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, 2019 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 1-13699

RAYTHEON COMPANY
(Exact Name of Registrant as Specified in its Charter)

Delaware	95-1778500
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

870 Winter Street, Waltham, Massachusetts 02451
(Address of Principal Executive Offices) (Zip Code)
(781) 522-3000
(Registrant's telephone number, including area code)

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, $0.01 par value	RTN	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 Section 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 for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

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

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

Large Accelerated Filer	☒	Accelerated Filer	☐	Non-accelerated Filer	☐	Smaller Reporting Company	☐
Emerging Growth Company	☐						

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

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

The aggregate market value of the voting stock held by non-affiliates of the Registrant as of June 28, 2019 was approximately $48.3 billion.

The number of shares of Common Stock outstanding as of February 10, 2020 was 278,441,000.

Documents incorporated by reference and made a part of this Form 10-K:

Portions of the Registrant's Definitive Proxy Statement for its 2020 Annual Meeting of Stockholders or an amendment on Form 10-K/A are incorporated by reference in Part III of this Form 10-K.

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PART I

ITEM 1. BUSINESS

General

Raytheon Company, together with its subsidiaries, is a technology and innovation leader specializing in defense and other government markets throughout the world. The terms "we," "us," "our," "Raytheon" and the "Company" mean Raytheon Company and its subsidiaries, unless the context indicates another meaning. We develop technologically advanced and integrated products, services and solutions in our core markets: integrated air and missile defense; electronic warfare; command, control, communications, computers, cyber, intelligence, surveillance and reconnaissance; space systems; effects; and cyber. We serve both domestic and international customers primarily as a prime contractor or subcontractor on a broad portfolio of defense and related programs for government customers.

We were founded in 1922 and have grown internally and through a number of acquisitions. We are incorporated in the state of Delaware. Our principal executive offices are located at 870 Winter Street, Waltham, Massachusetts 02451.

Proposed Merger with United Technologies Corporation (UTC)

On June 9, 2019, we entered into an Agreement and Plan of Merger (the Merger Agreement) with UTC and Light Merger Sub Corp., a wholly-owned subsidiary of UTC (Merger Sub). Under the terms and subject to the conditions set forth in the Merger Agreement, Merger Sub will merge with and into Raytheon (the Merger) with Raytheon surviving the Merger as a wholly-owned subsidiary of UTC. At the effective time of the Merger (the Effective Time), each share of common stock of Raytheon issued and outstanding immediately prior to the Effective Time (except for shares held by Raytheon as treasury stock) will be converted into the right to receive 2.3348 shares of common stock of UTC (and, if applicable, cash in lieu of fractional shares), less any applicable withholding taxes. At the Effective Time, Raytheon's stockholders will hold approximately 43%, and UTC's stockholders will hold approximately 57%, of the outstanding shares of common stock of UTC.

The Merger Agreement also provides that, prior to the consummation of the Merger, UTC will complete the previously announced separation of its commercial businesses, Otis and Carrier, from its other businesses (the Separation), and the pro rata distributions to its stockholders of 100% of the common stock of the entity holding the Otis business and 100% of the common stock of the entity holding the Carrier business (the Distributions).

The Merger was approved by Raytheon's stockholders at a special meeting of Raytheon's stockholders held on October 11, 2019. The issuance of shares of UTC Common Stock in connection with the Merger was approved by UTC's stockholders at a special meeting of UTC's stockholders held on October 11, 2019.

For more information refer to "Note 2: Proposed Merger with United Technologies Corporation (UTC)" within Item 8 of this Form 10-K.

In this section, we describe our business, including our business segments, product lines, customers, operations and other considerations.

Business Segments

We operate in five business segments:
- Integrated Defense Systems;
- Intelligence, Information and Services;
- Missile Systems;
- Space and Airborne Systems; and
- Forcepoint.

The following is a description of each of our business segments. As part of the description, we include a discussion of some of the segment's notable initiatives and achievements in 2019, such as certain key contract awards and new product introductions.

Integrated Defense Systems (IDS)—IDS, headquartered in Tewksbury, Massachusetts, is a leader in integrated air and missile defense; large land- and sea-based radar solutions; command, control, communications, computers, cyber and intelligence solutions; naval combat and ship electronic and sensing systems; and undersea sensing and effects solutions. IDS delivers combat-proven performance against the complete spectrum of airborne and ballistic missile threats and is a world leader in the technology, development, and production of sensors and mission systems. IDS provides solutions to the U.S. Department of Defense (DoD), and more than 50 international customers which represent more than half of IDS's business.

In 2019, IDS booked several significant awards to provide advanced Patriot® Air and Missile Defense (A&MD) systems and National Advanced Surface-to-Missile Systems (NASAMS™). IDS was awarded contracts to provide Patriot A&MD and NASAMS systems to Qatar, contracts to provide additional Patriot A&MD systems to the U.S. Army and other international customers, and a contract to provide NASAMS for the Commonwealth of Australia. IDS was instrumental in Raytheon being selected to provide the U.S. Army with their next generation 360-degree capable radar, the Lower Tier Air and Missile Defense Sensor (LTAMDS). LTAMDS is a new radar that is designed to ultimately replace the current U.S. Army's Patriot radars. LTAMDS is managed as a Corporate project and as a result, the related net expenses are not included in management's evaluation of IDS's segment results. In addition, the U.S. Navy awarded IDS options to continue to produce the low-rate initial production Air and Missile Defense Radar (AMDR) units for the DDG-51 class of warships. IDS also received an award to provide Guidance Enhanced Missiles (GEM-T) for an international customer and awards for the Army Navy/Transportable Radar Surveillance-Model 2 (AN/TPY-2) radar program for the Kingdom of Saudi Arabia (KSA).

IDS has the following principal product lines:

Integrated Air and Missile Defense (IAMD)—IAMD provides combat-proven air and missile defense systems, including the Patriot A&MD system which is the cornerstone of the air and missile defense architecture for 17 nations around the world, including the U.S. and seven NATO nations. The NASAMS, also offered by IAMD, is a highly adaptable mid-range solution for any operational air defense requirement. It is deployed in the U.S. and ten other nations around the world. IAMD was also instrumental in Raytheon being selected to provide the U.S. Army with LTAMDS. For segment reporting purposes, the costs related to the LTAMDS project are presented as part of Corporate and other unallocated costs as discussed above. Total sales from IAMD were approximately 10% of our consolidated revenues for 2019, 2018 and 2017.

Mission Systems and Sensors (MSS)—MSS provides integrated whole-life air and missile defense systems. MSS produces systems and solutions, including early warning radar, the AN/TPY-2, the Multi-Function Radio Frequency System (MFRFS), and other land-based surveillance and search radars, which provide threat detection, precision tracking, discrimination and classification of ballistic missile threats. In addition, MSS provides command, control, communications, computers, cyber and intelligence solutions through the development, delivery and support of complex integrated, networked, actionable combat command and control solutions for air and land combat commanders. MSS also provides tailored capabilities to deliver Air Defense Operations Centers (ADOC) for integrated command and control, fire direction and weapons systems and sensors to our global customers. Key MSS customers include the U.S. Army and Air Force, the Missile Defense Agency (MDA), and international customers.

Seapower Capability Systems (SCS)—SCS is a provider and integrator of maritime air and missile defense radar systems, naval combat management, and anti-submarine and mine warfare systems, as well as sensors, maritime naval navigation systems, and torpedoes for U.S. and international navies. SCS provides the low-rate initial production AMDR units, designated as AN/SPY-6, for the U.S. Navy's DDG 51 class of warships. SCS's contracts with the U.S. Navy also include Enterprise Air Surveillance Radar (EASR) for aircraft carriers and amphibious warfare ships, and, in the anti-submarine warfare area, a new variable depth sonar solution for the littoral combat ship class. In addition, as a ship integrator for the U.S. Navy, SCS provides mission systems equipment and combat and missions system integration for the following ship classes: DDG 1000 destroyers; LPD 17 amphibious warfare ships; and CVN 78 aircraft carriers. SCS also provides the innovative undersea mine neutralization system known as Barracuda for the U.S. Navy.

IDS also includes the Advanced Technology (AT) product line, which executes contract research and development programs primarily with the Office of Naval Research (ONR), the Strategic Capabilities Office (SCO) and the Defense Advanced Research Projects Agency (DARPA) in advanced materials, semiconductors such as Gallium Nitride (GaN) and next-generation systems such as Flexible Digital Array Radar (FlexDAR) and Cross Domain Maritime Surveillance and Targeting (CDMaST), to support Raytheon product lines. AT also pursues attractive adjacent growth markets such as undersea warfare and directed energy. In addition, IDS works closely with the U.S. government research labs including ONR, MIT Lincoln Labs and DARPA.

Intelligence, Information and Services (IIS)—IIS, headquartered in Dulles, Virginia, provides a full range of technical and professional services to intelligence, defense, federal and commercial customers worldwide. IIS specializes in global Intelligence, Surveillance and Reconnaissance (ISR); navigation; DoD space and weather solutions; cybersecurity; analytics; training; logistics; mission support; advanced software-based complex systems; automation and sustainment solutions; and international and domestic Air Traffic Management (ATM) systems. Key customers include the U.S. Intelligence Community, the DoD, the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration (NOAA), the Department of Homeland Security (DHS), NASA and a number of international customers.

During 2019, IIS won a number of contracts, including multi-year contracts to develop and deploy a mission-critical, advanced Cyber Security Operations Center (CSOC) and related services for a country in the Middle East and North Africa (MENA) region and a low-rate initial production award to outfit the U.S. Navy's nuclear-powered aircraft carriers and amphibious assault ships with Joint Precision Approach and Landing Systems (JPALS). In addition to these wins, IIS continued to grow its classified business in both cyber and space, receiving a number of significant contracts. In the first quarter of 2019 we acquired an additional 10% equity ownership in the Range Generation Next LLC (RGNext) joint venture, increasing our equity ownership to 60% and giving us control of RGNext operations.

Effective July 1, 2019, IIS combined and reorganized the previous Global Intelligence Solutions (GIS), Mission Support and Modernization (MSM), and Navigation, Weather and Services (NWS) product lines to form the C2, Space and Intelligence (CSI) product line and the Navigation and Modernization Solutions (NMS) product line to align similar capabilities and solutions. IIS has the following principal product lines:

C2, Space and Intelligence (CSI)—CSI combines space and intelligence mission support with an expanding portfolio of command and control solutions, such as large-scale data processing and exploitation, storage architectures, and high-performance data handling and processing systems, offering customers the ability to seamlessly operate across every domain, sharing and exploiting data as quickly as it can be collected. CSI serves the U.S. Intelligence Community, the DoD, and civil federal agencies. In addition to numerous classified programs, CSI key programs include integrating commercial software methods and solutions into the U.S. Air Force's Air and Space Operations Center (AOC) and the Joint Polar Satellite System (JPSS), which supports multiple civil, defense and international polar-orbiting environmental satellites.

Cybersecurity and Special Missions (CSM)—CSM provides broad cyber domain capabilities and advanced solutions to strengthen critical systems and support mission execution. CSM designs, implements and integrates customized cyber products and services and quick-reaction solutions. In addition, CSM provides high-consequence special mission support for the U.S. Intelligence Community, the DoD, civil federal agencies, international governments and commercial enterprises. Raytheon leverages and incorporates CSM cyber capabilities across the Company.

Global Training Solutions (GTS)—GTS provides integrated operational training through comprehensive support for live, virtual and constructive training exercises and operations, maintenance for training and range systems, curriculum development and instruction, management oversight and administration for contractor activities, and supply support for government-owned property and material. Previously, GTS provided these services principally under the Warfighter Field Operations Customer Support (Warfighter FOCUS) contract with the U.S. Army, which largely transitioned to a number of competitively awarded replacement programs throughout 2019. GTS will participate in some of the planned replacement programs; however, some of the work has been awarded to other contractors. GTS also provides critical commercial training solutions through Raytheon Professional Services for both domestic and international customers.

Navigation and Modernization Solutions (NMS)—NMS combines airspace and mission systems modernization and product support efforts, primarily supporting programs for NASA, the DoD and the FAA by implementing secure environmental and navigation ground solutions and data processing. NMS capabilities include ground systems for command and control of space assets, and domestic and international ATM. Key programs include the ATM solution Standard Terminal Automation Replacement System (STARS), the JPALS, the Global Positioning System Next Generation Operational Control System (GPS-OCX). NMS also develops advanced ground stations to control unmanned systems, such as Global Hawk®, and provides cyber-resiliency and avionics solutions for a wide range of aircraft, including the V-22, CH-53 and HH-60. Through its RGNext joint venture, NMS provides operation and mission support to U.S. Air Force space launch and U.S. Army test facilities. NMS also delivers product support services for other Raytheon business segments, including system deployment, installation and integration, logistics and training for military and civil customers in over 80 countries.

IIS also operates the Cyber Operations, Development and Evaluation (CODE) Center, an advanced cyber range in which the Company integrates our capabilities and demonstrates, tests and assesses new cyber products and services to determine how they can best integrate into a customer's CSOC. IIS leverages CODE Center capabilities to drive both internal and external research and development with Governmental entities and commercial cyber protection companies.

Missile Systems (MS)—MS, headquartered in Tucson, Arizona, designs, develops, integrates and produces missile and combat systems for the armed forces of the U.S. and allied nations. Leveraging its capabilities in advanced airframes, guidance and navigation systems, high-resolution sensors, surveillance, hypersonic systems, targeting and netted systems, MS provides and supports a broad range of advanced weapon systems including missiles, smart munitions, close-in weapon systems, projectiles, kinetic kill vehicles, directed energy effectors and advanced combat sensor solutions. Key customers include the U.S. Navy, Army, Air Force and Marine Corps, the MDA, and the armed forces of more than 50 allied nations.

In 2019, MS continued to capture key contract awards from a broad global customer base, including a multi-year award for the Standard Missile-6 (SM-6®), Standard Missile-3 (SM-3®), Advanced Medium-Range Air-to-Air Missile (AMRAAM®), AIM 9-X Sidewinder short-range air-to-air missile, the next generation development of the Evolved Seasparrow Missile (ESSM®), Phalanx®, Tomahawk cruise missile development and production, the U.S. Air Force's Long Range Standoff (LRSO) program, the U.S. Navy's over-the-horizon weapon system (the Naval Strike Missile, or NSM) and a number of classified and unclassified awards in hypersonic, sensor, undersea warfare and missile defense technologies. MS also completed successful flight tests on the SM-3, SM-6, Exoatmospheric Kill Vehicle (EKV), Rolling Airframe Missile (RAM™), Tomahawk and StormBreaker™ programs.

Air Warfare Systems (AWS)—AWS products and services enable the U.S. Armed Forces and international customers to attack, suppress and destroy air-, sea- and ground-based targets. Products include the AMRAAM, a state-of-the-art, highly dependable and battle-proven air-to-air missile that also has a surface-to-air launch application; the Tomahawk cruise missile, an advanced surface- or submarine-launched cruise missile with loitering and network communication capability; StormBreaker, an air-to-ground glide weapon designed to engage moving targets in adverse weather and through battlefield conditions; the Joint Standoff Weapon (JSOW®), a family of air-to-ground weapons that employ an integrated GPS/inertial navigation system that guides the weapon to the target; the Paveway™ family of laser and GPS precision guided munitions; the AIM-9X Sidewinder short-range air-to-air missile; the Miniature Air Launched Decoy-Jammer (MALD®-J), a high endurance electronic warfare decoy/jammer used to deceive and degrade air defenses; the High-Speed Anti-Radiation Missile (HARM®); the Maverick® precision strike missile; and the Griffin®, a small lightweight missile that can be employed from aircraft, unmanned aerial vehicles, ships or ground-launched against light targets. Also, AWS partners with Kongsberg Defence Systems on the NSM and the Joint Strike Missile (JSM), which are over-the-horizon anti-surface warfare and land attack weapons systems to be used on various aircraft platforms and ship classes. Total sales from AWS were approximately 10% of our consolidated revenues for 2019, 2018, and 2017.

Strategic and Naval Systems (SNS)—SNS designs, develops, produces, and supports air and missile defense interceptor systems along with highly effective, layered ship defense systems for U.S. Armed Forces and more than 30 allied countries across multiple platforms to counter the threats of today and tomorrow. SNS's primary customers are the MDA and the U.S. Navy as well as various international customers. The SNS portfolio includes the Standard Missile family of products with capabilities including sea- and land-based endo- and exoatmospheric defense against short- and intermediate-range ballistic missiles and tri-mission defense against air, surface and ballistic missile threats. The product line designs, develops, integrates, manufactures, and supports the Phalanx Close-In Weapon System (CIWS), employed on land and at sea; and the RAM and Launcher System, the SeaRAM® system, and the ESSM® family of missiles all protecting ships against air, subsurface and surface cruise/ballistic missile threats. In addition, SNS's contracts with the MDA include sustainment of the EKV, which is the primary weapon payload of the Ground Based Interceptor (GBI) for ballistic missile defense. SNS continues to leverage its strategic international cooperative partnerships to evolve its existing products and technologies with a goal of addressing the full spectrum of threats to both the U.S. and our allies. Total sales from SNS were approximately 10% of our consolidated revenues for 2019, 2018, and 2017.

Land Warfare Systems (LWS)—LWS provides precision missiles and munitions, advanced electro-optical/infrared (EO/IR) sensors, and integrated mission solutions in the land domain for the U.S. Army and Marine Corps, and the militaries of more than 50 allied nations. LWS capabilities are designed to provide warfighters the situational awareness and lethality they need to overmatch and defeat evolving complex threats. The LWS portfolio includes the Tube-launched, Optically-tracked, Wireless-guided (TOW®) weapon system, a long-range precision anti-armor/anti-fortification/anti-amphibious-landing weapon system, Javelin, a man-portable anti-tank missile in partnership with Lockheed Martin, and the Excalibur® precision artillery munition, which is a GPS-guided round providing indirect precision fire for ground forces. LWS also includes the 3rd Generation Forward Looking Infrared (FLIR), which leverages proven sensor technology to provide the warfighter with high-definition resolution and magnification of target images in darkness and in a range of adverse environmental conditions and produces an unmanned aircraft system (UAS) called Coyote®, which is a multi-purpose solution for ISR, Counter-UAS, and strike missions.

Advanced Missile Systems (AMS)—AMS focuses on the development and early introduction of next-generation, end-to-end system solutions that are designed to support the MS customer base including the U.S. Air Force, Navy, Army, MDA, DARPA, the ONR, the Air Force Research Laboratory (AFRL), and the SCO. AMS develops and demonstrates systems and technologies aimed to solve customer problems in all mission areas and then transitions more mature products or families of products to one of the other MS product lines or other business segments before those products enter the production phase of their life cycle. AMS is engaged in opportunities involving the transition from weapon development to warfighter fielding in the areas of next generation missile systems, hypersonic and counter-hypersonic weapons, long range strike weapons, UAS, non-kinetic solutions, space applications, undersea warfare and collaborative weapon technologies.

