSTOMER CONCENTRATION

Our largest customer is the U.S. Government. Sales to the U.S. Government accounted for 84 percent, 83 percent and 84 percent of sales during the years ended December 31, 2016, 2015 and 2014, respectively. For further information on sales by customer category, see Note 1 to the consolidated financial statements. No single program accounted for more than ten percent of total sales during any period presented. See "Risk Factors" for further discussion regarding risks related to customer concentration.

COMPETITIVE CONDITIONS

We compete with many companies in the defense, intelligence and federal markets. BAE Systems, Boeing, Booz Allen Hamilton, General Dynamics, Harris, L3 Technologies, Leidos, Leonardo, Lockheed Martin, Raytheon and

Thales are some of our primary competitors. Key characteristics of our industry include long operating cycles and intense competition, which is evident through the number of bid protests (competitor protests of U.S. Government procurement awards) and the number of competitors bidding on program opportunities.

It is common in the defense industry for work on major programs to be shared among a number of companies. A company competing to be a prime contractor may, upon ultimate award of the contract to another competitor, become a subcontractor to the ultimate prime contracting company. It is not unusual to compete for a contract award with a peer company and, simultaneously, perform as a supplier to or a customer of that same competitor on other contracts, or vice versa.

SEASONALITY

No material portion of our business is considered to be seasonal.

BACKLOG

At December 31, 2016, total backlog was $45.3 billion, compared with $35.9 billion at the end of 2015. For further information, see "Backlog" in MD&A.

RESEARCH AND DEVELOPMENT

See Note 1 to the consolidated financial statements.

INTELLECTUAL PROPERTY

We routinely apply for and own a number of U.S. and foreign patents related to the products and services we provide. We also develop and protect intellectual property as trade secrets. In addition to owning a large portfolio of proprietary intellectual property, we license some intellectual property rights to third parties and we license or otherwise obtain access to intellectual property from third parties. The U.S. Government typically holds licenses to patents developed in the performance of U.S. Government contracts and may use or authorize others to use the inventions covered by these patents for certain purposes. See "Risk Factors" for further discussion regarding risks related to intellectual property.

RAW MATERIALS

We have not experienced significant delays in the supply or availability of raw materials, nor have we experienced a significant price increase for raw materials. See "Risk Factors" for further discussion regarding risks related to raw materials.

EMPLOYEE RELATIONS

We believe that we maintain good relations with our approximately 67,000 employees. Approximately 2,500 are covered by 11 collective agreements in the U.S., of which we negotiated four renewals in 2016 and expect to negotiate one renewal in 2017. See "Risk Factors" for further discussion regarding risks related to employee relations.

REGULATORY MATTERS

Government Contract Security Restrictions

Certain classified programs with the U.S. Government are prohibited by the customer from being publicly discussed and are therefore generally referred to as "restricted" in this Annual Report on Form 10-K. The consolidated financial statements and financial information in this Annual Report on Form 10-K reflect the operating results of our entire company, including restricted programs.

Contracts

We generate the majority of our business from long-term contracts with the U.S. Government for development, production and support activities. Unless otherwise specified in a contract, allowable and allocable costs are billed to contracts with the U.S. Government pursuant to the Federal Acquisition Regulation (FAR) and U.S. Government Cost Accounting Standards (CAS). Examples of costs incurred by us and not billed to the U.S. Government in accordance with the FAR and CAS include, but are not limited to, certain legal costs, charitable donations, advertising costs, interest expense and unallowable employee compensation and benefits costs.

We monitor our contracts on a regular basis for compliance with our policies and procedures and applicable government regulations and laws to enhance compliance and consistent application for contracts with similar terms and conditions. In addition, costs incurred and allocated to contracts with the U.S. Government are routinely audited by the Defense Contract Audit Agency (DCAA).

Our long-term contracts typically fall into one of two broad categories:

Cost-type contracts – Cost-type contracts include cost plus fixed fee, cost plus award fee and cost plus incentive fee contracts. Cost-type contracts provide generally for reimbursement of a contractor’s allowable costs incurred plus fee. As a result, cost-type contracts have less financial risk associated with unanticipated cost growth but generally lower profit margins than fixed-price contracts. Cost-type contracts typically require that the contractor use its best efforts to accomplish the scope of the work within some specified time and stated dollar limitation. Fees on cost-type contracts can be fixed in terms of dollar value or percentage of costs. Award and incentive fees are generally based on performance criteria such as cost, schedule, quality and/or technical performance. Award fees are determined and earned based on customer evaluation of the company's performance against contractual criteria, and are intended to provide motivation for excellence in contract performance. Incentive fees are generally based on cost and provide for an initially negotiated fee to be adjusted later, typically using a formula to measure performance against the associated criteria, based on the relationship of total allowable costs to total target costs. Award and incentive fees that can reasonably be estimated and are deemed reasonably assured are recorded over the performance period of the contract.

Fixed-price contracts – Firm fixed-price contracts include a specified scope of work for a price that is a pre-determined, negotiated amount and not generally subject to adjustment regardless of costs incurred by the contractor, absent changes in scope by the customer. As a result, fixed-price contracts have more financial risk associated with unanticipated cost growth, but generally provide the opportunity for higher profit margins than cost-type contracts. Certain fixed-price incentive fee contracts provide for reimbursement of the contractor’s allowable costs plus a fee up to a cost ceiling amount, typically through a cost-sharing ratio that affects profitability. These types of fixed-price incentive fee contracts effectively become firm fixed-price contracts once the cost-share ceiling is reached. Time-and-materials contracts are considered fixed-price contracts as they specify a fixed hourly rate for each labor hour charged.

Profit margins on our contracts may vary materially depending on, among other things, the contract type, contract phase (e.g., development, low rate production or mature production), negotiated fee arrangements, achievement of performance objectives, and cost, schedule and technical performance.

See Note 1 to the consolidated financial statements and “Risk Factors.”

The following table summarizes sales for the year ended December 31, 2016, recognized by contract type and customer category:

($ in millions)	U.S. Government[1]	International[2]	Other Customers[3]	Total	Percentage of Total Sales
Cost-type contracts	$ 12,665	$ 698	$ 106	$ 13,469	55%
Fixed-price contracts	7,908	2,507	624	11,039	45%
Total sales	$ 20,573	$ 3,205	$ 730	$ 24,508	100%

(1) Sales to the U.S. Government include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is the U.S. Government. Each of the company's segments derives substantial revenue from the U.S. Government.

(2) International sales include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is an international customer. These sales include foreign military sales contracted through the U.S. Government, direct sales with governments outside the U.S. and commercial sales outside the U.S.

(3) Sales to Other Customers include sales to U.S. state and local governments and commercial sales in the U.S.

Environmental

Our operations are subject to and affected by federal, state, local and foreign laws and regulations relating to protection of the environment. In 2010, we established goals for the reduction of greenhouse gas emissions and implementation of best management practices for water use and solid waste; those goals were achieved as of December 31, 2014. In 2015, we announced our 2020 environmental sustainability goals: to reduce absolute greenhouse gas emissions by 30 percent from 2010 levels; to reduce potable water use by 20 percent from 2014 levels; and to achieve a 70 percent solid waste diversion rate (from landfills).

We have incurred and expect to continue to incur capital and operating costs to comply with applicable environmental laws and regulations and to achieve our environmental sustainability commitments. See “Risk Factors” and Notes 1 and 11 to the consolidated financial statements.

EXECUTIVE OFFICERS

See "Directors, Executive Officers and Corporate Governance" for information about our executive officers.

AVAILABLE INFORMATION

Our principal executive offices are located at 2980 Fairview Park Drive, Falls Church, Virginia 22042. Our telephone number is (703) 280-2900 and our home page is www.northropgrumman.com.

Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and proxy statement for the annual shareholders’ meeting, as well as any amendments to those reports, are available free of charge through our website as soon as reasonably practicable after we file them with the SEC. You can learn more about us by reviewing our SEC filings on the investor relations page of our website.

The SEC also maintains a website at www.sec.gov that contains reports, proxy statements and other information about SEC registrants, including Northrop Grumman Corporation.

References to our website and the SEC’s website in this report are provided as a convenience and do not constitute, and should not be viewed as, incorporation by reference of the information contained on, or available through, such websites. Such information should not be considered a part of this report, unless otherwise expressly incorporated by reference in this report.

Item 1A. Risk Factors

Our consolidated financial position, results of operations and cash flows are subject to various risks, many of which are not exclusively within our control, that may cause actual performance to differ materially from historical or projected future performance. We encourage you to consider carefully the risk factors described below in evaluating the information contained in this report as the outcome of one or more of these risks could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***We depend heavily on a single customer, the U.S. Government, for a substantial portion of our business. Changes in this customer’s priorities and spending could have a material adverse effect on our financial position, results of operations and/or cash flows.***

Our primary customer is the U.S. Government, from which we derived 84 percent, 83 percent and 84 percent of our sales during the years ended December 31, 2016, 2015 and 2014, respectively; we have a number of large programs and opportunities with the U.S. Air Force, in particular. The U.S. Government has been implementing significant reductions in government spending and other significant program changes. We cannot predict the impact on existing, follow-on, replacement or future programs from potential changes in priorities due to changes in defense spending levels, the threat environment, military strategy and planning and/or changes in social, economic or political priorities.

The U.S. Government generally has the ability to terminate contracts, in whole or in part, for its convenience or for default based on performance. In the event of termination for the U.S. Government’s convenience, contractors are generally protected by provisions covering reimbursement for costs incurred on the contracts and profit on those costs up to the amount authorized under the contract, but not the anticipated profit that would have been earned had the contract been completed. Termination by the U.S. Government of a contract due to default could require us to pay for re-procurement costs in excess of the original contract price, net of the value of work accepted from the original contract, as well as other damages. Termination of a contract due to our default could have a material adverse effect on our reputation, our ability to compete for other contracts and our financial position, results of operations and/or cash flows.

The U.S. Government also has the ability to stop work under a contract for a limited period of time for its convenience. It is possible that the U.S. Government could invoke this ability across a limited or broad number of contracts. In the event of a stop work order, contractors are typically protected by provisions covering reimbursement for costs incurred on the contract to date and for costs associated with the temporary stoppage of work on the contract plus a reasonable fee. However, such temporary stoppages and delays could introduce inefficiencies and result in financial and other damages for which we may not be able to negotiate full recovery from the U.S. Government. They could also ultimately result in termination of a contract (or contracts) for convenience or reduced future orders.

A significant shift in government priorities to programs in which we do not participate and/or reductions in funding for or the termination of programs in which we do participate, unless offset by other programs and opportunities, could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Significant delays or reductions in appropriations for our programs and U.S. Government funding more broadly may negatively impact our business and programs and could have a material adverse effect on our financial position, results of operations and/or cash flows.***

U.S. Government programs are subject to annual congressional budget authorization and appropriation processes. For many programs, Congress appropriates funds on a fiscal year basis even though the program performance period may extend over several years. Consequently, programs are often partially funded initially and additional funds are committed only as Congress makes further appropriations. If we incur costs in excess of funds obligated on a contract, we may be at risk for reimbursement of those costs unless and until additional funds are obligated to the contract. We cannot predict the extent to which total funding and/or funding for individual programs will be included, increased or reduced as part of the annual budget process ultimately approved by Congress and the President or in separate supplemental appropriations or continuing resolutions, as applicable. Laws and plans adopted by the U.S. Government relating to, along with pressures on and uncertainty surrounding the federal budget, potential changes in priorities and defense spending levels, sequestration, the appropriations process, use of continuing resolutions (with restrictions, e.g., on new starts) and the permissible federal debt limit, could adversely affect the funding for individual programs and delay purchasing or payment decisions by our customers. In the event government funding for our significant programs becomes unavailable, or is reduced or delayed, or planned orders are reduced, our contract or subcontract under such programs may be terminated or adjusted by the U.S. Government or the prime contractor.

On November 2, 2015, the President signed the Bipartisan Budget Act of 2015 (the Budget Act). The Budget Act raised the statutory limit on the amount of permissible federal debt (the debt ceiling) until March 2017 and raised the sequester caps imposed by the Budget Control Act of 2011 (the Budget Control Act) by $80 billion, split equally between defense and non-defense discretionary spending in FY 2016 and FY 2017 ($50 billion in FY 2016 and $30 billion in FY 2017).

If the debt ceiling is breached, we may be required to continue to perform for some period of time on certain of our U.S. Government contracts even if the U.S. Government is unable to make timely payments. Unforeseen circumstances could cause an extended debt ceiling breach and have significant near and long-term consequences for our company, our employees, our suppliers and the defense industry.

On December 18, 2015, Congress passed and the President signed the Consolidated Appropriations Act of 2016, which provided funding for the U.S. Government for FY 2016, providing $1.1 trillion in discretionary funding for federal agencies through September 2016. The President signed a continuing resolution in September 2016, which was extended in December 2016, and provides funding for the U.S. Government at FY 2016 levels through April 28, 2017.

The budget environment, including sequestration as currently mandated, and uncertainty surrounding the appropriations processes, remain significant long-term risks. Considerable uncertainty exists regarding how future budget and program decisions will unfold, including the defense spending priorities of the incoming Administration and Congress, what challenges budget reductions (required by the Budget Control Act and otherwise) will present for the defense industry and whether an annual appropriations bill will be enacted for FY 2017. If an annual appropriations bill is not enacted for FY 2017 or beyond, the U.S. Government may continue to operate under a continuing resolution, restricting new contract or program starts and we may face a government shutdown of unknown duration. Adverse consequences from operating under a continuing resolution may be greater as the company has a higher percentage of development programs. We believe continued budget pressures would have serious negative consequences for the security of our country, the defense industrial base, including Northrop Grumman, and the customers, employees, suppliers, investors, and communities that rely on companies in the defense industrial base. It is likely budget and program decisions made in this environment would have long-term implications for our company and the entire defense industry.

Long-term funding for certain programs in which we participate may be reduced, delayed or cancelled. In addition, budget cuts globally could adversely affect the viability of our subcontractors and suppliers, and our employee base. While we believe that our business is well-positioned in areas that the DoD and other customers have indicated are areas of focus for future defense spending, the long-term impact of the Budget Control Act, other defense spending cuts, the debt ceiling and the ongoing fiscal debates remain uncertain.

Significant delays or reductions in appropriations; long-term funding under a continuing resolution; an extended debt ceiling breach or government shutdown; and/or future budget and program decisions, among other items, may negatively impact our business and programs and could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***We are subject to various investigations, claims, disputes and litigation that could ultimately be resolved against us.***

The size, nature and complexity of our business make us susceptible to investigations, claims, disputes and litigation, particularly those involving governments. We are and may become subject to investigations, claims, disputes and administrative, civil or criminal litigation globally and across a broad array of matters, including, but not limited to, government contracts, false claims, products liability, fraud, environmental, shareholder derivative actions, intellectual property, tax, export/import, anti-corruption, labor, health and safety, employee benefits and plans, including plan administration, and improper payments. These matters could divert financial and management resources; result in fines, penalties, compensatory, treble or other damages or non-monetary relief; and otherwise disrupt our business. Government regulations also provide that certain allegations against a contractor may lead to suspension or debarment from government contracts or suspension of export privileges for the company or one or more of its components. Suspension or debarment could have a material adverse effect on the company because of our reliance on government contracts and export authorizations. An investigation, claim, dispute or litigation, even if not substantiated or fully indemnified or insured, could also negatively impact our reputation among our customers and the public, and make it more difficult for us to compete effectively or obtain adequate insurance in the future. Investigations, claims, disputes or litigation could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our international business exposes us to additional risks.***

Sales to customers outside the U.S. are an increasingly important component of our strategy. Our international business (including joint ventures) is subject to numerous political and economic factors, legal requirements, cross-cultural considerations and other risks associated with doing business globally. These risks differ in some respects from those associated with our U.S. business and our exposure to such risks may increase if our international business continues to grow as we anticipate.

Our international business is subject to both U.S. and foreign laws and regulations, including, without limitation, regulations relating to import-export controls, technology transfer restrictions, repatriation of earnings, data privacy and protection, investment, exchange rates and controls, the Foreign Corrupt Practices Act (FCPA) and other anti-corruption laws, the anti-boycott provisions of the U.S. Export Administration Act, labor and employment, works councils and other labor groups, taxes, environment, security restrictions and intellectual property. Failure by us, our employees, affiliates, partners or others with whom we work to comply with these laws and regulations could result in administrative, civil or criminal liabilities, including suspension or debarment from government contracts or suspension of our export privileges. Our customers outside of the U.S. generally have the ability to terminate contracts for default based on performance. Termination of a contract due to default could have a material adverse effect on our reputation, our ability to compete for other contracts and our financial position, results of operations and/or cash flows. We also are subject to various non-U.S. procurement and other laws applicable to our industry. New regulations and requirements, or changes to existing ones in the various countries in which we operate can significantly increase our costs and risks of doing business internationally.

Changes in regulations, political leadership and environment, or security risks may dramatically affect our ability to conduct or continue to conduct business in international markets. Our international business may also be impacted by changes in foreign national policies and priorities, which may be influenced by changes in the threat environment, geopolitical uncertainties, government budgets, and economic and political factors more generally, any of which could impact funding for programs or delay purchasing decisions or customer payments. We also could be affected by the legal, regulatory and economic impacts of Britain's exit from the European Union, the impact of which is not known at this time. Global economic conditions and fluctuations in foreign currency exchange rates could further impact our business. For example, the tightening of credit in financial markets outside of the U.S. could adversely affect the ability of our customers and suppliers to obtain financing and could result in a decrease in or cancellation of orders for our products and services or impact the ability of our customers to make payments.

Our contracts with non-U.S. customers may also include terms and reflect legal requirements that create additional risks. They may include industrial cooperation agreements requiring specific in-country purchases, investments, manufacturing agreements or other financial obligations, known as offset obligations, and provide for significant penalties if we fail to meet such requirements. Our ability to sell products outside the U.S. could be adversely affected if we are unable to design our products for export on a cost effective basis or to obtain and retain all necessary export licenses and authorizations on a timely basis. We face risks related to our products that are approved for export, but may be subject to the U.S. Government changing or cancelling the export license after the product is ordered. Our ability to conduct business outside of the U.S. also depends on our ability to attract and retain sufficient qualified personnel with the skills and/or security clearances in the markets in which we do business.

The products and services we provide internationally, including those provided by subcontractors and joint ventures in which we have an interest, are sometimes in countries with unstable governments, economic or fiscal challenges, military or political conflicts and/or developing legal systems. This may increase the risk to our employees, subcontractors or other third parties, and/or increase the risk of a wide range of liabilities, as well as loss of property or damage to our products.

The occurrence and impact of these factors is difficult to predict, but one or more of them could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our reputation, our ability to do business and our financial position, results of operations and/or cash flows may be impacted by the improper conduct of employees, agents, subcontractors, suppliers, business partners or joint ventures in which we participate.***

We have implemented policies, procedures, training and other compliance controls, and have negotiated terms designed to prevent misconduct by employees, agents or others working on our behalf or with us that would violate the applicable laws of the jurisdictions in which we operate, including laws governing improper payments to government officials, the protection of export controlled or classified information, cost accounting and billing, competition and data privacy. However, we cannot ensure that we will prevent all such misconduct committed by our employees, agents, subcontractors, suppliers, business partners or others working on our behalf or with us, and this risk of improper conduct may increase as we expand globally. In the ordinary course of our business we form and are members of joint ventures. We may be unable to prevent misconduct or other violations of applicable laws by these joint ventures (including their officers, directors and employees) or our partners. Improper actions by those with whom or through whom we do business (including our employees, agents, subcontractors, suppliers, business partners and joint ventures) could subject us to administrative, civil or criminal investigations and monetary and non-monetary penalties, including suspension and debarment, which could negatively impact our reputation and ability to conduct business and could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***We use estimates when accounting for contracts. Contract cost growth or changes in estimated contract revenues and costs could affect our profitability and our overall financial position.***

Contract accounting requires judgment relative to assessing risks, estimating contract revenues and costs, and making assumptions regarding performance. Due to the size and nature of many of our contracts, the estimation of total revenues and costs at completion is complex and subject to many variables. Incentives, awards and/or penalties related to performance on contracts are considered in estimating revenue and profit rates when there is sufficient information to assess anticipated performance. Suppliers' expected performance is also assessed and considered in estimating costs and profitability.

Our operating income can be adversely affected when we experience increased estimated contract costs. Reasons for increased estimated contract costs may include: design issues; changes in estimates of the nature and complexity of the work to be performed, including technical or quality issues or requests to perform additional work at the direction of the customer; production challenges, including those resulting from the availability and timeliness of customer funding, unavailability or reduced productivity of qualified and timely cleared labor or the effect of any delays in performance; the availability, performance, quality or financial strength of significant subcontractors; supplier issues, including the costs, timeliness and availability of materials and components; the effect of any changes in laws or regulations; actions deemed necessary for long-term customer satisfaction; and natural disasters or environmental matters. We may file requests for equitable adjustment or claims to seek recovery in whole or in part for our increased costs.

Our risk varies with the type of contract. Due to their nature, fixed-price contracts inherently tend to have more risk than cost type contracts. In 2016, approximately half of our sales were derived from fixed-price contracts. We typically enter into fixed-price contracts where costs can be more reasonably estimated based on actual experience, such as for mature production programs. In addition, our contracts contain provisions relating to cost controls and audit rights. If the terms specified in our contracts are not met, our profitability may be reduced and we may incur a loss. Our fixed-priced contracts may include fixed-price development work. This type of work is inherently more uncertain as to future events than production contracts, and, as a result, there is typically more variability in estimates of the costs to complete the development stage. As work progresses through the development stage into production, the risks associated with estimating the total costs of the contract are typically reduced. While management uses its best judgment to estimate costs associated with fixed-price development contracts, future events could result in either upward or downward adjustments to those estimates. Under cost type contracts, allowable costs incurred by the contractor are generally subject to reimbursement plus a fee. We often enter into cost type contracts for development programs with complex design and technical challenges. These cost type programs typically have award or incentive fees that are subject to uncertainty and may be earned over extended periods or towards the end of the contract. In these cases, the associated financial risks are primarily in recognizing profit, which ultimately may not be earned, or program cancellation if cost, schedule, or technical performance issues arise.

Because of the significance of the judgment and estimation processes described above, it is possible that materially different amounts could be obtained if different assumptions were used or if the underlying circumstances were to change. Changes in underlying assumptions, circumstances or estimates, and the failure to prevail on claims for equitable adjustments could have a material adverse effect upon the profitability of one or more of the affected contracts and on our overall financial position, results of operations and/or cash flows. See “Critical Accounting Policies, Estimates and Judgments” in MD&A.

- ***Our earnings and profitability depend, in part, on subcontractor and supplier performance and financial viability as well as raw material and component availability and pricing.***

We rely on other companies to provide raw materials and major components and subsystems for our products and to produce hardware elements and sub-assemblies, provide software and intellectual property, and perform some of the services we provide to our customers, and to do so in compliance with all applicable laws and regulations. Disruptions or performance problems caused by our subcontractors and suppliers, or a misalignment between our contractual obligations to our customers and our agreement with our subcontractors and suppliers, could have an adverse effect on our ability to meet our commitments to customers.

Our ability to perform our obligations on time could be adversely affected if one or more of our subcontractors or suppliers were unable to provide the agreed-upon products or materials or perform the agreed-upon services in a timely, compliant and cost-effective manner or otherwise to meet the requirements of the contract. Changes in economic conditions, including changes in defense budgets or credit availability, or other changes impacting a subcontractor or supplier (including changes in ownership or operations) could adversely affect the financial stability of our subcontractors and suppliers and/or their ability to perform. The inability of our suppliers to perform, or their inability to perform adequately, could also result in the need for us to transition to alternate suppliers, which could result in significant incremental cost and delay or the need for us to provide other resources to support our existing suppliers.

In connection with our U.S. Government contracts, we are required to procure certain materials, components and parts from supply sources approved by the customer. We also are facing increased and changing regulatory requirements, many of which apply to our subcontractors and suppliers. In some cases, there may be only one supplier for certain components. If a sole source supplier cannot meet our needs or is otherwise unavailable, we may be unable to find a suitable alternative.

Our procurement practices are intended to reduce the likelihood of our procurement of counterfeit, unauthorized or otherwise non-compliant parts or materials. We rely on our subcontractors and suppliers to comply with applicable laws and regulations, including regarding the parts or materials we procure from them; in some circumstances, we rely on certifications provided by our subcontractors and suppliers regarding their compliance. We also rely on our subcontractors and suppliers effectively to mitigate the risk of cyber and security threats or other disruptions with respect to the products and components they deliver to us and the information entrusted to them by us or our customers.

If we are unable to procure or experience significant delays in subcontractor or supplier deliveries of needed materials, components, intellectual property or parts; if our subcontractors or suppliers do not comply with all applicable laws and regulations; if the certifications we receive from them are inaccurate; or if what we receive is counterfeit or otherwise improper, it could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our business could be negatively impacted by cyber and other security threats or disruptions.***

As a defense contractor, we face various cyber and other security threats, including attempts to gain unauthorized access to sensitive information and networks; insider threats; threats to the safety of our directors, officers and employees; threats to the security of our facilities, infrastructure and supply chain; and threats from terrorist acts or other acts of aggression. Our customers and partners (including our supply chain and joint ventures) face similar threats. Although we utilize various procedures and controls to monitor and mitigate the risk of these threats, there can be no assurance that these procedures and controls will be sufficient. These threats could lead to losses of sensitive information or capabilities; harm to personnel, infrastructure or products; financial liabilities and damage to our reputation.

Cyber threats are evolving and include, but are not limited to, malicious software, destructive malware, attempts to gain unauthorized access to data, disruption or denial of service attacks, and other electronic security breaches that could lead to disruptions in mission critical systems, unauthorized release of confidential, personal or otherwise protected information (ours or that of our employees, customers or partners), and corruption of data, networks or systems. In addition, we could be impacted by cyber threats or other disruptions or vulnerabilities found in products we use or in our partners' or customers' systems that are used in connection with our business. These events, if not prevented or effectively mitigated, could damage our reputation, require remedial actions and lead to loss of business, regulatory actions, potential liability and other financial losses.

We provide systems, products and services to various customers (government and commercial) who also face cyber threats. Our systems, products and services may themselves be subject to cyber threats and/or they may not be able to detect or deter threats, or effectively to mitigate resulting losses. These losses could adversely affect our customers and our company.

The impact of these factors is difficult to predict, but one or more of them could result in the loss of information or capabilities, harm to individuals or property, damage to our reputation, loss of business, contractual or regulatory actions and potential liabilities, any one of which could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***As a U.S. Government contractor, we and our partners are subject to various procurement and other laws and regulations applicable to our industry and we could be adversely affected by changes in such laws and regulations or any negative findings by the U.S. Government as to our compliance with them. We also may be adversely affected by changes in our customers' business practices globally.***

U.S. Government contractors (including their subcontractors and others with whom they do business) must comply with many significant procurement regulations and other specific legal requirements. These regulations and other requirements, although often customary in government contracts, increase our performance and compliance costs and risks and are regularly evolving. New laws, regulations or procurement requirements or changes to current ones (including, for example, regulations related to cybersecurity, recovery of employee compensation costs, counterfeit parts, anti-human trafficking, specialty metals and conflict minerals) can significantly increase our costs and risks and reduce our profitability.

We operate in a highly regulated environment and are routinely audited and reviewed by the U.S. Government and its agencies, such as the Defense Contract Audit Agency (DCAA), Defense Contract Management Agency (DCMA) and the DoD Inspector General. These agencies review performance under our contracts, our cost structure and our compliance with applicable laws, regulations and standards, as well as the adequacy of our systems and processes in meeting government requirements. Costs ultimately found to be unallowable or improperly allocated to a specific contract will not be reimbursed or must be refunded if already reimbursed. If an audit uncovers improper or illegal activities, we may be subject to civil and criminal penalties, sanctions, forfeiture of profits or suspension or debarment. Whether or not illegal activities are alleged, the U.S. Government has the ability to decrease or withhold certain payments when it deems systems subject to its review to be inadequate, with significant financial impact. In addition, we could suffer serious reputational harm if allegations of impropriety were made against us or a business partner.

Our industry has experienced, and we expect it will continue to experience, significant changes to business practices globally as a result of an increased focus on affordability, efficiencies, business systems, recovery of costs and a reprioritization of available defense funds to key areas for future defense spending. As a result of certain of these initiatives, we have experienced and may continue to experience an increased number of audits and/or a lengthened period of time required to close open audits. For example, the thresholds for certain allowable costs in the U.S., including compensation costs, have been significantly reduced; the allowability of other types of costs are being challenged, debated and, in certain cases, modified, all with potentially significant financial costs to the company. In connection with these cost reduction initiatives, the U.S. Government is also pursuing alternatives to shift additional responsibility and performance risks to the contractor. The U.S. Government has been pursuing and may continue to pursue policies that could negatively impact our profitability. Changes in procurement practices favoring incentive-based fee arrangements, different award criteria, non-traditional contract provisions and government contract negotiation offers that indicate what our costs should be also may affect our profitability and predictability.

We (again, including our subcontractors and others with whom we do business) also are subject to and expected to perform in compliance with a vast array of federal laws related to our industry, including but not limited to the Truth in Negotiations Act, the False Claims Act, the Procurement Integrity Act, CAS, FAR, the International Traffic in Arms Regulations promulgated under the Arms Export Control Act, the Close the Contractor Fraud Loophole Act and the FCPA. If we are found to have violated the law, or are found not to have acted responsibly, we may be subject to reductions of the value of contracts; contract modifications or termination; the withholding of payments from our customer; the loss of export privileges; civil and criminal liabilities; the assessment of penalties, fines, or compensatory, treble or other damages; or suspension or debarment.

If we or those with whom we do business do not comply with the laws, regulations and processes to which we are subject or if customer business practices change significantly, including with respect to the thresholds for allowable costs, it could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Competition within our markets and bid protests may affect our ability to win new contracts and result in reduced revenues and market share.***

We operate in highly competitive markets and our competitors may have more extensive or specialized engineering, manufacturing, or marketing capabilities in some areas or financial capacity, or be willing to accept more risk or lower profitability in competing for contracts. We have seen, and anticipate we will continue to see, increased competition in some of our core markets, especially as a result of budget pressures for many customers, a continued focus on affordability and competition, and our own success in winning business. We are facing increasing competition in the U.S. and outside the U.S. from U.S., foreign and multinational firms. In some instances outside the U.S., foreign companies may receive loans, marketing subsidies and other assistance from their governments that may not be available to U.S. companies and foreign companies may be subject to fewer restrictions on technology transfer. Additionally, some customers, including the DoD, may turn to commercial contractors, rather than traditional defense contractors, for some products and services, or may utilize small business contractors or determine to source work internally rather than hiring a contractor.

We are also seeing a significant number of bid protests from unsuccessful bidders on new program awards. Bid protests could result in contract modifications or the award decision being reversed and loss of the contract award. Even where a bid protest does not result in the loss of an award, the resolution can extend the time until the contract activity can begin, and delay earnings.

If we are unable to continue to compete successfully against our current or future competitors, or prevail in protests, we may experience declines in future revenues and market share, which could, over time, have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our ability to win new competitions and meet the needs of our customers depends, in part, on our ability to maintain a qualified workforce.***

Our operating results are heavily dependent upon our ability to attract and retain sufficient personnel with requisite skills and/or security clearances. If qualified personnel are scarce or difficult to attract or retain or if we experience a high level of attrition, generally or in particular areas, or if such personnel are unable to obtain security clearances on a timely basis, we could experience higher labor, recruiting or training costs in order to attract and retain necessary employees.

Certain of our employees are covered by collective agreements. We generally have been able to renegotiate renewals to expiring agreements without significant disruption of operating activities. If we experience difficulties with renewals and renegotiations of existing collective agreements or if our employees pursue new collective representation, we could incur additional expenses and may be subject to work stoppages. Any such expenses or delays could adversely affect our programs served by employees who are covered by such agreements or representation.

If we are unable to attract and retain a qualified workforce, we may be unable to maintain our competitive position and our future success could be materially adversely affected.

- ***Many of our contracts contain performance obligations that require innovative design capabilities, are technologically complex, require state-of-the-art manufacturing expertise or are dependent upon factors not wholly within our control. Failure to meet our contractual obligations could adversely affect our profitability, reputation and future prospects.***

We design, develop and manufacture technologically advanced and innovative products and services, which are applied by our customers in a variety of environments. Problems and delays in development or delivery, or system failures, as a result of issues with respect to design, technology, intellectual property rights, labor, inability to achieve learning curve assumptions, inability to manage effectively a broad array of programs, manufacturing materials or components could prevent us from meeting requirements and create significant risk and liabilities. Similarly, failures to perform on schedule or otherwise to fulfill our contractual obligations could negatively impact our financial position, reputation and ability to win future business.

In addition, our products cannot be tested and proven in all situations and are otherwise subject to unforeseen problems. Examples of unforeseen problems that could negatively affect revenue, schedule and profitability include loss on launch or flight of spacecraft, loss of aviation platforms, premature failure of products that cannot be accessed for repair or replacement, problems with design, quality and workmanship, country of origin of procured materials, delivery of subcontractor components or services and degradation of product performance. These failures could result, either directly or indirectly, in loss of life or property. Among the factors that may affect revenue and profitability could be inaccurate cost estimates, design issues, human factors, unforeseen costs and expenses not covered by insurance or indemnification from the customer, diversion of management focus in responding to unforeseen problems, loss of follow-on work, and, in the case of certain contracts, repayment to the government customer of contract cost and fee payments we previously received.

Certain contracts, primarily involving space satellite systems, contain provisions that entitle the customer to recover fees in the event of failure of the system upon launch or subsequent deployment for less than a specified period of time. Under such terms, we could be required to forfeit fees previously recognized and/or collected.

If we are unable to meet our obligations, including due to issues regarding the design, development or manufacture of our products or services, or we experience launch, platform or satellite system failures, it could have a material adverse effect on our reputation, our ability to compete for other contracts and our financial position, results of operations and/or cash flows.

- ***Environmental matters, including unforeseen costs associated with compliance and remediation efforts, and government and third party claims, could have a material adverse effect on our reputation and our financial position, results of operations and/or cash flows.***

Our operations are subject to and affected by a variety of federal, state, local and foreign environmental laws and regulations, including as they may be changed over time. Compliance with environmental laws and regulations requires, and is expected to continue to require, significant operating and capital costs. We may be subject to substantial fines, penalties and criminal sanctions for violations. If we are found to be in violation of the Federal Clean Air Act or the Clean Water Act, the facility or facilities involved in the violation could be placed by the Environmental Protection Agency on a list maintained by the General Services Administration of facilities that generally cannot be used in performing on U.S. Government contracts until the violation is corrected.

We incur, and expect to continue to incur, substantial remediation costs related to the cleanup of pollutants previously released into the environment. Stricter or different enforcement of existing laws and regulations; new laws, regulations or cleanup requirements; discovery of previously unknown or more extensive contamination; imposition of fines, penalties, compensatory or other damages (including natural resource damages); a determination that certain environmental costs are unallowable; rulings on allocation or insurance coverage; and/or the insolvency or other inability or unwillingness of other parties to pay their share of such costs could require us to incur significant additional costs in excess of those anticipated.

We also are and may become a party to various legal proceedings and disputes involving government and private parties (including class actions) relating to alleged impacts from pollutants released into the environment. These matters could result in compensatory or other damages, determinations on allowability or insurance coverage, fines, penalties, and non-monetary relief.

We are engaged in remediation activities relating to environmental conditions allegedly resulting from historic operations at the former United States Navy and Grumman facilities in Bethpage, New York. We have incurred, and expect to continue to incur, substantial remediation costs related to environmental conditions in Bethpage. We are and may become a party to various legal proceedings and disputes related to remediation and/or alleged environmental impacts in Bethpage, including with federal and state entities, local municipalities and water districts, insurance carriers and class action plaintiffs. These matters could result in fines, penalties, compensatory or other damages (including natural resource damages), determinations on allocation, allowability and coverage, and non-monetary relief.

In addition, government and private parties could seek to hold us responsible for liabilities or obligations related to former operations that have been divested or spun-off (including our former shipbuilding business) and/or for which other parties have agreed to be responsible and/or to indemnify us, directly or indirectly. The indemnity related rights we have may not be sufficient to protect us against such liabilities.

The impact of these factors is difficult to predict, but one or more of them could harm our reputation and business and have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our business is subject to disruption caused by natural and/or environmental disasters that could adversely affect our profitability and our overall financial position.***

We have significant operations located in regions that may be exposed to earthquakes, damaging storms and other natural disasters. Our business also may be subject to environmental disasters. Our subcontractors and suppliers are also subject to natural and environmental disasters that could affect their ability to deliver or perform under a contract. Although preventative measures may help to mitigate damage, the damage and disruption resulting from natural and environmental disasters may be significant.

Natural and environmental disasters could also disrupt our and our subcontractors' and suppliers' workforce and the critical industrial infrastructure needed for normal business operations.

If insurance or other risk transfer mechanisms are unavailable or insufficient to recover all costs or if we experience a significant disruption to our business due to a natural or environmental disaster, it could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Our insurance coverage, customer indemnifications or other liability protections may be unavailable or inadequate to cover all of our significant risks or our insurers may deny coverage of or be unable to pay for material losses we incur, which could adversely affect our profitability and overall financial position.***

We endeavor to obtain insurance agreements from financially solid, highly rated counterparties in established markets to cover significant risks and liabilities (including, for example, natural disasters and product liability). Not every risk or liability can be insured, and for risks that are insurable, the policy limits and terms of coverage reasonably obtainable in the market may not be sufficient to cover all actual losses or liabilities incurred. Even if insurance coverage is available, we may not be able to obtain it at a price or on terms acceptable to us. Disputes with insurance carriers, including over policy terms, reservation of rights, the applicability of coverage (including exclusions), compliance with provisions (including notice) and/or the insolvency of one or more of our insurers may significantly affect the amount or timing of recovery.