Space and Airborne Systems (SAS)—SAS, headquartered in McKinney, Texas, is a leader in the design, development and manufacture of integrated sensor and communication systems for advanced missions. These missions include intelligence, surveillance and reconnaissance; precision engagement; manned and unmanned aerial operations; and space. Leveraging state-of-the-art technologies, mission systems and domain knowledge, SAS designs, manufactures, supports and sustains civil and military electro-optical/infrared (EO/IR) sensors; airborne radars for surveillance and fire control applications; lasers; precision guidance systems; signals intelligence systems; processors; electronic warfare systems; tactical and strategic communications; and space-qualified systems. Key customers are the U.S. Navy, Air Force, and Army, international allies and classified customers.

In 2019, SAS was selected to develop and deliver a new active electronically scanned array (AESA) radar for Boeing's B-52 bomber. In addition, the U.S. Marine Corps selected SAS's APG-79(v)4 AESA radar for its F/A-18C/D classic Hornet fleet. SAS was awarded a contract by the U.S. Air Force to develop two prototype high-energy laser (HEL) counter-UAS for a year-long overseas deployment. SAS also delivered its first Next Generation Jammer (NGJ) Mid-Band pod to the U.S. Navy for ground and aircraft integration testing, and received a follow-on award for the NGJ program for the U.S. Navy. In addition, SAS received a contract to build the Geostationary Littoral Imaging and Monitoring Radiometer sensor for NASA. This new sensor will create highly detailed views of physical and biological conditions in coastal waters. SAS was also awarded a number of classified contracts in intelligence, surveillance and reconnaissance, space protection, electronic warfare and signals intelligence.

SAS has the following principal product lines:

Intelligence, Surveillance and Reconnaissance Systems (ISRS)—ISRS designs, develops and manufactures a wide array of advanced Multispectral EO/IR sensors, light-sensing focal plane arrays, advanced visible and infrared sensors, AESA and mechanically scanned radars and various integrated airborne intelligence, surveillance, and reconnaissance systems solutions to provide customers with actionable information for strike, persistent surveillance and special mission platforms. These systems perform detection, identification, tracking, targeting, navigation, weather, and situational awareness tasks on a variety of airborne platforms, including maritime, littoral and overland patrol aircraft, unmanned aerial systems, and other tactical, attack and transport rotary- and fixed-wing aircraft. Key ISRS programs include the F-35 next-generation Electro-Optical Distributed Aperture System (EODAS); Multi-Spectral Targeting Systems (MTS) on numerous unmanned and manned aircraft; the Silent Knight Terrain Following/Terrain Avoiding radar for rotary-wing platforms; and an international classified program.

Secure Sensor Solutions (S^3)—S^3 designs, manufactures and develops cost-effective, high-performance integrated sensor solutions for tactical and strategic platforms, which deliver trusted, actionable information for mission assurance. S^3 provides integrated advanced fire control radars to customers, including the U.S. Navy, Marine Corps, and Air Force and international governments. S^3 produces AESA radars for the U.S. Air Force's F-15 and B-2 aircraft, the U.S. Navy's F/A-18E/F and EA-18G, the U.S. Marine Corps' F/A-18C/D and radars for several international customers. S^3 develops Airborne Early Warning & Reconnaissance Systems (AEWRS) across multiple platforms, for U.S. and international customers, including the Global Hawk and U2. S^3 also develops sophisticated anti-jam GPS solutions for many customers and provides a wide range of state-of-the-art product families and engineering services for the DoD's response to dynamic threat environments.

Electronic Warfare Systems (EWS)—EWS designs and manufactures cost-effective, high-performance electronic warfare systems and equipment for strategic and tactical aircraft, helicopters, surface ships and ground forces for the U.S. Air Force, Army, Navy, Special Operations Forces, and intelligence agencies and international governments. EWS products deliver a range of non-kinetic effects ranging from radar jamming to information operations. The EWS portfolio includes the Next Generation Jammer (NGJ) program, the HEL Weapon Systems for Counter-UAS and Precision Strike program, integrated electronic warfare suites, development of electronic warfare planning and management tools (EW PMT), the Multi-function Integrated Receiver/Exciter System (MFIRES) product family, advanced classified programs, and products which include towed decoys, radar warning receivers, radar and communications countermeasures and missile warning sensors.

Integrated Communication Systems (ICS)—ICS is a market leader in tactical airborne communications, software-defined radio technology, advanced tactical and protected networking, protected tactical satellite communication (SATCOM) terminals and cryptology and real-time sensor networking. The ARC-231 radio is deployed on U.S. and international rotary-wing platforms and fixed-wing aircraft. The Vinson/ANDVT Cryptology Modernization (VACM) family of products provides secure communications for U.S. and international customers. ICS is the only producer of Advanced Extremely High Frequency (AEHF) satellite terminals for all U.S. military branches, providing protected, highly secure SATCOM terminals for the U.S. military, including the Navy Multiband Terminal (NMT) and the Air Force Family of Advanced Beyond Line of Sight Terminal (FAB-T) and related ground terminals, Global Aircrew Strategic Network Terminal (Global ASNT) and the Army Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T).

Space Systems (SS)—SS designs and manufactures space and space-qualified sensor payloads for large national programs and develops innovative solutions for emerging commercial, intelligence, defense and civil space applications. SS provides EO/IR, radio frequency (RF), radar and laser space-based sensors to customers, including the DoD, MDA, NASA, classified and commercial customers, and international governments. SS also provides the Visible Infrared Imaging Radiometer Suite (VIIRS), an advanced imaging and radiometric sensor for NASA and NOAA weather/environmental monitoring programs.

Advanced Concepts Technology (ACT), an innovation incubator, is also part of SAS. ACT conducts both internal and contract research and development for customers, including the AFRL and DARPA. ACT produces cutting-edge products and capabilities, including next-generation all-weather millimeter wave targeting radars, advanced mission system architecture, electro-optical (EO) and RF technologies, advanced speech recognition with natural language understanding, and systems exploiting acoustic phenomenology. In addition, BBN Technologies within ACT develops technology to direct and control swarms of small, autonomous air and ground vehicles for DARPA.

Forcepoint—Forcepoint, headquartered in Austin, Texas, develops cybersecurity products serving commercial and government organizations worldwide. Forcepoint was created in May 2015 as a joint venture of Raytheon and Vista Equity Partners that brought together the capabilities of the legacy Raytheon Cyber Products (RCP) and Websense, Inc. (Websense) businesses. On November 18, 2019, Raytheon acquired Vista Equity Partners' interest in Forcepoint, such that Forcepoint is now wholly owned by Raytheon. Refer to "Note 11: Redeemable Noncontrolling Interests" within Item 8 of this Form 10-K for additional information. Forcepoint delivers a portfolio of human-centric cybersecurity capabilities that incorporate behavior based insights, including risk adaptive data loss prevention; user and entity behavior analytics (UEBA) and cloud access security broker (CASB) capabilities; insider threat solutions; next-generation firewall (NGFW) technology; cloud and on premise web and email security; and cross domain transfer products. Forcepoint's customers deploy its software products on standard servers, mobile endpoints or other information technology hardware, including Forcepoint optimized appliances, as a software-as-a-service (otherwise referred to as a cloud-based or cloud service) offering, or in a hybrid hardware/cloud configuration. Forcepoint's customers include large enterprises, small- and medium-sized businesses and both domestic and international government agencies.

Forcepoint has the following principal product lines:

Global Governments and Critical Infrastructure—In addition to providing the full suite of Forcepoint products to government customers, Global Governments and Critical Infrastructure provides a suite of cross domain and insider threat technologies designed to enable defense, intelligence and civilian agencies to securely and efficiently access and transfer data, including streaming video, across multiple domains. In addition, Forcepoint provides these technologies to critical infrastructure customers. Global Governments and Critical Infrastructure products are deployed primarily in high assurance environments.

Enterprise Security—Enterprise Security consists of the User and Data Security solution area and the Cloud Access and Network Security solution area. User and Data Security provides risk adaptive data loss prevention; UEBA; and insider threat security products. Forcepoint's data loss prevention suite of products extend data security control solutions to enterprise cloud applications, end user software applications and sensitive data and intellectual property on laptops, both on- and off-network, and include dynamic data protection, which allows automated enforcement at the individual level driven by analytics-defined risk indicators. Forcepoint's UEBA products analyze large amounts of data to assess risk. Forcepoint's insider threat suite of products spans analytics, insider threat, advanced threat protection and related security features. Cloud Access and Network Security solutions provide a range of appliances that consolidate multiple security capabilities and deliver real-time security functionality, including content security and firewall capabilities. The content security solutions integrate Forcepoint's web, email, filtering, and NGFW technologies into a single security architecture that may be deployed in the cloud, on premise (e.g. a proxy server or firewall) and in a hybrid environment. In addition, Forcepoint's CASB product provides visibility, access and control as users interact with data in cloud applications. The firewall products consist of the Forcepoint NGFW and the Forcepoint Sidewinder proxy firewall products. The Forcepoint NGFW product provides software and hardware solutions that focus on high-availability, centralized management and policy deployment across large networks and protection from advanced evasion techniques. The Forcepoint Sidewinder product provides proxy-based firewall software and hardware solutions, designed to allow for clear visibility and control of command filtering, protocol enforcement and application access.

In addition to the principal product lines, Forcepoint provides consulting services of certified engineers who assess, plan, design, analyze and optimize security solutions for its customers' business environments.

Sales to the U.S. Government

(In millions, except percentages)	**2019**	2018	2017
Sales to the U.S. government[(1)]	**$ 20,111**	$ 18,447	$ 16,860
Sales to the U.S. government as a percentage of Total Net Sales[(1)]	**69%**	68%	67%
Foreign military sales through the U.S. government	**$ 4,198**	$ 3,502	$ 3,311
Foreign military sales through the U.S. government as a percentage of Total Net Sales	**14%**	13%	13%

(1) Excludes foreign military sales through the U.S. government.

Our principal U.S. government customer is the DoD; other U.S. government customers include U.S. Intelligence Community agencies, NASA, the DHS and the FAA.

U.S. Government Contracts and Regulation

We act as a prime contractor or major subcontractor for numerous U.S. government programs. As a result, we are subject to extensive regulations and requirements of the U.S. government agencies and entities that govern these programs, including with respect to the award, administration and performance of contracts under such programs. We are also subject to certain unique business risks associated with U.S. government program funding and appropriations, U.S. government contracts, and supplying technologically-advanced, cutting-edge defense-related products and services to the U.S. government.

U.S. government contracts generally are subject to the Federal Acquisition Regulation (FAR), which sets forth policies, procedures and requirements for the acquisition of goods and services by the U.S. government; department-specific regulations that implement or supplement the FAR, such as the DoD's Defense Federal Acquisition Regulation Supplement (DFARS); and other applicable laws and regulations. These regulations impose a broad range of requirements, many of which are unique to government contracting, including various procurement, import and export, security, contract pricing and cost, contract termination and adjustment, audit and product integrity requirements. A contractor's failure to comply with these regulations and requirements could result in reductions to the value of contracts, contract modifications or termination, cash withholds on contract payments, forfeiture of profits, and the assessment of penalties and fines, and could lead to suspension or debarment, for cause, from U.S. government contracting or subcontracting for a period of time. In addition, government contractors are also subject to routine audits and investigations by U.S. government agencies such as the Defense Contract Audit Agency (DCAA) and Defense Contract Management Agency (DCMA). These agencies review a contractor's performance under its contracts, cost structure and compliance with applicable laws, regulations and standards. The DCAA and DCMA also review the adequacy of and a contractor's compliance with its internal control systems and policies, including the contractor's accounting, purchasing, property, estimating, earned value management and material management accounting systems. For a discussion of certain risks associated with compliance with U.S. government contract regulations and requirements, see Item 1A of this Form 10-K.

U.S. government contracts include both cost reimbursement and fixed-price contracts. Cost reimbursement contracts, subject to a contractual cost-ceiling amount in certain cases, provide for the reimbursement of allowable costs plus the payment of a fee. These contracts fall into three basic types: (1) cost-plus fixed fee contracts which provide for the payment of a fixed fee irrespective of the final cost of performance; (2) cost-plus incentive fee contracts which provide for increases or decreases in the target incentive fee, within specified limits, based upon actual cost results compared to contractual cost targets; and (3) cost-plus award fee contracts which provide for the payment of an award fee determined at the discretion of the customer based upon the performance of the contractor against pre-established criteria. Under cost reimbursement contracts, the contractor is reimbursed periodically for allowable costs and is paid a portion of the fee based on contract progress. Some costs incidental to performing contracts have been made partially or wholly unallowable for reimbursement by statute, the FAR or other regulation. Examples of such costs include charitable contributions, certain merger and acquisition costs, lobbying costs, interest expense and certain litigation defense costs. We also classify time-and-materials (T&M) contracts as cost reimbursement contracts as they are typically used to cover certain contract costs plus a set amount of fee.

Fixed-price contracts are predominantly either firm fixed-price (FFP) contracts or fixed-price incentive (FPI) contracts. Under FFP contracts, the contractor agrees to perform a specific scope of work for a fixed price and as a result, benefits from cost savings and carries the burden of cost overruns. Under FPI contracts, the contractor shares with the U.S. government savings accrued from contracts performed for less than target costs and costs incurred in excess of target costs up to a negotiated ceiling price (which is higher than the target costs) and carries the entire burden of costs exceeding the negotiated ceiling price. Accordingly, under such contracts, the contractor's profit may also be adjusted up or down depending upon whether specified cost objectives are met. Under FFP and FPI type contracts, the contractor usually receives either negotiated performance-based payments (PBPs) or monthly progress payments from the U.S. government generally in amounts equaling 80% of costs incurred under U.S. government contracts. The remaining amount, including profits or incentive fees, is billed upon delivery and acceptance of end items under the contract. The DoD has expressed a preference to utilize FPI as opposed to FFP contracts. In the event we experience a greater proportion of FPI contracts and/or progress payments for our fixed-price DoD contracts in the future than historically, it could have an adverse effect on our operating margins, cash flow and liquidity. For a discussion of certain risks associated with fixed-price and cost reimbursement contracts and risks associated with changes in U.S. government procurement rules, regulations and business practices, see Item 1A of this Form 10-K.

U.S. government contracts generally also permit the government to terminate the contract, in whole or in part, without prior notice, at the U.S. government's convenience or for default based on performance. If a contract is terminated for convenience, the contractor is generally entitled to payments for its allowable costs and will receive some allowance for profit on the work performed. If a contract is terminated for default, the contractor is generally entitled to payments for its work that has been accepted by the U.S. government, but a termination arising out of our default could expose us to liability and have a negative impact on our ability to obtain future contracts and orders. The U.S. government's right to terminate its contracts has not had a material adverse effect upon our operations, financial condition or liquidity. For a discussion of the risks associated with the U.S. government's right to terminate its contracts, see Item 1A of this Form 10-K.

U.S. government programs generally are implemented by the award of individual contracts and subcontracts. Congress generally appropriates funds on a fiscal year basis even though a program may extend across several fiscal years. Consequently, programs are often only partially funded initially and additional funds become contractually obligated only if Congress makes further appropriations. The contracts and subcontracts under a program generally are subject to termination for convenience or adjustment if appropriations for such programs are not available or change. The U.S. government is required to equitably adjust a contract price for additions or reductions in scope or other changes ordered by it. For a discussion of the risks associated with program funding and appropriations, see Item 1A and "Overview" within Item 7 of this Form 10-K. In addition, because we are engaged in supplying technologically-advanced, cutting-edge defense-related products and services to the U.S. government, we are subject to certain business risks, some of which are specific to our industry. These risks include: (1) the cost and ability to attract and retain trained, skilled and qualified employees; (2) the uncertainty and instability of prices and supply of raw materials and components; (3) the problems associated with advanced designs, which may result in unforeseen technological difficulties and cost overruns; (4) the intense competition and the constant necessity for improvement in facility utilization and personnel training; and (5) the impact of potential security and cyber threats. Our sales to the U.S. government may be affected by changes in procurement policies, budget considerations, changing priorities for national defense, global political environments and other factors. See Item 1A and “Overview” within Item 7 of this Form 10-K for a more detailed discussion of these and other related risks.

International Sales

(In millions, except percentages)		2019		2018		2017
Total international sales[(1)]	**$**	**8,582**	$	8,105	$	8,085
Total international sales as a percentage of Total Net Sales[(1)]		**29%**		30%		32%

(1) Includes foreign military sales through the U.S. government of $4,198 million, $3,502 million and $3,311 million in 2019, 2018 and 2017, respectively.

Our international sales are conducted through Raytheon Company and certain U.S. and international subsidiaries. For example, Raytheon Systems Limited (RSL), a U.K. subsidiary, provides a wide range of products and services, most notably with our MS, SAS and IIS business segments, to commercial, defense and other government customers in the U.K. and globally. Raytheon Australia delivers integrated solutions to the Australian Defence Force, most notably with our IDS and IIS business segments. Generally, we internally fund our international subsidiary working capital requirements in the applicable countries. In connection with certain international sales, we utilize the services of sales representatives who are paid commissions in return for services rendered, and international consultants and advisors who are typically paid a fixed retainer fee. Our Forcepoint business segment also sells certain products and services, both domestically and internationally, primarily through a network of distributors and value-added resellers.

Sales and income from international operations and investments are subject to U.S. government laws, regulations and policies, including the International Traffic in Arms Regulations (ITAR), the Export Administration Regulations (EAR) and the Foreign Corrupt Practices Act (FCPA), and other anti-corruption sanctions and export laws and regulations. Depending on the type of international sale, Raytheon must either seek approvals from the U.S. government under the foreign military sales process or may require an export authorization and the issuance of a license by either the U.S. Department of State, the U.S. Department of Commerce or the U.S. Department of the Treasury. Such licenses and authorizations may be denied or delayed for reasons of U.S. national security or foreign policy. In addition, for certain international sales, the Department of State must notify Congress prior to authorizing such exports. Congress may also take action to block or delay certain proposed defense sales.

Our international sales are also subject to foreign government laws, regulations and procurement policies and practices in addition to U.S. government requirements. In addition, our international business is sensitive to changes in the priorities and budgets of international customers and geopolitical uncertainties, which may be driven by changes in threat environments, volatility in worldwide economic conditions, regional and local economic and political factors, U.S. foreign policy and other risks and uncertainties. Additional information regarding the risks associated with our international business is contained in Item 1A of this Form 10-K.

Classified Sales

Classified sales include U.S. government sales on programs designated as classified by the U.S. government, as well as international sales on programs for which the customer, end user or end product is prohibited from being publicly disclosed. Total classified sales as a percentage of total net sales were 20% in 2019, 19% in 2018 and 17% in 2017. The operating results of these classified programs are included in the applicable business segment's and our consolidated results of operations. The business risks and considerations associated with these classified programs generally do not differ materially from those of our other U.S. government and international programs and products.

Backlog

(In millions, except percentages) December 31:		2019		2018	% of Total Backlog 2019	2018
Total U.S. government backlog[(1)]	**$**	**29,679**	$	24,963	**61%**	59%
Total non-U.S. government domestic backlog		**668**		689	**1%**	2%
Total domestic backlog		**30,347**		25,652	**62%**	60%
Total foreign military sales backlog		**7,967**		8,578	**16%**	20%
Total direct foreign government backlog		**9,596**		7,343	**20%**	17%
Total non-government foreign backlog		**842**		847	**2%**	2%
Total international backlog		**18,405**		16,768	**38%**	40%
Total backlog	**$**	**48,752**	$	42,420	**100%**	100%

(1) Excludes foreign military sales backlog through the U.S. government which is included in total international backlog.

Approximately half of the December 31, 2019 year-end backlog is not expected to be filled during the following 12 months. These amounts include both funded backlog (unfilled orders for which funding is authorized, appropriated and contractually obligated by the customer) and unfunded backlog (firm orders for which funding has not been appropriated or obligated to us). For additional information related to backlog figures, see “Segment Results” within Item 7 of this Form 10-K.

Competition
We directly participate in most major areas of development in the defense and government electronics, space, information technology and technical services and support markets. Technical superiority, reputation, price, past performance, delivery schedules, and reliability are among the principal competitive factors considered by customers in these markets. We conduct extensive research and development activities to continually enhance our existing products and services and develop new products and services to meet our customers’ changing needs and requirements, and address new market opportunities. We also compete in the commercial cybersecurity market, which is characterized by rapid changes in technology, products, customer specifications and industry standards. We compete worldwide with a number of U.S. and international companies in these markets, some of which may have more extensive or more specialized engineering, manufacturing and marketing capabilities than we do in some areas. We frequently partner on various programs with our major suppliers, some of whom are, from time to time, competitors on other programs. In addition, U.S. defense spending levels in the future are difficult to predict. Changes in U.S. defense spending may potentially limit certain future market opportunities. See Item 1A and “Overview” within Item 7 of this Form 10-K for a more detailed discussion of these and other related risks.

Raw Materials, Suppliers and Seasonality
We are dependent upon the availability of materials and major components and the performance of our suppliers and subcontractors. Some products require relatively scarce raw materials and parts. We generally have not experienced significant difficulties in procuring the necessary raw materials, components and other supplies for our products. However, consolidations and business closures among our suppliers may affect our ability to do so. In addition, our suppliers may experience materials or parts shortages for various reasons, including as a result of geopolitical and international trade developments. Further, some scarce raw materials required for our products are largely controlled by a single country, and therefore the ability to source those materials is dependent on U.S. relations with that country.

In addition, we must comply with specific procurement requirements which may, in effect, limit the suppliers and subcontractors we may utilize. In some instances, for a variety of reasons, we are dependent on sole-source suppliers. We enter into long-term or volume purchase agreements with certain suppliers and take other actions to ensure the availability of needed materials, components and subsystems. We are also dependent on suppliers to provide genuine original equipment manufacturer parts and have a robust set of standardized policies to detect counterfeit material, especially electronic components, throughout our supply chain. For a discussion of the risks associated with our raw materials and suppliers, see Item 1A of this Form 10-K.

In recent years, our revenues in the second half of the year have generally exceeded revenues in the first half. Some of the factors that can affect revenue recognition between accounting periods include the timing of new program awards (including international contract awards and approvals), the availability of U.S. government funding, product deliveries (which are dependent on availability of materials) and customer acceptance. We expect this trend to continue in 2020. Additional information regarding the risks associated with our raw materials, suppliers, and seasonality is contained in Item 1A of this Form 10-K.

Intellectual Property

We own an intellectual property portfolio that includes many U.S. and foreign patents, as well as unpatented trade secrets and know-how, data, software, trademarks and copyrights, all of which contribute to the preservation of our competitive position in the market, and our ability to continue to compete in the market. In certain instances, we have augmented our technology base by licensing the proprietary intellectual property of others. We also license our intellectual property to others, including our customers. The U.S. government has licenses to certain of our intellectual property, including certain patents, developed in the performance of U.S. government contracts, and has the right to use and authorize others to use such intellectual property, including the inventions covered by such patents, for U.S. government purposes. Foreign governments may also have licenses to certain of our intellectual property in connection with our performance of foreign government contracts. While our intellectual property rights in the aggregate are important to our operations, we do not believe that any particular trade secret, patent, trademark, copyright, license or other intellectual property right is of such importance that its loss, expiration or termination would have a material effect on our business. Additional information regarding the risks associated with our intellectual property is contained in Item 1A of this Form 10-K.

Employment

As of December 31, 2019, we had approximately 70,000 employees.

Environmental Regulation

Our operations are subject to and affected by a variety of international, federal, state and local environmental laws and regulations. A criminal violation of certain U.S. environmental statutes such as the Clean Air Act and Clean Water Act could result in suspension, debarment or disqualification by the U.S. Environmental Protection Agency (EPA). A facility determined to be in violation of the criminal provisions of these statutes can be prohibited from performing any U.S. government contract work until the violation has been corrected and the EPA approves the reinstatement of the facility.

We have potential exposure for environmental remediation at various sites: (1) owned or operated by us, whether currently or in the past; (2) where we have been named a Potentially Responsible Party (PRP) by the EPA or similarly named by an international, state or local government entity; and (3) where a non-governmental third party is pursuing a cost recovery or contribution claim against us. Under existing U.S. environmental laws, liability for site remediation is generally "joint and several," meaning that the liable party could become solely responsible for the full cost of funding the remediation. Liable parties typically agree amongst themselves to share, on an allocated basis, the costs and expenses of the remediation. In the unlikely event that we are required to fund more than our share or the entire cost of remediation of a site, the statutory framework provides that we may pursue rights of contribution from other responsible parties.

We have provided for our estimated share of the costs to complete environmental remediation where we have determined that it is probable that we will incur such costs in the future and the costs can be reasonably estimated. The timing and costs of environmental remediation are difficult to estimate due to uncertainties regarding: (1) the extent of the remediation; (2) the discovery and application of innovative remediation technologies; and (3) the status and interpretation of laws and regulations. Our estimates do not reflect the possibility that we may recover some of our costs from insurance or from pursuing other parties. For multi-party sites, we expect that the actual cost of remediation will be shared among liable parties and our estimates do not reflect the unlikely event that we would be required to fund more than our share or the entire cost of remediation of a site. In addition, the majority of our costs are eligible for future recovery through the pricing of our products and services to the U.S. government.

We manage various government-owned facilities on behalf of the U.S. government. At such facilities, environmental compliance and remediation costs have historically been primarily the responsibility of the U.S. government and we have relied (and continue to rely with respect to past practices) upon U.S. government funding to pay such costs. While the government remains responsible for capital and operating costs associated with environmental compliance, responsibility for fines and penalties associated with environmental noncompliance is typically borne by either the U.S. government or the contractor, depending on the contract and the relevant facts. Fines and penalties are unallowable costs under the contracts pursuant to which such facilities are managed.

Additional information regarding the effect of compliance with environmental protection requirements and the resolution of environmental claims against us and our operations, including expected remediation costs, is contained in Item 1A, “Commitments and Contingencies” within Item 7 and “Note 10: Commitments and Contingencies” within Item 8 of this Form 10-K.

Available Information

Our internet address is www.raytheon.com. We use our Investor Relations website as a routine channel for distribution of important information, including news releases, analyst presentations and financial information. We make available free of charge on or through our Investor Relations website our annual reports and quarterly reports on Forms 10-K and 10-Q (including related filings in inline eXtensible Business Reporting Language (iXBRL) format), current reports on Form 8-K and amendments to those reports as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission (SEC). The SEC maintains an internet site at www.sec.gov that contains reports, proxy statements and other information regarding registrants that file electronically, including Raytheon.

Additionally, we also make available on or through our website copies of our key corporate governance documents, including our Governance Principles, Certificate of Incorporation, By-laws and charters for the Audit Committee, Management Development and Compensation Committee (MDCC), Governance and Nominating Committee, Public Policy and Corporate Responsibility Committee and Special Activities Committee of the Board of Directors and our code of ethics entitled “Code of Conduct.” Raytheon stockholders may request free copies of these documents from our Investor Relations Department by writing to Raytheon Company, Investor Relations, 870 Winter Street, Waltham, MA 02451, by calling (781) 522-5123 or by sending an email request to invest@raytheon.com.

The content on any website referred to in this Form 10-K is not incorporated by reference into this Form 10-K unless expressly noted.

ITEM 1A. RISK FACTORS

This Form 10-K and the information we are incorporating by reference contain forward-looking statements within the meaning of federal securities laws, including information regarding our financial outlook, future plans, objectives, business prospects, products and services, trends and anticipated financial performance including with respect to: the timing and expected completion and impact of the proposed merger with United Technologies Corporation (UTC); our revenue; our liquidity and capital resources; our bookings and backlog; our international sales, including our ability to do business in the Kingdom of Saudi Arabia (KSA) and future delays in the Congressional Notification process and/or other potential challenges related to sales to certain foreign customers; cybersecurity sales; our pension, other postretirement benefit (PRB), nonqualified defined benefit and defined contribution plans expense and funding; our recognition of revenue on certain performance obligations; our expectations regarding customer demand and contracts; seasonality of our business; our capital expenditures; our amortization expense; the impact of new accounting pronouncements and tax regulations; our expected tax payments; our unrecognized tax benefits; our reclassifications of gains or losses on cash flow hedges; the impact of acquisitions, investments and other business arrangements and the tax deductibility of goodwill; the impact and outcome of audits and legal and administrative proceedings, claims, investigations, commitments and contingencies; the impact of certain regional developments; delays and disruptions in delivery of materials and services from suppliers; the impact of changes in fair value of our reporting units; delays and disruption in delivery of materials and services from Turkish suppliers; the impact of changes in foreign currency rates; the impact of Brexit; the impact of competition; growth in our cyber business; as well as information regarding domestic and international defense spending, budgets and business practices. You can identify these statements by the fact that they include words such as “will,” “believe,” “anticipate,” “expect,” “estimate,” “intend,” “plan,” or variations of these words, or similar expressions. These forward-looking statements are not statements of historical facts and represent only our current expectations regarding such matters. These statements inherently involve a wide range of known and unknown uncertainties. Our actual actions and results could differ materially from what is expressed or implied by these statements. Specific factors that could cause such a difference include, but are not limited to, those set forth below and other important factors disclosed previously and from time to time in our other filings with the Securities and Exchange Commission (SEC). Given these factors, as well as other variables that may affect our operating results, you should not rely on forward-looking statements, assume that past financial performance will be a reliable indicator of future performance, or use historical trends to anticipate results or trends in future periods. We expressly disclaim any obligation or intention to provide updates to the forward-looking statements and the estimates and assumptions associated with them, except as required by law.

We depend on the U.S. government for a substantial portion of our business, and changes in U.S. government defense spending and priorities could impact our financial position, results of operations and overall business.

In 2019, U.S. government sales, excluding foreign military sales, accounted for approximately69% of our total net sales. Our U.S. government revenues largely result from contracts awarded under various U.S. government programs, primarily defense-related programs with the U.S. Department of Defense (DoD), and a broad range of programs with the U.S. Intelligence Community and other departments and agencies. Our programs are subject to U.S. government policies, budget decisions and appropriation processes which are driven by numerous factors including: (1) geopolitical events; (2) macroeconomic conditions; and (3) the ability of the U.S. government to enact relevant legislation, such as appropriations bills.

In recent years, U.S. government appropriations have been affected by larger U.S. government budgetary issues and related legislation. The Budget Control Act of 2011 (BCA) established specific limits on annual appropriations for fiscal years (FY) 2012–2021, but was amended a number of times leading to fluctuations and unpredictability in annual DoD funding levels. As compared to the relevant preceding year, the DoD budget fell in FY 2013, remained essentially flat for FY 2014 and 2015, and increased each year from FY 2016 to 2020. BCA caps were raised for FY 2021 from their original level, and FY 2021 DoD funding is expected to be similar to FY 2020. Further, the DoD budget requires the agreement and action of both Congress and the President. In addition, in previous years the U.S. government has been unable to complete its budget process before the end of its fiscal year, resulting in both governmental shut-downs and Continuing Resolutions (CRs) providing only enough funds for U.S. government agencies to continue operating at prior year levels. Further, if the U.S. government debt ceiling is not raised and the national debt reaches the statutory debt ceiling, the U.S. government could default on its debts.

As a result, U.S. government defense spending levels are subject to a wide range of outcomes and are difficult to predict beyond the near-term due to numerous factors, including the external threat environment, future governmental priorities and the state of governmental finances. Significant changes in U.S. government defense spending or changes in U.S. government priorities, policies and requirements could have a material adverse effect on our results of operations, financial condition and liquidity.

Our financial results largely are dependent on our ability to perform on our U.S. government contracts, which are subject to uncertain levels of funding and timing, as well as termination. Our financial results could also be affected by performance delays, cost overruns, product failures, materials or components shortages, or definitization delays in connection with these contracts, as well as by the mix of our contracts and programs.

Our financial results largely are dependent on our performance under our U.S. government contracts. Although we have thousands of U.S. government contracts, the termination of one or more of our contracts, or the occurrence of performance delays, cost overruns, product failures, materials or components shortages, or contract definitization delays could negatively impact our results of operations, financial condition and liquidity.

U.S. government contracts generally permit the government to terminate the contract, in whole or in part, without prior notice, at the U.S. government's convenience or for default based on performance. If one of our contracts is terminated for convenience, we would generally be entitled to payments for our allowable costs and would receive some allowance for profit on the work performed. If one of our contracts is terminated for default, we would generally be entitled to payments for work accepted by the U.S. government. A termination arising out of our default could expose us to liability and have a negative impact on our ability to obtain future contracts and orders. In addition, we are a subcontractor and not the prime contractor on some contracts. In these arrangements, the U.S. government could terminate the prime contract for convenience or otherwise, without regard to our performance as a subcontractor. Further, we can give no assurance that we would be awarded new U.S. government contracts to offset the revenues lost as a result of the termination of any of our contracts.

The funding of U.S. government programs is subject to congressional appropriations, which are made on a fiscal year basis even for multi-year programs. Consequently, programs are often only partially funded initially and may not continue to be funded in future years. In addition, regular appropriation bills may be delayed, which may result in delays to funding, the collection of receivables and our contract performance due to lack of authorized funds to procure related products and services. Under certain circumstances, we may use our own funds to meet our customer's desired delivery dates or other requirements but we may not be reimbursed. Further, if appropriations for one of our programs become unavailable, reduced or delayed, the U.S. government may terminate for convenience our contract or subcontract under that program.

Our U.S. government contracts typically involve the development, application and manufacture of advanced defense and technology systems and products aimed at achieving challenging goals. New technologies may be untested or unproven and in some instances, product requirements or specifications may be modified. As a result, we may experience technological and other performance difficulties, which may result in delays, setbacks, cost overruns or product failures and could divert our attention or resources from other projects. With the U.S. government's greater focus on new technologies, such as interceptors, space-based sensors, high-energy lasers, hypersonics, and counter-hypersonics, we have more development programs. Our failure to execute effectively on these programs could impact our future sales opportunities. Additionally, in order to win certain U.S. government contracts, we may be required to invest in development prior to award as our customers demand more mature and proven solutions. These additional investment amounts may not be worthwhile if we are not chosen for new contract awards.

Our U.S. government contracts are typically either fixed-priced contracts or cost reimbursement contracts. Fixed-price contracts represent approximately65% of our backlog, and are predominantly either firm fixed-price (FFP) contracts or fixed-price incentive (FPI) contracts. Under FFP contracts, we receive a fixed price irrespective of the actual costs we incur and we therefore carry the burden of any cost overruns. Under FPI contracts, we share with the U.S. government savings for cost underruns less than target costs and expenses for cost overruns exceeding target costs up to a negotiated cost ceiling. We carry the entire burden of cost overruns exceeding the cost ceiling amount under FPI contracts. Under cost reimbursable contracts, we are reimbursed for allowable costs and paid a fixed or performance-based fee, but we are generally not reimbursed for unauthorized costs exceeding a cost ceiling amount or costs not allowable under the contract or applicable regulations. Contracts for development programs with complex design and technical challenges are typically cost reimbursable, but can be FFP or FPI. In addition, other contracts in backlog are for the transition from development to production, which includes starting and stabilizing a manufacturing and test line while the final design is still being validated.

Over the past several years, the DoD has increased its use of Other Transaction Authority (OTA) contracts, under which it awards research and development work without all of the procurement requirements that typically apply to DoD contracts, including justification of sole source awards. OTAs may use fixed-price contracts during all phases of the contract, or mandated contract cost sharing (e.g., one-third of program costs). They may also require non-traditional subcontractor participation and impose other requirements that differ from our other DoD contracts. For example, we were awarded an OTA contract for the Lower Tier Air and Missile Defense Sensor (LTAMDS) in late 2019. If we are unable to perform on our OTA contracts, including any applicable non-traditional requirements, it could negatively impact our results of operations, financial condition and liquidity.

Due to the nature of our work under many of our U.S. government contracts, we may experience unforeseen technological difficulties and cost overruns. If we are unable to control costs or if our initial cost estimates are incorrect, our profitability could be negatively affected, particularly under fixed-price development contracts. We may also experience cost underruns which would reduce contract value and related expected revenues, and we may be unable to expand the contract scope or secure additional work to offset the resulting lost revenues. Some of our U.S. government contracts have provisions relating to cost controls and audit rights and if we fail to meet the terms specified in those contracts it could have a negative impact on our results of operations, financial condition and liquidity. Our contracts also require us to comply with extensive and evolving procurement rules and regulations, which are discussed in more detail below.

From time to time, we may begin performance under an undefinitized contract award with a not-to-exceed price prior to completing contract negotiations in order to support U.S. government priorities. Uncertainties in final contract price, specifications and terms, or loss of negotiating leverage associated with particularly long delays in contract definitization, may negatively affect our profitability.