In some circumstances we may be entitled to certain legal protections or indemnifications from our customers through contractual provisions, laws, regulations or otherwise. However, these protections are not always available, are typically subject to certain terms or limitations, including the availability of funds, and may not be sufficient to cover all losses or liabilities incurred.

If insurance coverage, customer indemnifications and/or other legal protections are not available or are not sufficient to cover our risks or losses, it could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***We provide products and services related to hazardous and high risk operations, which subjects us to various environmental, regulatory, financial, reputational and other risks.***

We provide products and services related to hazardous and high risk operations. Among other such operations, our products and services are used in nuclear-related activities (including nuclear-powered platforms) and used in support of nuclear-related operations of third parties. In addition, certain of our products are provided with space launch services. These activities subject us to various extraordinary risks, including potential liabilities relating to nuclear-related incidents; to the harmful effects on the environment and human health that may result from nuclear-related activities, operations or incidents, as well as the storage, handling and disposal of radioactive materials; and to failed launches of spacecraft. We may be subject to reputational harm and potential liabilities arising out of a nuclear or launch incident, among others, whether or not the cause was within our control. Under some circumstances, the U.S. Government and prime contractors provide for certain indemnification and other protection under certain of our government related contracts, including pursuant to, or in connection with, Public Law 85-804, the Price-Anderson Nuclear Industries Indemnity Act and the Terrorism Risk Insurance Reauthorization Act, for certain risks.

In addition, our customers may otherwise use our products and services in connection with hazardous activities, or in ways that can be unusually hazardous or risky, creating potential liabilities to our customers and/or our company as the provider of such products and services. In the event of an incident, if our customers fail to use our products properly or if our products or services do not operate as intended, we could be subject to reputational harm and potential liabilities.

If there was a nuclear incident or other nuclear-related damages, an incident related to launch activities or an incident or other damages related to or caused by the use of our products and services in connection with hazardous activities or risks, and if indemnification or other protection was not available to cover our losses and liabilities, it could adversely affect our reputation and have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Pension and medical liabilities and related expenses recorded in our financial statements may fluctuate significantly depending upon future investment performance of plan assets, changes in actuarial assumptions, and legislative or other regulatory actions.***

A substantial portion of our current and retired employee population is covered by pension and other post-retirement benefit plans. Defined benefit pension and medical liabilities and related expenses as recorded in our financial statements are primarily dependent upon future investment performance of plan assets and various assumptions, including discount rates applied to future payment obligations, mortality assumptions, estimated long-term rates of return on plan assets, rates of future cost growth and trends for future costs. In addition, funding requirements for benefit obligations of our pension and other post-retirement benefit plans, including Pension Benefit Guaranty Corporation premiums for certain of our defined benefit plans, and our health and welfare plans are subject to legislative and other government regulatory actions.

In accordance with government regulations, pension plan cost recoveries under our U.S. Government contracts may occur in different periods from when those pension costs are recognized for financial statement purposes or when pension funding is made. These timing differences could have a material adverse effect on our cash flows. The cost accounting rules have been revised in order to partially harmonize the measurement and period of assignment of defined benefit pension plan costs allocable to U.S. Government contracts and the minimum required contribution under the Employee Retirement Income Security Act of 1974 (ERISA), as amended by the Pension Protection Act (PPA) of 2006. These rules better align, but do not eliminate, mismatches between ERISA funding requirements and CAS pension costs for U.S. Government CAS covered contracts.

Future investment performance of plan assets and changes in assumptions associated with our pension and other post-retirement benefit plans could have a material adverse effect on our financial position, results of operations and/or cash flows.

- ***Changes in future business conditions could cause business investments and/or recorded goodwill and other long-lived assets to become impaired, resulting in substantial losses and write-downs that would reduce our operating income.***

Although we currently have significant excess fair value of our reporting units over their respective carrying values, goodwill accounts for approximately half of our total assets. Market-based inputs to the calculations in our goodwill impairment test, such as weighted average cost of capital and terminal value (based on market comparisons) could change significantly from our current assumptions. We continue to monitor the recoverability of the carrying value of our goodwill and other long-lived assets. Significant write-offs of goodwill or other long-lived assets could have a material adverse effect on our financial condition and/or results of operations.

- ***We may be unable fully to exploit or adequately to protect intellectual property rights, which could materially affect our ability to compete, our reputation and our financial position, results of operations and/or cash flows.***

To perform on our contracts and to win new business, we depend on our ability to develop, protect and exploit our intellectual property and also to access the intellectual property of others under reasonable terms. We may not be able adequately to exploit, protect or access intellectual property and the conduct of our customers, competitors and suppliers may make it more difficult for us to do so.

We own many forms of intellectual property, including U.S. and foreign patents, trademarks, copyrights and trade secrets and we license or otherwise obtain access to various intellectual property rights of third parties. The U.S. Government and certain foreign governments hold licenses or other rights to certain intellectual property that we develop in performance of government contracts, and may seek to use or authorize others to use such intellectual property, including in competition with us. Governments have increased certain efforts to assert or obtain more extensive rights in intellectual property, which could decrease our ability to exploit certain of our intellectual property rights and to compete. Governments have also declined at times to make intellectual property of others available to us under acceptable terms.

We also rely significantly upon proprietary technology, information, processes and know-how. We typically seek to protect this information, including by entering into confidentiality agreements with our employees and other parties such as consultants and subcontractors. These agreements and other measures may not provide adequate protection for our trade secrets and other proprietary information. In the event of an infringement of such intellectual property rights, a breach of a confidentiality agreement or divulgence of proprietary information, we may not have adequate legal remedies. In addition, our trade secrets or other proprietary information may otherwise become known or be independently developed by competitors.

In some instances, our ability to seek, win or perform contracts may require us to access and use third party intellectual property. This may require that the government or our customer is willing and able to provide rights to such third party intellectual property, or that we are able to negotiate directly to obtain necessary rights on reasonable terms.

Our intellectual property is subject to challenge, invalidation, misappropriation or circumvention by third parties. Our use of intellectual property licensed or otherwise obtained from third parties is also subject to challenge. Litigation to determine the scope of intellectual property rights, even if ultimately successful, could be costly and could divert management's attention away from other aspects of our business. Moreover, the laws concerning intellectual property rights vary among countries and the protection provided to our intellectual property by foreign laws and courts may not be the same as the remedies available under U.S. law.

If we are unable adequately to exploit our intellectual property rights, to protect our intellectual property rights against infringement or third party claims, or to obtain rights to intellectual property of others, it could have a material adverse effect on our reputation, ability to compete for and perform on contracts, financial position, results of operations and/or cash flows.

- ***Our future success depends, in part, on our ability to develop new products and new technologies and maintain technologies, facilities and equipment to win new competitions and meet the needs of our customers.***

Many of the markets in which we operate are characterized by rapidly changing technologies. The product, program and service needs of our customers change and evolve regularly. Our success in the competitive defense industry depends upon our ability to develop technologically advanced, innovative and cost-effective products and services and market these products and services to our customers in the U.S. and internationally. Our success depends on our continued access to assured suppliers of important technologies and components. Our success also depends on our ability to provide the people, technologies, facilities, equipment and financial capacity needed to deliver those products and services with maximum efficiency. If we fail to maintain our competitive position, we could lose a significant amount of future business to our competitors, which would negatively impact our ability to generate favorable financial results and maintain market share.

If we are unable to develop new products and technologies, we may be unable to maintain our competitive position and our future success could be materially adversely affected.

- ***Unanticipated changes in our tax provisions or exposure to additional tax liabilities could affect our profitability and cash flow.***

We are subject to income and other taxes in the U.S. and foreign jurisdictions. Changes in applicable U.S. or foreign tax laws and regulations, or their interpretation and application, including the possibility of retroactive effect, could affect our tax expense and profitability. For example, a change in the U.S. corporate tax rate would result in a remeasurement of our net deferred tax assets through the income tax provision because our deferred tax assets are measured at the current statutory tax rate. In addition, the final determination of any tax audits or related litigation could be materially different from our historical income tax provisions and accruals. Changes in our tax provision or an increase in our tax liabilities, whether due to changes in applicable law and regulations, the interpretation or application thereof, changes in the tax rate or a final determination of tax audits or litigation, could have a material adverse effect on our financial position, results of operations and/or cash flows.

Item 1B. Unresolved Staff Comments

None.

FORWARD-LOOKING STATEMENTS AND PROJECTIONS

This Annual Report on Form 10-K and the information we are incorporating by reference contain statements, other than statements of historical fact, that constitute “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. Words such as “expect,” “intend,” “may,” “could,” “plan,” “project,” “forecast,” “believe,” “estimate,” “outlook,” “anticipate,” “trends,” “goals” and similar expressions generally identify these forward-looking statements. Forward-looking statements include, among other things, statements relating to our future financial condition, results of operations and/or cash flows. Forward-looking statements are based upon assumptions, expectations, plans and projections that we believe to be reasonable when made, but which may change over time. These statements are not guarantees of future performance and inherently involve a wide range of risks and uncertainties that are difficult to predict. Specific risks that could cause actual results to differ materially from those expressed or implied in these forward-looking statements include, but are not limited to, those identified under “Risk Factors” and other important factors disclosed in this report and from time to time in our other filings with the SEC.

You are urged to consider the limitations on, and risks associated with, forward-looking statements and not unduly rely on the accuracy of forward-looking statements. These forward-looking statements speak only as of the date this report is first filed or, in the case of any document incorporated by reference, the date of that document. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by applicable law.

Item 2. Properties

At December 31, 2016, we had approximately 34 million square feet of floor space at 442 separate locations, primarily in the U.S., for manufacturing, warehousing, research and testing, administration and various other uses. At December 31, 2016, we leased to third parties approximately 260,000 square feet of our owned and leased facilities.

At December 31, 2016, we had major operations at the following locations:

Aerospace Systems

Azusa, Carson, El Segundo, Manhattan Beach, Mojave, Palmdale, Redondo Beach and San Diego, CA; Melbourne and St. Augustine, FL; Devens, MA; and Moss Point, MS.

Mission Systems

Huntsville, AL; McClellan, Redondo Beach, San Diego, San Jose, Sunnyvale and Woodland Hills, CA; Aurora and Colorado Springs, CO; Apopka, FL; Rolling Meadows, IL; Annapolis, Annapolis Junction, Elkridge, Halethorpe, Linthicum and Sykesville, MD; Bethpage and Williamsville, NY; Beavercreek and Cincinnati, OH; Salt Lake City, UT; and Chantilly, Charlottesville, Fairfax, McLean and Richmond, VA. Locations outside the U.S. include Germany, Italy and the United Kingdom.

Technology Services

Sierra Vista, AZ; Warner Robins, GA; Lake Charles, LA; Baltimore, MD; and Chester and Herndon, VA. Locations outside the U.S. include Australia and France.

Corporate

Falls Church and Lebanon, VA and Irving, TX.

The following is a summary of our floor space at December 31, 2016:

Square feet (in thousands)	Owned	Leased	U.S. Government Owned/Leased	Total
Aerospace Systems	6,756	6,610	2,019	15,385
Mission Systems	8,783	5,583	—	14,366
Technology Services	414	2,845	1	3,260
Corporate	657	444	—	1,101
Total	16,610	15,482	2,020	34,112

We maintain our properties in good operating condition and believe that the productive capacity of our properties is adequate to meet current contractual requirements and those for the foreseeable future.

Item 3. Legal Proceedings

We have provided information about certain legal proceedings in which we are involved in Note 10 to the consolidated financial statements.

We are a party to various investigations, lawsuits, claims and other legal proceedings, including government investigations and claims, that arise in the ordinary course of our business. These types of matters could result in fines; penalties; compensatory, treble or other damages; or non-monetary relief. Government regulations also provide that certain allegations against a contractor may lead to suspension or debarment from future government contracts or suspension of export privileges for the company or one or more of its components. Suspension or debarment could have a material adverse effect on the company because of our reliance on government contracts and authorizations. The nature of legal proceedings is such that we cannot assure the outcome of any particular matter. However, based on information available to us to date and other than as noted in Note 10 to the consolidated financial statements, we do not believe that the outcome of any matter currently pending against the company is likely to have a material adverse effect on the company's consolidated financial position as of December 31, 2016, its annual results of operations and/or cash flows. For further information on the risks we face from existing and future investigations, lawsuits, claims and other legal proceedings, please see “Risk Factors.”

Item 4. Mine Safety Disclosures

No information is required in response to this item.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

COMMON STOCK

We have 800,000,000 shares authorized at a $1 par value per share, of which 175,068,263 shares and 181,303,083 shares were issued and outstanding as of December 31, 2016 and 2015, respectively.

PREFERRED STOCK

We have 10,000,000 shares authorized at a $1 par value per share, of which no shares were issued and outstanding as of December 31, 2016 and 2015.

MARKET INFORMATION

Our common stock is listed on the New York Stock Exchange and trades under the symbol NOC.

The following table sets forth, for the periods indicated, the intraday high and low prices of our common stock as reported in the consolidated reporting system for the New York Stock Exchange Composite Transactions.

	2016	2015
	Low - High	Low - High
First Quarter	**$175.00 - $200.78**	$141.58 - $172.30
Second Quarter	**198.75 - 223.42**	152.44 - 166.55
Third Quarter	**206.69 - 224.12**	152.31 - 176.83
Fourth Quarter	**212.02 - 253.80**	168.26 - 193.99

HOLDERS

The approximate number of common stockholders was 24,427 as of January 26, 2017.

DIVIDENDS

Quarterly dividends per common share for the most recent two years are as follows:

	2016	2015
First Quarter	**$ 0.80**	$ 0.70
Second Quarter	**0.90**	0.80
Third Quarter	**0.90**	0.80
Fourth Quarter	**0.90**	0.80
Total	**$ 3.50**	$ 3.10

PURCHASES OF EQUITY SECURITIES BY THE ISSUER AND AFFILIATED PURCHASERS

The table below summarizes our repurchases of common stock during the three months ended December 31, 2016:

Period	Total Number of Shares Purchased	Average Price Paid per Share[1]	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 ($ in millions)
October 1, 2016 - October 28, 2016	662,750	$ 217.46	662,750	$ 2,970
October 29, 2016 - November 25, 2016	464,130	237.83	464,130	2,860
November 26, 2016 - December 31, 2016	592,600	237.65	592,600	2,719
Total	1,719,480	$ 229.92	1,719,480	$ 2,719

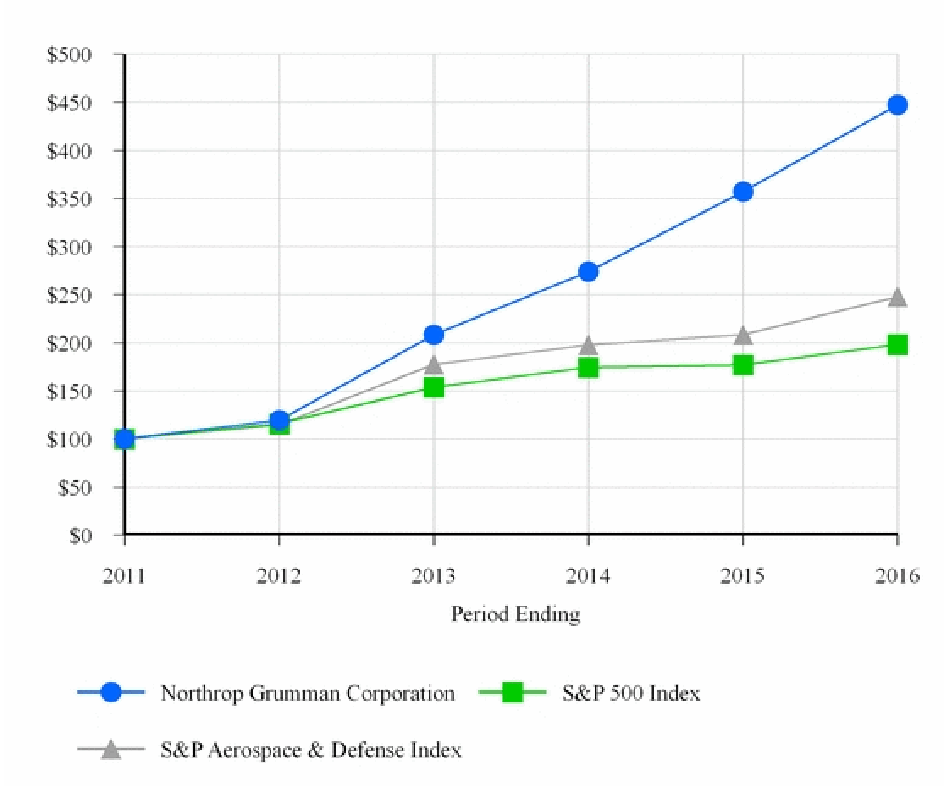
(1) Includes commissions paid.

Share repurchases take place from time to time, subject to market conditions and management's discretion, in the open market or in privately negotiated transactions. The company retires its common stock upon repurchase and, in the periods presented, has not made any purchases of common stock other than in connection with these publicly announced repurchase programs.

See Note 2 to the consolidated financial statements for further information on our share repurchase programs.

STOCK PERFORMANCE GRAPH

Comparison of Cumulative Five Year Total Return
Among Northrop Grumman Corporation, the S&P 500 Index,
and the S&P Aerospace & Defense Index



(1) Assumes $100 invested at the close of business on December 31, 2011, in Northrop Grumman Corporation common stock, Standard & Poor's (S&P) 500 Index and the S&P Aerospace & Defense Index.
(2) The cumulative total return assumes reinvestment of dividends.
(3) The S&P Aerospace & Defense Index is comprised of Arconic, Inc., The Boeing Company, General Dynamics Corporation, L3 Technologies, Inc., Lockheed Martin Corporation, Northrop Grumman Corporation, Raytheon Company, Rockwell Collins, Inc., Textron, Inc., TransDigm Group and United Technologies Corporation.
(4) The total return is weighted according to market capitalization of each company at the beginning of each year.
(5) This graph is not deemed to be filed with the U.S. Securities and Exchange Commission (SEC) or subject to the liabilities of Section 18 of the Securities and Exchange Act of 1934 (the Exchange Act), and should not be deemed to be incorporated by reference into any of our prior or subsequent filings under the Securities Act of 1933 or the Exchange Act.

Item 6. Selected Financial Data

The data presented in the following table is derived from the audited consolidated financial statements and other information.

SELECTED FINANCIAL DATA

	Year Ended December 31				
$ in millions, except per share amounts	**2016**	2015	2014	2013	2012
Sales					
U.S. Government[1]	**$ 20,573**	$ 19,458	$ 20,085	$ 21,278	$ 22,268
International[2]	**3,205**	3,339	3,045	2,493	2,085
Other Customers[3]	**730**	729	849	890	865
Total sales	**24,508**	23,526	23,979	24,661	25,218
Operating income	**3,193**	3,076	3,196	3,123	3,130
Net earnings	**2,200**	1,990	2,069	1,952	1,978
Basic earnings per share	**$ 12.30**	$ 10.51	$ 9.91	$ 8.50	$ 7.96
Diluted earnings per share	**12.19**	10.39	9.75	8.35	7.81
Cash dividends declared per common share	**3.50**	3.10	2.71	2.38	2.15
Year-End Financial Position					
Total assets[4]	**$ 25,614**	$ 24,424	$ 26,545	$ 26,351	$ 26,527
Notes payable to banks and long-term debt[4]	**7,070**	6,496	5,901	5,900	3,919
Other long-term obligations[5]	**7,667**	7,059	7,520	4,018	7,043
Financial Metrics					
Net cash provided by operating activities	**$ 2,813**	$ 2,162	$ 2,593	$ 2,483	$ 2,640
Free cash flow[6]	**1,893**	1,691	2,032	2,119	2,309
Other Information					
Company-sponsored research and development expenses	**$ 705**	$ 712	$ 569	$ 507	$ 520
Total backlog	**45,339**	35,923	38,199	37,033	40,809
Square footage at year-end (in thousands)	**34,112**	34,392	34,264	34,500	35,053
Number of employees at year-end	**67,000**	65,000	64,300	65,300	68,100

(1) Sales to the United States (U.S.) Government include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is the U.S. Government. Each of the company's segments derives substantial revenue from the U.S. Government.

(2) International sales include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is an international customer. These sales include foreign military sales contracted through the U.S. Government, direct sales with governments outside the U.S. and commercial sales outside the U.S.

(3) Sales to Other Customers include sales to U.S. state and local governments and commercial sales in the U.S.

(4) Prior year amounts have been reclassified to conform to current year presentation due to our adoption of Accounting Standards Update 2015-03, *Interest - Imputation of Interest (Subtopic 835-30): Simplifying the Presentation of Debt Issuance Costs.* As a result, we now present capitalized debt issuance costs as a reduction in the carrying amount of long-term debt. This change resulted in a reclassification of other non-current assets to long-term debt, which reduced our previously reported total assets and total liabilities as of each period end date.

(5) Other long-term obligations include pension and other post-retirement benefit plan liabilities, deferred compensation, unrecognized tax benefits, environmental liabilities and other long-term obligations.

(6) Free cash flow is a non-GAAP measure defined as net cash provided by operating activities less capital expenditures, and may not be defined and calculated by other companies in the same manner. We use free cash flow as a key factor in our planning for, and consideration of, acquisitions, stock repurchases, and the payment of dividends. This measure may be useful to investors and other users of our financial statements as a supplemental measure of our cash performance, but should not be considered in isolation, as a measure of residual cash flow available for discretionary purposes, or as an alternative to operating results presented in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP” or “FAS”). See “Liquidity and Capital Resources” – “Free Cash Flow” in Management's Discussion and Analysis of Financial Conditions and Results of Operations (MD&A) for more information on this measure, including a reconciliation of free cash flow to net cash provided by operating activities.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

OVERVIEW

Global Security and Economic Environment
The U.S. and its allies face a global security environment of heightened tensions and instability, threats from state and non-state actors as well as terrorist organizations, emerging nuclear tensions and diverse regional security concerns. Global threats persist across all domains, from undersea to space to cyber. The market for defense products, services and solutions globally continues to be driven by these complex and evolving security challenges, considered in the broader context of political and socioeconomic priorities.

Global economic growth is expected to remain in the low single digits in 2017, reflecting the impact of and uncertainty surrounding geopolitical tensions globally and financial market volatility. The global economy may also be affected by Britain's exit from the European Union, the impact of which is not known at this time. Global economic conditions could impact customer purchasing decisions.

U.S. Political and Economic Environment
In the U.S., there is an uncertain political environment with a new Administration and a new Congress. The U.S. continues to face substantial fiscal and economic challenges, which affect funding for its discretionary and non-discretionary budgets. Part I of the Budget Control Act of 2011 (Budget Control Act) provided for a reduction in planned defense budgets by at least $487 billion over a ten year period. Part II mandated substantial additional reductions, through a process known as "sequestration," which took effect in March 2013.

On November 2, 2015, the President signed the Bipartisan Budget Act of 2015 (the Budget Act). The Budget Act raised the debt ceiling until March 2017 and raised the sequester caps imposed by the Budget Control Act by $80 billion, split equally between defense and non-defense discretionary spending in the Government's FY 2016 and FY 2017 ($50 billion in FY 2016 and $30 billion in FY 2017). Sequestration spending caps under the Budget Control Act could reduce defense spending again in FY 2018.

On December 18, 2015, Congress passed and the President signed the Consolidated Appropriations Act of 2016, which provided funding for the U.S. Government for FY 2016, providing $1.1 trillion in discretionary funding for federal agencies through September 2016. The FY 2016 DoD budget was approximately $580 billion (including $58 billion for Overseas Contingency Operations (OCO)), which represented an approximately four percent increase relative to DoD funding for FY 2015.

On February 9, 2016, the President delivered his FY 2017 budget to Congress. The FY 2017 budget reflected the FY 2017 spending caps established in the Budget Act and requested $583 billion for the DoD's annual budget, including $59 billion for OCO. The President signed a continuing resolution in September 2016, which was extended in December 2016 and provides funding for the U.S. Government at FY 2016 levels through April 28, 2017.

The federal budget and debt ceiling are expected to continue to be the subject of considerable debate, which could have a significant impact on defense spending broadly and the company's programs in particular. Additionally, both the incoming Administration and the new Congress have offered plans to reform the federal income tax code, along with other significant policy initiatives, some of which could have an impact on the company.

For further information on the risks we face from the current political and economic environment, see "Risk Factors."

Operating Performance Assessment and Reporting
We manage and assess our business based on our performance on contracts and programs (typically large contracts or two or more closely-related contracts). We recognize sales from our portfolio of long-term contracts primarily using the cost-to-cost method of percentage of completion accounting, but in some cases we utilize the units-of-delivery method of percentage of completion accounting. As a result, sales tend to fluctuate in concert with costs incurred and units delivered across our large portfolio of contracts. Due to Federal Acquisition Regulation (FAR) rules that govern our U.S. Government business and related Cost Accounting Standards (CAS), most types of costs are allocable to U.S. Government contracts. As such, we do not focus on individual cost groupings (such as manufacturing, engineering and design labor costs, subcontractor costs, material costs, overhead costs and general and administrative (G&A) costs), as much as we do on total contract cost, which is the key driver of our sales and operating income.

In evaluating our operating performance, we look primarily at changes in sales and operating income. Where applicable, significant fluctuations in operating performance attributable to individual contracts or programs, or changes in a specific cost element across multiple contracts, are described in our analysis. Based on this approach and the nature of our operations, the discussion of results of operations below first focuses on our three segments before distinguishing between products and services. Changes in sales are generally described in terms of volume, deliveries or other indicators of sales activity. Changes in margins are generally described in terms of performance and contract mix. For purposes of this discussion, volume generally refers to increases or decreases in sales or cost from production/service activity levels or delivery rates. Performance generally refers to non-volume related changes in profitability. Contract mix refers to changes in the ratio of contract type, lifecycle, customer or other non-performance impacts on contract profitability.

CONSOLIDATED OPERATING RESULTS

Selected financial highlights are presented in the table below:

	Year Ended December 31			% Change in	
$ in millions, except per share amounts	**2016**	2015	2014	**2016**	2015
Sales	**$ 24,508**	$ 23,526	$ 23,979	**4 %**	(2)%
Operating costs and expenses	**21,315**	20,450	20,783	**4 %**	(2)%
Operating income	**3,193**	3,076	3,196	**4 %**	(4)%
Operating margin rate	***13.0%***	*13.1%*	*13.3%*		
Federal and foreign income tax expense	**723**	800	868	**(10)%**	(8)%
Effective income tax rate	***24.7%***	*28.7%*	*29.6%*		
Net earnings	**2,200**	1,990	2,069	**11 %**	(4)%
Diluted earnings per share	**12.19**	10.39	9.75	**17 %**	7 %

Sales
2016 – Sales increased $982 million, or 4 percent, as compared with 2015, primarily due to higher sales at Aerospace Systems and Mission Systems.

2015 – Sales decreased $453 million, or 2 percent, as compared with 2014, primarily due to lower sales on U.S. Government contracts across the company, partially offset by an increase in international sales at Aerospace Systems.

See “Revenue Recognition” in Note 1 to the consolidated financial statements for further information on sales by customer category.

See “Segment Operating Results” for further information by segment and “Product and Service Analysis” for product and service detail.

Operating Costs and Expenses and Operating Margin Rate
Operating costs and expenses primarily include labor, material, subcontractor and overhead costs, and are generally allocated to contracts as incurred. Operating margin rate is defined as operating income as a percentage of sales. In accordance with industry practice and the regulations that govern cost accounting requirements for government contracts, most general management and corporate expenses incurred at the segment and corporate locations are considered allowable and allocable costs. Allowable and allocable G&A costs, including independent research and development (IR&D) and bid and proposal costs, are allocated on a systematic basis to contracts in progress.

Operating costs and expenses comprise the following:

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Product costs	**$ 11,002**	$ 10,333	$ 10,431	**6%**	(1)%
Service costs	**7,729**	7,551	7,947	**2%**	(5)%
G&A	**2,584**	2,566	2,405	**1%**	7 %
Operating costs and expenses	**$ 21,315**	$ 20,450	$ 20,783	**4%**	(2)%
Operating costs and expenses as a % of sales	**87.0%**	86.9%	86.7%		
G&A as a % of sales	**10.5%**	10.9%	10.0%		

2016 – Operating costs and expenses as a percentage of sales increased slightly in 2016 as compared with 2015, which reduced our operating margin rate to 13.0 percent from 13.1 percent in the prior year period. The decrease in operating margin rate was driven by lower segment margin rates, as described in "Segment Operating Results," and a $32 million decrease in our net FAS/CAS pension adjustment, partially offset by a $137 million reduction in unallocated corporate expenses, as described in Note 3 to the consolidated financial statements.

2015 – Operating costs and expenses as a percentage of sales increased in 2015 as compared with 2014, which reduced our operating margin rate to 13.1 percent from 13.3 percent in the prior year period. The decrease in operating margin rate was driven by $179 million of lower segment operating income, as described in "Segment Operating Results," and $21 million in higher unallocated corporate expenses, partially offset by a $79 million increase in our net FAS/CAS pension adjustment, as described in Note 3 to the consolidated financial statements.

2016 – G&A as a percentage of sales decreased to 10.5 percent in 2016 from 10.9 percent in 2015, principally due to higher sales volume.

2015 – G&A as a percentage of sales increased to 10.9 percent in 2015 from 10.0 percent in 2014, principally due to an increase in IR&D as we continue to invest in future business opportunities.

For further information regarding product and service sales and costs, see the "Product and Service Analysis" section that follows "Segment Operating Results."

Operating Income

We define operating income as sales less operating costs and expenses, which includes G&A.

2016 – Operating income increased $117 million, or 4 percent, as compared with 2015, primarily due to a $137 million reduction in unallocated corporate expenses and higher sales volume, partially offset by a $32 million decrease in our net FAS/CAS pension adjustment and lower segment margin rates.

2015 – Operating income decreased $120 million, or 4 percent, as compared with 2014, primarily due to the lower sales volume described above and the absence in 2015 of a $75 million benefit realized in 2014 in connection with agreements reached with the U.S. Government to settle certain claims relating to use of the company's intellectual property and a terminated program.

Federal and Foreign Income Taxes

2016 – Our effective tax rate for 2016 was 24.7 percent, as compared with 28.7 percent in 2015. The lower rate is principally due to $85 million of excess tax benefits related to employee share-based payment transactions recognized in 2016 resulting from the adoption of ASU No. 2016-09, as described in Note 1 to the consolidated financial statements, a $40 million benefit recognized in connection with resolution of the Internal Revenue Service (IRS) examination of the company's 2007-2011 tax returns and a $33 million benefit recognized in connection with the repatriation of earnings from certain of our foreign subsidiaries described in Note 6 to the consolidated financial statements. These benefits were partially offset by a $58 million decrease in research credits, which were principally a result of credits recorded in 2015 that were claimed on our prior year tax returns. While discrete tax benefits in each year have reduced our effective tax rate below the statutory rate, these items are not indicative of a longer-term trend. On an ongoing basis (excluding impacts associated with ASU No. 2016-09 and assuming no changes in federal tax legislation), we expect an effective tax rate of approximately 30 percent due principally to recurring tax benefits associated with the manufacturing deduction and research credits.

2015 – Our effective tax rate for 2015 was 28.7 percent, as compared with 29.6 percent in 2014. This reduction was driven by a $76 million increase in research credits primarily resulting from credits claimed on our prior year tax returns, partially offset by a $51 million benefit recorded in 2014 for the partial resolution of the IRS examination of our 2007-2009 tax returns.

Net Earnings

2016 – Net earnings for 2016 increased $210 million, or 11 percent, as compared with 2015, primarily due to the higher operating income and lower effective tax rate discussed above.

2015 – Net earnings for 2015 decreased $79 million, or 4 percent, as compared with 2014, primarily due to lower operating income and higher interest expense, partially offset by the lower effective tax rate described above.

Diluted Earnings Per Share

2016 – Diluted earnings per share for 2016 increased $1.80, or 17 percent, as compared with 2015. The increase is primarily due to the 11 percent increase in net earnings discussed above and a 6 percent reduction in weighted-average shares outstanding resulting from shares repurchased during 2015 and 2016.

2015 – Diluted earnings per share for 2015 increased $0.64, or 7 percent, as compared with 2014. The increase is primarily due to a 10 percent reduction in weighted-average diluted shares outstanding resulting from shares repurchased in 2014 and 2015, partially offset by the 4 percent decline in net earnings discussed above.

SEGMENT OPERATING RESULTS

Basis of Presentation

At December 31, 2016, the company was aligned in three operating sectors, which are also our reportable segments: Aerospace Systems, Mission Systems, and Technology Services. Effective January 1, 2016, the company streamlined our sectors from four to three as described in Note 3 to the consolidated financial statements. For a more complete description of each segment's products and services, see "Business."

We present our sectors in the following business areas, which are reported in a manner reflecting core capabilities:

Aerospace Systems	**Mission Systems**	**Technology Services**
Autonomous Systems	Sensors and Processing	Global Logistics and Modernization
Manned Aircraft	Cyber and ISR	Advanced Defense Services
Space	Advanced Capabilities	System Modernization and Services

This section discusses segment sales, operating income and operating margin rates. A reconciliation of segment operating income to total operating income is provided below.

Segment Operating Income and Margin Rate

Segment operating income, as reconciled in the Reconciliation of Segment Operating Income to Total Operating Income table below, is a non-GAAP measure that reflects total earnings from our three segments including allocated pension expense recognized under CAS, and excluding unallocated corporate items and FAS pension expense. This measure may be useful to investors and other users of our financial statements as a supplemental measure in evaluating the financial performance and operational trends of our sectors.

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Segment operating income	**$ 2,935**	$ 2,920	$ 3,099	**1%**	(6)%
Segment operating margin rate	***12.0%***	*12.4%*	*12.9%*		

2016 - Segment operating income for 2016 increased $15 million, or 1 percent, as compared with 2015 as a result of higher sales volume, which more than offset the lower segment operating margin rate. Segment operating margin rate decreased to 12.0 percent from 12.4 percent in 2015 principally due to a lower segment margin rate at Aerospace Systems.

2015 - Segment operating income for 2015 decreased $179 million, or 6 percent, as compared with 2014 and segment operating margin rate decreased to 12.4 percent from 12.9 percent in 2014. The decrease in segment operating income was principally due to lower sales volume and the absence in 2015 of the $75 million in settlements described above and a benefit of approximately $45 million from lower 2014 CAS costs due to passage of the Highway and Transportation Funding Act of 2014 (HATFA). The absence in 2015 of the noted settlements and HATFA benefits was the primary driver of the lower 2015 operating margin rate.

Reconciliation of Segment Operating Income to Total Operating Income - The table below reconciles segment operating income to total operating income by including the impact of net FAS/CAS pension adjustments, as well as unallocated corporate expenses (certain corporate-level expenses, which are not considered allowable or allocable under applicable CAS or the FAR). See Note 3 to the consolidated financial statements for further information on the net FAS/CAS pension adjustment and unallocated corporate expenses.

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Segment operating income	**$ 2,935**	$ 2,920	$ 3,099	**1 %**	(6)%
CAS pension expense	**847**	703	384	**20 %**	83 %
Less: FAS pension expense	**(531)**	(355)	(115)	**50 %**	209 %
Net FAS/CAS pension adjustment	**316**	348	269	**(9)%**	29 %
Unallocated corporate expenses	**(53)**	(190)	(169)	**(72)%**	12 %
Other	**(5)**	(2)	(3)	**150 %**	(33)%
Total operating income	**$ 3,193**	$ 3,076	$ 3,196	**4 %**	(4)%

Net EAC Adjustments - We record changes in estimated contract earnings at completion (net EAC adjustments) using the cumulative catch-up method of accounting. Net EAC adjustments can have a significant effect on reported sales and operating income and the aggregate amounts are presented in the table below:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Favorable EAC adjustments	**$ 765**	$ 924	$ 922
Unfavorable EAC adjustments	**(271)**	(344)	(258)
Net EAC adjustments	**$ 494**	$ 580	$ 664

Net EAC adjustments by segment are presented in the table below:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Aerospace Systems	**$ 263**	$ 352	$ 359
Mission Systems	**191**	169	295
Technology Services	**69**	68	32
Eliminations	**(29)**	(9)	(22)
Net EAC adjustments	**$ 494**	$ 580	$ 664

AEROSPACE SYSTEMS

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Sales	**$ 10,828**	$ 9,940	$ 9,910	**9%**	— %
Operating income	**1,236**	1,205	1,285	**3%**	(6)%
Operating margin rate	***11.4%***	*12.1%*	*13.0%*		

2016 - Aerospace Systems sales for 2016 increased $888 million, or 9 percent, as compared with 2015. The increase was due to higher volume on Manned Aircraft and Autonomous Systems programs. Manned Aircraft sales increased primarily due to higher restricted volume, increased F-35 deliveries and production ramp-up on the E-2D program. These increases were partially offset by lower B-2 volume and fewer F/A-18 deliveries. Autonomous Systems sales increased primarily due to higher volume on the Triton and Global Hawk programs, partially offset by ramp-down of the NATO Alliance Ground Surveillance (AGS) program. Space sales include higher volume on restricted programs, partially offset by lower volume on the Advanced Extremely High Frequency (AEHF) program.

Operating income for 2016 increased $31 million, or 3 percent, and includes a gain of $45 million associated with the sale of a property. Higher sales volume and improved performance on Space and Autonomous Systems programs were more than offset by lower margins on Manned Aircraft programs, principally due to changes in contract mix and the timing of risk reductions. Operating margin rate decreased to 11.4 percent from 12.1 percent primarily due to the lower margins on Manned Aircraft programs, partially offset by improved performance on Space and Autonomous Systems programs.