In addition, we are involved in programs that are classified by the U.S. government which have security requirements that place limits on our ability to discuss our performance on these programs, including any risks, disputes and claims.

Our future success depends on our ability to develop new offerings and technologies for our current and future markets.

To continue achievement of our growth strategy, we must successfully develop new offerings and technologies or adapt existing offerings and technologies for our current and future markets including new international, civil, and commercial markets. Accordingly, our future performance depends on a number of factors, including our ability in current, emerging and future growth markets to:

– Identify market needs and growth opportunities;
– Identify emerging technological and other trends;
– Identify additional uses for our existing technology to address customer needs;
– Develop and maintain competitive products and services at competitive prices;
– Enhance our offerings by adding innovative features that differentiate our offerings from those of our competitors;
– Develop, manufacture and bring solutions to market quickly at cost-effective prices;
– Enhance product designs for export and releasability to international markets; and
– Effectively structure our businesses to reflect the competitive environment including through the use of joint ventures, collaborative agreements and other forms of alliances.

We believe that in order to remain competitive in the future, we will need to continue to invest significant financial resources to develop new, and adapt existing, offerings and technologies. We fund this investment through customer funded and internal research and development, acquisitions and joint ventures or other teaming arrangements. We believe this investment is needed to meet demands and expand in our domestic and international markets, including emerging opportunities within the DoD market and the commercial cybersecurity market in which our Forcepoint business segment competes. Our investments to develop new offerings and technologies, or adapt existing offerings and technologies, could divert our attention and resources from other projects. In addition, we cannot be sure that these investments will ultimately lead to the timely development of new offerings and technologies or identification of and expansion into new or growth markets.

Due to the design complexity of our products, we may experience future delays in completing the development and introduction of new products. Any delays could result in increased costs of development or deflect resources from other projects. These risks are heightened by recent increases in new development programs. Further, our competitors may develop competing technologies which gain market acceptance in advance of our products. In addition, there can be no assurance that: (1) the market for our offerings will develop or continue to expand; (2) we will be successful in newly identified markets as we currently anticipate; or (3) the acquisitions, joint ventures or other teaming arrangements we may enter into in pursuit of developing new offerings and technologies will be successful. The failure of our technology to gain market acceptance could significantly reduce our revenues and harm our business.

Our existing technology and offerings may become obsolete due to new competitive technology or offerings. If we fail in our new product development efforts or our products or services fail to achieve market acceptance faster than our competitors, our ability to procure new contracts could be negatively impacted, which would negatively impact our results of operations, financial condition and liquidity.

Competition within our markets may reduce our revenues and market share and limit our future market opportunities.

We operate in highly competitive markets and our competitors may have more extensive or more specialized engineering, manufacturing and marketing capabilities than we do. We anticipate companies continuing to enhance their competitive position against us in our core markets as a result of continued domestic and cross-border defense industry consolidation and the expansion of competitors' capabilities throughout the supply chain through vertical integration. We are also facing heightened competition in our domestic and international markets from foreign and multinational firms. In addition, as discussed in more detail above, U.S. defense spending and U.S. government procurement strategies may limit our future market opportunities. For example, the DoD continues to award contracts through competitive bidding. Highly competitive pricing, in which a bidder may anticipate making a substantial investment in a program in order to win the work, has been seen in certain cases. In addition, bid protests from unsuccessful bidders on new program awards are more frequent. Generally, a bid protest will delay the start of contract activities, delay earnings, and could result in the award decision being overturned and require a re-bid of the contract. Additionally, some customers, including the DoD, are increasingly turning to commercial contractors, rather than traditional defense contractors, for information technology and other support work.

In addition, the U.S. government has been awarding more development programs due to changing U.S. government priorities. If we are unable to continue to compete successfully against our current or future competitors in our core markets, we may experience declines in revenues and market share which could negatively impact our results of operations, financial condition and liquidity.

In addition, our Forcepoint cybersecurity business segment faces significant competition due to rapid changes in technology, products, customer specifications and industry standards. It also has a wide range of market competitors, some that are significantly larger with broader product and service offerings or have best-of-breed products and/or maintain stronger customer relationships. In order to compete effectively, Forcepoint must successfully execute on its growth strategy, including the development of new products and services. If Forcepoint is unable to compete successfully, it may divert financial and management resources that would otherwise benefit our other operations.

As a U.S. government contractor, we are subject to extensive procurement rules and regulations. Changes in rules, regulations and business practices could negatively affect current programs and potential awards. Our business could be negatively affected if we fail to comply with any procurement rules and regulations.

As a U.S. government contractor, we must comply with specific procurement regulations and other requirements including: (1) export-import control; (2) security; (3) contract pricing and cost; (4) contract termination and adjustment; and (5) audit and product integrity requirements. These requirements impact our performance and compliance costs. In addition, the U.S. government has and may continue to implement initiatives focused on efficiencies, affordability and cost growth and other changes to its procurement practices which may negatively affect our results of operations, financial condition and liquidity. This could also affect whether we pursue certain opportunities and the terms under which we are able to pursue them.

For example, in recent years the DoD has increasingly included contractual payment and cost reimbursement terms such as incentive-based contracts that require contractors to share cost overruns and underruns with the U.S. government.

In addition, failure to comply with procurement regulations and requirements could result in: (1) reductions in contract value; (2) contract modifications or termination; (3) cash withholds on contract payments; (4) forfeiture of profits; and (5) the assessment of civil and criminal penalties and fines. Any of these could negatively impact our results of operations, financial condition and liquidity. Our failure to comply with these regulations and requirements could also lead to suspension or debarment, for cause, from U.S. government contracting or subcontracting for a period of time. Among the causes for debarment are violations of various statutes, including those related to: (1) procurement integrity; (2) export control; (3) U.S. government security regulations; (4) employment practices; (5) protection of the environment; (6) accuracy of records and the recording of costs; and (7) foreign corruption. Penalties or sanctions resulting from any failure to comply with applicable requirements could have a negative impact on our results of operations, financial condition and liquidity. This could also have a negative impact on our reputation, lead to contract terminations and reduce our ability to procure other U.S. government contracts in the future.

Issues with component availability, subcontractor performance or key supplier performance may affect our ability to manufacture and deliver our products and services.

We depend on our suppliers delivering materials, and on our subcontractors assembling major components and subsystems for our products in a timely and satisfactory manner and in full compliance with applicable terms and conditions. We are subject to specific procurement requirements that limit the types of materials we use which may limit the suppliers and subcontractors we may utilize. These procurement rules include requirements for genuine original equipment manufacturer parts. As we continue to seek further cost efficiencies throughout our business, we may centralize procurements in order to attain better pricing through strategic sourcing, which may increase our dependency on certain suppliers. In some instances, we are dependent on sole-source suppliers. In recent years, our supplier pool has become further limited in some areas due to consolidation and supplier business closures.

In addition, our suppliers may experience materials or components shortages. In recent times, the industry has experienced shortages of certain microelectronic components. Tariffs currently imposed on certain materials and other trade issues may create or exacerbate existing materials shortages and drive-up material prices. These developments may also result in further supplier business closures. Some products require relatively scarce raw materials, including some which are largely controlled by a single country, and the ability to source those materials is dependent on U.S. relations with the country. Materials or components sourced from a particular country may become subject to sanctions or other bans imposed by the United States or other countries. In addition, some of our suppliers or subcontractors may be susceptible to changes in global economic conditions that could impair their ability to meet their obligations to us.

If certain component materials are not available or if any of our suppliers or subcontractors otherwise fails to meet our needs or becomes insolvent, we may not have readily available alternatives or alternatives at prices that meet the demands of our customers. We enter into long-term or volume purchase agreements with certain suppliers and take other actions, such as accelerating supplier payments commensurate with value delivered, to ensure the financial viability of our suppliers and the availability of needed materials, components and subsystems. However, we cannot be sure that such items will be available at all or in the needed quantities. In addition, we require our suppliers to deliver components and services that are free from viruses and malicious code that may damage or destroy such components and interrupt such services, and include in our contracts with our suppliers the DoD requirements mandating the reporting of breaches to information technology systems containing critical government information. If we experience a material supplier or subcontractor problem, it could negatively impact our ability to satisfactorily and timely complete our customer obligations. This could result in reduced sales, termination of contracts and damage to our reputation and relationships with our customers. We could also incur additional costs in addressing this type of problem. Any of these events could have a negative impact on our results of operations, financial condition and liquidity. In addition, we must conduct diligence and provide disclosure regarding the use of certain minerals, known as conflict minerals, which may impact our procurement practices and increase our costs.

Our international business is subject to geopolitical and economic factors, regulatory requirements and other risks.

Our international business exposes us to geopolitical and economic factors, regulatory requirements, increasing competition and other risks associated with doing business in foreign countries, including those related to tariffs and trade barriers. These risks differ from and may be greater than those associated with our domestic business. In 2019, our sales to customers outside the U.S. (including foreign military sales through the U.S. government) accounted for 29% of our total net sales. Our exposure to such risks may increase if our international business continues to grow as we anticipate. Any significant impairment of our ability to conduct business outside of the U.S. could negatively impact our results of operations, financial condition and liquidity.

Our international business is sensitive to changes in the priorities and budgets of international customers, which may be driven by: (1) changes in threat environments; (2) geopolitical uncertainties; (3) volatility in worldwide economic conditions; and (4) various regional and local economic and political factors, including volatility in energy prices, changes in U.S. foreign policy, changes in existing free trade laws and regulations and other risks and uncertainties. Our international sales are subject to U.S. laws, regulations and policies, including the International Traffic in Arms Regulations (ITAR), the Export Administration Regulations (EAR), the Foreign Corrupt Practices Act (FCPA), and other anti-corruption, sanctions, and export laws and regulations. Any failure by us or others working on our behalf to comply with these laws and regulations could result in criminal, civil or administrative penalties including fines, suspension or debarment from government contracts or suspension of our ability to export our products.

In addition, due to the nature of our products, we must obtain licenses and authorizations from various U.S. government agencies before selling our products outside of the U.S. Our ability to obtain these licenses and authorizations timely or at all is subject to risks and uncertainties, including changing U.S. government policies or laws or delays in Congressional action due to geopolitical and other factors. Some of our direct commercial sale contracts with international customers have requirements relating to these licenses and authorizations and may permit the customer to terminate the contract if we fail to receive these approvals in a timely manner. If we are not successful in obtaining or maintaining the necessary licenses or authorizations in a timely manner, our sales relating to those approvals may be reversed, prevented or delayed. In the recent past, we had several direct commercial sales contracts for precision guided munitions with certain Middle Eastern customers for which U.S. government approvals had been delayed until the Administration directly approved these sales. At December 31, 2019, we had pending $1.2 billion of total contract value of these contracts that require U.S. government approvals. Additionally, one of those contracts, which has a contract value of $835 million, also requires U.K. government approval. In addition, new sales to these customers may face similar delays and/or potential challenges given the geopolitical issues.

Certain events have caused increased attention on U.S. defense sales to the Kingdom of Saudi Arabia (KSA). Although we currently do not expect to be prevented from doing business in KSA, which represents less than 5% of our sales, if government action impairs our ability to fulfill our contractual obligations or otherwise to continue to do business in KSA, it would have a material adverse effect on our financial results.

Our international sales are also subject to local government laws, regulations, and procurement policies and practices which may differ from U.S. government requirements. These include regulations relating to export-import control, technology transfer, investments, exchange controls and repatriation of earnings. Further, our international sales contracts may be subject to non-U.S. contract laws and regulations and include contractual terms that differ from those of similar contracts in the U.S. or that may be interpreted differently under foreign laws. Delays, cost overruns and product failures, or technological or other difficulties could also affect our ability to perform on our international contracts and negatively affect our profitability. In addition, these contracts may be subject to termination for default based on performance or failure to obtain U.S. government export approvals. These contracts may also be subject to termination at the customer's convenience, and may be subject to funding risks. In connection with our international business, we also operate subsidiaries domiciled in non-U.S. locations that are subject to local government laws and regulations which may differ from U.S. government requirements. In addition, the timing of orders, customer negotiations, governmental approvals and notifications from our international customers can be less predictable than from our domestic customers. This may lead to variations in international bookings and sales each year.

We must also manage a certain degree of exposure to the risk of currency fluctuations. Our international sales in functional currencies other than the U.S. dollar were approximately $1.4 billion in both 2019 and 2018 and $1.3 billion in 2017, the majority of which were in British pounds and Australian dollars with the remainder primarily in euros and Canadian dollars. See "Note 16: Business Segment Reporting" within Item 8 of this Form 10-K for total net sales and property, plant and equipment by geographical area.

Our international business faces substantial competition from both U.S. companies and foreign companies. In some instances, foreign companies may be owned by foreign governments or may receive loans, marketing subsidies and other assistance from their governments that may not be available to U.S. companies. In addition, foreign companies may be subject to fewer restrictions on technology transfer than U.S. companies.

Our international contracts may include industrial cooperation agreements requiring specific local purchases, manufacturing agreements, technology transfer agreements or financial support obligations, sometimes in the form of either offset obligations or in-country industrial participation (ICIP) agreements. Approvals of offset or ICIP thresholds and requirements may be subjective and time-consuming and may delay contract awards. Offset requirements may, in certain countries, include the creation of a joint venture with a local company which may control the venture. This could result in liability for violations of law for actions taken by these entities, including laws related to anti-corruption, sanctions, export, or local laws which may differ from U.S. laws and requirements. In addition, the ability to recover investments that we make may be dependent upon the success of ventures that we do not control. Such offset obligations are generally multi-year arrangements and may provide for penalties in the event we fail to perform in accordance with the offset requirements. In addition, certain customers' demands are increasing for greater offset or ICIP commitment levels, higher-value content, including the transfer of technologies and capabilities, and local production and economic development. We also are exposed to risks associated with using third-party foreign representatives and consultants for international sales, and teaming with international subcontractors, partners and suppliers in connection with international programs. As a result of the above factors, we could experience financial penalties and award and funding delays on international programs, our profitability on these programs could be negatively affected, and we could incur losses on these programs which could negatively impact our results of operations, financial condition and liquidity.

We depend on the recruitment and retention of qualified personnel, and our failure to attract, train and retain such personnel and to maintain our corporate culture and high ethical standards could seriously harm our business.

Due to the specialized nature of our business, our future performance is highly dependent upon the continued services of our key technical personnel and executive officers, the development of additional management personnel and the hiring of new qualified technical, manufacturing, marketing, sales and management personnel for our operations. Our continued growth increases the need for qualified personnel. Competition for personnel is intense and we may not be successful in attracting, training or retaining qualified personnel with the requisite skills or security clearances. In addition, certain personnel may be required to receive various security clearances and substantial training in order to work on certain programs or perform certain tasks. Necessary security clearances may be delayed, which may impact our ability to perform on our U.S. government contracts. Further, a significant percentage of our current workforce is nearing or eligible for retirement. To the extent that we lose experienced personnel, it is critical that we develop other employees, hire new qualified personnel and successfully manage the transfer of critical knowledge. We face competition in attracting new qualified personnel, especially in a low unemployment environment. In addition, new qualified personnel may have different expectations from our current workforce, which could result in difficulties attracting and retaining new employees. Loss of key employees, failure to attract new qualified employees or adequately train them, delays in receiving required security clearances, or delays in hiring key personnel could seriously harm our business.

We believe that a critical component of our ability to successfully attract, train and retain qualified personnel has been our corporate culture, which we believe fosters innovation, collaboration and a focus on execution, all in an environment of high ethical standards. Our global operations may present challenges in maintaining these important aspects of our corporate culture. Any failure to maintain our corporate culture could negatively impact our ability to attract, train and retain essential qualified personnel who are vital to our business. Further, we rely on our key personnel to lead with integrity and to meet our high ethical standards. To the extent any of our leaders were to behave in a way that is inconsistent with our values, we could experience a materially adverse impact to our reputation and our operating results.

Our business could be negatively impacted by cyber attacks, other security breaches and other disruptions.

We routinely experience cyber and other security threats including: threats to our information technology infrastructure, attempts to gain access to our proprietary, sensitive or classified information, and attempts to infiltrate our products and services and sabotage or disable their use by our customers. We also encounter threats to our physical security, including our facilities and personnel, and threats from terrorism or similar acts. In addition, our business could be disrupted by natural disasters, including the impacts of climate change.

As a defense contractor that protects national security information, we are the target of advanced and persistent cyber attacks from a variety of assailants, including nation states, in addition to attacks similar to those encountered in other industries. Our customers, suppliers, subcontractors and other third parties with whom we do business routinely experience similar security threats. Cybersecurity threats include, but are not limited to, malicious software, attempts to access information, online extortion attempts, disruption or denial of service attacks, insider threat attacks, and other cybersecurity events that could lead to disruptions of our systems or unauthorized access to our data. Our information technology networks and related systems are critical to the operation of our business and essential to our ability to successfully perform day-to-day operations. In addition, in some cases we must rely on the safeguards put in place by our customers, suppliers, subcontractors and other third parties to protect against and report cyber threats. Cyber attacks could lead to disruptions in mission critical systems, unauthorized release of confidential, personal, other protected information (which may belong to us, our employees, or third parties) or national security information, and corruption of data, networks or systems. We believe we have implemented appropriate measures and controls and have invested in significant resources to appropriately identify and monitor these threats and mitigate potential risks, including risks involving our customers and suppliers. However, due to their persistence, sophistication and volume, we may not be successful in preventing or defending against all cyber attacks and preventing or mitigating associated losses. In addition, because cybersecurity and related data privacy and protection laws and regulations are evolving and present increasing compliance challenges, our compliance costs could increase.

In addition, we provide cybersecurity, defense and other products and services to government and commercial customers, as well as products in which cybersecurity capabilities are embedded. As a result, these products and services are subject to attacks targeting their security, integrity and/or availability. Our cybersecurity products and services ultimately may not be able to effectively detect, prevent, or protect against cyber attacks or otherwise mitigate customer losses and other potential consequences of these attacks. In addition, some products and services that we provide to customers, particularly those related to public security, may raise potential liabilities related to privacy and intellectual property.

The impact of a future cyber incident cannot be predicted, particularly because these threats evolve quickly, their seriousness and scale vary widely, and national security information or other sensitive government functions may be involved. The impact of other business disruptions, such as those related to our physical security or resulting from natural disasters or other events, is also difficult to predict. Further, our insurance coverage may not be adequate to cover all related costs and we may not otherwise be fully indemnified for them. We maintain internal controls and procedures on cybersecurity incident prevention, detection, mitigation, response, recovery and disclosure. However, we may be unsuccessful in detecting, reporting or responding to these events adequately in a timely manner. Cyber attacks, security breaches, and other events could disrupt our operations, or the operations of our customers, suppliers, subcontractors and other third parties, and cause harm to facilities or personnel. They could require significant management attention and resources and could result in the loss of business, regulatory actions and potential liability. They could also negatively impact our reputation among our customers and the public. Any one of these outcomes could have a negative impact on our financial condition, results of operations and liquidity.

Our business could be adversely affected by a negative audit or investigatory finding by the U.S. government.

We are subject to audits and investigations by U.S. government agencies including the Defense Contract Audit Agency (DCAA), the Defense Contract Management Agency (DCMA), the Inspectors General of the DoD and other departments and agencies, the Government Accountability Office (GAO), the Department of Justice (DOJ) and Congressional Committees, in large part because we are a government contractor. From time to time, these and other agencies conduct investigations or audits to determine whether our operations are in compliance with applicable requirements. The DCAA and DCMA also review the adequacy of and our compliance with our internal control systems and policies, including our accounting, purchasing, property, estimating, earned value management and material management accounting systems. Our final allowable incurred costs for each year are subject to audit and have from time to time resulted in disputes between us and the U.S. government. In some cases, the DOJ has convened grand juries to investigate possible irregularities in our costs. Any costs found to be improperly allocated to a specific contract will not be reimbursed or must be refunded if already reimbursed. An adverse outcome of any audit or investigation could result in civil and criminal penalties and fines which could negatively impact our results of operations, financial condition and liquidity. In addition, if allegations of impropriety were made against us, we could suffer serious reputational harm which could negatively affect our financial position, results of operations and liquidity.

We use estimates in accounting for many of our programs, and changes in our estimates could adversely affect our future financial results.

Accounting for long-term contracts requires estimates and judgments related to our progress toward completion. Significant judgments include potential risks associated with the ability and cost to achieve program schedule, including customer-directed delays or reductions in scheduled deliveries, and technical and other specific contract requirements. Due to the size and long-term nature of many of our contracts, the estimation of total revenues and cost at completion is complicated and subject to many variables. Management must make assumptions and estimates regarding contract revenue and cost (including estimates of award fees and penalties), including with respect to: (1) labor productivity and availability; (2) the complexity of the work to be performed; (3) the availability of materials; (4) the length of time to complete the performance obligation; (5) execution by our subcontractors; (6) the availability and timing of funding from our customer; and (7) overhead cost rates, among other variables. Because of the significance of management's judgments and estimation processes described above, it is likely that materially different amounts could be recorded if we used different assumptions or if the underlying circumstances were to change. Changes in underlying assumptions, circumstances or estimates may adversely affect our future results of operations and financial condition.

For a detailed discussion of how our financial statements can be affected by contract accounting policies, see "Critical Accounting Estimates" within Item 7 of this Form 10-K.

Significant changes in key estimates and assumptions, such as discount rates and assumed long-term return on plan assets (ROA), as well as our actual investment returns on our pension plan assets and other actuarial factors, could affect our earnings, equity and pension contributions in future periods.

We must determine our pension and PRB plans' expense or income which involves significant judgment, particularly with respect to our discount rate, long-term ROA and other actuarial assumptions. The discount rate assumption is set annually and we determine on an annual basis whether it is appropriate to change our long-term ROA assumption. These assumptions and other actuarial assumptions may change significantly due to changes in economic, legislative, and/or demographic experience or circumstances. Changes in our assumptions could result in negative changes to our pension and PRB plans' expense and funded status, and our cash contributions to such plans, which would negatively impact our results of operations. In addition, differences between our actual investment returns and our long-term ROA assumption would result in a change to our pension and PRB plans' expense and funded status and our required contributions to the plans. They may also be impacted by changes in regulatory, accounting and other requirements applicable to pensions.

For a detailed discussion of how our financial statements can be affected by pension and PRB plan accounting policies, see "Critical Accounting Estimates" within Item 7 of this Form 10-K.

If we fail to manage our acquisitions, investments, divestitures, joint ventures and other transactions successfully, these activities could adversely affect our future financial results.

In pursuing our business strategies, we continually review, evaluate and consider potential investments, acquisitions, divestitures, joint ventures and other teaming and collaborative arrangements. We undertake to identify opportunities that will complement our existing products and services or customer base, as well as expand our offerings and market reach into new areas that naturally extend from our core capabilities. In evaluating such transactions, we are required to make difficult judgments regarding the value of business opportunities, technologies and other assets, and the risks and cost of potential liabilities. Further, these transactions involve certain other risks and uncertainties including: (1) the risks involved with entering new markets; (2) the difficulty in integrating newly-acquired businesses and managing or monitoring other collaborative business arrangements; (3) challenges and failures in achieving strategic objectives and other expected benefits which may result in certain liabilities to us for guarantees and other commitments; (4) unidentified issues not discovered in Raytheon's due diligence; (5) the diversion of our attention and resources from our operations and other initiatives; (6) the potential impairment of acquired assets; (7) the performance of underlying products, capabilities or technologies; and (8) the potential loss of key employees and customers of acquired businesses. In addition, future transactions may impact our deployment of capital, including dividends, stock repurchases, pension contributions, and investments.

Goodwill and other intangible assets represent a significant portion of our assets, and any impairment of these assets could negatively impact our results of operations and financial condition.

At December 31, 2019, we had goodwill and other intangible assets of approximately$15.4 billion which represented 45% of our total assets. Our goodwill is subject to an impairment test annually and is also tested whenever events and circumstances indicate that goodwill may be impaired. In the event of an impairment any excess goodwill must be written off in the period of determination. Intangible assets (other than goodwill) are generally amortized over the useful life of such assets. In addition, from time to time, we may acquire or make an investment in a business which will require us to record goodwill and intangible assets based on the purchase price and the value of the acquired assets. We may subsequently experience unforeseen events that could adversely affect the value of our goodwill or intangible assets and trigger an impairment evaluation. Future determinations of significant impairments of goodwill or intangible assets as a result of an impairment test or any accelerated amortization of other intangible assets could have a negative impact on our results of operations and financial condition.

For a detailed discussion of how our financial statements can be affected by goodwill accounting policies, see "Critical Accounting Estimates" within Item 7 of this Form 10-K.

The outcome of litigation in which we have been named, or may in the future be named, as a defendant is unpredictable, and an adverse decision in any such matter could have a material adverse effect on our results of operations, financial condition and liquidity.

We are the defendant in a number of litigation matters and are subject to various other claims, demands and investigations. In addition, we may be subject to future litigation matters, claims, demands and investigations. These matters may divert financial and management resources that would otherwise be used to benefit our operations. No assurances can be given that the results of these matters will be favorable to us. An adverse resolution or outcome of any of these lawsuits, claims, demands or investigations could have a negative impact on our results of operations, financial condition and liquidity.

We may be unable to adequately protect our intellectual property rights or obtain certain rights in third party intellectual property on reasonable terms, which could affect our ability to compete.

Our efforts to gain awards of contracts and ensure a competitive position in the market depends in part on our ability to ensure that our intellectual property is protected, that our intellectual property rights are not diluted or subject to misuse, and that we are able to license certain third party intellectual property on reasonable terms. We own many U.S. and foreign patents and patent applications, and have rights in unpatented inventions, know-how, data, software, trademarks and copyrights. The U.S. government and foreign governments have licenses under certain of our intellectual property, including certain patents, which are developed or used in performance of government contracts. Governments may use or authorize others (including our competitors) to use such patents and intellectual property for government and other purposes. Governments may challenge the sufficiency of intellectual property rights we have granted in government contracts and attempt to obtain greater rights, which could reduce our ability to protect our intellectual property rights and to compete. There can be no assurance that any of our patents and other intellectual property will not be challenged, invalidated, misappropriated or circumvented by third parties. In addition, the laws concerning intellectual property vary among nations and the protection provided to our intellectual property by the laws and courts of foreign nations may differ from those of the U.S. Further, litigation to enforce our intellectual property rights can be costly, and even if successful, can distract our attention from other areas of our business. All of the above could diminish the value of our intellectual property, affecting our ability to procure future business or maximize the use of our intellectual property to increase our revenue.

In some instances, we have augmented our technology base by licensing the proprietary intellectual property of others. Intellectual property obtained from third parties is also subject to challenge, invalidation, misappropriation or circumvention by third parties. In addition, we may not be able to obtain necessary licenses on commercially reasonable terms. In other instances, our ability to procure and perform government contracts requires us to obtain certain rights in the intellectual property of others through government grants. Governments may deny us the right to obtain such rights in the intellectual property of others which may affect our ability to perform government contracts.

The confidentiality and intellectual property assignment agreements we enter into with our employees and non-disclosure obligations and agreements we enter into with our suppliers, consultants and appropriate customers may not adequately protect our proprietary information, deter misappropriation and misuse of our proprietary information, or prevent third-party development of similar technologies, all of which may negatively impact our ability to compete. We may be unable to adequately protect our intellectual property rights, use our intellectual property for a competitive advantage, or continue to access licensed intellectual property of third parties, any of which could have a negative impact on our ability to win and perform on contracts, our reputation, and our results of operations, financial condition and liquidity.

Our operations expose us to the risk of material environmental liabilities.

We use hazardous substances and generate hazardous wastes in our operations. As a result, we are subject to potentially material liabilities related to personal injuries or property damage that may be caused by hazardous substance releases and exposures. For example, we are investigating and remediating contamination related to past practices at a number of properties and, in some cases, have in the past been named as a defendant in related “toxic tort” claims.

We are also subject to laws and regulations that: (1) impose requirements for the proper management, treatment, storage and disposal of hazardous substances and wastes; (2) restrict air and water emissions from our operations (including U.S. government-owned facilities we manage); and (3) require maintenance of a safe workplace. These laws and regulations can lead to substantial fines and criminal sanctions for violations, and may require the installation of costly equipment or operational changes to limit pollution emissions, decrease the likelihood of accidental hazardous substance releases and/or reduce the risks of injury to people. We incur, and expect to continue to incur, capital and other expenditures to comply with these laws and regulations.

A criminal violation of certain U.S. environmental statutes such as the Clean Air Act and Clean Water Act could result in suspension, debarment or disqualification by the U.S. Environmental Protection Agency (EPA). A facility determined to be in violation of the criminal provisions of these statutes can be prohibited from performing any U.S. government contract work until the violation has been corrected and the EPA approves the reinstatement of the facility.

In addition, new laws, regulations, or governmental policies, sudden changes in the interpretation and enforcement of existing laws and regulations, the discovery of previously unknown contamination, or the imposition of new clean-up standards could require us to incur additional costs in the future that would have a negative effect on our results of operations, financial condition and liquidity.

We face certain significant risk exposures and potential liabilities that may not be adequately covered by indemnity or insurance.

A significant portion of our business relates to designing, developing and manufacturing advanced defense and technology systems and products. New technologies may be untested or unproven. In addition, we may incur significant liabilities that are unique to our products and services. In some, but not all, circumstances, we may be entitled to indemnification from our customers through contractual provisions, and we may obtain limitations of liability and additional defenses for various reasons including the qualification of our products and services by the Department of Homeland Security (DHS) under the SAFETY

Act provisions of the Homeland Security Act of 2002. The amount of the insurance coverage we maintain or indemnification to which we may be contractually or otherwise entitled may not be adequate to cover all claims or liabilities. Accordingly, we may be forced to bear substantial costs resulting from risks and uncertainties of our business which would negatively impact our results of operations, financial condition and liquidity. Any accident, failure of, or defect in our products and services, even if fully indemnified or insured, could negatively affect our reputation among our customers and the public, and make it more difficult for us to compete effectively. It could also affect the cost and availability of available insurance in the future.

Unanticipated changes in our tax provisions or exposure to additional income tax liabilities could affect our profitability.

We are subject to income taxes in the U.S. and many foreign jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes. In the ordinary course of our business, there are transactions and calculations where the ultimate tax determination is uncertain. Further, changes in domestic or foreign income tax laws and regulations, or their interpretation, could result in higher or lower income tax rates assessed or changes in the taxability of certain sales or the deductibility of certain expenses, thereby affecting our income tax expense and profitability. In addition, we are regularly under audit by tax authorities. The final determination of tax audits and any related litigation could be materially different from our historical income tax provisions and accruals. Additionally, changes in the geographic mix of our sales could impact our tax liabilities and affect our income tax expense and profitability.

Risks Related to the Proposed Merger with UTC

The Merger is subject to conditions, some or all of which may not be satisfied, or completed on a timely basis, if at all. Failure to complete the Merger could have material adverse effects on Raytheon.

The completion of the Merger is subject to a number of conditions, including, among other things, the receipt of certain regulatory approvals, the receipt of an Internal Revenue Service (IRS) private letter ruling regarding certain tax matters and certain tax-related opinions and solvency opinions from outside legal counsel, the completion by UTC of the Separation and the Distributions, and a certain amount of net indebtedness of UTC following the Separation and the Distributions (UTC RemainCo), which make the completion and timing of the Merger uncertain.

The failure to satisfy all of the required conditions could delay the completion of the Merger for a significant period of time or prevent it from occurring at all. There can be no assurance that the conditions to the completion of the Merger will be satisfied or waived or that the Merger will be completed.

If the Merger is not completed, Raytheon may be materially adversely affected and, without realizing any of the benefits of having completed the Merger, will be subject to a number of risks, including the following:

– the market price of Raytheon common stock could decline;
– Raytheon could owe a substantial termination fee to UTC in specified circumstances;
– if the Merger Agreement is terminated and the Raytheon Board of Directors seeks another business combination, Raytheon stockholders cannot be certain that Raytheon will be able to find a party willing to enter into a transaction on terms equivalent to or more attractive than the terms that UTC has agreed to in the Merger Agreement;
– time and resources, financial and other, committed by Raytheon’s management to matters relating to the Merger could otherwise have been devoted to pursuing other beneficial opportunities;
– Raytheon may experience negative reactions from the financial markets or from its customers, suppliers or employees; and
– Raytheon will be required to pay its costs relating to the Merger, such as legal, accounting, financial advisory and printing fees, whether or not the Merger is completed.

In addition, if the Merger is not completed, Raytheon could be subject to litigation related to any failure to complete the Merger or related to any enforcement proceeding commenced against Raytheon to perform its obligations under the Merger Agreement. Any of these risks could materially and adversely impact Raytheon’s ongoing business, financial condition, financial results and stock price.

Similarly, delays in the completion of the Merger could, among other things, result in additional transaction costs, loss of revenue or other negative effects associated with delay and uncertainty about completion of the Merger, and could materially and adversely impact the ongoing business, financial condition, financial results and stock price of Raytheon prior to the Merger and UTC following completion of the Merger (the Combined Company).

The Merger is subject to the expiration or termination of applicable waiting periods and the receipt of approvals, consents or clearances from several regulatory authorities that may impose conditions that could have an adverse effect on Raytheon or the Combined Company or, if not obtained, could prevent completion of the Merger.

Before the Merger may be completed, any applicable waiting period (and any extension thereof) under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (HSR Act) relating to the completion of the Merger must have expired or been terminated and any authorization or consent from a governmental authority required to be obtained with respect to the Merger under certain other applicable foreign regulatory laws must have been obtained. In deciding whether to grant the required regulatory authorization or consent, the relevant governmental entities will consider the effect of the Merger within their relevant jurisdiction, including, among other things, the impact on the parties' respective customers and suppliers and the applicable defense ministry and the impact of the parties' foreign investment in the jurisdiction. The terms and conditions of the authorizations and consents that are granted, if any, may impose requirements, limitations or costs or place restrictions on the conduct of the Combined Company's business or may materially delay the completion of the Merger.

Under the Merger Agreement, UTC and Raytheon have agreed to use their respective reasonable best efforts to obtain such authorizations and consents, and each of UTC and Raytheon has agreed to take any and all steps necessary to avoid or eliminate impediments under any antitrust laws that may be asserted by any governmental authority so as to enable the completion of the Merger as promptly as practicable. However, UTC's and Raytheon's obligations to take such actions are subject to limitations, including that neither UTC nor Raytheon will be required to commit to or effect any sale, divestiture, lease, holding separate pending a sale or other transfer or disposal, or certain other restrictions or actions if such actions, in the aggregate would or would reasonably be expected to have a materially adverse impact on Raytheon, UTC or their respective subsidiaries or affiliates, in each case measured on a scale relative to the size of the Combined Company.

In addition, at any time before or after the completion of the Merger, and notwithstanding the termination of applicable waiting periods, the applicable U.S. or foreign regulatory authorities or any state attorney general could take such action under antitrust or applicable foreign investment laws as such party deems necessary or desirable in the public interest. Such action could include, among other things, seeking to enjoin the completion of the Merger or seeking divestiture of substantial assets of the parties. In addition, in some circumstances, a third party could initiate a private action challenging, seeking to enjoin, or seeking to impose conditions on the Merger. UTC and Raytheon may not prevail and may incur significant costs in defending or settling any such action.

There can be no assurance that the conditions to the completion of the Merger set forth in the Merger Agreement relating to applicable regulatory laws will be satisfied.

The exchange ratio is fixed and will not be adjusted in the event of any change in either UTC's or Raytheon's stock price; there is no (and will not be until the completion of the Distributions) trading history with respect to the shares of the UTC aerospace businesses on a standalone basis after giving effect to the Separation and the Distributions.

Upon completion of the Merger, each issued and outstanding share of Raytheon common stock (other than excluded shares) will be converted into the right to receive the Merger consideration, which is equal to 2.3348 fully paid and nonassessable shares of UTC common stock (and, if applicable, cash in lieu of fractional shares). This exchange ratio was fixed in the Merger Agreement and will not be adjusted for changes in the market price of either UTC common stock or Raytheon common stock.

As of the date of this filing, it is impossible to accurately predict the market price of UTC common stock at the completion of the Merger (including as a result of, among other things, the Separation and the Distributions), and therefore, impossible to accurately predict the market value of the shares of UTC common stock that Raytheon stockholders will receive in the Merger. There is no (and will not be until the completion of the Distributions) trading history with respect to the shares of the UTC aerospace businesses on a standalone basis after giving effect to the Separation and the Distributions. The market price for UTC common stock may fluctuate both prior to the completion of the Merger and thereafter for a variety of reasons, including, among others, general market and economic conditions, the demand for UTC's or Raytheon's products and services, the Separation and the Distributions, changes in laws and regulations, other changes in UTC's and Raytheon's respective businesses, operations, prospects and financial results of operations, market assessments of the likelihood that the Merger will be completed, and the expected timing of the Merger. Many of these factors are beyond UTC's and Raytheon's control. As a result, the market value represented by the exchange ratio will also vary.