2015 - Aerospace Systems sales for 2015 were comparable to the prior year. Sales in 2014 included the $75 million in settlements described above. Excluding the settlements, sales for 2015 increased $105 million, or 1 percent, as compared to 2014. The increase is primarily due to higher volume on Autonomous Systems and Space programs, partially offset by lower volume on Manned Aircraft programs. Autonomous Systems sales reflect higher volume on a number of programs, including Global Hawk, partially offset by lower volume on the Fire Scout and NATO AGS programs. Sales in Manned Aircraft declined principally due to fewer F/A-18 deliveries, as that program ramps down, and lower volume on restricted programs, partially offset by the transition to full rate production on the E-2D program and increased deliveries on the F-35 program. Space sales include higher volume on restricted programs, partially offset by lower volume on the AEHF program.

Operating income for 2015 decreased $80 million, or 6 percent, and operating margin rate decreased to 12.1 percent from 13.0 percent. Lower operating income and margin rate in 2015 were primarily due to the benefits recognized in 2014 associated with the settlements described above.

MISSION SYSTEMS

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Sales	**$ 10,928**	$ 10,674	$ 11,001	**2%**	(3)%
Operating income	**1,445**	1,410	1,557	**2%**	(9)%
Operating margin rate	***13.2%***	*13.2%*	*14.2%*		

2016 - Mission Systems sales for 2016 increased $254 million, or 2 percent, as compared with 2015 due to higher volume on Sensors and Processing and Advanced Capabilities programs, partially offset by lower volume on Cyber and ISR programs. Sensors and Processing sales increased primarily due to higher volume on communications programs, including the Joint Counter Radio-Controlled Improvised Explosive Device Electronic Warfare program; increased restricted volume and ramp-up on the G/ATOR program. These increases were partially offset by lower volume on international programs. Advanced Capabilities sales increased primarily due to higher volume on restricted, maritime systems and marine systems programs. Cyber and ISR sales reflect lower volume on space programs.

Operating income for 2016 increased $35 million, or 2 percent, due to the higher sales volume described above and a $21 million gain associated with the sale of a commercial cyber security product business, partially offset by a $49 million forward loss provision recorded on an Advanced Capabilities program principally due to cost growth for changes impacting fixed-price options, which may not be fully recovered through additional contract value. Operating margin rate for 2016 was consistent with the same period in 2015 and reflects improved performance on Sensors and Processing programs, partially offset by lower margins on Advanced Capabilities programs.

2015 - Mission Systems sales for 2015 decreased $327 million, or 3 percent, as compared with 2014. The decrease was due to lower volume across the sector. Advanced Capabilities sales decreased primarily due to the impact of in-theater force reductions, lower volume on the Consolidated Afloat Network and Enterprise Services program and completion of the Ground Combat Vehicle contract. These decreases were partially offset by higher volume on marine systems and missile defense programs. The decrease in Cyber and ISR sales is primarily due to lower volume on restricted programs, partially offset by higher volume on cyber solutions programs. Sensors and Processing sales decreased primarily due to ramp-down on an international program and lower volume on the LITENING program. These decreases were partially offset by ramp-up on the G/ATOR program and higher volume on fixed wing avionics and C4ISR programs.

Operating income for 2015 decreased $147 million, or 9 percent. Operating margin rate decreased to 13.2 percent from 14.2 percent. Operating income and margin rate for 2015 decreased primarily due to business mix changes, which resulted in lower volume for mature fixed-price production programs and higher volume for cost-type development programs, as well as less favorable performance on Sensors and Processing and Advanced Capabilities programs.

TECHNOLOGY SERVICES

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Sales	**$ 4,825**	$ 4,819	$ 4,902	**— %**	(2)%
Operating income	**512**	514	461	**— %**	11 %
Operating margin rate	***10.6%***	*10.7%*	*9.4%*		

2016 - Technology Services sales for 2016 were slightly higher than the prior year and reflect higher volume on System Modernization and Services programs, partially offset by lower volume on Advanced Defense Services and Global Logistics and Modernization programs. System Modernization and Services sales increased primarily due to higher volume on U.S. Government health programs. Advanced Defense Services sales declined primarily due to the completion of several programs in 2015, partially offset by higher volume on the Saudi Arabian Ministry of National Guard Training Support program (through our interest in a joint venture for which we consolidate the financial results). Global Logistics and Modernization sales decreased principally due to lower volume on the Intercontinental Ballistic Missile (ICBM) program, partially offset by higher volume on the KC-10 program. The increase in KC-10 volume is not indicative of a longer-term trend as we expect KC-10 sales will be winding down in 2017 as our contract nears completion.

Operating income and margin rate for 2016 were comparable to the prior year.

2015 - Technology Services sales for 2015 decreased $83 million, or 2 percent, as compared with 2014. The decrease is principally due to lower volume on Global Logistics and Modernization and System Modernization and Services programs. The decrease in Global Logistics and Modernization is mainly due to ramp-down activities on the ICBM program, partially offset by higher volume on intercompany restricted work. System Modernization and Services sales reflect lower volume across a number of programs, partially offset by higher volume on the Total Information Processing Support Services and Social Security Administration IT Support Services programs.

Operating income for 2015 increased $53 million, or 11 percent, and operating margin rate increased to 10.7 percent from 9.4 percent. The increase in operating income and margin rate in 2015 reflects improved performance, partially offset by the decline in sales volume described above and lower income from an unconsolidated joint venture than in the prior year period.

PRODUCT AND SERVICE ANALYSIS

The following table presents product and service sales and operating costs and expenses by segment:

	Year Ended December 31					
$ in millions	**2016**		2015		2014	
Segment Information:	**Sales**	**Operating Costs and Expenses**	Sales	Operating Costs and Expenses	Sales	Operating Costs and Expenses
Aerospace Systems						
Product	**$ 8,868**	**$ 7,837**	$ 7,976	$ 7,025	$ 7,970	$ 6,906
Service	**1,960**	**1,755**	1,964	1,710	1,940	1,719
Mission Systems						
Product	**6,471**	**5,588**	6,448	5,532	6,505	5,478
Service	**4,457**	**3,895**	4,226	3,732	4,496	3,966
Technology Services						
Product	**320**	**292**	358	339	329	356
Service	**4,505**	**4,021**	4,461	3,966	4,573	4,085
Segment Totals						
Total Product	**$ 15,659**	**$ 13,717**	$ 14,782	$ 12,896	$ 14,804	$ 12,740
Total Service	**10,922**	**9,671**	10,651	9,408	11,009	9,770
Intersegment eliminations	**(2,073)**	**(1,815)**	(1,907)	(1,698)	(1,834)	(1,630)
Total Segment[(1)]	**$ 24,508**	**$ 21,573**	$ 23,526	$ 20,606	$ 23,979	$ 20,880

[(1)] A reconciliation of segment operating income to total operating income, is included in “Segment Operating Results.”

Product Sales and Costs
2016 - Product sales for 2016 increased $877 million, or 6 percent, as compared with 2015. The increase was primarily driven by higher product sales at Aerospace Systems due to higher restricted volume, increased F-35 deliveries and production ramp-up on the E-2D program.

Product costs for 2016 increased $821 million, or 6 percent, as compared to 2015, consistent with the change in product sales described above.

2015 - Product sales for 2015 were comparable with 2014. Sales in 2014 included the $75 million in settlements at Aerospace Systems as described above and sales in 2015 reflect lower product sales at Mission Systems and higher product sales at Technology Services. The decrease at Mission Systems was primarily due to ramp-down on an international program and lower product sales on certain Cyber and ISR programs, partially offset by higher F-35 volume. The increase at Technology Services was primarily due to higher volume on intercompany restricted work.

Product costs for 2015 increased $156 million, or 1 percent, as compared to 2014. The increase was primarily due to higher product costs at Aerospace Systems and Mission Systems due to lower performance and changes in business mix.

Service Sales and Costs
2016 - Service sales for 2016 increased $271 million, or 3 percent, as compared with 2015. The increase was primarily driven by higher volume on several Cyber and ISR and Sensors and Processing service programs at Mission Systems.

Service costs for 2016 increased $263 million, or 3 percent, as compared with 2015, consistent with the change in service sales described above and reflects higher service margins at Mission Systems, partially offset by lower service margins at Aerospace Systems.

2015 - Service sales for 2015 decreased $358 million, or 3 percent, as compared with 2014. The decrease was primarily due to lower service sales at Mission Systems and Technology Services. The decrease at Mission Systems was primarily due to lower volume on certain Advanced Capabilities and unmanned aircraft systems programs, including the impact of in-theater force reductions. The decrease at Technology Services was primarily due to lower service sales on certain SMS programs.

Service costs for 2015 decreased $362 million, or 4 percent, as compared with 2014, consistent with the change in service sales described above.

BACKLOG

Total backlog includes both funded backlog (firm orders for which funding is authorized and appropriated) and unfunded backlog. Unexercised contract options and indefinite delivery indefinite quantity (IDIQ) contracts are not included in backlog until the time the option or IDIQ task order is exercised or awarded. For multi-year service contracts with non-U.S. Government customers having no stated contract values, backlog includes only the amounts committed by the customer. Backlog is converted into sales as costs are incurred or deliveries are made.

Backlog consisted of the following at December 31, 2016 and 2015:

	2016			2015	
$ in millions	**Funded**	**Unfunded**	**Total Backlog**	Total Backlog	% Change in 2016
Aerospace Systems	**$ 9,419**	**$ 17,891**	**$ 27,310**	$ 18,014	**52 %**
Mission Systems	**9,301**	**4,414**	**13,715**	13,254	**3 %**
Technology Services	**3,446**	**868**	**4,314**	4,655	**(7)%**
Total backlog	**$ 22,166**	**$ 23,173**	**$ 45,339**	$ 35,923	**26 %**

Approximately $18.2 billion of the $45.3 billion total backlog at December 31, 2016 is expected to be converted into sales in 2017.

LIQUIDITY AND CAPITAL RESOURCES

We endeavor to ensure the most efficient conversion of operating income into cash for deployment in our business and to maximize shareholder value through cash deployment activities. In addition to our cash position, we use various financial measures to assist in capital deployment decision-making, including cash provided by operating activities and free cash flow, a non-GAAP measure described in more detail below.

As of December 31, 2016, we had cash and cash equivalents of $2.5 billion, of which $182 million was held outside of the U.S. by foreign subsidiaries. Cash and cash equivalents and cash generated from operating activities, supplemented by borrowings under credit facilities and/or in the capital markets, if needed, are expected to be sufficient to fund our operations for at least the next 12 months. Capital expenditure commitments were $657 million at December 31, 2016, and are expected to be paid with cash on hand.

Operating Cash Flow

The table below summarizes the key components of cash flow provided by operating activities:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Net earnings	**$ 2,200**	$ 1,990	$ 2,069
Non-cash items[1]	**585**	1,035	731
Changes in assets and liabilities:			
Trade working capital	**(240)**	(564)	(121)
Retiree benefits	**393**	(263)	(17)
Other, net	**(125)**	(36)	(69)
Net cash provided by operating activities	**$ 2,813**	$ 2,162	$ 2,593

[1] Includes depreciation and amortization, stock based compensation expense (including related excess tax benefits in 2015 and 2014) and deferred income taxes.

2016 – Net cash provided by operating activities for 2016 increased by $651 million, or 30 percent, as compared with 2015, principally due to a $500 million voluntary pre-tax pension contribution ($325 million after-tax) made in the first quarter of 2015, changes in trade working capital and an increase in net earnings during 2016, partially offset by an increase in net income tax payments.

2015 – Net cash provided by operating activities for 2015 decreased by $431 million, or 17 percent, as compared with 2014, principally due to changes in trade working capital and a $500 million voluntary pre-tax pension contribution ($325 million after-tax) made in the first quarter of 2015, partially offset by lower net tax payments.

Free Cash Flow

Free cash flow, as reconciled in the table below, is a non-GAAP measure defined as net cash provided by operating activities less capital expenditures, and may not be defined and calculated by other companies in the same manner. We use free cash flow as a key factor in our planning for, and consideration of, acquisitions, stock repurchases, and the payment of dividends. This measure may be useful to investors and other users of our financial statements as a supplemental measure of our cash performance, but should not be considered in isolation, as a measure of residual cash flow available for discretionary purposes, or as an alternative to operating results presented in accordance with U.S. GAAP.

The table below reconciles net cash provided by operating activities to free cash flow:

	Year Ended December 31			% Change in	
$ in millions	**2016**	2015	2014	**2016**	2015
Net cash provided by operating activities	**$ 2,813**	$ 2,162	$ 2,593	**30%**	(17)%
Less: Capital expenditures	**(920)**	(471)	(561)	**95%**	(16)%
Free cash flow	**$ 1,893**	$ 1,691	$ 2,032	**12%**	(17)%

2016 – Free cash flow for 2016 increased $202 million, or 12 percent, as compared with 2015. The increase was principally driven by the higher net cash provided by operating activities described above, partially offset by higher capital expenditures in 2016 reflecting $239 million for the purchase of facilities previously leased by Mission Systems and increased capital investment at Aerospace Systems.

2015 – Free cash flow for 2015 decreased $341 million, or 17 percent, as compared with 2014. The decrease was principally driven by the lower net cash provided by operating activities described above, partially offset by a reduction in capital expenditures.

Investing Cash Flow
2016 - Net cash used in investing activities for 2016 increased $374 million, or 87 percent, as compared with 2015. The increase was principally due to the higher capital expenditures described above, partially offset by proceeds from the sale of a property at Aerospace Systems and the sale of a commercial cyber security business at Mission Systems.

2015 - Net cash used in investing activities for 2015 decreased $214 million, or 33 percent, as compared with 2014. The decrease was principally due to lower capital expenditures and the 2014 acquisition of Qantas Defence Services Pty Limited.

Financing Cash Flow
2016 - Net cash used in financing activities during 2016 decreased $1.5 billion, or 45 percent, as compared with 2015, principally due to $1.6 billion lower share repurchases, $149 million higher net proceeds from the issuance of long-term debt and $135 million of borrowings under our credit facilities, partially offset by $321 million in debt repayments.

2015 - Net cash used in financing activities during 2015 was comparable with the prior year period and reflects an increase in share repurchases and dividends, offset by $600 million of net proceeds from our issuance of unsecured senior notes in 2015.

Credit Facilities and Unsecured Senior Notes - In December 2016, the company issued $750 million of unsecured senior notes and used a portion of the net proceeds to fund redemption of $200 million of the company's existing debt. We expect to use the remaining net proceeds from this offering for general corporate purposes, including potential pension plan funding and working capital. See Note 9 to the consolidated financial statements for further information on our credit facilities and unsecured senior notes.

Financial Arrangements - See Note 11 to the consolidated financial statements for further information on our use of standby letters of credit and guarantees.

Other Sources of Capital - We believe we can obtain additional capital, if necessary for long-term liquidity, from such sources as the public or private capital markets, the sale of assets, sale and leaseback of operating assets, and leasing rather than purchasing new assets. We have an effective shelf registration statement on file with the SEC, which allows us to access capital in a timely manner.

Share Repurchases - See Note 2 to the consolidated financial statements for further information on our share repurchase programs.

Contractual Obligations
At December 31, 2016, we had contractual commitments to repay debt with interest, make payments under operating leases, settle obligations related to agreements to purchase goods and services and make payments on various other liabilities. Payments due under these obligations and commitments, and the estimated timing of those payments, are as follows:

$ in millions	Total	2017	2018- 2019	2020- 2021	2022 and beyond
Long-term debt	$ 7,097	$ 12	$ 1,420	$ 834	$ 4,831
Interest payments on long-term debt	4,039	296	585	509	2,649
Operating leases	892	257	317	158	160
Purchase obligations[1]	8,748	5,009	2,398	1,271	70
Other long-term liabilities[2]	1,096	289	342	144	321
Total contractual obligations	$ 21,872	$ 5,863	$ 5,062	$ 2,916	$ 8,031

[1] A “purchase obligation” is defined as an agreement to purchase goods or services that is enforceable and legally binding on us and that specifies all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum, or variable price provisions; and the approximate timing of the transaction. These amounts are primarily comprised of open purchase order commitments to suppliers and subcontractors pertaining to funded contracts.

[2] Other long-term liabilities, including their current portions, primarily consist of total accrued environmental reserves, deferred compensation and other miscellaneous liabilities, of which $119 million is related to environmental reserves recorded in other current liabilities. It excludes obligations for uncertain tax positions of $142 million, as the timing of such payments, if any, cannot be reasonably estimated.

The table above excludes estimated minimum funding requirements for retirement and other post-retirement benefit plans, as set forth by the Employee Retirement Income Security Act, as amended (ERISA). For further information about future minimum contributions for these plans, see Note 12 to the consolidated financial statements. Further details regarding long-term debt and operating leases can be found in Notes 9 and 11, respectively, to the consolidated financial statements.

CRITICAL ACCOUNTING POLICIES, ESTIMATES, AND JUDGMENTS

Our consolidated financial statements are based on U.S. GAAP, which require us to make estimates and assumptions about future events that affect the amounts reported in our consolidated financial statements. We employ judgment in making our estimates in consideration of historical experience, currently available information and various other assumptions that we believe to be reasonable under the circumstances. Actual results could differ from our estimates and assumptions, and any such differences could be material to our consolidated financial statements. We believe the following accounting policies are critical to the understanding of our consolidated financial statements and require the use of significant management judgment in their application. For a summary of our significant accounting policies, see Note 1 to the consolidated financial statements.

Revenue Recognition

Due to the long-term nature of our contracts, we generally recognize revenue using the percentage-of-completion method of accounting as work on our contracts progresses, which requires us to make reasonably dependable estimates regarding the design, manufacture and delivery of our products and services. In accounting for these contracts, we utilize either the cost-to-cost or the units-of-delivery method of percentage-of-completion accounting, with cost-to-cost being the predominant method.

Contract sales may include estimated amounts not contractually agreed to or yet funded by the customer, including cost or performance incentives (such as award and incentive fees), un-priced change orders, contract claims and requests for equitable adjustment (REAs). Further, as contracts are performed, change orders can be a regular occurrence and may be un-priced until negotiated with the customer. Un-priced change orders, contract claims (including change orders unapproved as to both scope and price) and REAs are included in estimated contract sales when management believes it is probable the un-priced change order, claim and/or REA will result in additional contract revenue and the amount can be reliably estimated based on the facts and circumstances known to us at the time.

Our cost estimation process is based on the professional knowledge of our engineering, program management and financial professionals, and draws on their significant experience and judgment. We prepare EACs for our contracts and calculate an estimated contract operating margin based on estimated contract sales and cost. Since contract costs are typically incurred over a period of several years, estimation of these costs requires the use of judgment. Factors considered in estimating the cost of the work to be completed include our historical performance, the availability, productivity and cost of labor, the nature and complexity of work to be performed, the effect of change orders, availability and cost of materials, components and subcontracts, the effect of any delays in performance and the level of indirect cost allocations.

We generally review and reassess our sales, cost and profit estimates for each significant contract at least annually or more frequently as determined by the occurrence of events, changes in circumstances and evaluations of contract performance to reflect the latest reliable information available. Changes in estimates of contract sales and cost are frequent. The company performs on a broad portfolio of long-term contracts, including the development of complex and customized military platforms and systems, as well as advanced electronic equipment and software, that often include technology at the forefront of science. Changes in estimates occur for a variety of reasons, including changes in contract scope, the resolution of risk at lower or higher cost than anticipated, unanticipated risks affecting contract costs, performance issues with our subcontractors or suppliers, changes in indirect cost allocations, such as overhead and G&A costs, and changes in estimated award and incentive fees. Identified risks typically include technical, schedule and/or performance risk based on our evaluation of the contract effort. Similarly, the changes in estimates may include identified opportunities for operating margin improvement.

For the impacts of changes in estimates on our consolidated statement of earnings and comprehensive income (loss), see “Consolidated Operating Results” and Note 1 to the consolidated financial statements.

Retirement Benefits

Overview – The determination of projected benefit obligations and the fair value of plan assets for our pension and other post-retirement plans requires the use of estimates and actuarial assumptions. We perform an annual review of our actuarial assumptions in consultation with our actuaries. As we determine changes in the assumptions are warranted, or as a result of plan amendments, future pension and other post-retirement benefit expense and our projected benefit obligation could increase or decrease. The principal estimates and assumptions that have a significant effect on our consolidated financial position and annual results of operations are the discount rate, cash balance crediting rate, expected long-term rate of return on plan assets, estimated fair market value of plan assets, and mortality rate of those covered by our pension and other post-retirement benefit plans.

Discount Rate – The discount rate represents the interest rate that is used to determine the present value of future cash flows currently expected to be required to settle our pension and other post-retirement benefit obligations. The discount rate is generally based on the yield of high-quality corporate fixed-income investments. At the end of each year, we determine the discount rate using a theoretical bond portfolio model of bonds rated AA or better to match the notional cash outflows related to projected benefit payments for each of our significant benefit plans. Taking into consideration the factors noted above, our weighted-average composite pension discount rate was 4.19 percent at December 31, 2016, and 4.53 percent at December 31, 2015.

The effects of a hypothetical change in the discount rate may be nonlinear and asymmetrical for future years as the discount rate changes and the accounting corridor is applied. The accounting corridor is a defined range within which amortization of net gains and losses is not required and is equal to 10 percent of the greater of plan assets or benefit obligations. Holding all other assumptions constant, an increase or decrease of 25 basis points in the December 31, 2016 discount rate assumption would have the following estimated effects on 2016 pension and other post-retirement benefit obligations and 2017 expected pension and other post-retirement expense:

$ increase/(decrease) in millions	25 Basis Point Decrease in Rate	25 Basis Point Increase in Rate
Pension expense	$ 96	$ (92)
Other post-retirement benefit expense	1	(1)
Pension obligation	1,027	(974)
Other post-retirement benefit obligation	56	(53)

Cash Balance Crediting Rate - A portion of the company’s pension obligation and resulting pension expense is based on a cash balance formula, where participants’ hypothetical account balances are accumulated over time with pay-based credits and interest. Interest is credited monthly using the 30-Year Treasury bond rate. The interest crediting rate is part of the cash balance formula and independent of actual pension investment earnings. The cash balance crediting rate tends to move in concert with the discount rate but has an offsetting effect on pension benefit obligations and pension expense in comparison to the discount rate. Although current 30-Year Treasury bond rates are near historically low levels, we expect such bond rates to rise in the future. The cash balance crediting rate assumption has therefore been set to its current level of 3.1 percent as of December 31, 2016, growing to 3.6 percent by 2022. Holding all other assumptions constant, an increase or decrease of 25 basis points in the December 31, 2016 cash balance crediting rate assumption would have the following estimated effects on 2016 pension benefit obligations and 2017 expected pension expense:

$ increase/(decrease) in millions	25 Basis Point Decrease in Rate	25 Basis Point Increase in Rate
Pension expense	$ (26)	$ 27
Pension obligation	(132)	134

Expected Long-Term Rate of Return on Plan Assets – The expected long-term rate of return on plan assets (EROA) assumption reflects the average rate of net earnings we expect on current and future benefit plan investments. EROA is a long-term assumption, which we review annually and adjust to reflect changes in our long-term view of expected market returns and/or significant changes in our plan asset investment policy. Due to the inherent uncertainty of this assumption, we consider multiple data points at the measurement date including historical asset returns, the plan's target asset allocation, and third party projection models of expected long-term returns for each of the plans' strategic asset classes. In addition to the data points themselves, we consider trends in the data points, including changes from the prior measurement date. The EROA assumptions we use for pension benefits are consistent with those used for other post-retirement benefits; however, we reduce the EROA for other post-retirement benefit plans to allow for the impact of tax on investment earnings, as certain Voluntary Employee Beneficiary Association (VEBA) trusts are taxable.

While historical market returns are not necessarily predictive of future market returns, given our long history of plan performance supported by the stability in our investment mix, investment managers, and active asset management, we believe our actual historical performance is a reasonable metric to consider when developing our EROA. Our average annual rate of return from 1976 to 2016 is 11.1 percent and our 20-year rolling average rate of return is 8.2 percent, each determined on an arithmetic basis. Our 2016 asset returns were approximately 7.7 percent.

With regard to the company's investment policy, during 2016, the Benefit Plans Investment Committee reviewed and re-affirmed the major asset class allocations. Our asset allocation is approximately 45% equities, 35% fixed-income and 20% alternatives and we are not currently contemplating significant changes to that investment mix. For further information on plan asset investments, see Note 12 to the consolidated financial statements.

Consistent with our past practice, we obtained long-term capital market forecasting models from several third parties and, using our target asset allocation, developed an expected rate of return on plan assets from each model. We considered not only the specific returns projected by those third party models, but also changes in the models year-to-year when developing our EROA.

For determining FAS expense in 2016 and 2015, we assumed an expected long-term rate of return on pension plan assets of 8.0 percent for both 2016 and 2015 and an expected long-term rate of return on other post-retirement benefit plan assets of 7.7 percent and 7.6 percent, respectively. For 2017 FAS expense, we have assumed an expected long-term rate of return on pension plan assets of 8.0 percent and 7.7 percent on other post-retirement benefit plans. Holding all other assumptions constant, an increase or decrease of 25 basis points in our December 31, 2016 EROA assumption would have the following estimated effects on 2017 pension and other post-retirement benefit expense:

$ increase/(decrease) in millions	25 Basis Point Decrease	25 Basis Point Increase
Pension expense	$ 59	$ (59)
Other post-retirement benefit expense	3	(3)

Estimated Fair Market Value of Plan Assets – For certain plan assets where the fair market value is not readily determinable, such as real estate, private equity, hedge funds and opportunistic investments, estimates of fair value are determined using the best information available. Estimated fair values on these plan assets are based on redemption values and net asset values, as well as valuation methodologies that include third party appraisals, comparable transactions, discounted cash flow valuation models and public market data.

Mortality Rate – Mortality assumptions are used to estimate life expectancies of plan participants. In October 2014, the Society of Actuaries (SOA) issued updated mortality tables and a mortality improvement scale, which reflected longer life expectancies than previously projected. In October 2015, the SOA issued an updated mortality improvement scale which further refined the previous scale based on additional data and which generally contained lower mortality improvement projections. In October 2016, the SOA issued another updated mortality improvement scale which generally contained lower mortality improvement projections than the prior scales. In consideration of this information, we studied our historical mortality experience and developed an expectation for continued future mortality improvements based on the most recent SOA table, but with a long-term improvement rate of 0.75% versus 1.0% assumed by the SOA. Based on this data, we updated the mortality assumptions used in calculating our pension and post-retirement benefit obligations recognized at December 31, 2016, and the amounts estimated for our 2017 pension and post-retirement benefit expense.

For further information regarding our pension and post-retirement benefits, see “Risk Factors” and Note 12 to the consolidated financial statements.

Litigation, Commitments and Contingencies
We are subject to a range of claims, disputes, investigations, lawsuits, overhead cost claims, environmental matters, income tax matters and administrative proceedings that arise in the ordinary course of business. Estimating liabilities and costs associated with these matters requires judgment based upon the professional knowledge and experience of management. We determine whether to record a reserve and, if so, what amount based on consideration of the facts and circumstances of each matter as then known to us. Determinations regarding whether to record a reserve and, if so, of what amount, reflect management's assessment regarding what is likely to occur; they do not necessarily reflect what management believes should occur. The ultimate resolution of any such exposure to us may vary materially from earlier estimates as further facts and circumstances develop or become known to us.

Environmental Matters - We are subject to environmental laws and regulations in the jurisdictions in which we do or have done business. Factors that could result in changes to the assessment of probability, range of reasonably estimated costs and environmental accruals include: modification of planned remedial actions; changes in the estimated time required to conduct remedial actions; discovery of more or less extensive (or different) contamination than anticipated; information regarding the potential causes and effects of contamination; results of efforts to involve other responsible parties; financial capabilities of other responsible parties; changes in laws and regulations, their interpretation or application; contractual obligations affecting remediation or responsibilities; and improvements in remediation technology.

For further information on litigation, commitments and contingencies, see “Risk Factors” and Note 1, Note 10 and Note 11 to the consolidated financial statements.

Goodwill
Overview – We allocate the purchase price of acquired businesses to the underlying tangible and intangible assets acquired and liabilities assumed based upon their respective fair values, with the excess recorded as goodwill. Such fair value assessments require judgments and estimates that can be affected by contract performance and other factors over time, which may cause final amounts to differ materially from original estimates. Adjustments to the fair value of purchased assets and liabilities after the initial measurement period are recognized in net earnings.

Impairment Testing – We test for impairment of goodwill annually at each of our reporting units, which comprise our operating segments. The results of our annual goodwill impairment tests as of December 31, 2016 and 2015, respectively, indicated that the estimated fair value of each reporting unit substantially exceeded its respective carrying value. There were no impairment charges recorded in the years ended December 31, 2016, 2015 and 2014.

In addition to performing an annual goodwill impairment test, we may perform an interim impairment test if events occur or circumstances change that suggest goodwill in any of our reporting units may be impaired. Such indicators may include, but are not limited to, the loss of significant business, significant reductions in federal government appropriations or other significant adverse changes in industry or market conditions.

When testing goodwill for impairment, we compare the fair values of each of our reporting units to their respective carrying values. To determine the fair value of our reporting units, we primarily use the income approach based on the cash flows that the reporting unit expects to generate in the future, consistent with our operating plans. This income valuation method requires management to project sales, operating expenses, working capital, capital spending and cash flows for the reporting units over a multi-year period, as well as to determine the weighted-average cost of capital (WACC) used as a discount rate and terminal value assumptions. The WACC takes into account the relative weights of each component of our consolidated capital structure (equity and debt) and represents the expected cost of new capital adjusted as appropriate to consider lower risk profiles associated with longer-term contracts and barriers to market entry. The terminal value assumptions are applied to the final year of the discounted cash flow model. We use industry multiples (including relevant control premiums) of operating earnings to corroborate the fair values of our reporting units determined under the market valuation method of the income approach.

Impairment assessment inherently involves management judgments as to assumptions about expected future cash flows and the impact of market conditions on those assumptions. Due to the many variables inherent in the estimation of a business’ fair value and the relative size of our recorded goodwill, differences in assumptions may have a material effect on the results of our impairment analysis.

OTHER MATTERS

Off-Balance Sheet Arrangements

As of December 31, 2016, we had no significant off-balance sheet arrangements other than operating leases. For a description of our operating leases, see Note 11 to the consolidated financial statements.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

EQUITY RISK

We are exposed to market risk with respect to our portfolio of trading and available-for-sale marketable securities with a fair value of $330 million at December 31, 2016. These securities are exposed to market volatilities, changes in price and interest rates.

INTEREST RATE RISK

We are exposed to interest rate risk on variable-rate short-term borrowings under our credit facilities for which there was £110 million (the equivalent of approximately $135 million as of December 31, 2016) outstanding at December 31, 2016. At December 31, 2016, we have $7.1 billion of long-term debt, primarily consisting of fixed-rate debt, with a fair value of approximately $7.6 billion. The terms of our fixed-rate debt obligations do not generally allow investors to demand payment of these obligations prior to maturity. Therefore, we do not have significant exposure to interest rate risk for our fixed-rate debt; however, we do have exposure to fair value risk if we repurchase or exchange long-term debt prior to maturity.

FOREIGN CURRENCY RISK

In certain circumstances, we are exposed to foreign currency risk. We enter into foreign currency forward contracts to manage a portion of the exchange rate risk related to receipts from customers and payments to suppliers denominated in foreign currencies. We do not hold or issue derivative financial instruments for trading purposes. At December 31, 2016, foreign currency forward contracts with a notional amount of $147 million were outstanding. At December 31, 2016, a 10 percent unfavorable foreign exchange rate movement would not have a material impact on our consolidated financial position, annual results of operations and/or cash flows.

INFLATION RISK

We have generally been able to anticipate increases in costs when pricing our contracts. Bids for longer-term firm fixed-price contracts typically include assumptions for labor and other cost escalations in amounts that historically have been sufficient to cover cost increases over the period of performance.

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of
Northrop Grumman Corporation
Falls Church, Virginia

We have audited the accompanying consolidated statements of financial position of Northrop Grumman Corporation and subsidiaries (the "Company") as of December 31, 2016 and 2015, and the related consolidated statements of earnings and comprehensive income (loss), changes in shareholders' equity, and cash flows for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of Northrop Grumman Corporation and subsidiaries at December 31, 2016 and 2015, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2016, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the Company's internal control over financial reporting as of December 31, 2016, based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated January 30, 2017 expressed an unqualified opinion on the Company's internal control over financial reporting.

/s/ Deloitte & Touche LLP
McLean, Virginia
January 30, 2017

CONSOLIDATED STATEMENTS OF EARNINGS AND COMPREHENSIVE INCOME (LOSS)

	Year Ended December 31		
$ in millions, except per share amounts	**2016**	2015	2014
Sales			
Product	**$ 14,738**	$ 13,966	$ 14,015
Service	**9,770**	9,560	9,964
Total sales	**24,508**	23,526	23,979
Operating costs and expenses			
Product	**11,002**	10,333	10,431
Service	**7,729**	7,551	7,947
General and administrative expenses	**2,584**	2,566	2,405
Operating income	**3,193**	3,076	3,196
Other (expense) income			
Interest expense	**(301)**	(301)	(282)
Other, net	**31**	15	23
Earnings before income taxes	**2,923**	2,790	2,937
Federal and foreign income tax expense	**723**	800	868
Net earnings	**$ 2,200**	$ 1,990	$ 2,069
Basic earnings per share	**$ 12.30**	$ 10.51	$ 9.91
Weighted-average common shares outstanding, in millions	**178.9**	189.4	208.8
Diluted earnings per share	**$ 12.19**	$ 10.39	$ 9.75
Weighted-average diluted shares outstanding, in millions	**180.5**	191.6	212.1
Net earnings (from above)	**$ 2,200**	$ 1,990	$ 2,069
Other comprehensive (loss) income			
Change in unamortized benefit plan costs, net of tax benefit (expense) of $89 in 2016, ($45) in 2015 and $1,423 in 2014	**(175)**	75	(2,316)
Change in cumulative translation adjustment	**(50)**	(41)	(59)
Other, net	**(1)**	2	3
Other comprehensive (loss) income, net of tax	**(226)**	36	(2,372)
Comprehensive income (loss)	**$ 1,974**	$ 2,026	$ (303)

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

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

	December 31	
$ in millions	**2016**	2015
Assets		
Cash and cash equivalents	**$ 2,541**	$ 2,319
Accounts receivable, net	**3,299**	2,841
Inventoried costs, net	**816**	807
Prepaid expenses and other current assets	**200**	367
Total current assets	**6,856**	6,334
Property, plant and equipment, net of accumulated depreciation of $4,831 in 2016 and $4,849 in 2015	**3,588**	3,064
Goodwill	**12,450**	12,460
Deferred tax assets	**1,462**	1,409
Other non-current assets	**1,258**	1,157
Total assets	**$ 25,614**	$ 24,424
Liabilities		
Trade accounts payable	**$ 1,554**	$ 1,282
Accrued employee compensation	**1,342**	1,195
Advance payments and amounts in excess of costs incurred	**1,471**	1,537
Other current liabilities	**1,263**	1,443
Total current liabilities	**5,630**	5,457
Long-term debt, net of current portion of $12 in 2016 and $110 in 2015	**7,058**	6,386
Pension and other post-retirement benefit plan liabilities	**6,818**	6,172
Other non-current liabilities	**849**	887
Total liabilities	**20,355**	18,902
Commitments and contingencies (Note 11)		
Shareholders' equity		
Preferred stock, $1 par value; 10,000,000 shares authorized; no shares issued and outstanding	**—**	—
Common stock, $1 par value; 800,000,000 shares authorized; issued and outstanding: 2016—175,068,263 and 2015—181,303,083	**175**	181
Retained earnings	**10,630**	10,661
Accumulated other comprehensive loss	**(5,546)**	(5,320)
Total shareholders' equity	**5,259**	5,522
Total liabilities and shareholders' equity	**$ 25,614**	$ 24,424

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

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Operating activities			
Net earnings	**$ 2,200**	$ 1,990	$ 2,069
Adjustments to reconcile to net cash provided by operating activities:			
Depreciation and amortization	**456**	467	462
Stock-based compensation	**93**	99	134
Excess tax benefits from stock-based compensation	**—**	(103)	(81)
Deferred income taxes	**36**	572	216
Changes in assets and liabilities:			
Accounts receivable, net	**(461)**	(30)	(105)
Inventoried costs, net	**(15)**	(80)	(24)
Prepaid expenses and other assets	**(110)**	43	13
Accounts payable and other liabilities	**198**	(632)	(89)
Income taxes payable	**148**	135	84
Retiree benefits	**393**	(263)	(17)
Other, net	**(125)**	(36)	(69)
Net cash provided by operating activities	**2,813**	2,162	2,593
Investing activities			
Capital expenditures	**(920)**	(471)	(561)
Other, net	**115**	40	(84)
Net cash used in investing activities	**(805)**	(431)	(645)
Financing activities			
Common stock repurchases	**(1,547)**	(3,182)	(2,668)
Net proceeds from issuance of long-term debt	**749**	600	—
Payments of long-term debt	**(321)**	—	—
Cash dividends paid	**(640)**	(603)	(563)
Payments of employee taxes withheld from share-based awards	**(153)**	(186)	(127)
Net proceeds from credit facilities	**135**	—	—
Other, net	**(9)**	96	123
Net cash used in financing activities	**(1,786)**	(3,275)	(3,235)
Increase (decrease) in cash and cash equivalents	**222**	(1,544)	(1,287)
Cash and cash equivalents, beginning of year	**2,319**	3,863	5,150
Cash and cash equivalents, end of year	**$ 2,541**	$ 2,319	$ 3,863

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

CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY

	Year Ended December 31		
$ in millions, except per share amounts	**2016**	2015	2014
Common stock			
Beginning of year	**$ 181**	$ 199	$ 218
Common stock repurchased	**(7)**	(19)	(21)
Shares issued for employee stock awards and options	**1**	1	2
End of year	**175**	181	199
Paid-in capital			
Beginning of year	**—**	—	848
Common stock repurchased	**—**	—	(999)
Stock compensation	**—**	—	139
Other	**—**	—	12
End of year	**—**	—	—
Retained earnings			
Beginning of year	**10,661**	12,392	12,538
Common stock repurchased	**(1,548)**	(3,154)	(1,637)
Net earnings	**2,200**	1,990	2,069
Dividends declared	**(633)**	(596)	(578)
Stock compensation	**(50)**	29	—
End of year	**10,630**	10,661	12,392
Accumulated other comprehensive loss			
Beginning of year	**(5,320)**	(5,356)	(2,984)
Other comprehensive (loss) income, net of tax	**(226)**	36	(2,372)
End of year	**(5,546)**	(5,320)	(5,356)
Total shareholders' equity	**$ 5,259**	$ 5,522	$ 7,235
Cash dividends declared per share	**$ 3.50**	$ 3.10	$ 2.71

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations

Northrop Grumman Corporation (herein referred to as “Northrop Grumman,” the “company,” “we,” “us,” or “our”) is a leading global security company. We offer a broad portfolio of capabilities and technologies that enable us to deliver innovative products, systems and solutions for applications that range from undersea to outer space and into cyberspace. We provide products, systems and solutions in autonomous systems; cyber; command, control, communications and computers, intelligence, surveillance, and reconnaissance (C4ISR); strike; and logistics and modernization. We participate in many high-priority defense and government programs in the United States (U.S.) and abroad. We conduct most of our business with the U.S. Government, principally the Department of Defense (DoD) and intelligence community. We also conduct business with foreign, state and local governments, as well as commercial customers.

Principles of Consolidation

The consolidated financial statements include the accounts of Northrop Grumman and its subsidiaries. Material intercompany accounts, transactions and profits are eliminated in consolidation. Investments in equity securities and joint ventures where the company has significant influence, but not control, are accounted for using the equity method.

Reclassifications

The company adopted ASU 2015-03, *Interest - Imputation of Interest (Subtopic 835-30): Simplifying the Presentation of Debt Issuance Costs*, during the first quarter of 2016. As a result, we now present capitalized debt issuance costs as a reduction in the carrying amount of long-term debt. This change resulted in a reclassification of $30 million of other non-current assets reported in our 2015 consolidated statements of financial position to long-term debt, which reduced our previously reported total assets and total liabilities as of December 31, 2015.

Accounting Estimates

The company’s consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States of America (“U.S. GAAP” or “FAS”). The preparation thereof requires management to make estimates and judgments that affect the reported amounts of assets and liabilities and the disclosure of contingencies at the date of the financial statements, as well as the reported amounts of sales and expenses during the reporting period. Estimates have been prepared using the most current and best available information; however, actual results could differ materially from those estimates.

Revenue Recognition

The majority of our sales are derived from long-term contracts with the U.S. Government for the production of goods, the provision of services, or a combination of both. In accounting for these contracts, we utilize either the cost-to-cost method or the units-of-delivery method of percentage-of-completion accounting, with cost-to-cost being the predominant method. Generally, sales under cost-reimbursement contracts and construction-type contracts that provide for deliveries at lower volume rates are accounted for using the cost-to-cost method. Under this method, sales, including estimated profits, are recorded as costs are incurred. Generally, sales under contracts that provide for deliveries at higher volume rates are accounted for using the units-of-delivery method. Under this method, cost and sales are recognized as units are delivered to the customer. The company estimates profit on contracts as the difference between total estimated sales and total estimated cost at completion and recognizes that profit either as costs are incurred (cost-to-cost) or as units are delivered (units-of-delivery). The company classifies sales as product or service based on the predominant attributes of the contract.

Contract sales may include estimated amounts not contractually agreed to or yet funded by the customer, including cost or performance incentives (such as award and incentive fees), un-priced change orders, contract claims and requests for equitable adjustment (REAs). Further, as contracts are performed, change orders can be a regular occurrence and may be un-priced until negotiated with the customer. Un-priced change orders, contract claims (including change orders unapproved as to both scope and price) and REAs are included in estimated contract sales when management believes it is probable the un-priced change order, claim and/or REA will result in additional contract revenue and the amount can be reliably estimated based on the facts and circumstances known to us at the time. Amounts recognized related to claims and REAs as of December 31, 2016 were not material individually or in aggregate. As of December 31, 2015, the company had initiated REAs of approximately $300 million under contracts related to two Aerospace Systems programs, most of which were resolved in the third quarter of 2016.

Net Estimate-At-Completion (EAC) Adjustments - We recognize changes in estimated contract sales or costs and the resulting operating margins using the cumulative catch-up method of accounting. This method recognizes, in current period operating margin, the cumulative effect of the changes on current and prior periods as net EAC adjustments; sales and operating margins in future periods of contract performance are recognized as if the revised estimates had been used since contract inception. If it is determined that a loss will result from the performance of a contract, the entire amount of the estimable future loss, including an allocation of general and administrative (G&A) costs, is charged against income in the period the loss is identified. Loss provisions are first offset against costs included in unbilled accounts receivable or inventoried costs; remaining amounts are reflected in current liabilities.

Significant EAC adjustments on a single contract could have a material effect on the company's consolidated financial position or annual results of operations. When such adjustments occur, we generally disclose the nature, underlying conditions and financial impact of the adjustments. No discrete event or adjustments to an individual contract were material to the accompanying consolidated statements of earnings and comprehensive income (loss) for each of the three years ended December 31, 2016, 2015, and 2014.

The following table presents the effect of aggregate net EAC adjustments:

	Year Ended December 31		
$ in millions, except per share data	**2016**	2015	2014
Operating Income	**$ 494**	$ 580	$ 664
Net Earnings[1]	**321**	377	432
Diluted earnings per share[1]	**1.78**	1.97	2.04

[1] Based on statutory tax rates

Sales by Customer Category - The following table presents sales by customer category:

	Year Ended December 31					
	2016		2015		2014	
$ in millions	**$**	**%[4]**	$	%[4]	$	%[4]
U.S. Government[1]	**$ 20,573**	**84%**	$ 19,458	83%	$ 20,085	84%
International[2]	**3,205**	**13%**	3,339	14%	3,045	13%
Other Customers[3]	**730**	**3%**	729	3%	849	3%
Total Sales	**$ 24,508**		$ 23,526		$ 23,979	

[1] Sales to the U.S. Government include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is the U.S. Government. Each of the company's segments derives substantial revenue from the U.S. Government.

[2] International sales include sales from contracts for which we are the prime contractor, as well as those for which we are a subcontractor and the ultimate customer is an international customer. These sales include foreign military sales contracted through the U.S. Government, direct sales with governments outside the U.S. and commercial sales outside the U.S.

[3] Sales to Other Customers include sales to U.S. state and local governments and commercial sales in the U.S.

[4] Percentage of total sales.

General and Administrative Expenses

In accordance with industry practice and the regulations that govern cost accounting requirements for government contracts, most general management and corporate expenses incurred at the segment and corporate locations are considered allowable and allocable costs. Allowable and allocable G&A costs, including independent research and development (IR&D) and bid and proposal (B&P) costs, are allocated on a systematic basis to contracts in progress and are included as a component of total estimated contract costs.

Research and Development

Company-sponsored research and development activities primarily include efforts related to government programs. Company-sponsored IR&D expenses totaled $705 million, $712 million and $569 million in 2016, 2015 and 2014, respectively, and are included in G&A expenses. Customer-funded research and development activities are charged directly to the related contracts.

Income Taxes
Provisions for federal and foreign income taxes are calculated on reported earnings before income taxes based on current tax law and include the cumulative effect of any changes in tax rates from those used previously in determining deferred tax assets and liabilities. Such provisions differ from the amounts currently payable because certain items of income and expense are recognized in different periods for financial reporting purposes than for income tax purposes. The company recognizes federal and foreign interest accrued related to unrecognized tax benefits in income tax expense. Federal tax penalties are recognized as a component of income tax expense.

In accordance with industry practice and regulations that govern the cost accounting requirements for government contracts, current state and local income and franchise taxes are generally considered allowable and allocable costs and are therefore recorded in operating costs and expenses. The company recognizes changes in deferred state taxes and unrecognized state tax benefits in unallocated corporate expenses.

Uncertain tax positions reflect the company's expected treatment of tax positions taken in a filed tax return, or planned to be taken in a future tax return or claim, which have not been reflected in measuring income tax expense for financial reporting purposes. Until these positions are sustained by the taxing authorities or the statute of limitations concerning such issues lapses, the company does not recognize the tax benefits resulting from such positions and reports the tax effects as a liability for uncertain tax positions in its consolidated statements of financial position.

Cash and Cash Equivalents
Cash and cash equivalents are comprised of cash in banks and highly liquid instruments with original maturities of three months or less, primarily consisting of bank time deposits and investments in institutional money market funds. The company does not invest in high yield or high risk securities. Cash in bank accounts often exceed federally insured limits.

Fair Value of Financial Instruments
The company measures the fair value of its financial instruments using observable and unobservable inputs. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect internal market assumptions.

These two types of inputs create the following fair value hierarchy:

Level 1 - Quoted prices for identical instruments in active markets.

Level 2 - Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations whose inputs are observable or whose significant value drivers are observable.

Level 3 - Significant inputs to the valuation model are unobservable.

Marketable securities accounted for as trading and available-for-sale are recorded at fair value on a recurring basis. For available-for-sale securities, changes in unrealized gains and losses are reported as a component of other comprehensive income. Changes in unrealized gains and losses on trading securities are included in other, net in the consolidated statements of earnings and comprehensive income (loss). Investments in held-to-maturity instruments with original maturities greater than three months are recorded at amortized cost.

Derivative financial instruments are recognized as assets or liabilities in the financial statements and measured at fair value on a recurring basis. Changes in the fair value of derivative financial instruments that are designated as fair value hedges are recorded in net earnings, while the effective portion of the changes in the fair value of derivative financial instruments that are designated as cash flow hedges are recorded as a component of other comprehensive income until settlement. For derivative financial instruments not designated as hedging instruments, gains or losses resulting from changes in the fair value are reported in other, net in the consolidated statements of earnings and comprehensive income (loss).

The company may use derivative financial instruments to manage its exposure to interest rate risk for its long-term fixed-rate debt portfolio and foreign currency exchange risk related to receipts from customers and payments to suppliers denominated in foreign currencies. The company does not use derivative financial instruments for trading or speculative purposes, nor does it use leveraged financial instruments. Credit risk related to derivative financial instruments is considered minimal and is managed through the use of multiple counterparties with high credit standards and periodic settlements of positions, as well as by entering into master netting agreements with most of our counterparties.

Accounts Receivable and Inventoried Costs
Accounts receivable include amounts billed and currently due from customers, as well as amounts currently due but unbilled (primarily related to costs incurred on contracts accounted for under the cost-to-cost method). Accounts receivable also include certain estimated contract change amounts, claims or REAs in negotiation that are probable of recovery and amounts retained by the customer pending contract completion.

Inventoried costs primarily relate to work in process on contracts accounted for under the units-of-delivery method. These costs represent accumulated contract costs less the portion of such costs allocated to delivered items. Product inventory primarily consists of raw materials and is stated at the lower of cost or market, generally using the average cost method.

Accumulated contract costs in unbilled accounts receivable and inventoried costs include direct production costs, factory and engineering overhead, production tooling costs, and, for government contracts, allowable G&A costs. According to the provisions of U.S. Government contracts, the customer asserts title to, or a security interest in, inventories related to such contracts as a result of contract advances, performance-based payments, and progress payments. In accordance with industry practice, unbilled accounts receivable and inventoried costs are classified as current assets and include amounts related to contracts having production cycles longer than one year. Payments received in excess of unbilled accounts receivable and inventoried costs on a contract by contract basis are recorded as advance payments and amounts in excess of costs incurred in the consolidated statements of financial position.

Cash Surrender Value of Life Insurance Policies
The company maintains whole life insurance policies on a group of executives, which are recorded at their cash surrender value as determined by the insurance carrier. The company also has split-dollar life insurance policies on former officers and executives from acquired businesses, which are recorded at the lesser of their cash surrender value or premiums paid. These policies are utilized as a partial funding source for deferred compensation and other non-qualified employee retirement plans. As of December 31, 2016 and 2015, the carrying values associated with these policies were $304 million and $284 million, respectively, and are recorded in other non-current assets in the consolidated statements of financial position.

Property, Plant and Equipment
Property, plant and equipment are depreciated over the estimated useful lives of individual assets. Most of these assets are depreciated using declining-balance methods, with the remainder using the straight-line method. Major classes of property, plant and equipment and their useful lives are as follows:

		December 31	
Useful life in years, $ in millions	Useful Life	**2016**	2015
Land and land improvements	Up to 40[1]	**$ 415**	$ 381
Buildings and improvements	Up to 45	**1,798**	1,618
Machinery and other equipment	Up to 20	**4,711**	4,610
Capitalized software costs	3-5	**439**	406
Leasehold improvements	Length of Lease[2]	**1,056**	898
Property, plant and equipment, at cost		**8,419**	7,913
Accumulated depreciation		**(4,831)**	(4,849)
Property, plant and equipment, net		**$ 3,588**	$ 3,064

[1] Land is not a depreciable asset.

[2] Leasehold improvements are depreciated over the shorter of the useful life of the asset or the length of the lease.

Goodwill and Other Purchased Intangible Assets
The company tests for impairment of goodwill annually as of December 31, or when an indicator of potential impairment exists. When performing the goodwill impairment test, the company uses a discounted cash flow approach corroborated by comparative market multiples, where appropriate, to determine the fair value of its reporting units.

Goodwill and other purchased intangible asset balances are included in the identifiable assets of their assigned business segment. The company charges goodwill impairment, as well as the amortization of other purchased intangible assets, against the respective segment’s operating income. Purchased intangible assets are amortized on a straight-line basis over their estimated useful lives and are included in other non-current assets in the consolidated statements of financial position.

Leases

The company uses its incremental borrowing rate in the assessment of lease classification as capital or operating and defines the initial lease term to include renewal options determined to be reasonably assured. The majority of our leases are operating leases.

Many of the company's real property lease agreements contain incentives for tenant improvements, rent holidays, or rent escalation clauses. For tenant improvement incentives, the company records a deferred rent liability and amortizes the deferred rent over the term of the lease as a reduction to rent expense. For rent holidays and rent escalation clauses during the lease term, the company records rental expenses on a straight-line basis over the term of the lease. For purposes of recognizing lease incentives, the company uses the date of initial possession as the commencement date, which is generally when the company is given the right of access to the space and begins to make improvements in preparation for intended use.

Litigation, Commitments and Contingencies

We accrue for litigation, commitments and contingencies when management, after considering the facts and circumstances of each matter as then known to management, has determined it is probable a liability will be found to have been incurred and the amount of the loss can be reasonably estimated. When only a range of amounts is reasonably estimable and no amount within the range is more likely than another, the low end of the range is recorded. Legal fees are expensed as incurred. Due to the inherent uncertainties surrounding gain contingencies, we generally do not recognize potential gains until realized.

Environmental Costs

We accrue for environmental liabilities when management determines that, based on the facts and circumstances known to the company, it is probable the company will incur costs to address environmental impacts and the costs are reasonably estimable. When only a range of amounts is reasonably estimable and no amount within the range is more probable than another, we record the low end of the range. The company typically projects environmental costs for up to 30 years, records environmental liabilities on an undiscounted basis, and excludes asset retirement obligations and certain legal costs. At sites involving multiple parties, we accrue environmental liabilities based upon our expected share of liability, taking into account the financial viability of other liable parties. As a portion of environmental remediation liabilities are expected to be recoverable through overhead charges on government contracts, such amounts are deferred in inventoried costs (current portion) and other non-current assets until charged to contracts. The portion of environmental costs not expected to be recoverable is expensed.

Retirement Benefits

The company sponsors various defined benefit pension plans and defined contribution retirement plans covering substantially all of its employees. In most cases, our defined contribution plans provide for a company match of employee contributions. The company also provides post-retirement benefits other than pensions to eligible retirees and qualifying dependents, consisting principally of health care and life insurance benefits.

The liabilities, unamortized benefit plan costs and annual income or expense of the company's defined benefit pension and other post-retirement benefit plans are determined using methodologies that involve several actuarial assumptions. Unamortized benefit plan costs consist primarily of accumulated net after-tax actuarial losses.

Because U.S. Government regulations require that the costs of pension and other post-retirement plans be charged to our contracts in accordance with the Federal Acquisition Regulation (FAR) and the related U.S. Government Cost Accounting Standards (CAS) that govern such plans, we calculate retiree benefit plan costs under both CAS and FAS methods. While both FAS and CAS recognize a normal service cost component in measuring periodic pension cost, there are differences in the way the components of annual pension costs are calculated under each method. Measuring plan obligations under FAS and CAS includes different assumptions and models, such as in estimating returns on plan assets, calculating interest expense, and the periods over which gains/losses related to pension assets and actuarial changes are amortized. As a result, annual retiree benefit plan expense amounts for FAS are different from the amounts for CAS in any given reporting period even though the ultimate cost of providing benefits over the life of the plans is the same under either method. CAS retiree benefit plan costs are charged to contracts and are included in segment operating income, and the difference between FAS and CAS expense is recorded in operating income at the consolidated company level.

For U.S. GAAP reporting, net actuarial gains or losses are amortized to expense on a plan-by-plan basis when they exceed the accounting corridor. The accounting corridor is a defined range within which amortization of net gains and losses is not required and is equal to 10 percent of the greater of plan assets or benefit obligations. For most of the company’s plans, gains or losses outside of the corridor are subject to amortization over the average future service period of active plan participants (approximately nine years). For plans where all or almost all plan participants are inactive, gains or losses outside of the corridor are generally subject to amortization over the average remaining life expectancy of plan participants (approximately 20 years). Not all net periodic pension expense is recognized in net earnings in the year incurred because it is allocated as production costs and a portion remains in inventory at the end of a reporting period. The company’s funding policy for the qualified pension plans is to contribute, at a minimum, the statutorily required amount to an irrevocable trust.

Stock Compensation

The company’s stock compensation plans are classified as equity plans and compensation expense is generally recognized over the vesting period (typically three years), net of estimated forfeitures. The company issues stock awards in the form of restricted performance stock rights and restricted stock rights. The fair value of stock awards is determined based on the closing market price of the company’s common stock on the grant date. At each reporting date, the number of shares is adjusted to equal the number ultimately expected to vest.

Accumulated Other Comprehensive Loss

The components of accumulated other comprehensive loss are as follows:

	December 31	
$ in millions	**2016**	2015
Unamortized benefit plan costs, net of tax benefit of $3,439 in 2016 and $3,350 in 2015	**$ (5,416)**	$ (5,241)
Cumulative translation adjustment	**(132)**	(82)
Net unrealized gain on marketable securities and cash flow hedges, net of tax	**2**	3
Total accumulated other comprehensive loss	**$ (5,546)**	$ (5,320)

Unamortized benefit plan costs primarily consist of net after-tax actuarial losses totaling $5.6 billion and $5.5 billion as of December 31, 2016 and 2015, respectively. Net actuarial gains or losses are re-determined annually or upon remeasurement events and principally arise from changes in the interest rate used to discount our benefit obligations and differences between expected and actual returns on plan assets.

Reclassifications from accumulated other comprehensive loss to net earnings related to the amortization of benefit plan costs were $402 million, $388 million and $145 million, net of taxes, for the years ended December 31, 2016, 2015 and 2014, respectively. The reclassifications represent the amortization of net actuarial losses and prior service credits, and are included in the computation of net periodic pension cost. See Note 12 for further information.

Reclassifications from accumulated other comprehensive loss to net earnings, relating to cumulative translation adjustments, marketable securities and effective cash flow hedges for the years ended December 31, 2016, 2015 and 2014, respectively, were not material.

Shareholders' Equity

The company records the difference between the cost of shares repurchased and their par value as well as tax withholding in excess of related stock compensation expense as a reduction of paid-in capital to the extent available and then as a reduction of retained earnings.

Related Party Transactions

For all periods presented, the company had no material related party transactions.

Accounting Standards Updates

On March 30, 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-09, *Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting*. The company adopted ASU 2016-09 during the first quarter of 2016. Among other things, ASU 2016-09 requires that entities recognize excess tax benefits and deficiencies related to employee share-based payment transactions as income tax expense or benefit. ASU 2016-09 also eliminates the requirement to reclassify excess tax benefits and deficiencies from operating activities to financing activities in the statement of cash flows. As a result of adoption, the company recognized an $85 million tax benefit during the year ended December 31, 2016. Adoption also resulted in an $85 million increase in operating cash flows and a corresponding $85 million reduction in financing cash flows for the year ended December 31, 2016.

On February 25, 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*. ASU 2016-02 supersedes existing lease guidance, including Accounting Standards Codification (ASC) 840 - *Leases*. Among other things, ASU

2016-02 requires recognition of a right-of-use asset and liability for future lease payments for contracts that meet the definition of a lease. ASU 2016-02 will be effective January 1, 2019, although early adoption is permitted, and it is to be applied using a modified retrospective approach. We are currently evaluating the timing of adoption as well as the effect ASU 2016-02 will have on the company's consolidated financial position, annual results of operations and/or cash flows.

On May 1, 2015, the FASB issued ASU No. 2015-07, *Disclosure for Investments in Certain Entities That Calculate Net Asset Value per Share (or Its Equivalent), Fair Value Measurement (Topic 820)*. ASU 2015-07 eliminates the requirement to categorize investments in the fair value hierarchy if their fair value is measured at net asset value (NAV) per share (or its equivalent) using the practical expedient. We adopted these updates in 2016 and applied them retrospectively to all periods presented.

On May 28, 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*. ASU 2014-09 supersedes existing revenue recognition guidance, including ASC 605-35, *Revenue Recognition - Construction-Type and Production-Type Contracts*, and outlines a single set of comprehensive principles for recognizing revenue under U.S. GAAP. Among other things, it requires companies to identify contractual performance obligations and determine whether revenue should be recognized at a point in time or over time. On July 9, 2015, the FASB approved a one year deferral of the effective date of ASU 2014-09 to annual reporting periods beginning after December 15, 2017. ASU 2014-09 may be applied either retrospectively or through the use of a modified-retrospective method. We currently expect to adopt the standard on January 1, 2018 and apply it retrospectively to all periods presented.

During 2016, we substantially completed our evaluation of ASU 2014-09, including the expected impact on our business processes, systems and controls, and potential differences in the timing and/or method of revenue recognition for our contracts. As a result of our evaluation, we identified changes to and are modifying certain of our accounting policies and practices. We also designed and implemented specific controls over our evaluation of the impact of ASU 2014-09, including our calculation of the cumulative effect of adopting ASU 2014-09. Although we do not expect significant changes to our accounting systems or controls upon adoption of ASU 2014-09, we expect to modify certain of our current controls to incorporate the revisions we have made to our accounting policies and practices.

Based on our evaluation of ASU 2014-09, we currently do not expect it to have a material impact on our results of operations or cash flows in the periods after adoption. Under ASU 2014-09, revenue is recognized as control transfers to the customer. As such, revenue for our contracts will generally be recognized over time using the cost-to-cost method, which is consistent with the revenue recognition model we currently use for the majority of our contracts. For those contracts where we currently recognize revenue as units are delivered, in most cases the accounting for those contracts will change under ASU 2014-09 such that we will recognize revenue as costs are incurred. This change will generally result in an acceleration of revenue as compared with our current revenue recognition method for those contracts.

We expect to complete our assessment of the cumulative effect of adopting ASU 2014-09 as well as the expected impact of adoption on our 2016 results during the first half of 2017. We will continue our evaluation of ASU 2014-09 (including how it may impact new contracts we receive as well as new or emerging interpretations of the standard) through the date of adoption.

Other accounting standards updates effective after December 31, 2016, are not expected to have a material effect on the company's consolidated financial position, annual results of operations and/or cash flows.

2. EARNINGS PER SHARE, SHARE REPURCHASES AND DIVIDENDS ON COMMON STOCK

Basic Earnings Per Share
We calculate basic earnings per share by dividing net earnings by the weighted-average number of shares of common stock outstanding during each period.

Diluted Earnings Per Share
Diluted earnings per share include the dilutive effect of awards granted to employees under stock-based compensation plans. The dilutive effect of these securities totaled 1.6 million, 2.2 million and 3.3 million shares for the years ended December 31, 2016, 2015 and 2014, respectively.

Share Repurchases
On May 15, 2013, the company's board of directors authorized a share repurchase program of up to $4.0 billion of the company's common stock (2013 Repurchase Program). Repurchases under the 2013 Repurchase Program

commenced in September 2013 and were completed in March 2015. On December 4, 2014, the company's board of directors authorized a new share repurchase program of up to $3.0 billion of the company's common stock (2014 Repurchase Program). Repurchases under the 2014 Repurchase Program commenced in March 2015 and were completed in March 2016.

On September 16, 2015, the company's board of directors authorized a new share repurchase program of up to $4.0 billion of the company's common stock (2015 Repurchase Program). Repurchases under the 2015 Repurchase Program commenced in March 2016 upon the completion of the company's 2014 Repurchase Program. As of December 31, 2016, repurchases under the 2015 Repurchase Program totaled $1.3 billion; $2.7 billion remained under this share repurchase authorization. By its terms, the 2015 Repurchase Program is set to expire when we have used all authorized funds for repurchases.

Share repurchases take place from time to time, subject to market conditions and management's discretion, in the open market or in privately negotiated transactions. The company retires its common stock upon repurchase and, in the periods presented, has not made any purchases of common stock other than in connection with these publicly announced repurchase programs.

The table below summarizes the company's share repurchases to date under the authorizations described above:

Repurchase Program Authorization Date	Amount Authorized (in millions)	Total Shares Retired (in millions)	Average Price Per Share[1]	Date Completed	Shares Repurchased (in millions) Year Ended December 31		
					2016	2015	2014
May 15, 2013	$ 4,000	32.8	$ 121.97	March 2015	—	2.7	21.4
December 4, 2014	$ 3,000	18.0	$ 166.70	March 2016	**1.4**	16.6	—
September 16, 2015	$ 4,000	5.9	$ 218.28		**5.9**	—	—
					7.3	19.3	21.4

[1] Includes commissions paid.

Dividends on Common Stock

In May 2016, the company increased the quarterly common stock dividend 13 percent to $0.90 per share from the previous amount of $0.80 per share.

In May 2015, the company increased the quarterly common stock dividend 14 percent to $0.80 per share from the previous amount of $0.70 per share.

In May 2014, the company increased the quarterly common stock dividend 15 percent to $0.70 per share from the previous amount of $0.61 per share.

3. SEGMENT INFORMATION

The company is aligned in three operating sectors, which are also our reportable segments: Aerospace Systems, Mission Systems and Technology Services. Effective January 1, 2016, the company streamlined our sectors from four to three to better align our business with the evolving needs of our customers and enhance innovation across the company. Mission Systems and Technology Services were created by merging elements of our former Electronic Systems, Information Systems and Technical Services sectors. The Mission Systems sector is composed of the majority of our former Electronic Systems sector and the businesses from our former Information Systems sector focused on the development of new capabilities for our military and intelligence customers. The Technology Services sector was formed by combining the services portfolio in the former Information Systems sector with the former Technical Services sector. Among other operations that were realigned, the military and civil space hardware business in Azusa, California, previously reporting to the Electronic Systems sector, moved to the Aerospace Systems sector, and the electronic attack business, previously in the Aerospace Systems sector, moved to the Mission Systems sector.

The following table presents sales and operating income by segment:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Sales			
Aerospace Systems	**$ 10,828**	$ 9,940	$ 9,910
Mission Systems	**10,928**	10,674	11,001
Technology Services	**4,825**	4,819	4,902
Intersegment eliminations	**(2,073)**	(1,907)	(1,834)
Total sales	**24,508**	23,526	23,979
Operating income			
Aerospace Systems	**1,236**	1,205	1,285
Mission Systems	**1,445**	1,410	1,557
Technology Services	**512**	514	461
Intersegment eliminations	**(258)**	(209)	(204)
Total segment operating income	**2,935**	2,920	3,099
Net FAS/CAS pension adjustment	**316**	348	269
Unallocated corporate expenses	**(53)**	(190)	(169)
Other	**(5)**	(2)	(3)
Total operating income	**$ 3,193**	$ 3,076	$ 3,196

Net FAS/CAS Pension Adjustment
For financial statement purposes, we account for our employee pension plans in accordance with FAS. However, the cost of these plans is charged to our contracts in accordance with CAS. The net FAS/CAS pension adjustment reflects the difference between CAS pension expense included as cost in segment operating income and FAS expense included in total operating income.

2016 - The decrease in net FAS/CAS pension adjustment is primarily due to lower than expected asset returns during 2015, partially offset by the increase in our FAS discount rate assumption as of December 31, 2015 and the continued phase-in of the effects of CAS harmonization.

2015 - The increase in net FAS/CAS pension adjustment is principally due to higher 2015 CAS expense resulting from changes in mortality assumptions and demographic experience, partially offset by an increase in 2015 FAS expense as a result of changes in our FAS discount rate and mortality assumptions as of December 31, 2014.

Unallocated Corporate Expenses
Unallocated corporate expenses include the portion of corporate expenses not considered allowable or allocable under applicable CAS or the FAR, and therefore not allocated to the segments. Such costs consist of a portion of management and administration, legal, environmental, compensation, retiree benefits and corporate unallowable costs.

2016 - Unallocated corporate expenses declined in 2016, as compared to 2015. In 2016, unallocated corporate expenses included a $35 million benefit recognized for state tax refunds claimed on our prior year tax returns and a $25 million benefit recognized for estimated prior year overhead claim recoveries. In 2015, unallocated corporate expenses included a $45 million expense recognized for deferred state income taxes due to a change in accounting methods approved by the Internal Revenue Service (IRS) that lowered our deductions for domestic production activities and a $25 million expense recognized for deferred state income taxes resulting from a discretionary pension contribution.

2015 - The increase in unallocated corporate expenses for 2015, as compared to 2014, is principally due to a $21 million increase in unallocated state income taxes due in part to a change in accounting methods approved by the IRS during the fourth quarter of 2015.

Intersegment Sales and Operating Income
Sales between segments are recorded at values that include intercompany operating income for the performing segment based on that segment's estimated operating margin rate for external sales. Such intercompany operating income is eliminated in consolidation, so that the company's total sales and total operating income reflect only those transactions with external customers. See Note 1 for additional information.

The following table presents intersegment sales and operating income before eliminations:

$ in millions	Year Ended December 31 2016 Sales	2016 Operating Income	2015 Sales	2015 Operating Income	2014 Sales	2014 Operating Income
Intersegment sales and operating income						
Aerospace Systems	**$ 239**	**$ 28**	$ 221	$ 27	$ 166	$ 21
Mission Systems	**875**	**136**	781	97	842	115
Technology Services	**959**	**94**	905	85	826	68
Total	**$ 2,073**	**$ 258**	$ 1,907	$ 209	$ 1,834	$ 204

Assets

Substantially all of the company's operating assets are located in the U.S. The following table presents assets by segment:

$ in millions	December 31 2016	2015
Assets		
Aerospace Systems	**$ 7,523**	$ 7,049
Mission Systems	**9,991**	9,475
Technology Services	**3,082**	3,047
Segment assets	**20,596**	19,571
Corporate assets[1]	**5,018**	4,853
Total assets	**$ 25,614**	$ 24,424

[1] Corporate assets principally consist of cash and cash equivalents and deferred tax assets.

Capital Expenditures and Depreciation and Amortization

The following table presents capital expenditures and depreciation and amortization by segment:

$ in millions	Capital Expenditures 2016	Capital Expenditures 2015	Capital Expenditures 2014	Depreciation and Amortization[1] 2016	Depreciation and Amortization[1] 2015	Depreciation and Amortization[1] 2014
Aerospace Systems	**$ 451**	$ 237	$ 376	**$ 216**	$ 215	$ 208
Mission Systems	**372**	141	131	**140**	153	158
Technology Services	**6**	3	3	**37**	36	36
Corporate	**91**	90	51	**63**	63	60
Total	**$ 920**	$ 471	$ 561	**$ 456**	$ 467	$ 462

[1] Depreciation and amortization expense includes amortization of purchased intangible assets, as well as amortization of deferred and other outsourcing costs.

4. ACCOUNTS RECEIVABLE, NET

Unbilled amounts represent sales for which billings have not been presented to customers by period-end. These amounts are usually billed and collected within one year. Substantially all accounts receivable at December 31, 2016 are expected to be collected in 2017. The company does not believe it has significant exposure to credit risk, as accounts receivable and the related unbilled amounts are primarily due from the U.S. Government either as the ultimate customer or in connection with foreign military sales. Progress and performance-based payments are reflected as an offset to the related unbilled accounts receivable balance for contracts accounted for under the cost-to-cost method of percentage-of-completion accounting.

Accounts receivable consisted of the following:

	December 31	
$ in millions	**2016**	2015
Due from U.S. Government		
Billed	**$ 444**	$ 506
Unbilled	**8,878**	7,699
Progress and performance-based payments received	**(7,123)**	(6,140)
	2,199	2,065
Due from International and Other Customers[1]		
Billed	**238**	223
Unbilled	**4,747**	3,713
Progress and performance-based payments received	**(3,822)**	(3,101)
	1,163	835
Total accounts receivable	**3,362**	2,900
Allowance for doubtful accounts	**(63)**	(59)
Total accounts receivable, net	**$ 3,299**	$ 2,841

[1] Includes receivables due from the U.S. Government associated with foreign military sales.

5. INVENTORIED COSTS, NET

Inventoried costs are primarily from contracts where the U.S. Government is the primary customer, therefore the company does not believe it has significant exposure to recoverability risk related to these amounts.

Inventoried costs consisted of the following:

	December 31	
$ in millions	**2016**	2015
Production costs of contracts in process	**$ 1,574**	$ 1,218
G&A expenses	**249**	293
	1,823	1,511
Progress and performance-based payments received	**(1,107)**	(807)
	716	704
Product inventory and raw material	**100**	103
Total inventoried costs, net	**$ 816**	$ 807

6. INCOME TAXES

Federal and foreign income tax expense consisted of the following:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Federal income tax expense:			
Current	**$ 661**	$ 310	$ 701
Deferred	**49**	472	155
Total federal income tax expense	**710**	782	856
Foreign income tax expense:			
Current	**14**	21	10
Deferred	**(1)**	(3)	2
Total foreign income tax expense	**13**	18	12
Total federal and foreign income tax expense	**$ 723**	$ 800	$ 868

Earnings from foreign operations before income taxes are not material for all periods presented.

Income tax expense differs from the amount computed by multiplying the statutory federal income tax rate times earnings before income taxes due to the following:

	Year Ended December 31		
$ in millions	**2016**	2015	2014
Income tax expense at statutory rate	**$ 1,023**	$ 976	$ 1,028
Stock compensation - excess tax benefits	**(85)**	—	—
Research credit	**(61)**	(119)	(43)
Manufacturing deduction	**(58)**	(31)	(48)
Settlements with taxing authorities	**(40)**	—	(51)
Repatriation of Non-U.S Earnings	**(33)**	—	—
Other, net	**(23)**	(26)	(18)
Total federal and foreign income taxes	**$ 723**	$ 800	$ 868

2016 – The effective tax rate for 2016 was 24.7 percent, as compared with 28.7 percent in 2015. The lower rate is principally due to $85 million of excess tax benefits related to employee share-based payment transactions recognized in 2016 resulting from the adoption of ASU No. 2016-09, as described in Note 1, a $40 million benefit recognized in connection with resolution of the Internal Revenue Service (IRS) examination of the company’s 2007-2011 tax returns and a $33 million benefit recognized in connection with the repatriation of earnings from certain of our foreign subsidiaries, as described below. These benefits are partially offset by a $58 million decrease in research credits, which were principally a result of credits recorded in 2015 that were claimed on our prior year tax returns.

2015 – The effective tax rate for 2015 was 28.7 percent, as compared with 29.6 percent in 2014. This reduction was driven by a $76 million increase in research credits primarily resulting from credits claimed on our prior year tax returns, partially offset by a $51 million benefit recorded in 2014 for the partial resolution of the IRS examination of our 2007-2009 tax returns.

Income tax payments, net of refunds received, were $691 million, $118 million and $727 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Uncertain Tax Positions

We file income tax returns in the U.S. federal jurisdiction and in various state and foreign jurisdictions. In the third quarter of 2016, the U.S. Congressional Joint Committee on Taxation approved a resolution of the IRS examination of the company’s 2007-2011 tax returns. As a result, the company recorded a reduction of our unrecognized tax benefits of approximately $115 million and a reduction of our income tax expense of $40 million.

Our 2012-2015 federal tax returns are currently under IRS examination. The company believes it is reasonably possible that within the next twelve months we may resolve certain tax matters related to the years under examination, which may result in further reductions of our unrecognized tax benefits up to $70 million and income tax expense up to $40 million.

Open tax years related to state and foreign jurisdictions remain subject to examination, but are not considered material.

The change in unrecognized tax benefits during 2016, 2015 and 2014, excluding interest, is as follows:

	December 31		
$ in millions	**2016**	2015	2014
Unrecognized tax benefits at beginning of the year	**$ 223**	$ 210	$ 241
Additions based on tax positions related to the current year	**35**	52	62
Additions for tax positions of prior years	**2**	17	9
Reductions for tax positions of prior years	**(40)**	(10)	(47)
Settlements with taxing authorities	**(84)**	—	(14)
Other, net	**(1)**	(46)	(41)
Net change in unrecognized tax benefits	**(88)**	13	(31)
Unrecognized tax benefits at end of the year	**$ 135**	$ 223	$ 210

These liabilities, along with $7 million of accrued interest and penalties, are included in other current and non-current liabilities in the consolidated statements of financial position. If the income tax benefits from these tax positions are ultimately realized, $112 million of federal and foreign tax benefits would reduce the company's effective tax rate.