As a result of the Distributions, we expect the market price of shares of UTC common stock to decline because the market price will no longer include the value of the Otis business or the Carrier business. The value of UTC common stock that Raytheon stockholders will receive in the Merger will reflect the combination of the UTC aerospace businesses and Raytheon and will not include the value of the Otis business or the Carrier business as the market price of UTC common stock currently does. We cannot predict the amount of this decline, as the market price of shares of UTC common stock may fluctuate based on the perceived values of the common stock of UTC, the Otis business and the Carrier business in anticipation of the Distributions and the Merger, and it may not be possible to estimate the market value of UTC common stock. In addition, there is no (and will not be until the completion of the Distributions) trading history with respect to the shares of the UTC aerospace businesses on a standalone basis after giving effect to the Separation and Distributions. Therefore, current and historical market prices of UTC common stock are not reflective of the value that Raytheon stockholders will receive in the Merger.

Each party is subject to business uncertainties and contractual restrictions while the Merger is pending, which could adversely affect Raytheon's, and, following completion of the Merger, the Combined Company's business and operations.

In connection with the pendency of the Merger, it is possible that some customers, suppliers and other persons with whom UTC and/or Raytheon has a business relationship may delay or defer certain business decisions or might decide to seek to terminate, change or renegotiate their relationships with UTC or Raytheon, as the case may be, as a result of the Merger or otherwise, which could negatively affect UTC's or Raytheon's respective revenues, earnings and/or cash flows, as well as the market price of UTC common stock or Raytheon common stock, regardless of whether the Merger is completed.

Under the terms of the Merger Agreement, each of UTC and Raytheon is subject to certain restrictions on the conduct of its business prior to completing the Merger that may adversely affect its ability to execute certain of its business strategies, including the ability in certain cases to enter into or amend contracts, acquire or dispose of assets, incur indebtedness, pay dividends, incur capital expenditures or settle claims. Such limitations could adversely affect each of UTC's and Raytheon's business and operations prior to the completion of the Merger.

Each of the risks described above may be exacerbated by delays or other adverse developments with respect to the completion of the Merger.

Completion of the Merger may trigger change in control or other provisions in certain customer and other agreements to which UTC or Raytheon is a party, which may have an adverse impact on the Combined Company's business and results of operations following completion of the Merger.

The completion of the Merger may trigger change in control and other provisions in certain agreements to which UTC or Raytheon is a party. If UTC or Raytheon is unable to negotiate waivers of those provisions, counterparties may exercise their rights and remedies under the agreements, including terminating the agreements or seeking monetary damages or equitable remedies. Even if UTC and Raytheon are able to negotiate consents or waivers, the counterparties may require a fee for such waivers or seek to renegotiate the agreements on terms less favorable to UTC or Raytheon. Any of the foregoing or similar developments may have an adverse impact on the Combined Company's business and results of operations following completion of the Merger.

Uncertainties associated with the Merger may cause a loss of management personnel and other key employees, which could adversely affect the future business and operations of the Combined Company following completion of the Merger.

UTC and Raytheon are dependent on the experience and industry knowledge of their officers and other key employees to execute their business plans. The Combined Company's success after the completion of the Merger will depend in part upon the ability of the Combined Company to retain certain key management personnel and employees of UTC and Raytheon. Prior to the completion of the Merger (as well as the Separations and the Distributions), current and prospective employees of UTC and Raytheon may experience uncertainty about their roles following the completion of the transactions, which may have an adverse effect on the ability of each of UTC and Raytheon to attract or retain key management and other key personnel. Furthermore, UTC expects certain key members of its current management will become employees of the entities holding the

Otis business and the Carrier business and therefore such persons will no longer be employed by UTC. In addition, no assurance can be given that the Combined Company, after the completion of the Merger, will be able to attract or retain key management personnel and other key employees to the same extent that UTC and Raytheon have previously been able to attract or retain their own employees.

If either of the Distributions, together with certain related transactions, were to fail to qualify as a transaction that is generally tax-free for U.S. federal income tax purposes, including as a result of subsequent acquisitions of stock of UTC (including pursuant to the Merger), the Combined Company could be subject to significant tax liabilities.

It is a condition to the Distributions and the Merger that UTC receive (1) a private letter ruling from the IRS regarding certain U.S. federal income tax matters relating to the Separation and the Distributions and (2) an opinion of outside counsel regarding the qualification of certain elements of each of the Distributions under Section 355 of the Internal Revenue Code of 1986, as amended (the Code). Further, it is a condition to each of UTC's and Raytheon's obligations to complete the Merger that each of UTC and Raytheon receive an opinion of its respective outside counsel to the effect that (a) the Merger will qualify as a "reorganization" within the meaning of Section 368(a) of the Code and (b) the Merger will not cause Section 355(e) of the Code to apply to either of the Distributions.

Notwithstanding receipt of the IRS private letter ruling and the opinions of counsel regarding the Distributions, the IRS could determine that the Distributions and/or certain related transactions should be treated as taxable transactions for U.S. federal income tax purposes if it determines that any of the representations, assumptions or undertakings upon which the IRS private letter ruling or the opinions of counsel was based are inaccurate or have not been complied with. In addition, the IRS private letter ruling will not address all of the issues that are relevant to determining whether each of the Distributions, together with certain related transactions, qualifies as a transaction that is generally tax-free for U.S. federal income tax purposes. Accordingly, notwithstanding receipt by UTC of the IRS private letter ruling and receipt by UTC and Raytheon of opinions of counsel, there can be no assurance that the IRS will not assert that the Distributions and/or certain related transactions do not qualify for tax-free treatment for U.S. federal income tax purposes (including by reason of the Merger) or that a court would not sustain such a challenge. In the event the IRS were to prevail with such challenge, the Combined Company could be subject to significant U.S. federal income tax liability.

Risks Related to the Combined Company

Following the Merger, the composition of the board of directors of the Combined Company will be different than the composition of the current Raytheon Board of Directors.

The Raytheon Board of Directors currently consists of 13 directors. Upon completion of the Merger, the board of directors of the Combined Company will consist of 15 directors, including seven independent directors designated by UTC, six independent directors designated by Raytheon and the Chief Executive Officer and the Executive Chairman of the Combined Company.

The Combined Company may be unable to successfully integrate the UTC aerospace businesses and Raytheon and realize the anticipated benefits of the Merger.

The success of the Merger will depend, in part, on the Combined Company's ability to successfully combine and integrate the UTC aerospace businesses and Raytheon, and realize the anticipated benefits, including synergies, cost savings, innovation and technological opportunities and operational efficiencies from the Merger in a manner that does not materially disrupt existing customer, supplier and employee relations and does not result in decreased revenues due to losses of, or decreases in orders by, customers. If the Combined Company is unable to achieve these objectives within the anticipated time frame, or at all, the anticipated benefits may not be realized fully or at all, or may take longer to realize than expected, and the value of the Combined Company common stock may decline. The Combined Company may fail to realize some or all of the anticipated benefits of the Merger if the integration process takes longer than expected or is more costly than expected.

The integration of the two companies may result in material challenges, including, without limitation:

– managing a larger, more complex combined aerospace and defense business;
– maintaining employee morale and retaining key management and other employees;

- retaining existing business and operational relationships, including customers, suppliers and employees and other counterparties, as may be impacted by contracts containing consent and/or other provisions that may be triggered by the Merger, and attracting new business and operational relationships;
- the diversion of management's attention as a result of the devoting attention to the Merger, and/or the Separation and the Distributions;
- consolidating corporate and administrative infrastructures and eliminating duplicative operations, including unanticipated issues in integrating information technology, communications and other systems;
- coordinating geographically separate organizations; and
- unforeseen expenses or delays associated with the Merger, including the Separation and the Distributions.

Many of these factors will be outside of UTC's and/or Raytheon's control, and any one of them could result in delays, increased costs, decreases in the amount of expected revenues and diversion of management's time and energy, which could materially affect the Combined Company's financial position, results of operations and cash flows.

In addition, UTC completed its Merger with Rockwell Collins on November 26, 2018, and the integration of the UTC aerospace businesses and Rockwell Collins remains in process. This ongoing integration may increase the complexity of, and challenges associated with, the integration of the UTC aerospace businesses and Raytheon, which may make it more difficult for UTC and Raytheon to achieve the anticipated benefits of the Merger fully or at all, or within the anticipated time frame.

Due to legal restrictions, UTC and Raytheon are currently permitted to conduct only limited planning for the integration of the two companies following the Merger. The actual integration may result in additional and unforeseen expenses, and the anticipated benefits of the integration plan may not be realized on a timely basis, if at all.

The Combined Company may not be able to engage in desirable capital-raising or strategic transactions following the Merger.

Under current U.S. federal income tax law, a spin-off that otherwise qualifies for tax-free treatment can be rendered taxable to the parent corporation and its stockholders as a result of certain post-spin-off transactions, including certain acquisitions of shares or assets of the parent corporation. To preserve the tax-free treatment of the Distributions, the Combined Company may be limited in its ability to pursue certain equity issuances, strategic transactions, repurchases, or other transactions that it may otherwise believe to be in the best interests of its stockholders or that might increase the value of its business.

Upon completion of the Merger, Raytheon stockholders will have different rights under the Combined Company's governing documents than they do currently under Raytheon's governing documents.

Upon completion of the Merger, Raytheon stockholders will no longer be stockholders of Raytheon, but will instead become stockholders of the Combined Company and their rights as stockholders will be governed by the terms of the Combined Company's certificate of incorporation and amended and restated by-laws. The terms of the Combined Company's certificate of incorporation and amended and restated by-laws will be in some respects different than the terms of Raytheon's certificate of incorporation and by-laws, which currently govern the rights of Raytheon stockholders.

The Combined Company's amended and restated by-laws will designate the state courts within the State of Delaware as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by Combined Company stockholders, which could discourage lawsuits against the Combined Company and its directors, officers and employees.

Under the Combined Company's amended and restated by-laws, unless the Combined Company determines otherwise, a state court located within the State of Delaware (or, if no state court located within the State of Delaware has jurisdiction, the federal district court for the District of Delaware) will be the sole and exclusive forum for:

- any derivative action or proceeding brought on behalf of the Combined Company;
- any action asserting a claim of breach of a fiduciary duty owed by any director or officer or other employee of the Combined Company to the Combined Company or to Combined Company stockholders;

– any action asserting a claim against the Combined Company or any director or officer or other employee of the Combined Company arising pursuant to any provision of the Delaware General Corporation Law or the Combined Company's certificate of incorporation or the amended and restated by-laws (as either may be amended from time to time); or
– any action asserting a claim against the Combined Company or any director or officer or other employee of the Combined Company governed by the internal affairs doctrine.

To the fullest extent permitted by law, this exclusive forum provision will apply to state and federal law claims, including claims under the federal securities laws, including the Securities Act of 1933, as amended (the Securities Act) and the Securities Exchange Act of 1934, as amended (the Exchange Act), although Combined Company stockholders will not be deemed to have waived the Combined Company's compliance with the federal securities laws and the rules and regulations thereunder. The enforceability of similar choice of forum provisions in other companies' bylaws has been challenged in legal proceedings, and it is possible that, in connection with claims arising under federal securities laws or otherwise, a court could find the exclusive forum provision contained in the amended and restated by-laws to be inapplicable or unenforceable.

This exclusive forum provision may limit the ability of Combined Company stockholders to commence litigation in a forum that they prefer, which may discourage such lawsuits against the Combined Company and its current or former directors, officers and employees. Alternatively, if a court were to find this exclusive forum provision inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings described above, the Combined Company may incur additional costs associated with resolving such matters in other jurisdictions, which could negatively affect its business, results of operations and financial condition.

The future results of the Combined Company may be adversely impacted if the Combined Company does not effectively manage its complex operations following the completion of the Merger.

Following the completion of the Merger, the size of the Combined Company's aerospace and defense business will be significantly larger than the current size of either Raytheon's business or the UTC aerospace businesses, while at the same time the Otis business and Carrier business will no longer be part of UTC. The Combined Company's ability to successfully manage this expanded aerospace and defense business while having completed the Distributions will depend, in part, upon management's ability to design and implement strategic initiatives that address not only the integration of the UTC aerospace businesses and Raytheon, including UTC's continuing integration of the Rockwell Collins business, but also the increased scale and scope of the combined business with its associated increased costs and complexity, and the loss of certain scale and scope through the Distributions. There can be no assurances that the Combined Company will be successful in integrating the businesses or that it will realize the expected operating efficiencies, cost savings and other benefits currently anticipated from the Merger.

Each of UTC and Raytheon expects to incur substantial expenses related to the completion of the Merger and the integration of the UTC aerospace businesses and Raytheon.

Each of UTC and Raytheon will incur substantial expenses in connection with the completion of the Merger (including, in the case of UTC, with respect to the Separation and the Distributions) to integrate a large number of processes, policies, procedures, operations, technologies and systems of UTC and Raytheon in connection with the Merger. The substantial majority of these costs will be non-recurring expenses related to the transactions and facilities and systems consolidation costs. The Combined Company may incur additional costs or suffer loss of business under third-party contracts that are terminated or that contain change in control or other provisions that may be triggered by the completion of the transactions, and/or losses of, or decreases in orders by, customers, and may also incur costs to retain certain key management personnel and employees. UTC and Raytheon will also incur transaction fees and costs related to formulating integration plans for the Combined Company, and the execution of these plans may lead to additional unanticipated costs and time delays. These incremental transaction-related costs may exceed the savings the Combined Company expects to achieve from the elimination of duplicative costs and the realization of other efficiencies related to the integration of the businesses, particularly in the near term and in the event there are material unanticipated costs. Factors beyond the parties' control could affect the total amount or timing of these expenses, many of which, by their nature, are difficult to estimate accurately.

The market price of the Combined Company's common stock after the Merger is completed may be affected by factors different from those affecting the price of UTC common stock or Raytheon common stock before the Merger is completed.

Upon completion of the Merger, holders of Raytheon common stock will be holders of common stock of the Combined Company. As the businesses of UTC and Raytheon are different, the results of operations as well as the price of the Combined Company common stock may, in the future, be affected by factors different from those factors affecting each of UTC and Raytheon as an independent stand-alone company. The Combined Company will face additional risks and uncertainties to which each UTC and Raytheon may currently not be exposed. As a result, the market price of the Combined Company's shares may fluctuate significantly following completion of the Merger. Additionally, as a result of the Distributions, the market price of shares of the Combined Company's common stock will generally not be affected by factors relating to the Otis business or the Carrier business.

The market price of the Combined Company's common stock may decline as a result of the Merger, including as a result of some UTC and/or Raytheon stockholders adjusting their portfolios.

The market price of the Combined Company's common stock may decline as a result of the Merger if, among other things, the operational cost savings estimates in connection with the integration of the businesses of the UTC aerospace businesses and Raytheon's businesses are not realized, there are unanticipated negative impacts on UTC's financial position, results of operations or cash flows from either of the Distributions, or if the transaction costs related to the Merger are greater than expected. The market price also may decline if the Combined Company does not achieve the perceived benefits of the Merger (including the Separation and the Distributions) as rapidly or to the extent anticipated by financial or industry analysts or if the effect of the transactions on the Combined Company's financial position, results of operations or cash flows is not consistent with the expectations of financial or industry analysts.

In addition, sales of the Combined Company's common stock after the completion of the transactions may cause the market price of such common stock to decrease. It is estimated that UTC will issue approximately 648 million shares, including share equity awards, of UTC common stock in connection with the Merger, based on the number of outstanding shares, including share equity awards, of Raytheon common stock as of July 11, 2019. Raytheon stockholders may decide not to hold the shares of Combined Company common stock they will receive in the Merger. Certain Raytheon stockholders, such as funds with limitations on their permitted holdings of stock in individual issuers, may be required to sell the shares of Combined Company common stock that they receive in the Merger. UTC stockholders may decide not to continue to hold their shares of common stock following completion of the Merger and/or the Separation and the Distributions. Certain UTC stockholders, such as funds with limitations on their permitted holdings of stock in individual issuers, may be required to sell their shares of common stock following completion of the transactions. Such sales of Combined Company common stock could have the effect of depressing the market price for the Combined Company's common stock.

Any of these events may make it more difficult for the Combined Company to sell equity or equity-related securities, dilute your ownership interest in the Combined Company and have an adverse impact on the price of the Combined Company's common stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We and our subsidiaries operate in a number of plants, laboratories, warehouses and office facilities in the U.S. and abroad.

As of December 31, 2019 we owned, leased and/or utilized (through operating agreements) approximately27 million square feet of floor space for manufacturing, engineering, research, administration, sales and warehousing, 92% of which was located in the U.S. Of such total, 46% was owned (or held under a long-term ground lease with ownership of the improvements), 49% was leased, and 5% was government owned. In addition to the 27 million square feet of floor space described above, 67,081 square feet of space was leased or subleased by us to unrelated third parties.

There are no major encumbrances on any of our facilities other than financing arrangements, which in the aggregate are not material. In the opinion of management, our properties have been well maintained and are suitable and adequate for us to operate at present levels, and the productive capacity and extent of utilization of the facilities are appropriate for our existing real estate requirements.

As of December 31, 2019, our business segments had major operations at the following locations:

– *Integrated Defense Systems*—Huntsville, AL; Fullerton, CA; San Diego, CA; Andover, MA; Marlborough, MA; Tewksbury, MA; Woburn, MA; Maple Lawn, MD; Portsmouth, RI; Kiel, Germany; Warsaw, Poland; Doha, Qatar; Jeddah, Saudi Arabia; Riyadh, Saudi Arabia; and Abu Dhabi, United Arab Emirates.
– *Intelligence, Information and Services*—Fullerton, CA; Aurora, CO; Orlando, FL; Palm Bay, FL; Indianapolis, IN; Louisville, KY; Billerica, MA; Burlington, MA; Marlborough, MA; Annapolis Junction, MD; Troy, MI; State College, PA; El Paso, TX; Richardson, TX; Dulles, VA; Herndon, VA; Newport News, VA; Springfield, VA; Canberra, Australia; and Calgary, Canada.
– *Missile Systems*—Huntsville, AL; East Camden, AR; Tucson, AZ; Sacramento, CA; Louisville, KY; Albuquerque, NM; Farmington, NM; Dallas, TX; Richardson, TX; Midland, Canada; and Abu Dhabi, United Arab Emirates.
– *Space and Airborne Systems*—El Segundo, CA; Goleta, CA; Sunnyvale, CA; Largo, FL; Fort Wayne, IN; Cambridge, MA; Marlborough, MA; Forest, MS; Dallas, TX; McKinney, TX; Harlow, England; and Glenrothes, Scotland.
– *Forcepoint*—Boston, MA; Minneapolis, MN; Austin, TX; Salt Lake City, UT; Herndon, VA; Sydney, Australia; Reading, England; Helsinki, Finland; Bangalore, India; Chennai, India; Cork, Ireland; Dublin, Ireland; and Tel Aviv, Israel.
– *Corporate*—Billerica, MA; Waltham, MA; Greenville, TX; Richardson, TX; Plano, TX; Arlington, VA; and Dulles, VA.