Net interest expense within the company's federal, foreign and state income tax provisions was not material for all years presented.

Deferred Income Taxes

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and tax purposes. Net deferred tax assets and liabilities are classified as non-current in the consolidated statements of financial position.

The tax effects of significant temporary differences and carryforwards that gave rise to year-end deferred federal, state and foreign tax balances, as presented in the consolidated statements of financial position, are as follows:

	December 31	
$ in millions	**2016**	2015
Deferred Tax Assets		
Retiree benefits	**$ 2,814**	$ 2,549
Accrued employee compensation	**349**	316
Provisions for accrued liabilities	**295**	347
Inventory	**287**	227
Stock-based compensation	**72**	76
Other	**72**	68
Gross deferred tax assets	**3,889**	3,583
Less valuation allowance	**(31)**	(34)
Net deferred tax assets	**3,858**	3,549
Deferred Tax Liabilities		
Goodwill	**798**	788
Property, plant and equipment, net	**321**	297
Contract accounting differences	**1,200**	976
Other	**77**	79
Deferred tax liabilities	**2,396**	2,140
Total net deferred tax assets	**$ 1,462**	$ 1,409

Realization of deferred tax assets is primarily dependent on generating sufficient taxable income in future periods. The company believes it is more-likely-than-not our deferred tax assets will be realized, net of valuation allowances currently established.

At December 31, 2016, the company has available foreign tax credits and unused net operating losses of $18 million and $191 million, respectively, that may be applied against future taxable income. The net operating losses are primarily attributable to the United Kingdom and may be used indefinitely. A valuation allowance of $31 million, predominantly related to net operating losses, has been recorded due to the uncertainty regarding the realization of the asset.

Distributed and Undistributed Foreign Earnings
In the fourth quarter of 2016, certain of our foreign subsidiaries distributed earnings in the form of dividends to their respective immediate parent companies. Through this process, we repatriated $352 million of earnings generated by these foreign subsidiaries due, in part, to recent changes in foreign exchange rates, which improved the tax efficiency of such repatriation. The repatriation generated a net tax benefit of $33 million resulting from foreign tax credits in excess of U.S. income taxes due on these earnings.

As of December 31, 2016, the company has remaining undistributed earnings generated by our foreign subsidiaries of approximately $70 million. No deferred tax liability has been recorded on these earnings since we intend to indefinitely reinvest these earnings, as well as future earnings from our foreign subsidiaries, to fund our international operations. In addition, we expect future U.S. cash generation will be sufficient to meet future U.S. cash needs. Should the remaining undistributed earnings be distributed in the form of dividends or otherwise, the distributions would result in an immaterial amount of tax.

7. GOODWILL AND OTHER PURCHASED INTANGIBLE ASSETS

Goodwill
Changes in the carrying amounts of goodwill for the years ended December 31, 2015 and 2016, were as follows:

$ in millions	Aerospace Systems	Mission Systems	Technology Services	Total
Balance as of December 31, 2014	$ 3,742	$ 6,706	$ 2,018	$ 12,466
Other[1]	—	(2)	(4)	(6)
Balance as of December 31, 2015	$ 3,742	$ 6,704	$ 2,014	$ 12,460
Businesses sold and other[1]	**—**	**(10)**	**—**	**(10)**
Balance as of December 31, 2016	**$ 3,742**	**$ 6,694**	**$ 2,014**	**$ 12,450**

[1] Other consists primarily of adjustments for foreign currency translation.

Accumulated goodwill impairment losses at December 31, 2016 and 2015, totaled $570 million at Aerospace Systems.

Purchased Intangible Assets
Purchased intangible assets at December 31, 2016 and 2015 totaled $61 million and $77 million, respectively, net of accumulated amortization of $1.8 billion at each respective year end.

Amortization expense for 2016, 2015 and 2014, was $16 million, $22 million and $22 million, respectively. The company's purchased intangible assets are being amortized over an aggregate weighted-average period of 22 years. As of December 31, 2016, the expected future amortization of purchased intangibles for each of the next five years is approximately $10 million per year.

8. FAIR VALUE OF FINANCIAL INSTRUMENTS

The company holds a portfolio of marketable securities consisting of securities that are classified as either trading or available-for-sale to partially fund non-qualified employee benefit plans. These securities are included in other non-current assets in the consolidated statements of financial position.

The company's derivative portfolio consists primarily of foreign currency forward contracts. Where model-derived valuations are appropriate, the company utilizes the income approach to determine the fair value and uses the applicable London Interbank Offered Rate (LIBOR) swap rates.

The following table presents the financial assets and liabilities we record at fair value on a recurring basis identified by the level of inputs used to determine fair value. See Note 1 for the definitions of these levels.

	December 31, 2016			December 31, 2015		
$ in millions	**Level 1**	**Level 2**	**Total**	Level 1	Level 2	Total
Financial Assets (Liabilities)						
Marketable securities						
Trading	**$ 321**	**$ 2**	**$ 323**	$ 301	$ 2	$ 303
Available-for-sale	**7**	**—**	**7**	7	—	7
Derivatives	**—**	**8**	**8**	—	5	5

The notional value of the company's derivative portfolio at December 31, 2016 and 2015 was $147 million and $141 million, respectively. At December 31, 2016, no portion of the notional value was designated as a cash flow hedge. The portion of the notional value designated as cash flow hedges at December 31, 2015 was $10 million. The derivative fair values and related unrealized gains/losses at December 31, 2016 and 2015, were not material.

There were no transfers of financial instruments between the three levels of the fair value hierarchy during the years ended December 31, 2016 and 2015.

The carrying value of cash and cash equivalents approximates fair value.

9. LONG-TERM DEBT

Credit Facilities

In December 2016, a subsidiary of the company entered into a two-year credit facility, with two additional one-year option periods, in an aggregate principal amount of £120 million (the equivalent of approximately $147 million as of December 31, 2016) (the "2016 Credit Agreement"). The 2016 Credit Agreement is guaranteed by the company. At December 31, 2016, there was £110 million (the equivalent of approximately $135 million as of December 31, 2016) outstanding under this facility, which bears interest at a rate of LIBOR plus 1.10 percent. All of the borrowings outstanding under this facility mature less than one year from the date of issuance, but may be renewed under the terms of the facility. Based on our intent and ability to refinance the obligations on a long-term basis, substantially all of the borrowings are classified as non-current. The majority of the proceeds from this borrowing were used to facilitate the repatriation of earnings from certain of our foreign subsidiaries as discussed in Note 6.

In July 2015, the company amended its $1.8 billion five-year credit facility dated August 29, 2013 by reducing the aggregate principal amount available under the facility to $1.6 billion and extending the maturity to July 2020 (the “2015 Credit Agreement”). At December 31, 2016, there was no balance outstanding under this facility.

The Credit Agreements contain generally customary terms and conditions, including covenants restricting the company's ability to sell all or substantially all of its assets, merge or consolidate with another entity or undertake other fundamental changes and incur liens. The company also cannot permit the ratio of its debt to capitalization (as set forth in the Credit Agreements) to exceed 65 percent. At December 31, 2016, the company was in compliance with all covenants under the Credit Agreements.

Unsecured Senior Notes

In December 2016, the company issued $750 million of unsecured senior notes due February 1, 2027, with a fixed interest rate of 3.20 percent (the Notes). Interest on the Notes is payable semi-annually in arrears. The Notes are subject to redemption, in whole or in part, at the company's discretion at any time, or from time to time, prior to maturity at a redemption price equal to the greater of the principal amount of the Notes or an applicable “make-whole” amount, plus accrued and unpaid interest. We used a portion of the net proceeds to fund redemption of $200 million of the company's 6.75 percent unsecured senior notes due April 15, 2018. We recorded a pre-tax charge of $14 million principally related to the premium paid on the redemption, which was recorded in other, net in the consolidated statements of earnings and comprehensive income.

In February 2015, the company issued $600 million of unsecured senior notes due April 15, 2045 with a fixed interest rate of 3.85 percent. We used the net proceeds from this offering for the funding of a $500 million voluntary contribution to our pension plans in the first quarter of 2015 and a debt repayment of $107 million in the first quarter 2016.

Long-term debt consists of the following:

$ in millions		December 31 2016	2015
Fixed-rate notes and debentures, maturing in	**Interest rate**		
2016	7.75%	**$ —**	$ 107
2018	1.75%	**850**	1,050
2019	5.05%	**500**	500
2021	3.50%	**700**	700
2023	3.25%	**1,050**	1,050
2026	7.75% - 7.88%	**527**	527
2027	3.20%	**750**	—
2031	7.75%	**466**	466
2040	5.05%	**300**	300
2043	4.75%	**950**	950
2045	3.85%	**600**	600
Credit facilities	1.64%	**135**	—
Other	Various	**273**	276
Debt issuance costs		**(31)**	(30)
Total long-term debt		**7,070**	6,496
Less: current portion		**12**	110
Long-term debt, net of current portion		**$ 7,058**	$ 6,386

The estimated fair value of long-term debt was $7.6 billion and $6.9 billion as of December 31, 2016 and 2015, respectively. We calculated the fair value of long-term debt using Level 2 inputs, based on interest rates available for debt with terms and maturities similar to the company's existing debt arrangements.

Indentures underlying long-term debt issued by the company or its subsidiaries contain various restrictions with respect to the issuer, including one or more restrictions relating to limitations on liens, sale-leaseback arrangements and funded debt of subsidiaries. The majority of these fixed rate notes and debentures are subject to redemption at the company's discretion at any time prior to maturity in whole or in part at the principal amount plus any make-whole premium and accrued and unpaid interest. Interest on these fixed rate notes and debentures are payable semi-annually in arrears.

Total interest payments, net of interest received, were $299 million, $291 million, and $281 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Maturities of long-term debt as of December 31, 2016, are as follows:

$ in millions	
Year Ending December 31	
2017	$ 12
2018	853
2019	567
2020	94
2021	740
Thereafter	4,831
Total principal payments	7,097
Unamortized premium on long-term debt, net of discount	4
Debt issuance costs	(31)
Total long-term debt	$ 7,070

10. INVESTIGATIONS, CLAIMS AND LITIGATION

Litigation

On May 4, 2012, the company commenced an action, *Northrop Grumman Systems Corp. v. United States*, in the U.S. Court of Federal Claims. This lawsuit relates to an approximately $875 million firm fixed price contract awarded to the company in 2007 by the U.S. Postal Service (USPS) for the construction and delivery of flats sequencing systems (FSS) as part of the postal automation program. The FSS have been delivered. The company's lawsuit is based on various theories of liability. The complaint seeks approximately $63 million for unpaid portions of the contract price, and approximately $115 million based on the company's assertions that, through various acts and omissions over the life of the contract, the USPS adversely affected the cost and schedule of performance and materially altered the company's obligations under the contract. The United States responded to the company's complaint with an answer, denying most of the company's claims, and counterclaims seeking approximately $410 million, less certain amounts outstanding under the contract. The principal counterclaim alleges that the company delayed its performance and caused damages to the USPS because USPS did not realize certain costs savings as early as it had expected. On April 2, 2013, the U.S. Department of Justice informed the company of a False Claims Act complaint relating to the FSS contract that was filed under seal by a relator in June 2011 in the U.S. District Court for the Eastern District of Virginia. On June 3, 2013, the United States filed a Notice informing the Court that the United States had decided not to intervene in this case. The relator alleged that the company violated the False Claims Act in a number of ways with respect to the FSS contract, alleged damage to the USPS in an amount of at least approximately $179 million annually, alleged that he was improperly discharged in retaliation, and sought an unspecified partial refund of the contract purchase price, penalties, attorney's fees and other costs of suit. The relator later voluntarily dismissed his retaliation claim and reasserted it in a separate arbitration, which he also ultimately voluntarily dismissed. On September 5, 2014, the court granted the company's motion for summary judgment and ordered the relator's False Claims Act case be dismissed with prejudice. On December 19, 2014, the company filed a motion for partial summary judgment asking the court to dismiss the principal counterclaim referenced above. On June 29, 2015, the Court heard argument and denied that motion without prejudice to filing a later motion to dismiss. Although the ultimate outcome of these matters (“the FSS matters,” collectively), including any possible loss, cannot be predicted or reasonably estimated at this time, the company intends vigorously to pursue and defend the FSS matters.

On August 8, 2013, the company received a court-appointed expert's report in litigation pending in the Second Federal Court of the Federal District in Brazil brought by the Brazilian Post and Telegraph Corporation (ECT), a Brazilian state-owned entity, against Solystic SAS (Solystic), a French subsidiary of the company, and two of its consortium partners. In this suit, commenced on December 17, 2004, and relatively inactive for some period of time, ECT alleges the consortium breached its contract with ECT and seeks damages of approximately R$111 million (the equivalent of approximately $34 million as of December 31, 2016), plus interest, inflation adjustments and attorneys’ fees, as authorized by Brazilian law, which amounts could be significant over time. The original suit sought R$89 million (the equivalent of approximately $27 million as of December 31, 2016) in damages. In October 2013, ECT asserted an additional damage claim of R$22 million (the equivalent of approximately $7 million as of December 31, 2016). In its counterclaim, Solystic alleges ECT breached the contract by wrongfully refusing to accept the equipment Solystic had designed and built and seeks damages of approximately €31 million (the equivalent of approximately $33 million as of December 31, 2016), plus interest, inflation adjustments and attorneys’ fees, as authorized by Brazilian law. The Brazilian court retained an expert to consider certain issues pending before it. On August 8, 2013 and September 10, 2014, the company received reports from the expert, which contain some recommended findings relating to liability and the damages calculations put forth by ECT. Some of the expert's recommended findings were favorable to the company and others were favorable to ECT. In November 2014, the parties submitted comments on the expert's most recent report. On June 16, 2015, the court published a decision denying the parties' request to present oral testimony. At some future point, the court is expected to issue a decision on the parties' claims and counterclaims that could accept or reject, in whole or in part, the expert’s recommended findings.

The company is a party to various investigations, lawsuits, claims and other legal proceedings, including government investigations and claims, that arise in the ordinary course of our business. The nature of legal proceedings is such that we cannot assure the outcome of any particular matter. However, based on information available to the company to date, and other than with respect to the FSS matters discussed separately above, the company does not believe that the outcome of any matter pending against the company is likely to have a material adverse effect on the company's consolidated financial position as of December 31, 2016, or its annual results of operations and/or cash flows.

11. COMMITMENTS AND CONTINGENCIES

Guarantees of Subsidiary Performance Obligations

The company's subsidiaries enter into joint ventures, teaming and other business arrangements (collectively, Business Arrangements). The company generally strives to limit its exposure under these arrangements to its subsidiary's investment in the Business Arrangements or to the extent of such subsidiary's obligations under the applicable contract. In some cases, however, the company may enter into arrangements to guarantee performance or certain other obligations of the Business Arrangements and, in such cases, the company generally strives to obtain cross-indemnification from the other members of the Business Arrangements.

At December 31, 2016, the company is not aware of any existing event of default that would require it to satisfy any of these guarantees.

U.S. Government Cost Claims

From time to time, the company is advised of claims by the U.S. Government concerning certain potential disallowed costs, plus, at times, penalties and interest. When such findings are presented, the company and the U.S. Government representatives engage in discussions to enable the company to evaluate the merits of these claims, as well as to assess the amounts being claimed. Where appropriate, provisions are made to reflect the company's estimated exposure for potential disallowed costs. Such provisions are reviewed periodically using the most recent information available. The company believes it has adequately reserved for disputed amounts that are probable and reasonably estimable, and the outcome of any such matters would not have a material adverse effect on its consolidated financial position as of December 31, 2016, or its annual results of operations and/or cash flows.

Environmental Matters

The table below summarizes management's estimate of the range of reasonably possible future costs for environmental remediation, the amount accrued within that range, and the deferred costs expected to be recoverable through overhead charges on U.S. Government contracts as of December 31, 2016 and 2015:

$ in millions	Range of Reasonably Possible Future Costs[1]	Accrued Costs[2]	Deferred Costs[3]
December 31, 2016	**$379 - $774**	**$ 385**	**$ 195**
December 31, 2015	353 - 812	370	186

[1] Estimated remediation costs are not discounted to present value. The range of reasonably possible future costs does not take into consideration amounts expected to be recoverable through overhead charges on U.S. Government contracts.

[2] As of December 31, 2016, $119 million is recorded in other current liabilities and $266 million is recorded in other non-current liabilities.

[3] As of December 31, 2016, $67 million is deferred in inventoried costs and $128 million is deferred in other non-current assets. These amounts are evaluated for recoverability on a routine basis.

Although management cannot predict whether new information gained as our environmental remediation projects progress, or as changes in facts and circumstances occur, will materially affect the estimated liability accrued, we do not anticipate future remediation expenditures associated with our currently identified projects will have a material adverse effect on the company's consolidated financial position as of December 31, 2016, or its annual results of operations and/or cash flows.

Financial Arrangements

In the ordinary course of business, the company uses standby letters of credit and guarantees issued by commercial banks, and surety bonds issued principally by insurance companies to guarantee the performance on certain obligations. At December 31, 2016, there were $208 million of stand-by letters of credit and guarantees and $180 million of surety bonds outstanding.

Indemnifications

The company has provided indemnification for certain environmental, income tax and other potential liabilities in connection with certain of its divestitures. The settlement of these liabilities is not expected to have a material adverse effect on the company's consolidated financial position as of December 31, 2016, or its annual results of operations and/or cash flows.

Operating Leases

Rental expense for operating leases was $298 million in 2016, $302 million in 2015, and $304 million in 2014. These amounts are net of immaterial amounts of sublease rental income. Minimum rental commitments under long-term non-cancelable operating leases as of December 31, 2016 are payable as follows:

$ in millions	
Year Ending December 31	
2017	$ 257
2018	186
2019	131
2020	92
2021	66
Thereafter	160
Total minimum lease payments	$ 892

12. RETIREMENT BENEFITS

Plan Descriptions

U.S. Defined Benefit Pension Plans – The company sponsors several defined benefit pension plans in the U.S. covering the majority of its employees. Pension benefits for most employees are based on the employee's years of service, age and compensation. It is our policy to fund at least the minimum amount required for all qualified plans, using actuarial cost methods and assumptions acceptable under U.S. Government regulations, by making payments into benefit trusts separate from the company.

Defined Contribution Plans – The company also sponsors 401(k) defined contribution plans in which most employees are eligible to participate, including certain employees covered under collective agreements. Company contributions for most plans are based on employer matching of employee contributions up to four percent of compensation for employees hired on or before April 1, 2016. In addition to the 401(k) defined contribution benefit, certain employees hired from July 1, 2008 through April 1, 2016, are eligible to participate in Retirement Account Contributions (RAC) in lieu of a defined benefit pension plan. Most employees hired after April 1, 2016 and certain employees that did not previously participate in the pension plan or receive RAC are eligible for an increased company match of up to seven percent of compensation. The company's contributions to these defined contribution plans for the years ended December 31, 2016, 2015 and 2014, were $311 million, $291 million and $282 million, respectively.

Non-U.S. Benefit Plans – The company sponsors several benefit plans for non-U.S. employees. These plans are designed to provide benefits appropriate to local practice and in accordance with local regulations. Some of these plans are funded using benefit trusts separate from the company.

Medical and Life Benefits – The company provides a portion of the costs for certain health care and life insurance benefits for a substantial number of its active and retired employees. Certain covered employees achieve eligibility to participate in these plans upon retirement from active service if they meet specified age and years of service requirements. Qualifying dependents are also eligible for plan benefits in certain circumstances. The company reserves the right to amend or terminate the plans at any time. The company has capped the amount of its contributions to substantially all of its remaining post-retirement medical and life benefit plans.

In addition to a company and employee cost-sharing feature, the health plans also have provisions for deductibles, co-payments, coinsurance percentages, out-of-pocket limits, conformance to a schedule of reasonable fees, the use of managed care providers and coordination of benefits with other plans. The plans also provide for a Medicare carve-out. Subsequent to January 1, 2005 (or earlier at some segments), newly hired employees are not eligible for subsidized post-retirement medical and life benefits.

Beginning in the third quarter of 2014, in lieu of the benefits previously provided under the plans, the company provides subsidies to reimburse retirees for a portion of the cost of individual Medicare-supplemental coverage purchased directly by the retiree through a private insurance exchange. The amendment did not affect Pre-Medicare retirees.

Summary Plan Results

The cost to the company of its retirement benefit plans is shown in the following table:

	Year Ended December 31					
	Pension Benefits			Medical and Life Benefits		
$ in millions	**2016**	2015	2014	**2016**	2015	2014
Components of net periodic benefit cost						
Service cost	**$ 446**	$ 484	$ 457	**$ 30**	$ 35	$ 34
Interest cost	**1,284**	1,224	1,260	**94**	94	99
Expected return on plan assets	**(1,853)**	(1,975)	(1,871)	**(86)**	(89)	(83)
Amortization of:						
Prior service credit	**(60)**	(60)	(59)	**(22)**	(28)	(45)
Net loss from previous years	**714**	682	327	**16**	27	13
Other	**—**	—	1	**—**	—	—
Net periodic benefit cost	**$ 531**	$ 355	$ 115	**$ 32**	$ 39	$ 18

The table below summarizes the components of changes in unamortized benefit plan costs for the years ended December 31, 2014, 2015 and 2016:

$ in millions	Pension Benefits	Medical and Life Benefits	Total
Changes in unamortized benefit plan costs			
Change in net actuarial loss	$ 3,833	$ 234	$ 4,067
Change in prior service cost	—	(92)	(92)
Amortization of:			
Prior service credit	59	45	104
Net loss from previous years	(327)	(13)	(340)
Tax benefit related to above items	(1,357)	(66)	(1,423)
Change in unamortized benefit plan costs – 2014	2,208	108	2,316
Change in net actuarial loss	626	(125)	501
Amortization of:			
Prior service credit	60	28	88
Net loss from previous years	(682)	(27)	(709)
Tax (benefit) expense related to above items	(1)	46	45
Change in unamortized benefit plan costs – 2015	3	(78)	(75)
Change in net actuarial loss	**1,003**	**(91)**	**912**
Change in prior service cost	**—**	**—**	**—**
Amortization of:			
Prior service credit	**60**	**22**	**82**
Net loss from previous years	**(714)**	**(16)**	**(730)**
Tax (benefit) expense related to above items	**(121)**	**32**	**(89)**
Change in unamortized benefit plan costs – 2016	**$ 228**	**$ (53)**	**$ 175**

The table below presents the components of accumulated other comprehensive loss related to the company's retirement benefit plans:

	Pension Benefits		Medical and Life Benefits	
$ in millions	**2016**	2015	**2016**	2015
Amounts recorded in accumulated other comprehensive loss				
Net actuarial loss	**$ (9,030)**	$ (8,741)	**$ (113)**	$ (220)
Prior service credit	**244**	304	**44**	66
Income tax benefits related to above items	**3,407**	3,286	**32**	64
Unamortized benefit plan costs	**$ (5,379)**	$ (5,151)	**$ (37)**	$ (90)

The following table sets forth the funded status and amounts recognized in the consolidated statements of financial position for the company's retirement benefit plans. Pension benefits data includes the qualified plans, foreign plans and U.S. unfunded non-qualified plans for benefits provided to directors, officers and certain employees. The company uses a December 31 measurement date for its plans.

	Pension Benefits		Medical and Life Benefits	
$ in millions	**2016**	2015	**2016**	2015
Plan Assets				
Fair value of plan assets at beginning of year	**$ 23,950**	$ 25,063	**$ 1,153**	$ 1,216
Net gain (loss) on plan assets	**1,867**	(258)	**97**	(5)
Employer contributions	**81**	578	**83**	68
Participant contributions	**11**	10	**20**	22
Benefits paid	**(1,480)**	(1,428)	**(146)**	(151)
Other	**(45)**	(15)	**1**	3
Fair value of plan assets at end of year	**24,384**	23,950	**1,208**	1,153
Projected Benefit Obligation				
Projected benefit obligation at beginning of year	**29,182**	30,525	**2,181**	2,398
Service cost	**446**	484	**30**	35
Interest cost	**1,284**	1,224	**94**	94
Participant contributions	**11**	10	**20**	22
Actuarial loss (gain)	**1,026**	(1,602)	**(80)**	(219)
Benefits paid	**(1,480)**	(1,428)	**(146)**	(151)
Other	**(60)**	(31)	**1**	2
Projected benefit obligation at end of year	**30,409**	29,182	**2,100**	2,181
Funded status	**$ (6,025)**	$ (5,232)	**$ (892)**	$ (1,028)
Classification of amounts recognized in the consolidated statements of financial position				
Non-current assets	**$ 2**	$ 18	**$ 87**	$ 79
Current liability	**(146)**	(142)	**(42)**	(43)
Non-current liability	**(5,881)**	(5,108)	**(937)**	(1,064)

The following table shows those amounts expected to be recognized in net periodic benefit cost in 2017:

$ in millions	Pension Benefits	Medical and Life Benefits	Total
Amounts expected to be recognized in 2017 net periodic benefit cost			
Net actuarial loss	$ 712	$ 9	$ 721
Prior service credit	(58)	(21)	(79)

The accumulated benefit obligation for all defined benefit pension plans was $30.1 billion and $29.0 billion at December 31, 2016 and 2015, respectively. Amounts for pension plans with accumulated benefit obligations in excess of fair value of plan assets are as follows:

	December 31	
$ in millions	**2016**	2015
Projected benefit obligation	**$ 30,350**	$ 29,131
Accumulated benefit obligation	**30,065**	28,923
Fair value of plan assets	**24,322**	23,882

Plan Assumptions

On a weighted-average basis, the following assumptions were used to determine benefit obligations and net periodic benefit cost:

	Pension Benefits		Medical and Life Benefits	
	2016	2015	**2016**	2015
Assumptions used to determine benefit obligation at December 31				
Discount rate	**4.19%**	4.53%	**4.13%**	4.47%
Initial cash balance crediting rate assumed for the next year	**3.10%**	3.00%		
Rate to which the cash balance crediting rate is assumed to increase (the ultimate rate)	**3.60%**	3.75%		
Year that the cash balance crediting rate reaches the ultimate rate	**2022**	2021		
Rate of compensation increase	**3.00%**	3.00%		
Initial health care cost trend rate assumed for the next year			**6.50%**	7.00%
Rate to which the health care cost trend rate is assumed to decline (the ultimate trend rate)			**5.00%**	5.00%
Year that the health care cost trend rate reaches the ultimate trend rate			**2020**	2020
Assumptions used to determine benefit cost for the year ended December 31				
Discount rate	**4.53%**	4.12%	**4.47%**	4.04%
Initial cash balance crediting rate assumed for the next year	**3.00%**	2.75%		
Rate to which the cash balance crediting rate is assumed to increase (the ultimate rate)	**3.75%**	3.50%		
Year that the cash balance crediting rate reaches the ultimate rate	**2021**	2020		
Expected long-term return on plan assets	**8.00%**	8.00%	**7.70%**	7.58%
Rate of compensation increase	**3.00%**	3.00%		
Initial health care cost trend rate assumed for the next year			**7.00%**	6.50%
Rate to which the health care cost trend rate is assumed to decline (the ultimate trend rate)			**5.00%**	5.00%
Year that the health care cost trend rate reaches the ultimate trend rate			**2020**	2019

Plan Assets and Investment Policy

Plan assets are invested in various asset classes that are expected to produce a sufficient level of diversification and investment return over the long term. The investment goal is to exceed the assumed rate of return over the long term within reasonable and prudent levels of risk. Through consultation with our investment management team and outside investment advisers, management develops expected long-term returns for each of the plans' strategic asset classes. In addition to our historical investment performance, we consider several factors, including current market data such as yields/price-earnings ratios, historical market returns over long periods and periodic surveys of investment managers' expectations. Using policy target allocation percentages and the asset class expected returns, we calculate a weighted-average expected long-term rate of return. Liability studies are conducted on a regular basis to provide guidance in setting investment goals with an objective to balance risk. Risk targets are established and monitored against acceptable ranges.

Our investment policies and procedures are designed to ensure the plans' investments are in compliance with the Employee Retirement Income Security Act (ERISA). Guidelines are established defining permitted investments within each asset class. Derivatives are used for transitioning assets, asset class rebalancing, managing currency risk and for management of fixed-income and alternative investments.

For the majority of the plans' assets, the investment policies require that the asset allocation be maintained within the following ranges as of December 31, 2016:

	Asset Allocation Ranges
Cash and cash equivalents	0% - 12%
U.S. equities	15% - 35%
International equities	10% - 30%
Fixed-income securities	20% - 55%
Alternative investments	8% - 28%

The table below provides the fair values of the company's pension and VEBA trust plan assets at December 31, 2016 and 2015, by asset category. The table also identifies the level of inputs used to determine the fair value of assets in each category. See Note 1 for the definitions of these levels. Certain investments that are measured at fair value using NAV per share (or its equivalent) as a practical expedient are not required to be categorized in the fair value hierarchy table. The total fair value of these investments is included in the table below to permit reconciliation of the fair value hierarchy to amounts presented in the funded status table above. As of December 31, 2016 and 2015, there were no investments expected to be sold at a value materially different than NAV.

	Level 1		Level 2		Level 3		Total	
$ in millions	**2016**	2015	**2016**	2015	**2016**	2015	**2016**	2015
Asset category								
Cash and cash equivalents	**$ 72**	$ 37	**$ 2,477**	$ 1,457			**$ 2,549**	$ 1,494
U.S. equities	**3,686**	4,043	**—**	—	**$ 3**	$ 2	**3,689**	4,045
International equities	**2,392**	2,300	**48**	81	**$ 1**		**2,441**	2,381
Fixed-income securities								
U.S. Treasuries			**1,109**	530			**1,109**	530
U.S. Government Agency			**424**	717			**424**	717
Non-U.S. Government			**108**	274			**108**	274
Corporate debt			**3,723**	4,876			**3,723**	4,876
Asset backed			**296**	392	**1**	1	**297**	393
High yield debt			**1,844**	1,678			**1,844**	1,678
Bank loans			**297**	261			**297**	261
Other Assets	**(10)**	20	**12**	5			**2**	25
Investments valued using NAV as a practical expedient								
U.S. equities							**700**	593
International equities							**3,329**	2,470
Fixed-income funds							**99**	133
Hedge funds							**220**	219
Opportunistic investments							**581**	278
Private equities							**1,801**	1,850
Real estate funds							**2,379**	2,886
Fair value of plan assets at the end of the year	**$6,140**	$6,400	**$10,338**	$10,271	**$5**	$3	**$25,592**	$25,103

There were no transfers of plan assets between the three levels of the fair value hierarchy during the years ended December 31, 2016 and 2015.

Generally, investments are valued based on information in financial publications of general circulation, statistical and valuation services, records of security exchanges, appraisal by qualified persons, transactions and bona fide offers. Cash and cash equivalents are predominantly held in money market or short-term investment funds. U.S. and international equities consist primarily of common stocks and institutional common trust funds. Investments in certain equity securities, which include domestic and international securities and registered investment companies, are valued at the last reported sales or quoted price on the last business day of the reporting period. Fair values for certain fixed-income securities, which are not exchange-traded, are valued using third-party pricing services.

Other assets include derivative assets with a fair value of $19 million and $40 million, derivative liabilities with a fair value of $28 million and $25 million, and net notional amounts of $2.0 billion and $3.2 billion, as of December 31, 2016 and 2015, respectively. Derivative instruments may include exchange traded futures contracts, interest rate swaps, options on futures and swaps, currency contracts, total return swaps and credit default swaps. Notional amounts do not quantify risk or represent assets or liabilities of the pension and VEBA trusts, but are used in the calculation of cash settlement under the contracts. The volume of derivative activity is commensurate with the amounts disclosed at year-end. Certain derivative financial instruments within the pension trust are subject to master netting agreements with certain counterparties.

Investments in certain equity and fixed-income funds, which include common/collective trust funds, and alternative investments, including hedge funds, opportunistic investments, private equity funds and real estate funds, are valued based on the NAV derived by the investment managers, as a practical expedient, and are described further below.

U.S. and International equities: Generally, redemption periods are monthly with a notice requirement less than 30 days. As of December 31, 2016 and 2015, unfunded commitments were not material.

Fixed-income funds: Redemption periods are daily, monthly or quarterly with various notice requirements but generally are less than 30 days. As of December 31, 2016 and 2015, there were no unfunded commitments.

Hedge funds: The redemption period of hedge funds is generally quarterly and requires a 90-day notice. As of December 31, 2016 and 2015, there were no unfunded commitments.

Opportunistic investments: Opportunistic investments are primarily held in partnerships with a 5-10 year life. As of December 31, 2016 and 2015, unfunded commitments were $638 million and $536 million, respectively.

Private equities: The term of each fund is typically 10 or more years and the fund's investors do not have an option to redeem their interest in the fund. As of December 31, 2016 and 2015, unfunded commitments were $1.3 billion and $930 million, respectively.

Real estate funds: The closed-end real estate funds and infrastructure funds have terms that are typically 10 or more years. Generally, with the fund's approval, investors may redeem their interests in the fund. As of December 31, 2016 and 2015, unfunded commitments were $72 million and $80 million, respectively.

For the years ended December 31, 2016 and 2015, the defined benefit pension and VEBA trusts did not hold any Northrop Grumman common stock.

Benefit Payments

The following table reflects estimated future benefit payments for the next ten years, based upon the same assumptions used to measure the benefit obligation, and includes expected future employee service, as of December 31, 2016:

$ in millions	Pension Plans	Medical and Life Plans	**Total**
Year Ending December 31			
2017	$ 1,531	$ 150	$ 1,681
2018	1,575	154	1,729
2019	1,622	152	1,774
2020	1,670	153	1,823
2021	1,718	153	1,871
2022 through 2026	9,251	731	9,982

In 2017, the company expects to contribute the required minimum funding of approximately $82 million to its pension plans and approximately $52 million to its medical and life benefit plans. During the year ended December 31, 2015, the company made a voluntary pension contribution of $500 million.

13. STOCK COMPENSATION PLANS AND OTHER COMPENSATION ARRANGEMENTS

Stock Compensation Plans

At December 31, 2016, the company had stock-based compensation awards outstanding under the following shareholder-approved plans: the 2001 Long-Term Incentive Stock Plan (2001 Plan) and the 2011 Long-Term Incentive Stock Plan (2011 Plan), both applicable to employees, and the 1993 Stock Plan for Non-Employee Directors (1993 SPND).

Employee Plans – The 2011 Plan replaced the 2001 Plan. The only outstanding awards under the 2001 Plan are an immaterial number of vested stock options, which expire in 2018. In May 2015, the company’s shareholders approved amendments to the 2011 Plan. These amendments provided that shares issued under the plan would be counted against the aggregate share limit on a one-for-one basis. As amended, 5.1 million shares plus 2.4 million of newly authorized shares were available for issuance under the 2011 Plan; as of December 31, 2016, 6.8 million shares remain available for issuance.

The 2011 Plan provides for the following equity awards: stock options, stock appreciation rights (SARs) and stock awards. Under the 2011 Plan, no SARs have been granted and there are no outstanding stock options. Stock awards include restricted performance stock rights (RPSR) and restricted stock rights (RSR). RPSRs generally vest and are paid following the completion of a three-year performance period, based on achievement of financial objectives determined by the Board. RSRs generally vest 100% after three years. Each includes dividend equivalents, which are paid upon payment of the RPSR or RSR. The terms of equity awards granted under the 2011 Plan provide for accelerated vesting, and in some instances forfeiture, of all or a portion of an award upon termination of employment.

Non-Employee Director Plans – Awards to non-employee directors are made pursuant to the Northrop Grumman Corporation Equity Grant Program for Non-Employee Directors under the 2011 Plan (the Director Program), which was amended and restated effective January 1, 2016. Prior to January 1, 2016, the Director Program and the 1993 SPND provided for quarterly award and vesting of an annual equity retainer in the form of deferred stock units (Automatic Stock Units) to be paid upon the conclusion of a director's board service, or earlier, as specified by the director, if the director had five or more years of service.

Under the amended Director Program, each non-employee director is awarded an annual equity grant in the form of Automatic Stock Units, which vest on the one-year anniversary of the grant date. Directors may elect to have all or any portion of their Automatic Stock Units paid on (A) the earlier of (i) the beginning of a specified calendar year after the vesting date or (ii) their separation from service as a member of the Board, or (B) on the vesting date. Directors that were members of the Board on January 1, 2016 also received a one-time transitional grant of deferred stock units that vested in May 2016. Directors receiving the transitional grant could elect similar payment terms for such stock units.

Directors also may elect to defer to a later year all or a portion of their remaining cash retainer or committee retainer fees into a stock unit account as Elective Stock Units or in alternative investment options. Elective Stock Units are awarded on a calendar quarterly basis. Directors may elect to have all or a portion of their Elective Stock Units paid on the earlier of (i) the beginning of a specified calendar year or (ii) their separation from service as a member of the Board. Stock units awarded under the Director Program are paid out in an equivalent number of shares of Northrop Grumman common stock. Directors are credited with dividend equivalents in connection with the accumulated stock units until the shares of common stock relating to such stock units are issued.

Compensation Expense

Stock-based compensation expense for the years ended December 31, 2016, 2015 and 2014 was $93 million, $99 million and $134 million, respectively. The related tax benefits for stock-based compensation for the years ended December 31, 2016, 2015 and 2014 were $85 million, $103 million and $81 million, respectively.

At December 31, 2016, there was $92 million of unrecognized compensation expense related to unvested stock awards granted under the company’s stock-based compensation plans. These amounts are expected to be charged to expense over a weighted-average period of 1.3 years.

Stock Awards

Compensation expense for stock awards is measured at the grant date based on the fair value of the award and is recognized over the vesting period (generally three years). The fair value of stock awards and performance stock awards is determined based on the closing market price of the company’s common stock on the grant date. The fair value of market-based stock awards is determined at the grant date using a Monte Carlo simulation model. For purposes of measuring compensation expense for performance awards, the number of shares ultimately expected to vest is estimated at each reporting date based on management’s expectations regarding the relevant performance criteria.

Stock award activity for the years ended December 31, 2014, 2015 and 2016, is presented in the table below. Vested awards do not include any adjustments to reflect the final performance measure for issued shares.

	Stock Awards (in thousands)		Weighted-Average Grant Date Fair Value	Weighted-Average Remaining Contractual Term (in years)
Outstanding at January 1, 2014	3,420	$	61	1.5
Granted	763		118	
Vested	(1,217)		58	
Forfeited	(158)		70	
Outstanding at December 31, 2014	2,808	$	77	1.1
Granted	539		166	
Vested	(1,691)		62	
Forfeited	(70)		108	
Outstanding at December 31, 2015	1,586	$	122	1.2
Granted	**483**		**186**	
Vested	**(872)**		**97**	
Forfeited	**(49)**		**143**	
Outstanding at December 31, 2016	**1,148**	**$**	**167**	**1.3**

The majority of our stock awards are granted annually during the first quarter. RSRs typically vest on the third anniversary of the grant date, while RPSRs generally vest and pay out based on the achievement of financial metrics for the three-year period ending on December 31 of the third year subsequent to grant.

The grant date fair value of shares issued in settlement of fully vested stock awards was $97 million, $143 million and $80 million during the years ended December 31, 2016, 2015 and 2014, respectively.

Cash Awards

The company grants certain employees cash units (CUs) and cash performance units (CPUs). Depending on actual performance against financial objectives, recipients of CPUs earn between 0 and 200 percent of the original grant. The following table presents the minimum and maximum aggregate payout amounts related to those cash awards granted for the periods presented:

	Year Ended December 31					
$ in millions		**2016**		2015		2014
Minimum aggregate payout amount	**$**	**39**	$	37	$	32
Maximum aggregate payout amount		**199**		194		179

The majority of our cash awards are granted annually during the first quarter. CUs typically vest and settle in cash on the third anniversary of the grant date, while CPUs generally vest and pay out in cash based on the achievement of financial metrics for a three-year period ending on December 31 of the third year subsequent to grant. At December 31, 2016, there was $131 million of unrecognized compensation expense related to cash awards.

14. UNAUDITED SELECTED QUARTERLY DATA

Unaudited quarterly financial results are set forth in the following tables. It is the company's long-standing practice to establish actual interim closing dates using a "fiscal" calendar in which we close our books on a Friday near each quarter-end date, in order to normalize the potentially disruptive effects of quarterly closings on business processes.

This practice is only used at interim periods within a reporting year.

2016

In millions, except per share amounts	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Sales	**$ 5,956**	**$ 6,000**	**$ 6,155**	**$ 6,397**
Operating income	**739**	**797**	**826**	**831**
Net earnings	**556**	**517**	**602**	**525**
Basic earnings per share	**3.07**	**2.87**	**3.38**	**2.98**
Diluted earnings per share	**3.03**	**2.85**	**3.35**	**2.96**
Weighted-average common shares outstanding	**181.3**	**180.1**	**178.1**	**176.0**
Weighted-average diluted shares outstanding	**183.4**	**181.5**	**179.6**	**177.6**

2015

In millions, except per share amounts	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
Sales	$ 5,957	$ 5,896	$ 5,979	$ 5,694
Operating income	780	813	794	689
Net earnings	484	531	516	459
Basic earnings per share	2.45	2.77	2.78	2.52
Diluted earnings per share	2.41	2.74	2.75	2.49
Weighted-average common shares outstanding	197.7	191.8	185.8	182.1
Weighted-average diluted shares outstanding	200.5	193.7	187.9	184.2

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

DISCLOSURE CONTROLS AND PROCEDURES

Our principal executive officer (Chairman, Chief Executive Officer and President) and principal financial officer (Corporate Vice President and Chief Financial Officer) have evaluated the company’s disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) of the Securities Exchange Act of 1934 (the Exchange Act)) as of December 31, 2016, and have concluded that these 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 Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms. These disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed in the reports that we file or submit is accumulated and communicated to management, including the principal executive officer and the principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

CHANGES IN INTERNAL CONTROL OVER FINANCIAL REPORTING

During the three months ended December 31, 2016, no change occurred in our internal controls over financial reporting that materially affected, or is reasonably likely to materially affect, our internal controls over financial reporting.

Item 9B. Other Information

None.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Northrop Grumman Corporation (the company) prepared and is responsible for the consolidated financial statements and all related financial information contained in this Annual Report. This responsibility includes establishing and maintaining effective internal control over financial reporting. The company's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with accounting principles generally accepted in the United States of America.

To comply with the requirements of Section 404 of the Sarbanes–Oxley Act of 2002, the company designed and implemented a structured and comprehensive assessment process to evaluate its internal control over financial reporting across the enterprise. The assessment of the effectiveness of the company's internal control over financial reporting is based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Because of its inherent limitations, a system of internal control over financial reporting can provide only reasonable assurance and may not prevent or detect misstatements. Management regularly monitors its internal control over financial reporting, and actions are taken to correct deficiencies as they are identified. Based on its assessment, management has concluded that the company's internal control over financial reporting was effective as of December 31, 2016.

Deloitte & Touche LLP issued an attestation report dated January 30, 2017, concerning the company's internal control over financial reporting, which is contained in this Annual Report. The company's consolidated financial statements as of and for the year ended December 31, 2016, have been audited by the independent registered public accounting firm of Deloitte & Touche LLP in accordance with the standards of the Public Company Accounting Oversight Board (United States).

/s/ Wesley G. Bush
Chairman, Chief Executive Officer and President

/s/ Kenneth L. Bedingfield
Corporate Vice President and Chief Financial Officer

January 30, 2017

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of
Northrop Grumman Corporation
Falls Church, Virginia

We have audited the internal control over financial reporting of Northrop Grumman Corporation and subsidiaries (the "Company") as of December 31, 2016, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed by, or under the supervision of, the company's principal executive and principal financial officers, or persons performing similar functions, and effected by the company's board of directors, management, and other personnel 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of the inherent limitations of internal control over financial reporting, including the possibility of collusion or improper management override of controls, material misstatements due to error or fraud may not be prevented or detected on a timely basis. Also, projections of any evaluation of the effectiveness of the internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated financial statements as of and for the year ended December 31, 2016 of the Company and our report dated January 30, 2017 expressed an unqualified opinion on those financial statements.

/s/ Deloitte & Touche LLP
McLean, Virginia
January 30, 2017

PART III

Item 10. Directors, Executive Officers and Corporate Governance

DIRECTORS

Information about our Directors will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders, to be filed with the Securities and Exchange Commission (SEC) within 120 days after the end of our fiscal year.

EXECUTIVE OFFICERS

Our executive officers as of January 30, 2017, are listed below, along with their ages on that date, positions and offices held with the company, and principal occupations and employment, focused primarily on the past five years.

Name	Age	Office Held	Since	Recent Business Experience
Wesley G. Bush	55	Chairman, Chief Executive Officer and President	2010	President and Chief Operating Officer (2007-2009)
Patrick M. Antkowiak	56	Corporate Vice President and Chief Technology Officer	2014	Vice President and General Manager, Advanced Concepts and Technologies Division, Former Electronic Systems Sector (2010-2014)
M. Sidney Ashworth	65	Corporate Vice President, Government Relations	2010	Vice President of Washington Operations, GE Aviation (a provider of aircraft engines, components and systems) (2010)
Kenneth L. Bedingfield	44	Corporate Vice President and Chief Financial Officer	2015	Vice President, Finance (2014-2015); Vice President, Business Management and Chief Financial Officer, Aerospace Systems Sector (2013-2014); Corporate Vice President, Controller and Chief Accounting Officer (2011-2013)
Mark A. Caylor	52	Corporate Vice President and President, Enterprise Services and Chief Strategy Officer	2013	Corporate Vice President and Treasurer (2011-2012)
Sheila C. Cheston	58	Corporate Vice President and General Counsel	2010	Executive Vice President and Director, BAE Systems, Inc. (an aerospace and defense company) (2009 -2010)
Lisa R. Davis	55	Corporate Vice President, Communications	2016	Vice President, Communications, Former Electronic Systems Sector (2014-2016); Vice President, Communications, AstraZeneca (a biopharmaceutical company) (2006-2013)
Gloria A. Flach	58	Corporate Vice President and Chief Operating Officer	2016	Corporate Vice President and President, Former Electronic Systems Sector (2013-2015); Corporate Vice President and President, Enterprise Shared Services (2010-2012)

Name	Age	Office Held	Since	Recent Business Experience
Michael A. Hardesty	45	Corporate Vice President, Controller, and Chief Accounting Officer	2013	Vice President and Chief Financial Officer, Former Information Systems Sector (2011-2013)
Christopher T. Jones	52	Corporate Vice President and President, Technology Services Sector	2016	Corporate Vice President and President, Former Technical Services Sector (2013-2015); Vice President and General Manager, Integrated Logistics and Modernization Division, Former Technical Services Sector (2010-2012)
Denise M. Peppard	60	Corporate Vice President and Chief Human Resources Officer	2011	Vice President and Chief Human Resources, Computer Sciences Corporation (an information technology services company) (2010-2011)
David T. Perry	52	Corporate Vice President and Chief Global Business Development Officer	2012	Vice President and General Manager of Naval and Marine Systems Division, Former Electronic Systems Sector (2009-2012)
Thomas E. Vice	54	Corporate Vice President and President, Aerospace Systems Sector	2013	Corporate Vice President and President, Former Technical Services Sector (2010-2012)
Kathy J. Warden	45	Corporate Vice President and President, Mission Systems Sector	2016	Corporate Vice President and President, Former Information Systems Sector (2013-2015); Vice President and General Manager, Cyber Intelligence Division (2011-2012)

AUDIT COMMITTEE FINANCIAL EXPERT

The information as to the Audit Committee and the Audit Committee Financial Expert will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the company's fiscal year.

CODE OF ETHICS

We have adopted Standards of Business Conduct for all of our employees, including the principal executive officer, principal financial officer and principal accounting officer. The Standards of Business Conduct can be found on our internet website at www.northropgrumman.com under "Investor Relations – Corporate Governance – Overview." A copy of the Standards of Business Conduct is available to any stockholder who requests it by writing to: Northrop Grumman Corporation, c/o Office of the Secretary, 2980 Fairview Park Drive, Falls Church, VA 22042. We disclose amendments to provisions of our Standards of Business Conduct by posting amendments on our website. Waivers of the provisions of our Standards of Business Conduct that apply to our directors and executive officers are disclosed in a Current Report on Form 8-K.

The website and information contained on it or incorporated in it are not intended to be incorporated in this report on Form 10-K or other filings with the SEC.

OTHER DISCLOSURES

Other disclosures required by this Item will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 11. Executive Compensation

Information concerning Executive Compensation, including information concerning Compensation Committee Interlocks and Insider Participation and Compensation Committee Report, will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the company's fiscal year.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information as to Securities Authorized for Issuance Under Equity Compensation Plans and Security Ownership of Certain Beneficial Owners and Management will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the company's fiscal year.

For a description of securities authorized under our equity compensation plans, see Note 13 to the consolidated financial statements.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information as to Certain Relationships and Related Transactions and Director Independence will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Stockholders to be filed with the SEC within 120 days after the end of the company's fiscal year.

Item 14. Principal Accountant Fees and Services

The information as to Principal Accountant Fees and Services will be incorporated herein by reference to the Proxy Statement for the 2017 Annual Meeting of Shareholders to be filed with the SEC within 120 days after the end of the company's fiscal year.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) 1. Report of Independent Registered Public Accounting Firm

Financial Statements

Consolidated Statements of Earnings and Comprehensive Income (Loss)
Consolidated Statements of Financial Position
Consolidated Statements of Cash Flows
Consolidated Statements of Changes in Shareholders' Equity
Notes to Consolidated Financial Statements

2. Financial Statement Schedules

All schedules have been omitted because they are not applicable, not required, or the information has been otherwise supplied in the financial statements or notes to the financial statements.

3. Exhibits

2(a)	Separation and Distribution Agreement dated as of March 29, 2011, among Titan II, Inc. (formerly Northrop Grumman Corporation), Northrop Grumman Corporation (formerly New P, Inc.), Huntington Ingalls Industries, Inc., Northrop Grumman Shipbuilding, Inc. and Northrop Grumman Systems Corporation (incorporated by reference to Exhibit 10.2 to Form 8-K filed April 4, 2011)
3(a)	Amended and Restated Certificate of Incorporation of Northrop Grumman Corporation dated May 29, 2012 (incorporated by reference to Exhibit 3.1 to Form 10-Q for the quarter ended June 30, 2012, filed July 24, 2012)
3(b)	Amended and Restated Bylaws of Northrop Grumman Corporation dated February 17, 2016 (incorporated by reference to Exhibit 3.2 to Form 8-K filed February 22, 2016)
4(a)	Registration Rights Agreement dated as of January 23, 2001, by and among Northrop Grumman Corporation (now Northrop Grumman Systems Corporation), NNG, Inc. (now Northrop Grumman Corporation) and Unitrin, Inc. (incorporated by reference to Exhibit(d)(6) to Amendment No. 4 to Schedule TO filed January 31, 2001)
4(b)	Indenture dated as of October 15, 1994, between Northrop Grumman Corporation (now Northrop Grumman Systems Corporation) and The Chase Manhattan Bank (National Association), Trustee (incorporated by reference to Exhibit 4.1 to Form 8-K filed October 25, 1994)
4(c)	First Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation, The Bank of New York Mellon (successor trustee to JPMorgan Chase Bank and The Chase Manhattan Bank, N.A.), Titan II, Inc. (formerly known as Northrop Grumman Corporation), and Titan Holdings II, L.P., to Indenture dated as of October 15, 1994, between Northrop Grumman Corporation (now Northrop Grumman Systems Corporation) and The Chase Manhattan Bank, N.A., Trustee (incorporated by reference to Exhibit 4.1 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(d)	Second Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation, The Bank of New York Mellon (successor trustee to JPMorgan Chase Bank and The Chase Manhattan Bank, N.A.), Titan Holdings II, L.P., and Northrop Grumman Corporation (formerly known as New P, Inc.), to Indenture dated as of October 15, 1994, between Northrop Grumman Corporation (now Northrop Grumman Systems Corporation) and The Chase Manhattan Bank, N.A., Trustee (incorporated by reference to Exhibit 4.2 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(e)	Form of Officers' Certificate (without exhibits) establishing the terms of Northrop Grumman Corporation's (now Northrop Grumman Systems Corporation's) 7.75 percent Debentures due 2016 and 7.875 percent Debentures due 2026 (incorporated by reference to Exhibit 4-3 to Form S-4 Registration Statement No. 333-02653 filed April 19, 1996)

4(f)	Form of Northrop Grumman Corporation's (now Northrop Grumman Systems Corporation's) 7.75 percent Debentures due 2016 (incorporated by reference to Exhibit 4-5 to Form S-4 Registration Statement No. 333-02653 filed April 19, 1996)
4(g)	Form of Northrop Grumman Corporation's (now Northrop Grumman Systems Corporation's) 7.875 percent Debentures due 2026 (incorporated by reference to Exhibit 4-6 to Form S-4 Registration Statement No. 333-02653 filed April 19, 1996)
4(h)	Form of Officers' Certificate establishing the terms of Northrop Grumman Corporation's (now Northrop Grumman Systems Corporation's) 7.75 percent Debentures due 2031 (incorporated by reference to Exhibit 10.9 to Form 8-K filed April 17, 2001)
4(i)	Indenture dated as of April 13, 1998, between Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) and The Bank of New York, as trustee, under which its 6.75 percent Senior Debentures due 2018 were issued (incorporated by reference to Exhibit 4.1 to the Form 10-Q of Litton Industries, Inc. for the quarter ended April 30, 1998, filed June 15, 1998)
4(j)	Supplemental Indenture with respect to Indenture dated April 13, 1998, dated as of April 3, 2001, among Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation), Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.5 to Form 10-Q for the quarter ended March 31, 2001, filed May 10, 2001)
4(k)	Supplemental Indenture with respect to Indenture dated April 13, 1998, dated as of December 20, 2002, among Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation), Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4(q) to Form 10-K for the year ended December 31, 2002, filed March 24, 2003)
4(l)	Third Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation (successor-in-interest to Litton Industries, Inc.), The Bank of New York Mellon (formerly known as The Bank of New York) as trustee, Titan II, Inc. (formerly known as Northrop Grumman Corporation), and Titan Holdings II, L.P., to Indenture dated April 13, 1998, between Litton Industries, Inc. and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.3 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(m)	Fourth Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation (successor-in-interest to Litton Industries, Inc.), The Bank of New York Mellon (formerly known as The Bank of New York) as trustee, Titan Holdings II, L.P., and Northrop Grumman Corporation (formerly known as New P., Inc.), to Indenture dated April 13, 1998, between Litton Industries, Inc. and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.4 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(n)	Senior Indenture dated as of December 15, 1991, between Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) and The Bank of New York, as trustee, under which its 7.75 percent and 6.98 percent debentures due 2026 and 2036 were issued, and specimens of such debentures (incorporated by reference to Exhibit 4.1 to the Form 10-Q of Litton Industries, Inc. for the quarter ended April 30, 1996, filed June 11, 1996)
4(o)	Supplemental Indenture with respect to Indenture dated December 15, 1991, dated as of April 3, 2001, among Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation), Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.7 to Form 10-Q for the quarter ended March 31, 2001, filed May 10, 2001)
4(p)	Supplemental Indenture with respect to Indenture dated December 15, 1991, dated as of December 20, 2002, among Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation), Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4(t) to Form 10-K for the year ended December 31, 2002, filed March 24, 2003)

4(q)	Third Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation (successor-in-interest to Litton Industries, Inc.), The Bank of New York Mellon (formerly known as The Bank of New York), as trustee, Titan II, Inc. (formerly known as Northrop Grumman Corporation), and Titan Holdings II, L.P., to Senior Indenture dated December 15, 1991, among Litton Industries, Inc., Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.5 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(r)	Fourth Supplemental Indenture dated as of March 30, 2011 by and among Northrop Grumman Systems Corporation (successor-in-interest to Litton Industries, Inc.), The Bank of New York Mellon (formerly known as The Bank of New York) as trustee, Titan Holdings II, L.P., and Northrop Grumman Corporation (formerly known as New P, Inc.), to Senior Indenture dated December 15, 1991, among Litton Industries, Inc., Northrop Grumman Corporation, Northrop Grumman Systems Corporation and The Bank of New York, as trustee (incorporated by reference to Exhibit 4.6 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(s)	Indenture between TRW Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) and Mellon Bank, N.A., as trustee, dated as of May 1, 1986 (incorporated by reference to Exhibit 2 to the Form 8-A Registration Statement of TRW Inc. dated July 3, 1986)
4(t)	First Supplemental Indenture between TRW Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) and Mellon Bank, N.A., as trustee, dated as of August 24, 1989 (incorporated by reference to Exhibit 4(b) to Form S-3 Registration Statement No. 33-30350 of TRW Inc.)
4(u)	Fifth Supplemental Indenture between TRW Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) and The Chase Manhattan Bank, as successor trustee, dated as of June 2, 1999 (incorporated by reference to Exhibit 4(f) to Form S-4 Registration Statement No. 333-83227 of TRW Inc. filed July 20, 1999)
4(v)	Ninth Supplemental Indenture dated as of December 31, 2009 among Northrop Grumman Space & Mission Systems Corp. (predecessor–in-interest to Northrop Grumman Systems Corporation); The Bank of New York Mellon, as successor trustee; Northrop Grumman Corporation; and Northrop Grumman Systems Corporation (incorporated by reference to Exhibit 4(p) to Form 10-K for the year ended December 31, 2009, filed February 9, 2010)
4(w)	Tenth Supplemental Indenture dated as of March 30, 2011, by and among Northrop Grumman Systems Corporation (successor-in-interest to Northrop Grumman Space & Mission Systems Corp. and TRW, Inc.), The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank and to Mellon Bank, N.A., Titan II Inc. (formerly known as Northrop Grumman Corporation), and Titan Holdings II, L.P., to Indenture between TRW Inc. and Mellon Bank, N.A., as trustee, dated as of May 1, 1986 (incorporated by reference to Exhibit 4.7 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(x)	Eleventh Supplemental Indenture dated as of March 30, 2011, by and among Northrop Grumman Systems Corporation (successor-in-interest to Northrop Grumman Space & Mission Systems Corp. and TRW Inc.), The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank and to Mellon Bank, N.A., Titan Holdings II, L.P., and Northrop Grumman Corporation (formerly known as New P, Inc.) to Indenture between TRW Inc. and Mellon Bank, N.A., as trustee, dated as of May 1, 1986 (incorporated by reference to Exhibit 4.8 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(y)	Indenture dated as of November 21, 2001, between Northrop Grumman Corporation and JPMorgan Chase Bank, as trustee (incorporated by reference to Exhibit 4.1 to Form 8-K filed November 21, 2001)
4(z)	First Supplemental Indenture dated as of July 30, 2009, between Northrop Grumman Corporation and The Bank of New York Mellon, as successor trustee, to Indenture dated as of November 21, 2001 (incorporated by reference to Exhibit 4(a) to Form 8-K filed July 30, 2009)
4(aa)	Form of Northrop Grumman Corporation's 5.05 percent Senior Note due 2019 (incorporated by reference to Exhibit 4(c) to Form 8-K filed July 30, 2009)

4(bb)	Second Supplemental Indenture dated as of November 8, 2010, between Northrop Grumman Corporation and The Bank of New York Mellon, as successor trustee, to Indenture dated as of November 21, 2001 (incorporated by reference to Exhibit 4(a) to Form 8-K filed November 8, 2010)
4(cc)	Form of Northrop Grumman Corporation's 3.500% Senior Note due 2021 (incorporated by reference to Exhibit 4(a) to Form 8-K filed November 8, 2010)
4(dd)	Form of Northrop Grumman Corporation's 5.050% Senior Note due 2040 (incorporated by reference to Exhibit 4(a) to Form 8-K filed November 8, 2010)
4(ee)	Third Supplemental Indenture dated as of March 30, 2011, by and among Titan II, Inc. (formerly known as Northrop Grumman Corporation), The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, and Titan Holdings II, L.P., to Indenture dated as of November 21, 2001 between Northrop Grumman Corporation and JPMorgan Chase Bank, as trustee (incorporated by reference to Exhibit 4.9 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(ff)	Fourth Supplemental Indenture dated as of March 30, 2011, by and among Titan Holdings II, L.P., The Bank of New York Mellon, as successor trustee to JPMorgan Chase Bank, and Northrop Grumman Corporation (formerly known as New P., Inc.), to Indenture dated as of November 21, 2001 between Northrop Grumman Corporation and JPMorgan Chase Bank, as trustee (incorporated by reference to Exhibit 4.10 to Form 10-Q for the quarter ended March 31, 2011, filed April 27, 2011)
4(gg)	Fifth Supplemental Indenture, dated as of May 31, 2013, between Northrop Grumman Corporation and The Bank of New York Mellon, as successor to JPMorgan Chase Bank, Trustee, to Indenture dated as of November 21, 2001 (incorporated by reference to Exhibit 4(a) to Form 8-K filed May 31, 2013)
4(hh)	Form of 1.750% Senior Note due 2018 (incorporated by reference to Exhibit 4(a) to Form 8-K filed May 31, 2013)
4(ii)	Form of 3.250% Senior Note due 2023 (incorporated by reference to Exhibit 4(a) to Form 8-K filed May 31, 2013)
4(jj)	Form of 4.750% Senior Note due 2043 (incorporated by reference to Exhibit 4(a) to Form 8-K filed May 31, 2013)
4(kk)	Sixth Supplemental Indenture, dated as of February 6, 2015, between Northrop Grumman Corporation and The Bank of New York Mellon, as successor to JPMorgan Chase Bank, Trustee, to Indenture dated as of November 21, 2001 (incorporated by reference to Exhibit 4.1 to Form 8-K filed February 6, 2015)
4(ll)	Form of 3.850% Senior Note due 2045 (incorporated by reference to Exhibit 4.1 to Form 8-K filed February 6, 2015)
4(mm)	Seventh Supplemental Indenture, dated as of December 1, 2016, between Northrop Grumman Corporation and The Bank of New York Mellon, as successor to JPMorgan Chase Bank, Trustee, to Indenture dated as of November 21, 2001 (incorporated by reference to Exhibit 4.1 to Form 8-K filed December 1, 2016)
4(nn)	Form of 3.200% Senior Note due 2027 (incorporated by reference to Exhibit 4.1 to Form 8-K filed December 1, 2016)
10(a)	Amended and Restated Credit Agreement, dated as of July 8, 2015, among Northrop Grumman Corporation, as Borrower; Northrop Grumman Systems Corporation, as Guarantor; the lenders party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to Form 8-K filed July 9, 2015)

10(b)	Form of Guarantee dated as of April 3, 2001, by Northrop Grumman Corporation of the indenture indebtedness issued by Litton Industries, Inc. (predecessor-in-interest to Northrop Grumman Systems Corporation) (incorporated by reference to Exhibit 10.10 to Form 8-K filed April 17, 2001)
10(c)	Form of Guarantee dated as of April 3, 2001, by Northrop Grumman Corporation of Northrop Grumman Systems Corporation indenture indebtedness (incorporated by reference to Exhibit 10.11 to Form 8-K and filed April 17, 2001)
10(d)	Form of Guarantee dated as of March 27, 2003, by Northrop Grumman Corporation, as Guarantor, in favor of JP Morgan Chase Bank, as trustee, of certain debt securities issued by the former Northrop Grumman Space & Mission Systems Corp. (predecessor-in-interest to Northrop Grumman Systems Corporation) (incorporated by reference to Exhibit 4.2 to Form 10-Q for the quarter ended March 31, 2003, filed May 14, 2003)
+10(e)	Northrop Grumman Corporation 1993 Stock Plan for Non-Employee Directors (as Amended and Restated January 1, 2010) (incorporated by reference to Exhibit 10.1 to Form 10-Q for the quarter ended June 30, 2009, filed July 23, 2009)
+10(f)	Northrop Grumman Corporation Non-Employee Directors Equity Participation Plan (Amended and Restated January 1, 2008) (incorporated by reference to Exhibit 10(q) to Form 10-K for the year ended December 31, 2007, filed February 20, 2008)
+10(g)	Northrop Grumman 2001 Long-Term Incentive Stock Plan (As amended through December 19, 2007) (incorporated by reference to Exhibit A to the Company's Proxy Statement on Schedule 14A for the 2008 Annual Meeting of Shareholders filed April 21, 2008) (i) Form of Agreement for 2010 Stock Options (incorporated by reference to Exhibit 10.3 to Form 10-Q for the quarter ended March 31, 2010, filed April 28, 2010) (ii) Form of Agreement for 2011 Stock Options granted under the Northrop Grumman 2001 Long-Term Incentive Stock Plan (As amended through December 19, 2007) (incorporated by reference to Exhibit 10.1 of Form 8-K filed February 22, 2011)
+10(h)	Amended and Restated 2011 Long-Term Incentive Stock Plan (as amended and restated effective as of May 20, 2015) (incorporated by reference to Appendix B to the Northrop Grumman Corporation Proxy Statement on Schedule 14A for the 2015 Annual Meeting of Shareholders filed April 6, 2015, File No. 001-16411) (i) Northrop Grumman Corporation Equity Grant Program for Non-Employee Directors under the Northrop Grumman 2011 Long-Term Incentive Stock Plan, Amended and Restated Effective January 1, 2016 (incorporated by reference to Exhibit 10.1 to Form 10-Q for the quarter ended September 30, 2015, filed October 28, 2015)
+10(i)	Northrop Grumman 2011 Long-Term Incentive Stock Plan (as Amended Through December 4, 2014) (incorporated by reference to Exhibit 10(h) to Form 10-K for the year ended December 31, 2014, filed February 2, 2015) (i) Summary of Non-Employee Director Award Terms Under the 2011 Long-Term Incentive Stock Plan effective December 21, 2011 (incorporated by reference to Exhibit 10(j)(ii) to Form 10-K for the year ended December 31, 2011, filed February 7, 2012) (ii) Northrop Grumman Corporation Equity Grant Program for Non-Employee Directors under the Northrop Grumman 2011 Long-Term Incentive Stock Plan, Amended and Restated Effective January 1, 2015 (incorporated by reference to Exhibit 10(h)(ii) to Form 10-K for the year ended December 31, 2014, filed February 2, 2015) (iii) Grant Certificate Specifying the Terms and Conditions Applicable to 2013 Restricted Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.1 to Form 8-K filed February 21, 2013) (iv) Grant Certificate Specifying the Terms and Conditions Applicable to 2013 Restricted Performance Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.2 to Form 8-K filed February 21, 2013)

(v) Grant Certificate Specifying the Terms and Conditions Applicable to Special 2013 Restricted Stock Rights Granted to James F. Palmer Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.1 to Form 8-K filed September 23, 2013)
(vi) Grant Certificate Specifying the Terms and Conditions Applicable to 2014 Restricted Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.1 to Form 8-K filed February 24, 2014)
(vii)Grant Certificate Specifying the Terms and Conditions Applicable to 2014 Restricted Performance Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.2 to Form 8-K filed February 24, 2014)
(viii) Amended and Restated Grant Certificate Specifying the Terms and Conditions Applicable to 2014 Restricted Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.2 to Form 10-Q for the quarter ended June 30, 2014, filed July 23, 2014)
(ix) Amended and Restated Grant Certificate Specifying the Terms and Conditions Applicable to 2014 Restricted Performance Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.3 to Form 10-Q for the quarter ended June 30, 2014, filed July 23, 2014)
(x) Grant Certificate Specifying the Terms and Conditions Applicable to 2015 Restricted Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.1 to Form 8-K filed February 20, 2015)
(xi) Grant Certificate Specifying the Terms and Conditions Applicable to 2015 Restricted Performance Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.2 to Form 8-K filed February 20, 2015)

(xii)Grant Certificate Specifying the Terms and Conditions Applicable to 2016 Restricted Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.1 to Form 10-Q for the quarter ended March 31, 2016 filed April 27, 2016)

(xiii) Grant Certificate Specifying the Terms and Conditions Applicable to 2016 Restricted Performance Stock Rights Granted Under the 2011 Long-Term Incentive Stock Plan (incorporated by reference to Exhibit 10.2 to Form 10-Q for the quarter ended March 31, 2016 filed April 27, 2016)

+10(j) Northrop Grumman Supplemental Plan 2 (Amended and Restated Effective as of January 1, 2014) (incorporated by reference to Exhibit 10(l) to Form 10-K for the year ended December 31, 2013, Filed February 3, 2014)

(i) Appendix B to the Northrop Grumman Supplemental Plan 2: ERISA Supplemental Program 2 (Amended and Restated Effective as of January 1, 2014) (incorporated by reference to Exhibit 10(l)(i) to Form 10-K for the year ended December 31, 2013, filed February 3, 2014)
(ii) Appendix F to the Northrop Grumman Supplemental Plan 2: CPC Supplemental Executive Retirement Program (Amended and Restated Effective as of January 1, 2012) (incorporated by reference to Exhibit 10(k)(iii) to Form 10-K for the year ended December 31, 2011, filed February 8, 2012)
(iii) Appendix G to the Northrop Grumman Supplemental Plan 2: Officers Supplemental Executive Retirement Program (Amended and Restated Effective as of January 1, 2012) (incorporated by reference to Exhibit 10(k)(iv) to Form 10-K for the year ended December 31, 2011, filed February 8, 2012)

(iv) Appendix I to the Northrop Grumman Supplemental Plan 2: Officers Supplemental Executive Retirement Program II (Amended and Restated January 1, 2014) (incorporated by reference to Exhibit 10(k)(iv) to Form 10-K for the year ended December 31, 2015, filed February 1, 2016)

+10(k) Northrop Grumman Supplementary Retirement Income Plan (formerly TRW Supplementary Retirement Income Plan) (Amended and Restated Effective January 1, 2014) (incorporated by reference to Exhibit 10(m) to Form 10-K for the year ended December 31, 2013, filed February 3, 2014)

+10(l) Northrop Grumman Electronic Systems Executive Pension Plan (Amended and Restated Effective as of January 1, 2016) (incorporated by reference to Exhibit 10(m) to Form 10-K for the year ended December 31, 2015, filed February 1, 2016)

+10(m)	Severance Plan for Elected and Appointed Officers of Northrop Grumman Corporation (Amended and Restated Effective July 20, 2012) (incorporated by reference to Exhibit 10.4 to Form 10-Q for the quarter ended September 30, 2012, filed October 23, 2012)
+10(n)	Non-Employee Director Compensation Term Sheet, effective May 20, 2015 (incorporated by reference to Exhibit 10.1 to Form 10-Q for the quarter ended June 30, 2015, filed July 29, 2015)
+10(o)	Non-Employee Director Compensation Term Sheet, effective May 18, 2016 (incorporated by reference to Exhibit 10.1 to Form 10-Q for the quarter ended June 30, 2016, filed July 27, 2016)
+10(p)	Form of Indemnification Agreement between Northrop Grumman Corporation and its directors and executive officers (incorporated by reference to Exhibit 10.3 to Form 10-Q for the quarter ended March 31, 2012, filed April 24, 2012)
+10(q)	Northrop Grumman Deferred Compensation Plan (Amended and Restated Effective as of April 1, 2016) (incorporated by reference to Exhibit 10.3 to Form 10-Q for the quarter ended March 31, 2016, filed April 27, 2016)
+10(r)	The 2002 Incentive Compensation Plan of Northrop Grumman Corporation, As Amended and Restated effective January 1, 2009 (incorporated by reference to Exhibit 10.6 to Form 10-Q for the quarter ended March 31, 2009, filed April 22, 2009)
+10(s)	Northrop Grumman 2006 Annual Incentive Plan and Incentive Compensation Plan (for Non-Section 162(m) Officers), as amended and restated effective January 1, 2009 (incorporated by reference to Exhibit 10.7 to Form 10-Q for the quarter ended March 31, 2009, filed April 22, 2009)
+10(t)	Northrop Grumman Savings Excess Plan (Amended and Restated Effective as of January 1, 2016) (incorporated by reference to Exhibit 10(v) to Form 10-K for the year ended December 31, 2015, filed February 1, 2016)
+10(u)	Northrop Grumman Officers Retirement Account Contribution Plan (Amended and Restated Effective as of April 1, 2016) (incorporated by reference to Exhibit 10.4 to Form 10-Q for the quarter ended March 31, 2016, filed April 27, 2016)
+10(v)	Compensatory Arrangements of Certain Officers (incorporated by reference to Item 5.02(e) of Form 8-K filed February 20, 2015)
+10(w)	Offering letter dated February 1, 2007 from Northrop Grumman Corporation to James F. Palmer relating to position of Corporate Vice President and Chief Financial Officer (incorporated by reference to Exhibit 10(3) to Form 10-Q for the quarter ended March 31, 2007, filed April 24, 2007), as amended by Amendment to Letter Agreement between Northrop Grumman Corporation and James F. Palmer dated December 17, 2008 (incorporated by reference to Exhibit 10.3 to Form 8-K filed December 19, 2008)
+10(x)	Northrop Grumman Supplemental Retirement Replacement Plan, as Restated, dated January 1, 2008 between Northrop Grumman Corporation and James F. Palmer (incorporated by reference to Exhibit 10.4 to Form 8-K filed December 19, 2008)
	(i) First Amendment to the Northrop Grumman Supplemental Retirement Replacement Plan, dated October 25, 2011 (incorporated by reference to Exhibit 10(bb)(i) to Form 10-K for the year ended December 31, 2011, filed February 7, 2012)
+*10(y)	Northrop Grumman Corporation Special Officer Retiree Medical Plan (Amended and Restated Effective January 1, 2015)
+10(z)	Executive Life Insurance Policy (incorporated by reference to Exhibit 10(gg) to Form 10-K for the year ended December 31, 2004, filed March 4, 2005)
+10(aa)	Executive Accidental Death, Dismemberment and Plegia Insurance Policy Terms applicable to Executive Officers dated January 1, 2009 (incorporated by reference to Exhibit 10.3 to Form 10-Q for the quarter ended March 31, 2009, filed April 22, 2009)

+10(bb)	Executive Long-Term Disability Insurance Policy as amended by Amendment No. 2 dated June 19, 2008 and effective as of October 4, 2007 (incorporated by reference to Exhibit 10(2) to Form 10-Q for the quarter ended June 30, 2008, filed July 29, 2008)
+10(cc)	Executive Dental Insurance Policy Group Numbers 5134 and 5135 (incorporated by reference to Exhibit 10(m) to Form 10-K for the year ended December 31, 1995, filed February 22, 1996), as amended by action of the Compensation Committee of the Board of Directors of Northrop Grumman Corporation effective July 1, 2009 (incorporated by reference to Item 5.02(e) of Form 8-K filed May 26, 2009)
+*10(dd)	Group Personal Excess Liability Policy dated October 20, 2016 and effective as of January 1, 2017
+10(ee)	Letter dated December 16, 2009 from Northrop Grumman Corporation to Wesley G. Bush regarding compensation effective January 1, 2010 (incorporated by reference to Exhibit 10.2 to Form 8-K filed December 21, 2009)
+10(ff)	Northrop Grumman Corporation 1995 Stock Plan for Non-Employee Directors, as Amended as of May 16, 2007 (incorporated by reference to Exhibit A to the Company's Proxy Statement on Schedule 14A for the 2007 Meeting of Shareholders filed April 12, 2007)
+10(gg)	Relocation Agreement between Northrop Grumman Corporation and Gloria A. Flach dated December 1, 2015 (incorporated by reference to Exhibit 10(ii) to Form 10-K for the year ended December 31, 2015, filed February 1, 2016)
+10(hh)	Relocation Agreement between Northrop Grumman Corporation and Kathy J. Warden dated December 1, 2015 (incorporated by reference to Exhibit 10(jj) to Form 10-K for the year ended December 31, 2015, filed February 1, 2016)
*12(a)	Computation of Ratio of Earnings to Fixed Charges
*21	Subsidiaries
*23	Consent of Independent Registered Public Accounting Firm
*24	Power of Attorney
*31.1	Certification of Wesley G. Bush pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
*31.2	Certification of Kenneth L. Bedingfield pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
**32.1	Certification of Wesley G. Bush pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
**32.2	Certification of Kenneth L. Bedingfield pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
*101	Northrop Grumman Corporation Annual Report on Form 10-K for the fiscal year ended December 31, 2016, formatted in XBRL (Extensible Business Reporting Language); (i) the Consolidated Statements of Earnings and Comprehensive Income (Loss), (ii) Consolidated Statements of Financial Position, (iii) Consolidated Statements of Cash Flows, (iv) Consolidated Statements of Changes in Shareholders' Equity, and (v) Notes to Consolidated Financial Statements
+	Management contract or compensatory plan or arrangement
*	Filed with this Report
**	Furnished with this Report

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) 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, on the 30th day of January 2017.