A summary of the space owned, leased and/or utilized by us as ofDecember 31, 2019, by business segment is as follows:

(In square feet)	Leased	Owned(1)	Government owned(2)	Total(3)
Integrated Defense Systems	1,319,854	3,763,632	88,616	5,172,102
Intelligence, Information and Services	4,791,680	495,732	132	5,287,544
Missile Systems	2,808,888	2,919,606	1,249,597	6,978,091
Space and Airborne Systems	3,196,102	4,991,872	—	8,187,974
Forcepoint	588,518	—	—	588,518
Corporate(4)	513,873	292,046	5,944	811,863
Total square feet	13,218,915	12,462,888	1,344,289	27,026,092

(1) Ownership may include either fee ownership of land and improvements or a long-term ground lease with ownership of improvements.
(2) "Government owned" means space owned by the U.S. or a foreign government utilized by us pursuant to an operating agreement with the U.S. or a foreign government.
(3) Includes 18,000 square feet of vacant space, but excludes 67,081 square feet of space leased or subleased to unrelated third parties.
(4) Includes business development and Raytheon International, Inc.

ITEM 3. LEGAL PROCEEDINGS

We primarily engage in providing products and services under contracts with the U.S. government and, to a lesser degree, under direct foreign sales contracts, some of which the U.S. government funds. As a U.S. government contractor, we are subject to many levels of audit and investigation by the U.S. government relating to our contract performance and compliance with applicable rules and regulations. Agencies that oversee contract performance include: the Defense Contract Audit Agency (DCAA); the Defense Contract Management Agency (DCMA); the Inspectors General of the U.S. Department of Defense (DoD) and other departments and agencies; the Government Accountability Office (GAO); the Department of Justice (DOJ); and Congressional Committees. Other areas of our business operations may also be subject to audit and investigation by these and/or other agencies. From time to time, agencies investigate or conduct audits to determine whether our operations are being conducted in accordance with applicable requirements. Such investigations and audits may be initiated due to a number of reasons, including as a result of a whistleblower complaint. Such investigations and audits could result in administrative, civil or criminal liabilities, including repayments, fines or penalties being imposed upon us, the suspension of government export licenses or the suspension or debarment from future U.S. government contracting. U.S. government investigations often take years to complete and many result in no adverse action against us. Our final allowable incurred costs for each year are also subject to audit and have, from time to time, resulted in disputes between us and the U.S. government, with litigation resulting at the Court of Federal Claims (COFC) or the Armed Services Board of Contract Appeals (ASBCA) or their related courts of appeals. In addition, the DOJ has, from time to time, convened grand juries to investigate possible irregularities by us. We also provide products and services to customers outside of the U.S., and those sales are subject to local government laws, regulations and procurement policies and practices. Our compliance with such local government regulations or any applicable U.S. government regulations (e.g., the Foreign Corrupt Practices Act (FCPA) and International Traffic in Arms Regulations (ITAR)) may also be investigated or audited. Other than as specifically disclosed in this Form 10-K, we do not expect these audits, investigations or disputes to have a material effect on our financial position, results of operations or liquidity, either individually or in the aggregate.

In addition, various other claims and legal proceedings generally incidental to the normal course of business are pending or threatened against us. We do not expect these proceedings to result in any additional liability that would materially affect our financial position, results of operations or liquidity.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Our executive officers are listed below. Each executive officer was elected by our Board of Directors to serve for a term of one year and until his or her successor is elected and qualified or until his or her earlier removal, resignation or death.

Ralph H. Acaba

Mr. Acaba has served as President of the Integrated Defense Systems (IDS) business unit since March 2019 and Vice President of Raytheon Company since August 2017. From August 2017 to March 2019, he was Vice President of Raytheon Program Management. From September 2013 to July 2017, Mr. Acaba was Vice President of the Integrated Air and Missile Defense product line within IDS. Mr. Acaba joined Raytheon in 1986 and has held a series of increasingly senior leadership roles in Raytheon, including director of Patriot Systems and director of Maneuver Protection Programs. Age 56.

Roy Azevedo

Mr. Azevedo has served as Vice President of Raytheon Company and President of the Space and Airborne Systems (SAS) business unit since September 2018. From July 2017 to September 2018, he was Vice President and General Manager of the Intelligence, Surveillance and Reconnaissance Systems product line within SAS. From March 2015 to July 2017, Mr. Azevedo was Vice President and General Manager of the Secure Sensor Solutions product line within SAS. From October 2011 to March 2015, Mr. Azevedo was Vice President of the Advanced Concepts and Technology area within SAS and from August 2009 to October 2011, he was Deputy Vice President and General Manager of the Electronic Warfare Systems product line within SAS. Mr. Azevedo joined Raytheon in 1989 and has held positions of increasing responsibility on a variety of programs ranging from system and test design to advanced technology development and program manager. Age 59.

Frank R. Jimenez

Mr. Jimenez has served as Vice President and General Counsel since January 2015 and Corporate Secretary since April 2015. Prior to joining Raytheon, Mr. Jimenez served as General Counsel, Secretary and Managing Director, Corporate Affairs of Bunge Limited, a leading global agribusiness and food company, from July 2012 to January 2015. From 2011 to 2012, he served as Senior Vice President, General Counsel and Corporate Secretary at Xylem Inc., a global water technology company spun off from ITT Corporation in 2011. From 2009 to 2011, he served as Vice President and General Counsel of ITT Corporation. From 2006 to 2009, he served as General Counsel of the U.S. Department of the Navy. He previously held a variety of other positions in government, including Deputy General Counsel (Legal Counsel) for the U.S. Department of Defense and Chief of Staff at the U.S. Department of Housing and Urban Development, as well as Deputy Chief of Staff and Acting General Counsel to the Governor of Florida. Age 55.

Thomas A. Kennedy

Dr. Kennedy has served as Chairman of the Board since October 2014, Chief Executive Officer since April 2014 and a Director since January 2014. From April 2013 to March 2014, he served as Executive Vice President and Chief Operating Officer of Raytheon Company. From June 2010 to March 2013, he served as Vice President of Raytheon Company and President of the Integrated Defense Systems (IDS) business unit. From July 2007 to June 2010, he was Vice President of the Tactical Airborne Systems product line within the Space and Airborne Systems (SAS) business unit, and from May 2003 to July 2007, he was Vice President of the Mission System Integration product line within SAS. Dr. Kennedy joined Raytheon in 1983 and has held positions of increasing responsibility as a new business leader and program manager for several radar and electronic warfare systems development programs. Age 64.

Wesley D. Kremer

Mr. Kremer has served as President of the Missile Systems (MS) business unit since March 2019 and Vice President of Raytheon Company since October 2015. From July 2015 to March 2019, he was President of the Integrated Defense Systems (IDS) business unit. From July 2011 to July 2015, he was Vice President of the Air and Missile Defense Systems product line within MS. From May 2010 to July 2011, Mr. Kremer was Director of the Standard Missile-3 program, and from June 2008 to May 2010, he was Director of Systems Design and Performance Engineering within MS. From December 2006 to June 2008, he was General Manager of the Advanced Products Center within the Space and Airborne Systems (SAS) business unit. Prior to joining Raytheon in 2003, Mr. Kremer served 11 years in the U.S. Air Force as a weapon systems officer. Age 54.

Randa G. Newsome

Ms. Newsome has served as Vice President of Human Resources and Global Security since January 2015. From April 2013 to December 2014, she was Vice President of Human Resources and Security for Raytheon's Integrated Defense Systems (IDS) business unit. From December 2008 to April 2013, she was Vice President of Human Resources and Security for the former Technical Services business unit. From May 2004 to December 2008, Ms. Newsome was Director of Organization Performance and Talent Management for the former Intelligence and Information Systems business unit. Ms. Newsome joined Raytheon in 2001 as a human resources manager for the former Network Centric Systems business unit, after holding various assignments of increasing responsibility at Lockheed Martin Corporation. Age 54.

Anthony F. O'Brien

Mr. O'Brien has served as Vice President and Chief Financial Officer since March 2015. From March 2008 to March 2015, he was Vice President and Chief Financial Officer of Raytheon's Integrated Defense Systems (IDS) business unit. Mr. O'Brien joined Raytheon in 1986 and has held numerous finance positions of increasing responsibility with the Company over the course of his 33-year career, including Vice President of Finance and the senior finance executive responsible for Raytheon Airline Aviation Services and Raytheon's International Landed Companies, and Chief Financial Officer for Raytheon Aircraft Company. Age 55.

Rebecca R. Rhoads

Ms. Rhoads has served as Vice President of Raytheon Company and President of Global Business Services (GBS) since December 2013. From April 2001 to December 2013, she was a Vice President and the Chief Information Officer for Raytheon Company. From 1999 to April 2001, she was the Vice President of Information Technology for Raytheon's former Electronics Systems business unit. Ms. Rhoads began her career with General Dynamics as an electrical engineer in 1979, and worked in Engineering and Operations holding various assignments of increasing responsibility at General Dynamics, Hughes and Raytheon. Age 62.

David C. Wajsgras

Mr. Wajsgras has served as Vice President of Raytheon Company and President of the Intelligence, Information and Services (IIS) business unit since March 2015. From March 2006 to March 2015, he was Senior Vice President and Chief Financial Officer for Raytheon Company. From August 2005 to March 2006, he was Executive Vice President and Chief Financial Officer of Lear Corporation, an automotive interior systems and components supplier. From January 2002 to August 2005, he served as Senior Vice President and Chief Financial Officer of Lear. Mr. Wajsgras joined Lear in September 1999 as Vice President and Controller. Age 60.

Michael J. Wood

Mr. Wood has served as Vice President, Controller and Chief Accounting Officer since October 2006. Prior to joining Raytheon, Mr. Wood held positions of increasing responsibility over a 16-year career at KPMG LLP, an accounting firm, including as an Audit Partner serving various aerospace and defense clients. Age 51.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

At February 10, 2020, there were 18,800 record holders of our common stock. Our common stock is traded on the New York Stock Exchange under the symbol "RTN." The information required by Item 5 with respect to securities authorized for issuance under equity compensation plans is contained in Item 12 of this Annual Report on Form 10-K.

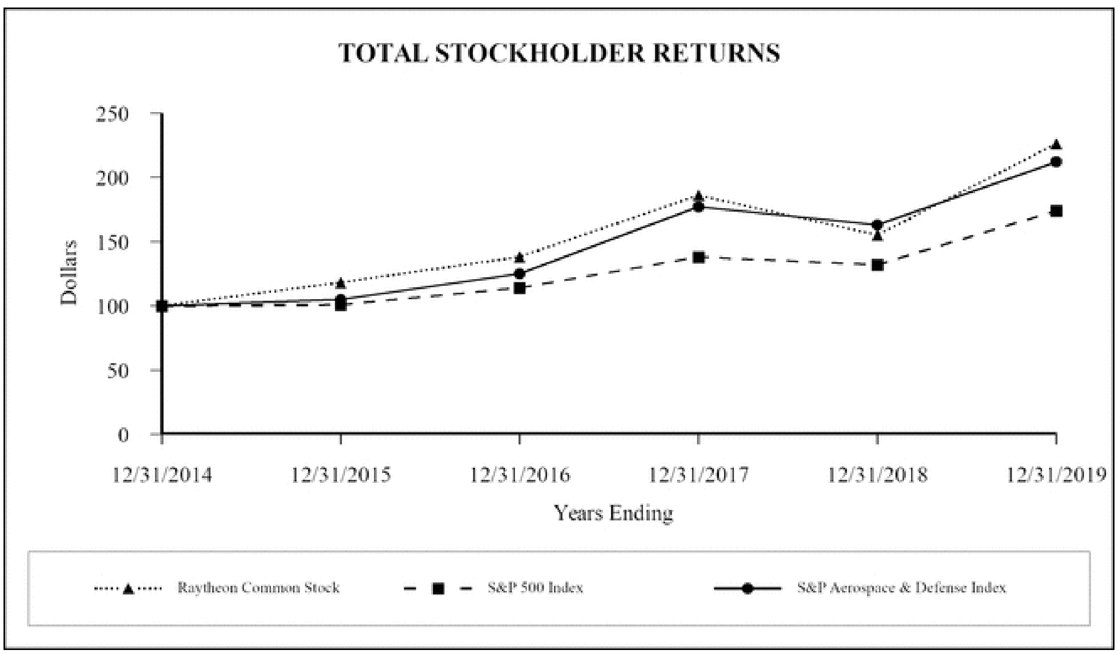
Stock Performance Graph

The following chart compares the total return on a cumulative basis of $100 invested in our common stock on December 31, 2014 to the Standard & Poor's (S&P) 500 Stock Index and the S&P Aerospace & Defense Index.

Total Return To Stockholders (Includes reinvestment of dividends)

	Annual Return Percentage Years Ending				
Company/Index	12/31/2015	12/31/2016	12/31/2017	12/31/2018	**12/31/2019**
Raytheon Common Stock	18.01	17.18	34.21	(16.51)	**45.53**
S&P 500 Index	1.38	11.96	21.83	(4.38)	**31.49**
S&P Aerospace & Defense Index	5.43	18.90	41.38	(8.07)	**30.33**

		Indexed Returns Years Ending				
Company/Index	Base Period 12/31/2014	12/31/2015	12/31/2016	12/31/2017	12/31/2018	**12/31/2019**
Raytheon Common Stock	$ 100	$ 118.01	$ 138.27	$ 185.58	$ 154.95	**$ 225.50**
S&P 500 Index	100	101.38	113.51	138.29	132.23	**173.86**
S&P Aerospace & Defense Index	100	105.43	125.36	177.24	162.93	**212.35**



Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans	Approximate Dollar Value (in Billions) of Shares that May Yet Be Purchased Under the Plans (2)
October (September 30, 2019–October 27, 2019)	10	$195.64	—	$ 0.7
November (October 28, 2019–November 24, 2019)	928	217.54	—	0.7
December (November 25, 2018–December 31, 2019)	674	215.79	—	0.7
Total	1,612	$216.67	—	

(1) All activity during the fourth quarter of 2019 relates to the surrender by employees of 1,612 shares to satisfy tax withholding obligations in connection with the vesting of restricted stock issued to employees.

(2) In November 2017, our Board authorized the repurchase of up to $2.0 billion of our outstanding common stock. However, the merger agreement with United Technologies Corporation (UTC) restricts us from repurchasing shares other than to satisfy tax withholding obligations. For more information refer to “Note 2: Proposed Merger with United Technologies Corporation (UTC)” within Item 8 of this Form 10-K.

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ITEM 6. SELECTED FINANCIAL DATA

The following selected consolidated financial data should be read in conjunction with the information contained in Item 7 of this Form 10-K and the consolidated financial statements and notes thereto included in Item 8 of this Form 10-K, which are incorporated herein by reference, in order to understand the factors that may affect the comparability of the financial data presented below.

FIVE-YEAR STATISTICAL SUMMARY

(In millions, except per share amounts and total employees)	2019	2018	2017	2016	2015
Results of Operations					
Total net sales	**$ 29,176**	$ 27,058	$ 25,348	$ 24,124	$ 23,321
Operating income	**4,774**	4,538	4,231	3,896	3,721
Retirement benefits non-service expense	**688**	1,230	913	601	654
Income from continuing operations	**3,328**	2,883	1,999	2,212	2,094
Income (loss) from discontinued operations, net of tax	**1**	(1)	2	1	13
Net income attributable to Raytheon Company	**3,343**	2,909	2,024	2,244	2,110
Diluted earnings per share from continuing operations attributable to Raytheon Company common stockholders	**$ 11.92**	$ 10.15	$ 6.94	$ 7.55	$ 6.87
Diluted earnings per share attributable to Raytheon Company common stockholders	**$ 11.93**	$ 10.15	$ 6.95	$ 7.55	$ 6.91
Average diluted shares outstanding	**280.2**	286.8	291.4	296.8	305.2
Financial Position at Year-End					
Cash and cash equivalents	**$ 4,292**	$ 3,608	$ 3,103	$ 3,303	$ 2,328
Short-term investments	**—**	—	297	100	872
Total current assets[1]	**13,082**	12,137	11,319	10,885	10,023
Property, plant and equipment, net	**3,353**	2,840	2,439	2,166	2,005
Total assets[1]	**34,566**	32,670	31,675	30,238	29,477
Total current liabilities[1]	**9,791**	8,463	7,515	6,539	6,275
Long-term liabilities (excluding debt and operating lease liabilities)[1]	**8,553**	6,922	8,267	7,758	7,134
Long-term debt	**3,261**	4,755	4,750	5,335	5,330
Redeemable noncontrolling interest	**32**	411	512	449	355
Total equity	**12,223**	11,472	9,963	10,157	10,383
Cash Flow and Other Information					
Net cash provided by (used in) operating activities from continuing operations	**$ 4,482**	$ 3,428	$ 2,747	$ 2,852	$ 2,346
Net cash provided by (used in) investing activities from continuing operations	**(1,006)**	(521)	(817)	53	(1,744)
Net cash provided by (used in) financing activities	**(2,803)**	(2,398)	(2,116)	(1,930)	(1,509)
Bookings	**36,340**	32,162	27,718	27,809	25,145
Total backlog at year-end	**48,752**	42,420	38,210	36,709	33,839
Dividends declared per share	**$ 3.77**	$ 3.47	$ 3.19	$ 2.93	$ 2.68
Total employees at year-end	**70,000**	67,000	64,000	63,000	61,000

(1) Amounts prior to 2017 do not reflect the impact of the adoption of Accounting Standards Update (ASU) 2016-02, *Leases (Topic 842)*, in the first quarter of 2019, using the modified retrospective approach. See “Note 1: Summary of Significant Accounting Policies” within Item 8 of this Form 10-K for additional information.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

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OVERVIEW

Introduction

Raytheon Company develops technologically advanced and integrated products, services and solutions in our core markets: integrated air and missile defense; electronic warfare; command, control, communications, computers, cyber, intelligence, surveillance and reconnaissance; space systems; effects; and cyber. We serve both domestic and international customers primarily as a prime contractor or subcontractor on a broad portfolio of defense and related programs for government customers.

We operate in five segments: Integrated Defense Systems (IDS); Intelligence, Information and Services (IIS); Missile Systems (MS); Space and Airborne Systems (SAS); and Forcepoint. For a more detailed description of our segments, see "Business Segments" within Item 1 of this Form 10-K.