NORTHROP GRUMMAN CORPORATION

By: **/s/ Michael A. Hardesty**

Michael A. Hardesty
Corporate Vice President, Controller, and Chief Accounting Officer
(Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed on behalf of the registrant this the 30th day of January 2017, by the following persons and in the capacities indicated.

Signature	Title
Wesley G. Bush*	Chairman, Chief Executive Officer and President (Principal Executive Officer), and Director
Kenneth L. Bedingfield*	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)
Michael A. Hardesty	Corporate Vice President, Controller and Chief Accounting Officer
Marianne C. Brown*	Director
Victor H. Fazio*	Director
Donald E. Felsinger*	Director
Ann M. Fudge*	Director
Bruce S. Gordon*	Director
William H. Hernandez*	Director
Madeleine A. Kleiner*	Director
Karl J. Krapek*	Director
Richard B. Myers*	Director
Gary Roughead*	Director
Thomas M. Schoewe*	Director
James S. Turley*	Director
Mark A. Welsh III*	Director

*By: **/s/ Jennifer C. McGarey**

Jennifer C. McGarey
Corporate Vice President and Secretary

Attorney-in-Fact
pursuant to a power of attorney

Group Personal Excess Liability Policy
CHUBB

Coverage Summary

Chubb Group of Insurance Companies 15 Mountain View Road
Warren, NJ 07060

Name and address of Insured Policy Number: (16) 7993-14-03

NORTHROP GRUMMAN CORPORATION
Group Personal Excess Program
2980 FAIRVIEW PARK DRIVE
FALLS CHURCH, VIRGINIA 22042 *Issued by the stock insurance company indicated below, herein called the company.*

FEDERAL INSURANCE COMPANY
Producer No.: 0017806 Incorporated under the laws of INDIANA

Sponsoring Organization and Address

Northrop Grumman Corporation
2980 Fairview Park Drive
Falls Church, VA 22042

Policy Period

From: JANUARY 01, 2017 To: JANUARY 01, 2018
12:01 A.M. Standard Time at the Named lnsured's mailing address.

Premium

Amount
$141,219.00

Limit Of Liability

SEE ENDT Each Occurrence

SEE ENDT Excess Uninsured / Underinsured

Motorists Protection Each Occurrence

Required Primary Underlying Insurance

Personal Liability (Homeowners) for personal injury and property damage in the minimum amount of $100,000 each occurrence.

Registered vehicles in the minimum amount of $250,000 / $500,000 bodily injury and $100,000 property damage; or $300,000 single limit each occurrence.

Required Primary Underlying Insurance
(continued)

Unregistered vehicles in the minimum amount of $300,000 bodily injury and property damage each occurrence.

Registered vehicles with less than four wheels and motorhomes in the minimum amount $250,000 / $500,000 bodily injury and $100,000 property damage; or $300,000 single limit each occurrence.

Watercraft less than 26 feet and 50 engine rated horsepower or less for bodily and property damage in the minimum amount of $100,000 each occurrence.

Watercraft 26 feet or longer or more than 50 engine rated horsepower for bodily injury and property damage in the minimum amount of $500,000 each occurrence.

Uninsured motorists/underinsured motorists protection in the minimum amount of $250,000 / $500,000 bodily injury and $100,000 property damage; or $300,000 single limit occurrence.

FAILURE TO COMPLY WITH THE REQUIRED PRIMARY UNDERLYING INSURANCE WILL RESULT IN A GAP IN COVERAGE.

Group Personal Excess Liability Policy
CHUBB

Coverage Summary

Effective Date JANUARY 01, 2017

Policy Number 7993-14-03

Authorization

In Witness Whereof, the company issuing this policy has caused this policy to be signed by its authorized officers and signed by a duly authorized representative of the company.

FEDERAL INSURANCE COMPANY

President

Secretary

Date
OCTOBER 20, 2016

Authorized Representative

Producer's Name & Address

MARSH USA, INC (PHILADELPHIA) 1717 ARCH STREET
PHILADELPHIA, PA 19103-0000

Chubb. Insured

CHUBB IMPORTANT NOTICE TO POLICY HOLDERS

This Important Notice is not your policy. Please read your policy carefully to determine your rights, duties, and what is and what is not covered. Only the provisions of your policy determine the scope of your insurance protection.

THIS IMPORTANT NOTICE PROVIDES INFORMATION CONCERNING POSSIBLE IMPACT ON YOUR INSURANCE COVERAGE DUE TO COMPLIANCE WITH APPLICABLE TRADE SANCTION LAWS.

PLEASE READ THIS NOTICE CAREFULLY.

Various trade or economic sanctions and other laws or regulations prohibit us from providing insurance in certain circumstances. For example, the United States Treasury Department's Office of Foreign Asset Control (OFAC) administers and enforces economic and trade sanctions and places restrictions on transactions with foreign agents, front organizations, terrorists, terrorists organizations, and narcotic traffickers. OFAC acts pursuant to Executive Orders of the President of the United States and specific legislation, to impose controls on transactions and freeze foreign assets under United States jurisdiction. (To learn more about OFAC, please refer to the United States Treasury's web site at http://www.treas.gov/ofac.)

To the extent that you or any other insured, or any person or entity claiming the benefits of this insurance has violated any applicable sanction laws, this insurance will not apply.

last page

CHUBB

THIS NOTICE IS BEING SENT TO THE MASTER POLICY HOLDER OF A GROUP INSURANCE POLICY. IT DESCRIBES CHUBB'S POLICY FOR HANDLING CERTAIN PERSONAL INFORMATION OF ITS INDIVIDUAL CUSTOMERS.

PRIVACY NOTICE

At Chubb, we respect the privacy of our customers and are committed to treating your personal information responsibly. Chubb has been serving the insurance needs of our customers for more than a century. To provide innovative products and services that respond to your insurance needs, Chubb collects certain personal information about you.This Privacy Notice describes how we collect, share and protect your personal information and applies to current and former customers. Key points include:

- We do not sell your personal information to anyone.
- We do not share your personal information with other companies that would use it for their own marketing purposes.
- We use safeguards to protect your personal information from unauthorized access, use or disclosure.
- We require employees and service providers to maintain the confidentiality of your personal information.
- We engage in limited information sharing practices that are permitted by law without requiring an opt out option to permit customers to limit personal information sharing and therefore no action is required by you.

What Personal Information Do We Collect?	Chubb collects personal information about you and the members of your household to conduct business operations, provide customer service, offer new products and satisfy legal and regulatory requirements. The type of personal information we collect depends on the financial product or service you have with us. We may collect the following categories of information about you: - Information from you directly or from your agent, broker or automobile assigned risk plan, including information from applications, worksheets, questionnaires, claim forms or other documents (such as name, address, driver's license number, Social Security number and amount of coverage requested); - Information about your transactions with us, our affiliates or others (such as products or services purchased, claims made, account balances and payment history); - Information from a consumer reporting agency (such as motor vehicle reports); - Information from other non-Chubb sources (such as prior loss information and demographic information); - Information from visitors to our websites (such as that provided through online forms and collected through other website tools); and - Information from an employer, benefit plan sponsor, benefit plan administrator or group master policyholder for any Chubb individual or group insurance product that you may have (such as name, address and amount of coverage requested). As used in this notice, the term "personal information" means any personally identifiable information about you that is not publicly available and that we obtain in connection with providing a financial product or service to you.
How Do We Use and Disclose Personal Information?	Chubb may use and disclose the personal information we collect to: - Service, process or administer our business operations such as underwriting and claims; - Market our products or services; - Detect or prevent fraud; or - Comply with regulatory requirements. The types of affiliated and non-affiliated third parties to whom we may disclose information for processing and servicing transactions include reinsurers, insurance agents or brokers, property and automobile appraisers, auditors, claim adjusters, third party administrators and, in the case of group insurance, employers, benefit plan sponsors, benefit plan administrators and group master policyholders. We may share personal information with our affiliates for their everyday business

	purposes. Chubb may also disclose personal information as otherwise required or permitted by law. For example, we may disclose information in response to a subpoena or to comply with an inquiry from a government agency or regulator. In addition, information we obtain from a report prepared by an insurance support organization may be retained by the insurance support organization and disclosed to other persons.
Do We Share with Service Providers and Other Financial Institutions?	Chubb may disclose personal information to our affiliates and to non-affiliated third parties that perform services for us, such as mailing your billing statements or marketing our products and services. We require companies that perform services for us to agree not to use or disclose your personal information except to perform the services for us. Where permitted by law, Chubb may disclose personal information to other financial institutions with which we have joint marketing agreements that include confidentiality and data safeguarding provisions.
How Do We Protect Personal Information?	Chubb uses administrative, technical and physical safeguards to protect your personal information from unauthorized access, use or disclosure. We limit access to personal information to only those persons who have a legitimate business need to access the information. The people who have access to personal information, including employees of Chubb and its affiliates and non-employees performing business functions for Chubb, are under obligations to safeguard such information.
What About Health Information?	Under certain circumstances, we also collect personal health information about our customers, such as information regarding an accident, disability or injury, for underwriting or claim handling purposes. Chubb does not disclose your personal health information for marketing purposes unless you expressly consent to our doing so.
Can I Opt Out Or Limit Chubb's Sharing?	The law permits certain types of disclosures without requiring an opt out option. Unlike some other companies, we do not disclose your personal information to non-affiliated third parties for their own marketing purposes. We also do not permit Chubb affiliates with whom you are not communicating or do not have any business relationship with to use your information to market to you. We similarly do not share information about your creditworthiness with our affiliates for their everyday business purposes. Because of the limited nature of Chubb's personal information sharing, Chubb is not required by law to offer an opt out option.
What Additional Rights Do I Have?	State law may give you additional rights with regard to your personal information, such as the right to access and correct information we have about you. Please see your policy for a description of such rights or contact our Privacy Office Customer Care Team using the contact information provided below.
What If I Have Questions?	If you have any questions about this notice or our practices with respect to personal information, please contact us by sending an email to privacyinquiries@chubb. com, calling our Privacy Office Customer Care Team at 1-800-258-2930 or mailing Privacy Inquiries, Chubb Group of Insurance Companies, 15 Mountain View Road, Warren NJ 07059.

Chubb Group of Insurance Companies (Chubb) is the marketing name used to refer to the insurance subsidiaries of The Chubb Corporation. This notice is being provided by the following Chubb companies to their consumer customers located in the United States: Chubb Custom Insurance Company, Chubb Indemnity Insurance Company, Chubb Insurance Company of New Jersey, Chubb Insurance Solutions Agency, Inc.,Chubb Lloyds Insurance Company of Texas, Chubb National Insurance Company, Executive Risk Indemnity Inc., Executive Risk Specialty Insurance Company, Federal Insurance Company, Great Northern Insurance Company, Pacific Indemnity Company, Texas Pacific Indemnity Company and Vigilant Insurance Company. **Last Revised [March 2015]**

CHUBB

GROUP PERSONAL EXCESS LIABILITY POLICY

GROUP PERSONAL EXCESS LIABILITY POLICY

CHUBB

INTRODUCTION

This is your Chubb Group Personal Excess Liability Policy. Together with your Coverage Summary, it explains your coverages and other conditions of your insurance in detail.

This policy is a contract between you and us. READ YOUR POLICY CAREFULLY and keep it in a safe place.

Agreement

We agree to provide the insurance described in this policy in return for the premium paid by you or the Sponsoring Organization and your compliance with the policy conditions.

Definitions

In this policy, we use words in their plain English meaning. Words with special meanings are defined in the part of the policy where they are used. The few defined terms used throughout the policy are defined here:

You means the individual who is a member of the Defined Group shown as the Insured named in the Coverage Summary.

We and **us** mean the insurance company named in the Coverage Summary.

Family member means your spouse or domestic partner or other relative who lives with you, or any other person under 25 in your care or your relative's care who lives with you.

Domestic partner means a person in a legal or personal relationship with you, who lives with you and shares a common domestic life with you, and meeting all of the benefits eligibility criteria as defined by the Sponsoring Organization.

Sponsoring Organization means the entity, corporation, partnership or sole proprietorship sponsoring and defining the criteria for qualification as an Insured.

Policy means your entire Group Personal Excess Liability Policy, including the Coverage Summary.

Coverage Summary means the most recent Coverage Summary we issued to you, including any endorsements.

Occurrence means an accident or offense to which this insurance applies and which begins within the policy period. Continuous or repeated exposure to substantially the same general conditions unless excluded is considered to be one occurrence.

Business means any employment, trade, occupation, profession, or farm operation including the raising or care of animals.

Defined Group means those individuals meeting the criteria for qualification as an Insured as defined by the Sponsoring Organization and accepted by us.

Follow form means we cover damages to the extent they are both covered under the Required Primary Underlying Insurance and, not excluded under this policy. Also, the amount of coverage, defense coverages, cancellation and "other insurance" provisions of this policy supersede and replace the similar provisions contained in such other policies. When this policy is called upon to pay losses in excess of required primary underlying policies exhausted by payment of claims, we do not provide broader coverage than provided by such policies. When no primary underlying coverage exists, the extent of coverage provided on a follow form basis will be determined as if the required primary underlying insurance had been purchased from us.

Covered person means:

- you or a family member;
- any person using a vehicle or watercraft covered under this policy with permission from you or a family member with respect to their legal responsibility arising out of its use;
- any other person who is a covered person under your Required Primary Underlying Insurance;
- any person or organization with respect to their legal responsibility for covered acts or omissions of you or a family member; or
- any combination of the above.

Damages mean the sum that is paid or is payable to satisfy a claim settled by us or resolved by judicial procedure or by a compromise we agree to in writing.

Personal injury means the following injuries, and resulting death:

- bodily injury;
- shock, mental anguish, or mental injury;

Definitions
(continued)

- false arrest, false imprisonment, or wrongful detention;
- wrongful entry or eviction;
- malicious prosecution or humiliation; and
- libel, slander, defamation of character, or invasion of privacy.

Bodily injury means physical bodily harm, including sickness or disease that results from it, and required care, loss of services and resulting death.

Property damage means physical injury to or destruction of tangible property and the resulting loss of its use. Tangible property includes the cost of recreating or replacing stocks, bonds, deeds, mortgages, bank deposits, and similar instruments, but does not include the value represented by such instruments. Tangible property does not include the cost of recreating or replacing any software, data or other information that is in electronic form.

Registered vehicle means any motorized land vehicle not described in "unregistered vehicle." Unregistered vehicle means:

- any motorized land vehicle not designed for or required to be registered for use on public roads;
- any motorized land vehicle which is in dead storage at your residence;
- any motorized land vehicle used solely on and to service your residence premises;
- any motorized land vehicle used to assist the disabled that is not designed for or required to be registered for use on public roads; or
- golf carts.

GROUP PERSONAL EXCESS LIABILITY COVERAGE

This part of your Group Personal Excess Liability Policy provides you or a family member with liability coverage in excess of your underlying insurance anywhere in the world unless stated otherwise or an exclusion applies.

Payment for a Loss

Amount of coverage
The amount of coverage for liability is shown in the Coverage Summary. We will pay on your behalf up to that amount for covered damages from any one occurrence, regardless of how many claims, homes, vehicles, watercraft, or people are involved in the occurrence.

Any costs we pay for legal expenses (see Defense coverages) are in addition to the amount of coverage.

Underlying Insurance
We will pay only for covered damages in excess of all underlying insurance covering those damages, even if the underlying coverage is for more than the minimum amount.

"Underlying insurance" includes all liability coverage that applies to the covered damages, except for other insurance purchased in excess of this policy.

Required primary underlying Insurance
Regardless of whatever other primary underlying insurance may be available in the event of a claim or loss, it is a condition of your policy that you and your family members must maintain in full effect primary underlying liability insurance of the types and in at least the amounts set forth below unless a different amount is shown in your Coverage Summary, covering your personal liability and to the extent you or a family member have such liability exposures, all vehicles and watercraft you or your family members own, or rent for longer than 60 days, or have furnished for longer than 60 days, as follows:

Personal liability (homeowners) for personal injury and property damage in the minimum amount of $300,000 each occurrence.

Payment for a Loss

(continued)

Registered vehicles in the minimum amount of:
- $250,000/$500,000 bodily injury and $100,000 property damage;
- $300,000/$300,000 bodily injury and $100,000 property damage; or
- $300,000 single limit each occurrence.

Unregistered vehicles in the minimum amount of $300,000 bodily injury and property damage each occurrence. Registered vehicles with less than four wheels and motorhomes in the minimum amount of:
- $250,000/$500,000 bodily injury and $100,000 property damage;
- $300,000/$300,000 bodily injury and $100,000 property damage; or
- $300,000 single limit each occurrence.

Watercraft less than 26 feet and 50 engine rated horsepower or less for bodily injury and property damage in the minimum amount of $300,000 each occurrence.

Watercraft 26 feet or longer or more than 50 engine rated horsepower for bodily injury and property damage in the minimum amount of $500,000 each occurrence.

Uninsured motorists/underinsured motorist protection in the minimum amounts of:
- $250,000/$500,000 bodily injury and $100,000 property damage;
- $300,000/$300,000 bodily injury and $100,000 property damage; or
- $300,000 single limit each occurrence.

With respect to you and your family members residing outside of the United States, the required primary underlying insurance limits of liability shall be the same limits of liability as shown above, unless you and your family members reside in a country where the minimum required primary underlying insurance limits of liability are not available. In these countries, you and your family members must maintain in full effect primary underlying liability insurance limits equal to the maximum limits of liability available in that country for all coverages up to the minimum required primary underlying limits shown in the Coverage Summary under Required Primary Underlying Insurance.

Failure by you or your family members to comply with this condition, or failure of any of your primary underlying insurers due to insolvency or bankruptcy, shall not invalidate this policy. In the event of any such failure, we shall only be liable in excess of the foregoing minimum amounts and to no greater extent with respect to coverages, amounts and defense costs than we would have been had this failure not occurred.

You must also give notice of losses and otherwise cooperate and comply with the terms and conditions of such primary underlying insurance.

Excess Liability Coverage

We cover damages a covered person is legally obligated to pay for personal injury or property damage, caused by an occurrence:
- in excess of damages covered by the underlying insurance; or
- from the first dollar of damage where no underlying insurance is required under this policy and no underlying insurance exists; or
- from the first dollar of damage where underlying insurance is required under this policy but no coverage is provided by the underlying insurance for a particular occurrence

unless stated otherwise or an exclusion applies.
Exclusions to this coverage are described in **Exclusions**.

Excess uninsured motorist/underinsured motorist protection
This coverage is in effect only if excess uninsured motorists/underinsured motorists protection is shown in the Coverage Summary.

Excess Liability Coverage

(continued)

We cover damages for bodily injury and property damage a covered person is legally entitled to receive from the owner or operator of an uninsured motorized/underinsured motorized land vehicle. We cover these damages in excess of the underlying insurance or the Required Primary Underlying Insurance, whichever is greater, if they are caused by an occurrence during the policy period, unless otherwise stated.

Amount of coverage. The maximum amount of excess uninsured motorists/underinsured motorists protection available for any one occurrence is the excess uninsured motorists/underinsured motorists protection amount shown in the Coverage Summary regardless of the number of vehicles covered by the Required Primary Underlying Insurance. We will not pay more than this amount in any one occurrence for covered damages regardless of how many claims, vehicles or people are involved in the occurrence.

This coverage will follow form.

Uninsured motorists/underinsured motorists protection arbitration

If we and a covered person disagree whether that person is legally entitled to recover damages from the owner or operator of an uninsured motor vehicle/underinsured motor vehicle, or do not agree as to the amount of damages, either party may make a written demand for arbitration. In this event, each party will select an arbitrator. The two arbitrators will select a third. If they cannot agree on a third arbitrator within 45 days, either may request that the arbitration be submitted to the American Arbitration Association. When the covered person's recovery exceeds the minimum limit specified in the applicable jurisdiction's financial responsibility law, each party will pay the expenses it incurs, and bear the expenses of the third arbitrator equally. Otherwise, we will bear all the expenses of the arbitration.

Unless both parties agree otherwise, arbitration will take place in the county and state in which the covered person lives. Local rules of law as to procedure and evidence will apply. A decision agreed to by two arbitrators will be binding unless the recovery amount for bodily injury exceeds the minimum limit specified by the applicable jurisdiction's financial responsibility law. If the amount exceeds that limit, either party may demand the right to a trial. This demand must be made within 60 days of the arbitrator's decision. If this demand is not made, the amount of damages agreed to by the arbitrators will be binding.

Defense coverages

We will defend a covered person against any suit seeking covered damages for personal injury or property damage that is either:

- not covered by any underlying insurance; or
- covered by an underlying policy. This will apply to each Defense Coverage as it has been exhausted by payment of claims.

We provide this defense at our expense, with counsel of our choice, even if the suit is groundless, false, or fraudulent. We may investigate, negotiate, and settle any such claim or suit at our discretion.

As part of our investigation, defense, negotiation, or settlement, we will pay:

- all premiums on appeal bonds required in any suit we defend;
- all premiums on bonds to release attachments for any amount up to the amount of coverage (but we are not obligated to apply for or furnish any bond);
- all expenses incurred by us;
- all costs taxed against a covered person;
- all interest accruing after a judgment is entered in a suit we defend on only that part of the judgment we are responsible for paying. We will not pay interest accruing after we have paid the judgment up to the amount of coverage;
- all prejudgment interest awarded against a covered person on that part of the judgment we pay or offer to pay. We will not pay any prejudgment interest based on that period of time after we make an offer to pay the amount of coverage;
- all earnings lost by each covered person at our request, up to $25,000;
- other reasonable expenses incurred by a covered person at our request; and
- the cost of bail bonds required of a covered person because of a covered loss.

In jurisdictions where we may be prevented by local law from carrying out these Defense Coverages, we will pay only those defense expenses that we agree in writing to pay and that are incurred by you.

CHUBB

Extra Coverages

In addition to covering damages and defense costs, we also provide other related coverages. These coverages are in addition to the amount of coverage for damages and defense costs unless stated otherwise.

Shadow defense coverage

If we are defending you or a family member in a suit seeking covered damages, we will pay reasonable expenses you or a family member incur up to $10,000 or the amount shown in the Coverage Summary for a law firm of your choice to review and monitor the defense. However any recommendation by your personal attorney is not binding on us. We will pay these costs provided that you obtain prior approval from us before incurring any fees or expenses.

Identity fraud

We will pay for your or a family member's identity fraud expenses, up to a maximum of $25,000, for each identity fraud occurrence.

"Identity fraud" means the act of knowingly transferring or using, without lawful authority, your or a family member's means of identity which constitutes a violation of federal law or a crime under any applicable state or local law.

"Identity fraud occurrence" means any act or series of acts of identity fraud by a person or group commencing in the policy period.

"Identity fraud expenses" means:

- the costs for notarizing affidavits or similar documents for law enforcement agencies, financial institutions or similar credit grantors, and credit agencies;
- the costs for sending certified mail to law enforcement agencies, financial institutions or similar credit grantors, and credit agencies;
- the loan application fees for reapplying for loan(s) due to the rejection of the original application because the lender received incorrect credit information;
- the telephone expenses for calls to businesses, law enforcement agencies, financial institutions or similar credit grantors, and credit agencies;
- earnings lost by you or a family member as a result of time off from work to complete fraud affidavits, meet with law enforcement agencies, credit agencies, merchants, or legal counsel;
- the reasonable attorney fees incurred with prior notice to us for:
- the defense of you or a family member against any suit(s) by businesses or their collection agencies;
- the removal of any criminal or civil judgements wrongly entered against you or a family member;
- any challenge to the information in your or a family member's consumer credit report; and
- the reasonable fees incurred with prior notice to us by an identity fraud mitigation entity to:
- provide services for the activities described above;
- restore accounts or credit standing with financial institutions or similar credit grantors and credit agencies; and
- monitor for up to one year the effectiveness of the fraud mitigation and to detect additional identity fraud activity after the first identify fraud occurrence.

However, such monitoring must begin no later than one year after you or a family member first report an identity fraud occurrence to us.

However, "identity fraud expenses" does not include expenses incurred due to any fraudulent, dishonest or criminal act by a covered person or any person acting with a covered person, or by any authorized representative of a covered person, whether acting alone or in collusion with others.

"Identity fraud mitigation entity" means a company that principally provides professional, specialized services to counter identity fraud for individuals or groups of individuals, or a financial institution that provides similar services.

In addition to the duties described in Policy Terms, Liability Conditions, Your duties after a loss, you shall notify an applicable law enforcement agency.

Extra Coverages

(continued)

Kidnap expenses

We will pay up to a maximum of $100,000 for kidnap expenses you or a family member incurs solely and directly as a result of a kidnap and ransom occurrence. In addition, we also will pay up to $25,000 to any person for information not otherwise available leading to the arrest and conviction of any person(s) who kidnaps you, a family member or a covered relative. The following are not eligible to receive this reward payment:

- you or a family member; or
- a covered relative who witnessed the occurrence.

"Kidnap and ransom occurrence" means the actual or alleged wrongful taking of:

- you;
- one or more family members; or
- one or more covered relatives while visiting or legally traveling with you or a family member;

from anywhere in the world except those places listed on the United States State Department Bureau of Consular Affairs Travel Warnings list at the time of the occurrence. The occurrence must include a demand for ransom payment which would be paid by you or a family member in exchange for the release of the kidnapped person(s).

"Kidnap expenses" means the reasonable costs for:

- a professional negotiator;
- a professional security consultant;
- professional security guard services;
- a professional public relations consultant;
- travel, meals, lodging and phone expenses incurred by you or a family member;
- advertising, communications and recording equipment;
- related medical, cosmetic, psychiatric and dental expenses incurred by a kidnapped person within 12 months from that person's release;
- attorneys fees;
- a professional forensic analyst;
- earnings lost by you or a family member, up to $25,000.

However, "kidnap expenses" does not include expenses incurred due to any kidnap and ransom occurrence caused by:

- you or a family member;
- a covered relative;
- any guardian, or former guardian of you, a family member or covered relative;
- any estranged spouse or domestic partner, or former spouse or domestic partner of you or a family member;
- any person unrelated to you or a family member who lives with you or a family member or has ever lived with you or a family member for 6 or more months, other than a domestic employee, residential staff, or a person employed by you or a family member for farm work; or
- a civil authority,

or any person acting on behalf of any of the above, whether acting alone or in collusion with others.

"Covered relative" means the following relatives of you, or a spouse or domestic partner who lives with you, or any family member:

- children, their children or other descendents of theirs;
- parents, grandparents or other ancestors of theirs; or
- siblings, their children or other descendents of theirs;

who do not live with you, including spouses or domestic partners of all of the above. Parents, grandparents and other ancestors include adoptive parents, stepparents and stepgrandparents.

Reputational Injury. If we are defending you or a family member in a suit seeking covered damages, we will pay reasonable and necessary fees or expenses that you or a family member incur for services provided by a reputation management firm to minimize potential injury to the reputation of you or a family member solely as a result of personal injury or property damage, caused by an occurrence if:

- the reputational injury is reported to us as soon as reasonably possible but not later than 30 days after the personal injury or property damage occurrence; and
- you obtain approval of the reputation management firm from us before incurring any fees or expenses, unless stated otherwise or an exclusion applies.There is no deductible for this coverage.

A Reputation management firm means a professional public relations consulting firm, a professional security consulting firm or a professional media management consulting firm.

Extra Coverages

(continued)

The maximum amount of coverage for Reputational injury available for any one occurrence is $25,000 or the amount shown in the Coverage Summary. We will not pay more than this amount in any one occurrence for covered damages regardless of how many claims or people are involved in the occurrence.

The maximum annual amount of coverage for Reputational injury shown in the Coverage Summary is the most we will pay for the sum of all covered damages you or a family member incur during the policy period regardless of the number of claims, people, or occurrences.

This coverage does not apply to loss caused by a wrongful employment act covered by Employment Practices Liability Insurance.

Exclusions

These exclusions apply to your Group Personal Excess Liability Coverage, unless stated otherwise.

Aircraft. We do not cover any damages arising out of the ownership, maintenance, use, loading, unloading, or towing of any aircraft, except aircraft chartered with crew by you. We do not cover any property damages to aircraft rented to, owned by, or in the care, custody or control of a covered person.

Hovercraft. We do not cover any damages arising out of the ownership, maintenance, use, loading, unloading or towing of any hovercraft. We do not cover any property damages to hovercraft rented to, owned by, or in the care, custody or control of a covered person .

Motorized land vehicle racing or track usage. We do not cover any damages arising out of the ownership, maintenance or use of any motorized land vehicle:

- during any instruction, practice, preparation for, or participation in, any competitive, prearranged or organized racing, speed contest, rally, gymkhana. sports event, stunting activity, or timed event of any kind; or
- on a racetrack, test track or other course of any kind.

Watercraft and aircraft racing or track usage. We do not cover any damages arising out of the ownership, maintenance or use of any watercraft or aircraft during any instruction, practice, preparation for, or participation in, any competitive, prearranged or organized racing, speed contest, rally, sports event, stunting activity or timed event of any kind. This exclusion does not apply to you or a family member for sailboat racing even if the sailboat is equipped with an auxiliary motor.

Motorized land vehicle-related jobs. We do not cover any damages arising out of the ownership, maintenance, or use of a motorized land vehicle by any person who is employed or otherwise engaged in the business of selling, repairing, servicing, storing, parking, testing, or delivering motorized land vehicles. This exclusion does not apply to you, a family member, or your employee or an employee of a family member for damages arising out of the ownership, maintenance or use of a motorized land vehicle owned by, rented to, or furnished to you or a family member.

Watercraft-related jobs. We do not cover any damages arising out of the ownership, maintenance, or use of a watercraft by any person who is engaged by or employed by, or is operating a marina. boat repair yard. shipyard. yacht club, boat sales agency, boat service station, or other similar organization. This exclusion does not apply to damages arising out of the ownership, maintenance, or use of a watercraft by you, a family member, or your or a family member's captain or full time paid crew member maintaining or using this watercraft with permission from you or a family member.

Motorized land vehicle and watercraft loading. We do not cover any person or organization, other than you or a family member or your or a family member's employees, with respect to the loading or unloading of motorized land vehicles or watercraft.

Workers' compensation or disability. We do not cover any damages a covered person is legally:

- required to provide; or
- voluntarily provides

under any:

- workers' compensation;
- disability benefits;
- unemployment compensation; or
- other similar laws.

But we do provide coverage in excess over any other insurance for damages you or a family member is legally required to pay for bodily injury to a domestic employee of a residence covered under the Required Primary Underlying Insurance which are not compensable under workers' compensation, unless another exclusion applies.

Director's liability. We do not cover any damages for any covered person's actions or failure to act as an officer or member of a board of directors of any corporation or organization. However, we do cover such damages if you are or a family member is an officer or member of a board of directors of a:

- homeowner, condominium or cooperative association; or
- not-for-profit corporation or organization for which he or she is not compensated; unless another exclusion applies.

Damage to covered person's property. We do not cover any person for property damage to property owned by any covered person.

Damage to property in your care. We do not cover any person for property damage to property rented to, occupied by, used by, or in the care of any covered person, to the extent that the covered person is required by contract to provide insurance. But we do cover such damages for loss caused by fire, smoke, or explosion unless another exclusion applies.

Wrongful employment act. We do not cover any damages arising out of a wrongful employment act. A wrongful employment act means any employment discrimination, sexual harassment. or wrongful termination of any residential staff actually or allegedly committed or attempted by a covered person while acting in the capacity as an employer, that violates applicable employment law of any federal, state, or local statute, regulation, ordinance, or common law of the United States of America, its territories or possessions, or Puerto Rico.

"Employment discrimination" as it relates solely to a wrongful employment act means a violation of applicable employment discrimination law protecting any residential staff based on bis or her race, color, religion, creed, age, sex, disability, national origin or other status according to any federal, state, or local statute, regulation, ordinance, or common law of the United States of America, its territories or possessions, or Puerto Rico.

"Sexual harassment" as it relates solely to a wrongful employment act means unwelcome sexual advances, requests for sexual favors, or other conduct of a sexual nature that:

- is made a condition of employment of any residential staff;
- is used as a basis for employment decisions;
- interferes with performance of any residential staff's duties; or
- creates an intimidating, hostile, or offensive working environment.

"Wrongful termination" as it relates solely to a wrongful employment act means

- the actual or constructive termination of employment of any residential staff by you or a family member in violation of applicable employment law; or
- breach of duty and care when you or a family member terminates an employment relationship with any residential staff.

"Residential staff" as it relates solely to a wrongful employment act means your or a family member's employee who is:

- employed by you or a family member, or through a firm under an agreement with you or a family member, to perform duties related only to a covered person's domestic, personal, or business pursuits covered under this part of your policy;
- compensated for labor or services directed by you or a family member; and
- employed regularly to work 15 or more hours per week.

Residential staff includes a temporary worker. Residential staff does not include an independent contractor or any covered person.

"Temporary worker" as it relates solely to a wrongful employment act means your or a family member's employee who is:

- employed by you or a family member, or through a firm under an agreement with you or a family member, to perform duties related only to a covered person's domestic, personal, or business pursuits covered under this part of your policy;
- compensated for labor or services directed by you or a family member; and
- employed to work 15 or more hours per week to substitute for any residential staff on leave or to meet seasonal or short term workload demands for 30 consecutive days or longer during a 6 month period.

Exclusions
(continued)

Temporary worker does not include an independent contractor or any covered person.

Discrimination. We do not cover any damages arising out of discrimination due to age, race, color, sex, creed, national origin, or any other discrimination.

Intentional acts. We do not cover any damages arising out of a willful, malicious, fraudulent or dishonest act or any act intended by any covered person to cause personal injury or property damage, even if the injury or damage is of a different degree or type than actually intended or expected. But we do cover such damages if the act was intended to protect people or property unless another exclusion applies. An intentional act is one whose consequences could have been foreseen by a reasonable person.

Molestation, misconduct or abuse, We do not cover any damages arising out of any actual, alleged or threatened:

- sexual molestation;
- sexual misconduct or harassment; or
- abuse.

Nonpermissive use. We do not cover any person who uses a motorized land vehicle or watercraft without permission from you or a family member.

Business pursuits. We do not cover any damages arising out of a covered person's business pursuits, investment or other for-profit activities, for the account of a covered person or others, or business property except on a follow form basis .

But we do cover damages arising out of volunteer work for an organized charitable, religious or community group, an incidental business away from home, incidental business at home, incidental business property, incidental farming, or residence premises conditional business liability unless another exclusion applies. We also cover damages arising out of your or a family member's ownership, maintenance, or use of a private passenger motor vehicle in business activities other than selling, repairing, servicing, storing, parking, testing, or delivering motorized land vehicles.

Unless stated otherwise in your Coverage Summary:

"Incidental business away from home" is a self-employed sales activity, or a self-employed business activity normally undertaken by person under the age of 18 such as newspaper delivery, babysitting, caddying, and lawn care. Either of these activities must:

- not yield gross revenues in excess of $15,000 in any year;
- have no employees subject to worker's compensation or other similar disability laws;
- conform to local, state, and federal laws.

Exclusions

(continued)

"Incidental business at home" is a business activity, other than farming, conducted on your residence premises which must:

- not yield gross revenues in excess of $15,000, in any year, except for the business activity of managing one's own personal investments;
- have no employees subject to worker's compensation or other similar disability laws;
- conform to local, state, and federal laws.

"Incidental business property" is limited to the rental or holding for rental, to be used as a residence, of a condominium or cooperative unit owned by you or a family member, an apartment unit rented to you or a family member, a one or two family dwelling owned by you or a family member, or a three or four family dwelling owned and occupied by you or a family member. We provide this coverage only for premises covered under the Required Primary Underlying Insurance unless the rental or holding for rental is for:

- a residence of yours or a family member's that is occasionally rented and that is used exclusively as a residence; or
- part of a residence of yours or a family member's by one or two roomers or boarders; or
- part of a residence of yours or a family member's as an office, school, studio, or private garage.

"Incidental farming" is a farming activity which meets all of the following requirements:

- is incidental to your or a family member's use of the premises as a residence;
- does not involve employment of others for more than 1,500 hours of farm work during the policy period;
- does not produce more than $25,000 in gross annual revenue from agricultural operations;
- and with respect to the raising or care of animals:
  - does not produce more than $50,000 in gross annual revenues;
  - does not involve more than 25 sales transactions during the policy period;
  - does not involve the sale of more than 50 animals during the policy period.

"Residence premises conditional business liability" is limited to business or professional activities when legally conducted by you or a family member at your residence. We provide coverage only for personal injury or property damage arising out of the physical condition of that residence if:

- you or a family member do not have any employees involved in your business or professional activities who are subject to workers' compensation or other similar disability laws; or, if you or a family member are a doctor or dentist, you do not have more than two employees subject to such laws;
- you or a family member do not earn annual gross revenues in excess of $5,000, if you or a family member are a home day care provider.

We do not cover damages or consequences resulting from business or professional care or services performed or not performed.

The following additional exclusion applies only to "incidental farming" as described under the exclusion, Business pursuits.

Contamination. We do not cover any actual or alleged damages arising out of the discharge, dispersal, seepage, migration or release or escape of pollutants. Nor do we cover any cost or expense arising out of any request, demand or order to:

- extract pollutants from land or water;
- remove, restore or replace polluted or contaminated land or water; or
- test for, monitor, clean up, remove, contain, treat, detoxify or neutralize pollutants, or in any way respond to or assess the effects of pollutants.

However, this exclusion does not apply if the discharge, dispersal, seepage, migration, release or escape is sudden and accidental. A "pollutant" is any solid, liquid, gaseous or thermal irritant or contaminant, including smoke (except smoke from a hostile fire), vapor, soot, fumes, acids, alkalis, chemicals and waste. A "contaminant" is an impurity resulting from the mixture of or contact of a substance with a foreign substance. "Waste" includes materials to be disposed of, recycled, reconditioned or reclaimed.

Exclusions

(continued)

Financial guarantees. We do not cover any damages for any covered person's financial guarantee of the financial performance of any covered person, other individual or organization.

Professional services. We do not cover any damages for any covered person's performing or failure to perform professional services, or for professional services for which any covered person is legally responsible or licensed.

Acts of war. We do not cover any damages caused directly or indirectly by war, undeclared war, civil war, insurrection, rebellion, revolution, warlike acts by military forces or personnel, the destruction or seizure of property for a military purpose, or the consequences of any of these actions.

Contractual liability, We do not cover any assessments charged against a covered person as a member of a homeowners, condominium or cooperative association. We also do not cover any damages arising from contracts or agreements made in connection with any covered person's business. Nor do we cover any liability for unwritten contracts, or contracts in which the liability of others is assumed after a covered loss.

Covered person's or dependent's personal injury. We do not cover any damages for personal injury for any covered person or their dependents where the ultimate beneficiary is the offending party or defendant. We also do not cover any damages for personal injury for which you can be held legally liable, in any way, to a family member, your spouse or domestic partner or for which a family member, your spouse or domestic partner can be held legally liable, in any way, to you.

However, we do cover damages for bodily injury arising out of the use of a motorized land vehicle for which you can be held legally liable to a family member, your spouse or domestic partner or for which a family member, your spouse or domestic partner can be held legally liable to you to the extent that coverage is provided under this policy. This coverage applies only to the extent such damages are covered by primary underlying insurance and exceed the limits of insurance required for that motorized land vehicle under the Required Primary Underlying Insurance provisions of this policy.

Liability for dependent care. We do not cover any damages for personal injury for which a covered person's only legal liability is by virtue of a contract or other responsibility for a dependent's care.

Illness, We do not cover personal injury or property damage resulting from any illness, sickness or disease transmitted intentionally or unintentionally by a covered person to anyone, or any consequence resulting from that illness, sickness or disease. We also do not cover any damages for personal injury resulting from the fear of contracting any illness, sickness or disease, or any consequence resulting from the fear of contracting any illness, sickness or disease.

Fungi and mold. We do not cover any actual or alleged damages or medical expenses arising out of mold, the fear of mold, or any consequences resulting from mold or the fear of mold. "Mold" means fungi, mold, mold spores, mycotoxins, and the scents and other byproducts of any of these.

Nuclear or radiation hazard. We do not cover any damages caused directly or indirectly by nuclear reaction, radiation, or radioactive contamination, regardless of how it was caused.

POLICY TERMS

This part of your Group Personal Excess Liability Policy explains the conditions that apply to your policy.

General Conditions

These conditions apply to your policy in general, and to each coverage provided in the policy.

Policy period

The effective dates of your policy are shown in the Coverage Summary. Those dates begin at 12:01 a.m. standard time at the mailing address shown.

All coverages on this policy apply only to occurrences that take place while this policy is in effect.

Transfer of rights

If we make a payment under this policy, we will assume any recovery rights a covered person has in connection with that loss, to the extent we have paid for the loss.

General Conditions

(continued)

All of your rights of recovery will become our rights to the extent of any payment we make under this policy. A covered person will do everything necessary to secure such rights; and do nothing after a loss to prejudice such rights. However, you may waive any rights of recovery from another person or organization for a covered loss in writing before the loss occurs.

Concealment or fraud
We do not provide coverage if you or any covered person has intentionally concealed or misrepresented any material fact relating to this policy before or after a loss.

Application of coverage
Coverage applies separately to each covered person. However, this provision does not increase the amount of coverage for any one occurrence.

Assignment
You cannot transfer your interest in this policy to anyone else unless we agree in writing to the transfer.

Policy changes
This policy can be changed only by a written amendment we issue.

Bankruptcy or Insolvency
We will meet all our obligations under this policy regardless of whether you, your estate, or anyone else or their estate becomes bankrupt or insolvent.

In case of death
In the event of your death, coverage will be provided until the end of the policy period or policy anniversary date, whichever occurs first, for any surviving member of your household who is a covered person at the time of death. We will also cover your legal representative or any person having proper temporary custody of your property.

Liberalization
We may extend or broaden the coverage provided by this policy. If we do this during the policy period or within 60 days before it begins, without increasing the premium, then the extended or broadened coverage will apply to occurrences after the effective date of the extended or broadened coverage.

Conforming to state law
If any provision of this policy conflicts with any applicable laws of the state you live in, this policy is amended to conform to those laws.

Conforming to trade sanction laws
This policy does not apply to the extent that trade or economic sanctions or other laws or regulations prohibit us from providing insurance.

Liability Conditions

These conditions apply to all liability coverages in this policy.

Other Insurance
This insurance is excess over any other insurance except for those policies that

- are written specifically to cover excess over the amount of coverage that applies in this policy; and
- schedule this policy as underlying insurance.

Your duties after a loss
In case of an accident or occurrence, the covered person shall perform the following duties that apply: **Notification**. You must notify us or your agent or broker as soon as possible.

Assistance. You must provide us with all available information. This includes any suit papers or other documents which help us in the event that we defend you.

Cooperation. You must cooperate with us fully in any legal defense. This may include any association by us with the covered person in defense of a claim reasonably likely to involve us.

Liability Conditions

(continued)

Examination. A person making a claim under this policy must submit as often as we reasonably require:

- to physical exams by physicians we select, which we will pay for; and
- to examination under oath and subscribe the same; and authorize us to obtain:
- medical reports; and
- other pertinent records.

Appeals

If a covered person, or any primary insurer, does not appeal a judgment for covered damages, we may choose to do so. We will then become responsible for all expenses, taxable costs, and interest arising out of the appeal. However, the amount of coverage for damages will not be increased.

Special Conditions

In the event of conflict with any other conditions of your policy, these conditions supersede.

Legal action against us

You agree not to bring action against us unless you have first complied with all conditions of this policy.

You also agree not to bring any action against us until the amount of damages you are legally obligated to pay bas been finally determined after an actual trial or appeal, if any, or by a written agreement between you, us and the claimant. No person or organization bas any right under this policy to bring us into any action to determine the liability of a covered person.

Notice of cancellation and coverage termination conditions

The Sponsoring Organization may cancel this policy by returning it to us or notifying us in writing at any time subject to the following:

- the Sponsoring Organization must notify us in advance of the requested cancellation date; and
- the Sponsoring Organization must provide proof of notification to each member of the Defined Group covered under this policy.

We may cancel this policy or any part of it subject to the following conditions. Our right to cancel applies to each coverage or limit in this policy. In the event we cancel this policy, we are under no obligation to provide you with an opportunity to purchase equivalent coverage.

- **Within 60 days**, When this policy or any part of it bas been in effect for less than 60 days, we may cancel with 30 days notice for any reason.
- **Non-payment of premium**. We may cancel this policy or any part of it with 10 days notice if the Sponsoring Organization or you fail to pay the premium by the due date, regardless of whether the premium is payable to us, to our agent, or under any financial credit.
- **Misrepresentation**. We may cancel this policy or any part of it with 30 days notice if the coverage was obtained through misrepresentation, fraudulent statements, or omissions or concealment of a fact that is relevant to the acceptance of the risk or to the hazard we assumed.
- **Increase in hazard**. We may cancel this policy or any part of it with 30 days notice if there bas been a substantial change in the risk which increases the chance of loss after insurance coverage bas been issued or renewed, including but not limited to an increase in exposure due to rules, legislation, or court decision.
- **Procedure**. To cancel this policy or any part of it, we must notify you in writing. This notice will be mailed to the Sponsoring Organization at the mailing address shown in the Coverage Summary and we will obtain a certificate of mailing. This notice will include the date the cancellation is to take effect.

Special Conditions

(continued)

Termination. Should an individual for any reason no longer qualify as a member of the Defined Group, coverage will cease sixty (60) days from the date that individual no longer qualifies as a member of the Defined Group, or the policy expiration or cancellation date, whichever comes first.

Refund. In the event of cancellation by the Sponsoring Organization or us, we will refund any unearned premium on the effective date of cancellation, or as soon as possible afterwards to the Sponsoring Organization. The unearned premium will be computed short rate for the unexpired term of the policy.

Schedule of Forms

CHUBB

Policy Number: (16) 7993-14-03
Insured: NORTHROP GRUMMAN CORPORATION
Group Personal Excess Program

Policy Period From: JANUARY 01, 2017 to JANUARY 01, 2018

The following is a schedule of forms issued with the policy at inception:

Form Name Form Number

PRIVACY NOTICE - GROUP MASTER POLICY	10-02-1058	(03/15)
IMPORTANT NOTICE - OFAC	99-10-0796	(09/04)
COVERAGE SUMMARY/DECLARATIONS	10-02-0690	(08/07)
GROUP PERSONAL EXCESS - CONTRACT/POLICY TERMS	10-02-0691	(08/07)
ANNUAL PREMIUM ADJUSTMENT CLAUSE	10-02-0692	(08/96)
UNDERLYING LIMITS ENDORSEMENT	10-02-0692	(08/96)
NAMED INSURED ENDORSEMENT	10-02-0692	(08/96)

Last page

CHUBB

ENDORSEMENT

Policy Period JANUARY 01, 2017 to JANUARY 01, 2018

Effective Date JANUARY 01, 2017

Policy Number (16) 7993-14-03

Insured NORTHROP GRUMMAN CORPORATION
Group Personal Excess Program

Name of Company FEDERAL INSURANCE COMPANY

Date Issued OCTOBER 20, 2016

UNDERLYING LIMITS ENDORSEMENT

IT IS HEREBY UNDERSTOOD AND AGREED THAT THE REQUIRED PRIMARY UNDERLYING LIABILITY INSURANCE LIMITS ARE AMENDED TO:

Personal Liability (Homeowners) for personal injury and property damage in the minimum amount of $300,000 each occurrence.

Registered vehicles in the minimum amount of:

$250,000/$500,000 bodily injury and $100,000 property damage;
$300,000/$300,000 bodily injury and $100,000 property damage; or
$300,000 single limit each occurrence.

Unregistered vehicles in the minimum amount of $300,000 bodily injury and property damage each occurrence.

Registered vehicles with less than four wheels and motorhomes in the minimum amount of:

$250,000/$500,000 bodily injury and $100,000 property damage;
$300,000/$300,000 bodily injury and $100,000 property damage; or
$300,000 single limit each occurrence.

Watercraft less than 26 feet and 50 engine rated horsepower or less for bodily injury and property damage in the minimum amount of $300,000 each occurrence.

Watercraft 26 feet or longer or more than 50 engine rated horsepower for bodily injury and property damage in the minimum amount of
$500,000 each occurrence.

Uninsured motorists /underinsured motorist protection in the minimum amount of:

$250,000/$500,000 bodily injury and $100,000 property damage;
$300,000/$300,000 bodily injury and $100,000 property damage; or

$300,000 single limit each occurrence.

FAILURE TO COMPLY WITH THE REQUIRED PRIMARY UNDERLYING INSURANCE WILL RESULT IN A GAP IN COVERAGE.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

Authorized Representative

CHUBB

ENDORSEMENT

Policy Period JANUARY 01, 2017 to JANUARY 01, 2018

Effective Date JANUARY 01, 2017

Policy Number (16) 7993-14-03

Insured NORTHROP GRUMMAN CORPORATION
Group Personal Excess Program

Name of Company FEDERAL INSURANCE COMPANY

Date Issued OCTOBER 20, 2016

ANNUAL PREMIUM ADJUSTMENT CLAUSE

It is agreed that this policy is written with a deposit premium to be adjusted on either each policy anniversary or at policy expiration. The premium will be adjusted on the basis of the difference between the total number of participants at inception and the actual number of participants at each policy anniversary. This difference is to be multiplied by fifty percent (50%)of the annual rate per participant, resulting in either an additional or return premium.

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.

Authorized Representative

Exhibit 10(y)

NORTHROP GRUMMAN CORPORATION
SPECIAL OFFICER RETIREE MEDICAL PLAN
(Amended and Restated Effective January 1, 2015)

ARTICLE 1 INTRODUCTION

1.01 Purpose. The purpose of the Northrop Grumman Corporation Special Officer Retiree Medical Plan (“Plan”) is to provide lifetime retiree medical and life insurance benefits to eligible elected officers of Northrop Grumman Corporation (“the Company”) and their eligible dependents as described in the Plan. The Plan provides for the continuation of welfare benefits to a select group of management or highly compensated employees within the meaning of Department of Labor Regulation 29 CFR section 2520.104-24 and Sections 201, 301, and 401 of the Employee Retirement Income Security Act of 1974 ("ERISA"). This amendment and restatement is effective January 1, 2015 and reflects administrative clarifications necessitated by the Company’s termination of medical benefit coverage for actively employed executives under the Northrop Grumman Executive Medical Plan (“Executive Medical Plan”).

1.02 Substantive Benefits. This document describes the standard eligibility provisions and terms of coverage under the Plan. The actual medical benefit coverage will be provided pursuant to the terms of the insurance contract or contracts issued by an insurance carrier or carriers selected by the Company. The actual life insurance coverage will be provided through an insurance contract or contracts issued by an insurance carrier or carriers selected by the Company.

ARTICLE 2 DEFINITIONS

2.01 Board. The Company’s Board of Directors.

2.02 Committee. The Compensation and Management Development Committee of the Board.

2.03 Continuation Coverage. Continued medical coverage under the Plan after a Qualifying Event has occurred. Such medical coverage is identical to the medical coverage as provided under the Plan to similarly situated persons with respect to whom a Qualifying Event has not occurred.

2.04 Continuation Coverage Election Period. The period beginning on the date of the Qualifying Event and ending sixty (60) days after the later of (a) the date the Qualified Beneficiary would lose medical coverage on account of the Qualifying Event, or (b) the date that the Qualified Beneficiary is provided with notice of his or her right to elect Continuation Coverage.

2.05 Grandfathered Participants. Participants who were actively employed by the Company on September 30, 2003.

2.06 Participant. An elected officer of the Company who is designated by the Board or the Committee as eligible to participate in the Plan.

2.07 Prior Plan. The Northrop Grumman Special Officer Retiree Medical Plan as in effect prior to October 1, 2003.

2.08 Qualified Beneficiary. A retired Vested Participant's spouse or dependent who, on the day before a Qualifying Event, has medical coverage under the Plan. In the case of a Qualifying Event described in subsection 2.09(iv) below, Qualified Beneficiary means a retired Vested Participant who had retired on or before the date of substantial elimination of medical coverage and any person who on the day before the Qualifying Event is the spouse or Surviving Spouse of the retired Vested Participant or a covered dependent child of the retired Vested Participant or Surviving Spouse.

2.09 Qualifying Event. Any of: (i) the death of a retired Vested Participant, but only with respect to a beneficiary who is not the Surviving Spouse of the retired Vested Participant; (ii) the divorce or legal separation of a retired Vested Participant from his spouse; (iii) a dependent child ceasing to be eligible for medical coverage as a dependent child of a retired Vested Participant under the dependent eligibility provisions of the insurance contract through which coverage is provided; or (iv) a proceeding in a case under Title 11 of the United States Code with respect to the Company; provided, however, that any such event will be a Qualifying Event only if it will cause the Qualified Beneficiary an immediate or deferred loss of medical coverage under the Plan. For purposes of this subsection, a loss of medical coverage means to cease to be eligible for medical benefits under the Plan under the same terms and conditions as in effect immediately before the Qualifying Event. A loss of medical coverage will be considered a deferred loss of medical coverage for purposes of this provision if the loss of medical coverage does not occur at the time of the Qualifying Event but occurs before the end of what would be the maximum period of Continuation Coverage under section 8.04 below. In the case of a Qualifying Event described in (iv), a loss of medical coverage includes a substantial elimination of medical coverage with respect to a Qualified Beneficiary within one year before or after the date of commencement of the bankruptcy proceeding.

2.10 Surviving Spouse. The individual to whom the retired Vested Participant was legally married under applicable State law both at the time of the retired Vested Participant's retirement and at the time of the retired Vested Participant's death.

2.11 Vested Participant. A Participant with either five years of service as an elected officer of the Company or 30 years of total service with the Company and its affiliates.

ARTICLE 3 ELIGIBILITY

3.01 Eligibility. Eligibility for the Plan is limited to those elected officers of the Company who are designated as eligible to participate in the Plan by the Board or the Committee. The eligible spouse and dependents of a Vested Participant will be eligible for medical benefits under the Plan commencing at the same time the Vested Participant's medical benefits commence. Spouse and dependent eligibility will be determined in accordance with the terms of the insurance contract through which coverage is provided.. A Vested Participant's eligibility for life insurance coverage will be subject to the terms of the life insurance contract or contracts through which such coverage is provided. The spouse and dependents of a Vested Participant are not eligible for life insurance coverage under the Plan.

3.02 Revocation of Eligibility. The Board or Committee may revoke a non-Vested Participant's Plan eligibility without the Participant's consent. The Board or Committee may revoke a Vested Participant's or Surviving Spouse's Plan eligibility, provided that the Vested Participant or, after the Vested Participant's death, his or her Surviving Spouse, consents to the revocation.

3.03 Automatic Cessation of Eligibility. A Participant who is not a Vested Participant will automatically cease to be a Participant under the Plan upon the earlier of the following: (i) the date the Participant terminates employment with the Company; or (ii) the date the Participant ceases to be an elected officer of the Company. However, the Board or the Committee may make provision for a Participant who ceases to be an elected officer of the Company, but does not terminate employment with the Company, to continue to accrue service credited toward becoming a Vested Participant. The spouse or dependent of a Participant will cease to be eligible for medical benefits under the Plan upon the earlier of the following: (i) the date the Participant ceases to be a Participant under the Plan; or (ii) the date the spouse or dependent ceases to be eligible in accordance with the terms of the insurance contract through which coverage is provided.

3.04 Plan Freeze. No elected officer whose date of election is effective after March 21, 2007 shall be designated as eligible to participate in the Plan. An elected officer who is a Participant as of March 21, 2007 may continue to earn service toward becoming a Vested Participant after that date in accordance with the terms of the Plan.

ARTICLE 4 COMMENCEMENT OF BENEFITS AND COSTS

4.01 Commencement of Benefits. A Vested Participant may elect to commence benefits under the Plan coincident with retirement from the Company under the terms of the supplemental executive retirement plan in which the Vested Participant participates. If the election to commence is not made at the time of retirement, the Vested Participant and his or her dependents cease to be eligible for the Plan. No subsequent election to commence benefits will be allowed.

4.02 Duration of Benefits. Subject to the Company's right to amend or terminate the Plan (as limited by subsection 6.01(b)), life insurance coverage will be provided for the life of the Vested Participant and medical coverage will be provided for the life of the Vested Participant and the life of his or her Surviving Spouse, if any. Eligible dependent medical coverage will only be available during the life of the Vested Participant and the life of his or her Surviving Spouse, if any, subject to ARTICLE 8.

4.03 Coverage Provided. Medical coverage will be provided pursuant to the terms of the insurance contract issued by the insurance carrier selected by the Company, as such contract is modified from time to time. Life insurance coverage will be provided through an insurance contract or contracts issued by an insurance carrier or carriers selected by the Company. Life insurance coverage will be in the amount of $450,000 at the Vested Participant's retirement and will be reduced by $50,000 effective as of each January 1 thereafter until the amount reaches $250,000.

4.04 Medicare. A Vested Participant, spouse or Surviving Spouse must enroll in Medicare Parts A and B when first eligible in order to receive benefits under this Plan. If he or she fails to enroll, medical benefit coverage under this Plan will cease upon the date the Vested Participant, spouse or Surviving Spouse first becomes eligible for Medicare Parts A and B.

4.05 Costs of Coverage.

(a) Medical Coverage.

i. The Vested Participant (or Surviving Spouse, following the death of a Vested Participant) will be responsible for any participant cost items, such as coinsurance, copayments, and deductibles, as determined by the Company in its discretion and described in the insurance contract through which coverage is provided. Subject to subsection (a)(ii) below, the level of participant (or Surviving Spouse) contributions toward the cost of coverage (i.e., premiums) will be frozen at the amount of the required participant contribution in effect under the Executive Medical Plan as of the date the Vested Participant commenced benefits under this Plan. For a Vested Participant who commences benefits under this Plan on or after July 1, 2014, the level of participant (or Surviving Spouse) contributions toward the cost of coverage will be frozen at the amount of the required participant contribution under the Executive Medical Plan as of June 30, 2014, subject to adjustment as described in subsection (a)(ii) below.

ii. A Vested Participant's or Surviving Spouse's contribution toward the cost of coverage may vary based on the level of coverage (one-person, two or more persons, etc.) in effect.

(b) Life Insurance Coverage. The cost of life insurance coverage will be paid in full by the Company.

4.06 Cessation of Medical Coverage. Eligibility for the continuation of medical benefits pursuant to the Plan will cease if any payment required to be made by the Vested Participant or dependent (for example, participant contributions, copayments or deductibles) is not timely paid in accordance with procedures established by the Company.

ARTICLE 5 SPECIAL COVERAGE PROVISIONS

5.01 Grandfathered Participants. Grandfathered Participants have the right, if otherwise eligible for the Plan at the time of retirement, to elect to be covered: (i) under the terms of the Prior Plan as in effect as of September 30, 2003; or (ii) the Plan as in effect at the time of such

Participant's retirement. Such election will be made pursuant to forms and procedures specified by the Company.

ARTICLE 6 CHANGE IN CONTROL

6.01 Effect of Change in Control. Upon the occurrence of a "change in control" as defined in the Company's Change-In-Control Severance Plan (as in effect at the time of the event), each of the following will occur:

(a) Each Participant will become a "Vested Participant."

(b) The Plan may not be terminated or amended in any manner that adversely affects the benefits of a Participant without his or her consent.

(c) All Participant contributions, co-pays, deductibles and any other participant or dependent cost items will be frozen as of the date of the change in control.

ARTICLE 7 CLAIMS AND APPEALS PROCEDURES

7.01 Claim for Medical or Life Insurance Benefit. A claim or appeal relating to medical benefits under the Plan will be subject to the claims and appeals procedures set forth in the insurance contract through which coverage is provided or the applicable coverage certificate relating to such insurance contract. A claim or appeal relating to life insurance benefits under the Plan will be subject to the claims and appeals procedures set forth in the insurance contract through which such coverage is provided or the applicable coverage certificate relating to such insurance contract.

7.02 Administrative Claims. A claim or appeal relating to eligibility to participate in the Plan, status as a Vested Participant, required contributions or any other claim or appeal that is not a claim or appeal relating to a medical or life insurance benefit under the Plan will be considered an "Administrative Claim" and will be subject to the claims and appeals procedures set forth in this section 7.02. Administrative Claims will be decided by the Corporate Vice President and Chief Human Resources Officer, or his or her delegate, who will be the claims administrator and the appropriate named fiduciary with respect to such claims.

(a) Notice of decision on any Administrative Claim will be furnished to the claimant within 90 days after receipt of the Administrative Claim by the claims administrator. The claims administrator may take one 90 day extension if circumstances warrant.

(b) A claimant whose Administrative Claim is denied in whole or in part will receive written notice of the denial within the timeframe specified in subsection 7.02(a) above setting forth: (i) the specific reasons for the denial; (ii) reference to the specific Plan provisions on which the denial is based; (iii) a description of any additional material or information necessary for the claimant to perfect the Administrative Claim and an explanation of why such material or information is necessary; and (iv) information as to the steps the claimant must take to submit his or her claim for review, including the time limit for submitting the claim for review.

(c) A claimant whose Administrative Claim is denied in whole or in part may request review of the denied Administrative Claim not later than 60 days after receipt of written notification of the denial. A claimant's request for review must be in writing. The claimant may submit written comments, documents, records and other information relating to the Administrative Claim and the claimant will be provided upon request with reasonable access to and copies of documents, records and other information relevant to his or her Administrative Claim. The claims administrator, in his or her sole discretion, will determine whether a document, record or other information is relevant to a claimant's Administrative Claim.

(d) Notice of decision on review of an Administrative Claim will be furnished to the claimant within 60 days after receipt of the request for review by the claims administrator. The claims administrator may take one 60 day extension if circumstances warrant.

(e) A claimant whose Administrative Claim is denied upon review will be furnished with written notice of the denial within the timeframe specified in subsection 7.02(d) above setting forth: (i) the specific reasons for the denial; (ii) reference to the specific Plan provisions on which the denial is based; (iii) a statement that the claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of documents, records and other information relevant to his or her Administrative Claim; and (iv) a statement of the claimant's right to bring an action under section 502(a) of ERISA. The claims administrator, in his or her sole discretion, will determine whether a document, record or other information is relevant to a claimant's Administrative Claim. The decision of the claims administrator on a claimant's request for review shall be final and conclusive.

ARTICLE 8 CONTINUATION OF MEDICAL COVERAGE

8.01 General. In addition to the Surviving Spouse medical coverage described above, Continuation Coverage under the Plan may be purchased after the date medical coverage would ordinarily terminate under the Plan as a result of a Qualifying Event.

8.02 Participant/Beneficiary Notice Requirements. In the case of the Qualifying Events described in subsections 2.09(ii) and (iii) above, the retired Vested Participant or his or her spouse or dependent must provide notice of the occurrence of the Qualifying Event not later than 60 days after the occurrence. Such notice must be provided to the COBRA administrator for the Plan.

8.03 Availability of Continuation Coverage. Upon the occurrence of a Qualifying Event, each Qualified Beneficiary will be offered an opportunity to purchase Continuation Coverage under the Plan. The election to purchase Continuation Coverage must be made during the Continuation Coverage Election Period in such form and manner as the Company prescribes. A Qualified Beneficiary who fails to elect Continuation Coverage during the Continuation Coverage Election Period following a Qualifying Event will not be entitled to elect Continuation Coverage with respect to such Qualifying Event.

8.04 Period of Continuation Coverage. Continuation Coverage as elected by the Qualified Beneficiary will extend for the period beginning on the date of loss of coverage as a result of the Qualifying Event and ending on the earliest of the following dates:

(a) If the Qualifying Event was divorce or legal separation, death of the retired Vested Participant, or loss of dependent child status, 36 months after the date Continuation Coverage began;

(b) If the Qualifying Event was a proceeding in a case under Title 11 of the United States Code: (i) for a Qualified Beneficiary who is the retired Vested Participant, the retired Vested Participant's date of death; (ii) for a Qualified Beneficiary who is the surviving spouse (determined without regard to whether such spouse was married to the Vested Participant at the time of his or her termination of employment with the Company and its affiliates) or dependent child of the retired Vested Participant, 36 months after the date of death of the retired Vested Participant;

(c) The first day for which timely payment for Continuation Coverage is not made with respect to the Qualified Beneficiary as provided in section 8.05 below;

(d) The date upon which the Company ceases to maintain any group health plan;

(e) The date upon which the Qualified Beneficiary first becomes covered under another group health plan after the date Continuation Coverage is elected; provided, Continuation Coverage will not terminate if the other group health plan contains an exclusion or limitation with respect to any preexisting condition that affects the Qualified Beneficiary, unless that limitation or exclusion does not apply to the Qualified Beneficiary because of the requirements of the Health Insurance Portability and Accountability Act of 1996;

(f) The date that the Qualified Beneficiary first becomes entitled to Medicare benefits under Title XVIII of the Social Security Act after the date Continuation Coverage is elected.

Notwithstanding anything herein to the contrary, the Company may terminate the Continuation Coverage of a Qualified Beneficiary on the same basis that the Company terminates medical coverage under the Plan for a similarly situated Participant with respect to whom a Qualifying Event has not occurred.

8.05 Payment for Continuation Coverage.

(a) Each Qualified Beneficiary who has elected to purchase Continuation Coverage will make a monthly payment to the Company in an amount up to 102% of the applicable premium determined by the Company in accordance with Internal Revenue Code Section 4980B(f)(4).

(b) The payment for the period of Continuation Coverage beginning on the date a Qualified Beneficiary would otherwise lose coverage as a result of a Qualifying Event and ending on the last day of the month during which the Qualified Beneficiary elects Continuation Coverage will be due on the date the Qualified Beneficiary elects Continuation Coverage and payment made within forty-five (45) days of such date will be deemed timely payment. The monthly payments for the remainder of the period of Continuation Coverage will be due as of the first day of the month for which the coverage is provided and payment made within thirty (30) days of the due date for each monthly installment will be deemed timely payment.

ARTICLE 9 GENERAL PROVISIONS

9.01 Amendment and Plan Termination. Except as provided in ARTICLE 6, the Company may amend or terminate the Plan at any time for any reason.

9.02 Assignment of Benefits. A Vested Participant or dependent may not, either voluntarily or involuntarily, assign, anticipate, alienate, commute, sell, transfer, pledge or encumber any benefits to which he or she is or may become entitled under the Plan, nor may Plan benefits be subject to attachment or garnishment by any of his or her creditors or to legal process.

9.03 Nonduplication of Benefits. This Section applies if the Company is required to make payments under this Plan to a person or entity other than the payees described in the Plan. In such a case, any coverage due the Participant (or his or her dependent) under the Plan will be reduced by the actuarial value of the coverage extended or payments made to such other person or entity.

9.04 Medicare Primary. Medicare coverage is primary to medical coverage offered pursuant to the Plan. Plan coverage will be secondary to Medicare to the maximum extent permissible under law.

9.05 Funding. Participants have the status of general unsecured creditors of the Company and the Plan constitutes a mere promise by the Company to continue eligibility for executive medical and life insurance coverage pursuant to the terms of the Plan.

9.06 Construction. The Committee will have full and sole discretionary authority to determine eligibility, construe and interpret the terms of the Plan, and determine factual issues, including the power to remedy possible ambiguities, inconsistencies or omissions.

9.07 Governing Law. This Plan will be governed by the law of the State of California, except to the extent superseded by federal law.

9.08 Non-Standard Provisions. The Board or Committee may in their discretion apply eligibility requirements or terms of coverage other than the standard provisions with respect to an individual.

NORTHROP GRUMMAN CORPORATION

By: /s/ Denise Peppard
Denise Peppard
Corporate Vice President and
Chief Human Resources Officer

Date: October 13, 2015

NORTHROP GRUMMAN CORPORATION

EXHIBIT 12(a)

NORTHROP GRUMMAN CORPORATION
COMPUTATION OF RATIOS OF EARNINGS TO FIXED CHARGES

$ in millions	Year Ended December 31				
Earnings:	2016	2015	2014	2013	2012
Earnings from continuing operations before income taxes	$ 2,923	$ 2,790	$ 2,937	$ 2,863	$ 2,965
Fixed Charges:					
Interest expense, including amortization of debt premium	301	301	282	257	212
Portion of rental expenses on operating leases deemed to be representative of the interest factor	99	101	101	99	116
Earnings from continuing operations before income taxes and fixed charges	$ 3,323	$ 3,192	$ 3,320	$ 3,219	$ 3,293
Fixed Charges:	$ 400	$ 402	$ 383	$ 356	$ 328
Ratio of earnings to fixed charges	8.3	7.9	8.7	9.0	10.0

Exhibit 21

NORTHROP GRUMMAN CORPORATION SUBSIDIARIES
Address for all subsidiaries is:
c/o NORTHROP GRUMMAN CORPORATION
Office of the Secretary
2980 Fairview Park Drive
Falls Church, Virginia 22042

Name of Subsidiary	Jurisdiction of Incorporation	Ownership Percentage
Northrop Grumman Systems Corporation	Delaware	100%

The company has additional subsidiaries, which considered in the aggregate or as a single subsidiary, do not constitute a significant subsidiary.

All the above listed subsidiaries have been consolidated in the company's consolidated financial statements.

EXHIBIT 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

Northrop Grumman Corporation
2980 Fairview Park Drive
Falls Church, Virginia 22042

We consent to the incorporation by reference in Registration Statement Nos. 033-59815, 033-59853, 333-67266, 333-100179, 333-107734, 333-121104, 333-125120, 333-127317, and 333-175798 on Forms S-8; and Registration Statement No. 333-196238 on Form S-3; of our reports dated January 30, 2017, relating to the financial statements of Northrop Grumman Corporation and subsidiaries and the effectiveness of Northrop Grumman Corporation and subsidiaries' internal control over financial reporting, appearing in this Annual Report on Form 10-K of Northrop Grumman Corporation for the year ended December 31, 2016.

/s/ Deloitte & Touche LLP
McLean, Virginia

January 30, 2017

Exhibit 24

POWER OF ATTORNEY IN CONNECTION WITH THE
2016 ANNUAL REPORT ON FORM 10-K

KNOW ALL MEN BY THESE PRESENTS, that each of the undersigned directors and officers of NORTHROP GRUMMAN CORPORATION, a Delaware corporation, does hereby appoint SHEILA C. CHESTON and JENNIFER C. MCGAREY, and each of them as his or her agents and attorneys-in-fact (the “Agents”), in his or her respective name and in the capacity or capacities indicated below, to execute and/or file the Annual Report on Form 10-K for the fiscal year ended December 31, 2016 (the “Report”) under the Securities Exchange Act of 1934, as amended (the “Act”), and any one or more amendments to any part of the Report that may be required to be filed under the Act (including the financial statements, schedules and all exhibits and other documents filed therewith or constituting a part thereof) and to any part or all of any amendment(s) to the Report, whether executed and filed by the undersigned or by any of the Agents. Further, each of the undersigned does hereby authorize and direct the Agents to take any and all actions and execute and file any and all documents with the Securities and Exchange Commission (the “Commission”), which they deem necessary or advisable to comply with the Act and the rules and regulations or orders of the Commission adopted or issued pursuant thereto, to the end that the Report shall be properly filed under the Act. Finally, each of the undersigned does hereby ratify each and every act and documents which the Agents may take, execute or file pursuant thereto with the same force and effect as though such action had been taken or such document had been executed or filed by the undersigned, respectively.

This Power of Attorney shall remain in full force and effect until revoked or superseded by written notice filed with the Commission.

IN WITNESS WHEREOF, each of the undersigned has caused this Power of Attorney to be executed as of this 30th day of January 2017.

/s/ Marianne C. Brown **Marianne C. Brown**	Director
/s/ Victor H. Fazio **Victor H. Fazio**	Director
/s/ Donald E. Felsinger **Donald E. Felsinger**	Director
/s/ Ann M. Fudge **Ann M. Fudge**	Director
/s/ Bruce S. Gordon **Bruce S. Gordon**	Director
/s/ William H. Hernandez **William H. Hernandez**	Director
/s/ Madeleine A. Kleiner **Madeleine A. Kleiner**	Director
/s/ Karl J. Krapek **Karl J. Krapek**	Director
/s/ Richard B. Myers **Richard B. Myers**	Director
/s/ Gary Roughead **Gary Roughead**	Director
/s/ Thomas M. Schoewe **Thomas M. Schoewe**	Director
/s/ James S. Turley **James S. Turley**	Director
/s/ Mark A. Welsh, III **Mark A. Welsh, III**	Director
/s/ Wesley G. Bush **Wesley G. Bush**	Chairman, Chief Executive Officer and President (Principal Executive Officer)
/s/ Kenneth L. Bedingfield **Kenneth L. Bedingfield**	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)

NORTHROP GRUMMAN CORPORATION

EXHIBIT 31.1

CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Wesley G. Bush, certify that:

1. I have reviewed this report on Form 10-K of Northrop Grumman Corporation ("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 company as of, and for, the periods presented in this report;
4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company 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 company, 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 company'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 company's internal control over financial reporting that occurred during the company's most recent fiscal quarter (the company's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and
5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company'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 company'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 company's internal control over financial reporting.

Date: January 30, 2017

/s/ Wesley G. Bush

Wesley G. Bush
Chairman, Chief Executive Officer and President

NORTHROP GRUMMAN CORPORATION

EXHIBIT 31.2

CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Kenneth L. Bedingfield, certify that:

1. I have reviewed this report on Form 10-K of Northrop Grumman Corporation ("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 company as of, and for, the periods presented in this report;

4. The company's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company 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 company, 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 company'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 company's internal control over financial reporting that occurred during the company's most recent fiscal quarter (the company's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company'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 company'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 company's internal control over financial reporting.

Date: January 30, 2017

/s/ Kenneth L. Bedingfield

Kenneth L. Bedingfield
Corporate Vice President and Chief Financial Officer

NORTHROP GRUMMAN CORPORATION

EXHIBIT 32.1

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 Annual Report of Northrop Grumman Corporation (the “company”) on Form 10-K for the year ended December 31, 2016, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Wesley G. Bush, Chairman, Chief Executive Officer and President 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.

Date: January 30, 2017

/s/ Wesley G. Bush
Wesley G. Bush
Chairman, Chief Executive Officer and President

NORTHROP GRUMMAN CORPORATION

EXHIBIT 32.2

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 Annual Report of Northrop Grumman Corporation (the "company") on Form 10-K for the year ended December 31, 2016, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Kenneth L. Bedingfield, Corporate 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.

Date: January 30, 2017

/s/ Kenneth L. Bedingfield

Kenneth L. Bedingfield
Corporate Vice President and Chief Financial Officer