As previously announced, effective January 1, 2019, we adopted the requirements of Accounting Standards Update (ASU) 2016-02, *Leases (Topic 842)* using the modified retrospective approach as discussed in "Note 1: Summary of Significant Accounting Policies" within Item 8 of this Form 10-K. We reclassified certain balance sheet amounts to conform to our current period presentation.

On June 9, 2019, Raytheon and United Technologies Corporation (UTC) entered into an agreement to combine in an all-stock merger of equals. The merger is targeted to close early in the second quarter of 2020, subject to and following completion by UTC of the separations and distributions of its Otis and Carrier businesses. Under the terms of the agreement, Raytheon stockholders will receive 2.3348 shares of UTC common stock for each Raytheon share. The agreement provides that upon completion of the merger, UTC stockholders will own approximately 57% and Raytheon stockholders will own approximately 43% of the outstanding shares of common stock of UTC. In addition, the agreement generally restricts certain actions by both Raytheon and UTC. The merger was approved by Raytheon's stockholders at a special meeting of Raytheon held on October 11, 2019, and was approved by UTC stockholders at a special meeting of UTC held on October 11, 2019. For additional information refer to "Note 2: Proposed Merger with United Technologies Corporation (UTC)" within Item 8 of this Form 10-K.

Business Environment

Domestic Considerations

U.S. government sales, excluding foreign military sales, accounted for 69% of our total net sales in 2019. Our principal U.S. government customer is the U.S. Department of Defense (DoD).

DoD funding levels, which are subject to budget and appropriation decisions and processes, are difficult to predict beyond the near-term. The Budget Control Act of 2011 (BCA) imposed spending caps on DoD funding for fiscal years (FY) 2012 to 2021, however the caps have been raised each year since FY 2013, most recently by the Bipartisan Budget Act (BBA) of 2019 for FY 2020 and FY 2021. DoD modernization funding, which consists of procurement and research and development, is of particular importance to defense contractors. DoD modernization funding has steadily increased since FY 2015, including for FY 2020, as a result of the BBA of 2015, the BBA of 2018, and the BBA of 2019. However, future DoD spending levels are uncertain given the lapse in the BCA after FY 2021 and will require the agreement and action of both Congress and the President.

In addition to the DoD budget considerations discussed above, future domestic defense spending levels are impacted by a number of additional factors, including external threats to U.S. national security, funding for on-going counter insurgency/counter terrorism operations overseas, the priorities of the Administration and Congress, overall health of the U.S. and world economies, and the state of governmental finances. However, we expect the DoD to continue to prioritize and protect the key capabilities required to execute its National Defense Strategy, including being able to deter and defeat peer nation threats. Such capabilities include Intelligence, Surveillance and Reconnaissance (ISR), cybersecurity, missile defense, electronic warfare, kinetic and non-kinetic effectors, undersea warfare, space systems, unmanned systems, special operations forces and interoperability with allied forces. We believe those priorities are well aligned with our product offerings, technologies, services and capabilities.

We currently are involved in tens of thousands of contracts, with no single contract accounting for more than5% of our total net sales in2019. Although we believe our diverse portfolio of programs and capabilities is well suited to a changing defense environment, we face numerous challenges and risks, as discussed above. For more information on the risks and uncertainties that could impact the U.S. government's demand for our products and services, see Item 1A of this Form 10-K.

International Considerations

In 2019, our sales to customers outside of the U.S. accounted for29% of our total net sales (including foreign military sales through the U.S. government). Internationally, the growing threat of additional terrorist activity, cyber threats, emerging nuclear states, long-range missiles and conventional military threats have led to an increase in demand for defense systems and services and other security solutions. In Asia, both short- and long-term regional security concerns are increasing demand for air and missile defense, air/naval modernization and maritime security. In the Middle East and North Africa (MENA), threats from state and non-state actors are increasing demand for air and missile defense (including counter-unmanned aerial vehicle (UAV) systems), air/land/naval force modernization, precision engagement, ISR, maritime and border security, and cybersecurity solutions. Given such threat environments, we expect our MENA customers to continue to prioritize security investments even if their budgets are impacted by volatile short-term energy prices. In Europe, some countries have begun to increase spending in response to geopolitical events and conflicts in Eastern Europe and the resulting uncertainty in the security threat environment. Based on these factors, we expect that European nations will continue to seek advanced air and missile defense and other capabilities, including ISR and cyber. Overall, we believe many international defense budgets have the potential to grow at a faster rate than the U.S. defense budget. However, international demand is sensitive to changes in the priorities and budgets of international customers and geopolitical uncertainties, which may be driven by changes in threat environments, volatility in worldwide economic conditions, regional and local economic and political factors, U.S. foreign policy and other risks and uncertainties. For more information on the risks and uncertainties that could impact international demand for and our ability to sell our products and services, see Item 1A of this Form 10-K.

Because of the breadth of our offerings, our systems integration capability, the value of our solutions and our strong legacy in the international marketplace, we believe that we are well positioned to continue to grow our international business. We continue to enhance our focus on global growth through increased investment in our international business in existing and new international markets. Such investment provides additional resources and capabilities, both in-country and in the U.S., that strengthen the Company's position to pursue both existing and new opportunities. We also continue to adjust our international business activities to address customer priorities. Although we believe our international business is well positioned to continue to grow, we recognize that we face substantial competition from both U.S. companies and other competitors in international markets, as well as the challenges of changing budget priorities, overall spending pressures, geopolitical uncertainties and the timing of contract awards.

(In millions)		2019		2018		2017
International sales[1]	$	8,582	$	8,105	$	8,085
International bookings		10,352		9,850		8,479

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

Our Strategy

The following are the broad elements of our strategy:

– Build upon our areas of strength within our key mission areas;
– Focus additional resources on emerging opportunities within the DoD market;
– Extend Raytheon's advanced cyber solutions beyond the U.S. government into international and commercial markets; and
– Engage key countries as individual markets with multiple customers.

We believe that our broad mix of technologies, domain expertise and key capabilities, our cost-effective, best-value solutions and the alignment of these strengths with customer needs position us favorably to grow in our key mission areas of: integrated air and missile defense; electronic warfare; command, control, communications, computers, cyber, intelligence, surveillance and reconnaissance; space systems; effects; and cyber. Globally, customers are increasingly seeking cost-effective mission solutions. These solutions can take the form of new electronics or electronic upgrades, but draw on our market focus area capabilities, deep domain expertise and system architecture skills. We continue to explore opportunities to make these affordable solutions more readily available to our international customers, including through enhanced design for export and releasability. We also continue to make investments to support our strategy, including through acquisitions and research and development. We seek to continuously innovate and refresh technology in our current franchises—advanced solution sets for which we expect longer-term customer demand, such as our Patriot Air and Missile Defense (A&MD) system, Air and Missile Defense Radar (AMDR), and Lower Tier Air and Missile Defense Sensor (LTAMDS)—and we use the related expertise to work to create new franchises and expand internationally. Moreover, we expect to continue to expand our customer base in key countries.

We provide cyber capabilities to government customers, including the Intelligence Community, the DoD, the Department of Homeland Security (DHS), and other defense and civil global customers, as well as embed information assurance capabilities in our products and our information technology infrastructure. We believe cyber markets continue to represent strong growth markets for Raytheon. We expect to continue to seek opportunities to leverage our extensive cyber capabilities and to grow and scale our cyber businesses.

Focus on the Customer and Execution

Our customer focus continues to be critical to the execution of our strategy—underpinned by a focus on performance, relationships and solutions. Performance means being able to meet customer commitments, which is ensured through strong processes, metrics and oversight. We maintain a "process architecture" that spans our defense businesses and our broad programs and pursuits. It consists of enterprisewide processes and systems such as: our Integrated Product Development System (IPDS), which assures consistency of evaluation and execution at each step in a program's life-cycle; Product Data Management (PDM), which is our business system software for engineering; Achieving Process Excellence (APEX), which is our SAP business system software for accounting, finance and program management; Process Re-Invention Integrating Systems for Manufacturing (PRISM), which is our SAP software for manufacturing operations; Advanced Company Estimating System (ACES), which is our cost proposal system; and Raytheon Enterprise Supplier Assessment (RESA) tool for Supply Chain Management. These processes and systems are linked to an array of front-end and back-end metrics. With this structure, we are able to track results and be alerted to potential issues through numerous oversight mechanisms, including operating reviews and annual operating plan reviews.

We are also continuing to build strong customer relationships by working with customers as partners and including them on Raytheon Six Sigma™ teams to jointly improve their programs and processes. We are increasingly focused on responding to our customers' changing requirements with rapid and effective solutions to real-world problems. In recognition of our customers' constraints and priorities, we also continue to drive various cost reductions across the Company by continuing to focus on enterprise collaboration and improving productivity and strong execution throughout our programs. We have worked to reduce costs across the Company and improve efficiencies in our production facilities, and we continue to increase value through Raytheon Six Sigma, the implementation of lean processes, reduced cycle times and strategic supply chain initiatives, in addition to other initiatives. To further increase efficiencies, we are also developing and applying new technologies to our development and production solutions. These technologies include additive manufacturing (AM) for rapid prototyping and novel product realization, and data analytics and machine learning to optimize production and product test.

FINANCIAL SUMMARY

We use the following key financial performance measures to manage our business on a consolidated basis and by business segment, and to monitor and assess our results of operations:

– *Bookings*—a forward-looking metric that measures the value of firm orders awarded to us during the year;
– *Net Sales*—a growth metric that measures our revenue for the current year;
– *Operating Income*—a measure of our profit from continuing operations for the year, before non-operating expenses, net and taxes; and
– *Operating Margin*—a measure of our operating income as a percentage of total net sales.

(In millions, except percentages)	**2019**	2018	2017
Bookings	**$ 36,340**	$ 32,162	$ 27,718
Total backlog	**48,752**	42,420	38,210
Total net sales	**29,176**	27,058	25,348
Total operating income[(1)]	**4,774**	4,538	4,231
Total operating margin[(1)]	**16.4%**	16.8%	16.7%
Operating cash flow from continuing operations	**$ 4,482**	$ 3,428	$ 2,747

(1) Includes the impact of the FAS/CAS Operating Adjustment, described below in Critical Accounting Estimates, of $1,454 million, $1,428 million and $1,303 million of income in 2019, 2018 and 2017, respectively.

Backlog, which is equivalent to our remaining performance obligations, represents the dollar value of firm orders for which work has not been performed. Backlog generally increases with bookings and generally converts into sales as we incur costs under the related contractual commitments. Therefore, we discuss changes in backlog, including any individually significant cancellations, for each of our segments, as we believe such discussion provides an understanding of the awarded but not executed portions of our contracts. Backlog excludes unexercised contract options and potential orders under ordering-type contracts (e.g., indefinite-delivery, indefinite-quantity (IDIQ)). Backlog is affected by changes in foreign exchange rates.

In addition, we maintain a strong focus on program execution and the prudent management of capital and investments in order to maximize operating income and cash. We focus on earnings per share (EPS) and measures to assess our cash generation and the efficiency and effectiveness of our use of capital, such as free cash flow (FCF) and return on invested capital (ROIC), both of which are not defined measurements under U.S. Generally Accepted Accounting Principles (GAAP) and may be calculated differently by other companies.

Considered together, we believe these metrics are strong indicators of our overall performance and our ability to create shareholder value. We feel these measures are balanced among long-term and short-term performance, efficiency and growth. We also use these and other performance metrics for executive compensation purposes.

A discussion of our results of operations and financial condition follows below in Consolidated Results of Operations, Segment Results, Financial Condition and Liquidity, and Capital Resources.

CRITICAL ACCOUNTING ESTIMATES

Our consolidated financial statements are based on the application of U.S. GAAP, which requires us to make estimates and assumptions about future events that affect the amounts reported in our consolidated financial statements and the accompanying notes. Future events and their effects cannot be determined with certainty; therefore, the determination of estimates requires the exercise of judgment. Actual results could differ from those estimates, and any such differences may be material to our consolidated financial statements. We believe the estimates set forth below may involve a higher degree of judgment and complexity in their application than our other accounting estimates and represent the critical accounting estimates used in the preparation of our consolidated financial statements. We believe our judgments related to these accounting estimates are appropriate. However, if different assumptions or conditions were to prevail, the results could be materially different from the amounts recorded.

Revenue Recognition

We determine the appropriate revenue recognition for our contracts with customers by analyzing the type, terms and conditions of each contract or arrangement with a customer. We classify contract revenues as product or service according to the predominant attributes of the relevant underlying contracts unless the contract can clearly be split between product and service. We define service revenue as revenue from activities that are not associated with the design, development or production of tangible assets, the delivery of software code or capability design. Our service revenue is primarily related to our IIS business segment.

The following provides additional information about our contracts with customers, the judgments we make in accounting for those contracts, and the resulting amounts recognized in our financial statements.

Accounting for long-term contracts for complex aerospace or defense equipment (or related services)—To determine the proper revenue recognition method for contracts for complex aerospace or defense equipment or related services, we evaluate whether two or more contracts should be combined and accounted for as one single contract and whether the combined or single contract should be accounted for as more than one performance obligation. This evaluation requires significant judgment and the decision to combine a group of contracts or separate the combined or single contract into multiple performance obligations could change the amount of revenue and profit recorded in a given period. For most of our contracts, the customer contracts with us to provide a significant service of integrating a complex set of tasks and components into a single project or capability (even if that single project results in the delivery of multiple units). Hence, the entire contract is accounted for as one performance obligation. Less commonly, however, we may promise to provide distinct goods or services within a contract, for example when a contract covers multiple phases of the product lifecycle (e.g., development, production, maintenance and support), in which case we separate the contract into more than one performance obligation. If a contract is separated into more than one performance obligation, we allocate the total transaction price to each performance obligation in an amount based on the estimated relative standalone selling prices of the promised goods or services underlying each performance obligation. We infrequently sell standard products with observable standalone sales. In cases where we do, the observable standalone sales are used to determine the standalone selling price. More frequently, we sell a customized customer specific solution, and in these cases we typically use the expected cost plus a margin approach to estimate the standalone selling price of each performance obligation.

We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. For certain contracts that meet the foregoing requirements, primarily international direct commercial sale contracts, we are required to obtain certain regulatory approvals. In these cases, we recognize revenue based on the likelihood of obtaining regulatory approvals based upon all known facts and circumstances.

We generally recognize revenue over time as we perform on our contractual performance obligations because of continuous transfer of control to the customer. For U.S. government contracts, this continuous transfer of control to the customer is supported by clauses in the contract that allow the customer to unilaterally terminate the contract for convenience, pay us for costs incurred plus a reasonable profit and take control of any work in process. Similarly, for non-U.S. government contracts, the customer typically controls the work in process as evidenced either by contractual termination clauses or by our rights to payment for work performed to date plus a reasonable profit to deliver products or services that do not have an alternative use to the Company.

Because of control transferring over time, revenue is recognized based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. We generally use the cost-to-cost measure of progress for our contracts because it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost measure of progress, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. Revenues, including estimated fees or profits, are recorded proportionally as costs are incurred. The majority of our sales are driven by pricing based on costs incurred to produce products or perform services under contracts with the U.S. government, as determined under the Federal Acquisition Regulation (FAR). The FAR provides guidance on the types of costs that are allowable in establishing prices for goods and services under U.S. government contracts. Costs to fulfill include labor, materials and subcontractors' costs, other direct costs and an allocation of indirect costs including pension and any other postretirement benefit (PRB) expense under U.S. government Cost Accounting Standards (CAS).

Due to the nature of the work required to be performed on many of our performance obligations, the estimation of total revenue and cost at completion (the process described below in more detail) is complex, subject to many variables and requires significant judgment by management on a contract by contract basis. It is common for our long-term contracts to contain award fees, incentive fees, or other provisions that can either increase or decrease the transaction price. These variable amounts generally are awarded upon achievement of certain performance metrics, program milestones or cost targets and can be based upon customer discretion. We estimate variable consideration at the most likely amount to which we expect to be entitled. We include estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Our estimates of variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available to us.

Contracts are often modified to account for changes in contract specifications and requirements. We consider contract modifications to exist when the modification either creates new or changes the existing enforceable rights and obligations. Most of our contract modifications are for goods or services that are not distinct from the existing contract due to the significant integration service provided in the context of the contract and are accounted for as if they were part of that existing contract. The effect of a contract modification on the transaction price and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis.

We have a companywide standard and disciplined quarterly Estimate at Completion (EAC) process in which management reviews the progress and execution of our performance obligations. As part of this process, management reviews information including, but not limited to, any outstanding key contract matters, progress towards completion and the related program schedule, identified risks and opportunities and the related changes in estimates of revenues and costs. The risks and opportunities include management's judgment about the ability and cost to achieve the schedule (e.g., the number and type of milestone events), technical requirements (e.g., a newly-developed product versus a mature product) and other contract requirements. Management must make assumptions and estimates regarding labor productivity and availability, the complexity of the work to be performed, the availability of materials, the length of time to complete the performance obligation (e.g., to estimate increases in wages and prices for materials and related support cost allocations), execution by our subcontractors, the availability and timing of funding from our customer, and overhead cost rates, among other variables. These estimates also include the estimated cost of satisfying our industrial cooperation agreements, sometimes in the form of either offset obligations or in-country industrial participation (ICIP) agreements, required under certain contracts. These obligations may or may not be distinct depending on their nature.

Based on this analysis, any quarterly adjustments to net sales, cost of sales and the related impact to operating income are recognized as necessary in the period they become known. These adjustments may result from positive program performance, and may result in an increase in operating income during the performance of individual performance obligations, if we determine we will be successful in mitigating risks surrounding the technical, schedule and cost aspects of those performance obligations or realizing related opportunities. Likewise, these adjustments may result in a decrease in operating income if we determine we will not be successful in mitigating these risks or realizing related opportunities. Changes in estimates of net sales, cost of sales and the related impact to operating income are recognized quarterly on a cumulative catch-up basis, which recognizes in the current period the cumulative effect of the changes on current and prior periods based on a performance obligation's percentage of completion. A significant change in one or more of these estimates could affect the profitability of one or more of our performance obligations. When estimates of total costs to be incurred exceed total estimates of revenue to be earned on a performance obligation related to complex aerospace or defense equipment or related services, or product maintenance or separately priced extended warranty, a provision for the entire loss on the performance obligation is recognized in the period the loss is identified.

Net EAC adjustments had the following impact on our operating results:

(In millions, except per share amounts)		2019[1]		2018[1]		2017
Operating income	**$**	**520**	$	492	$	442
Income from continuing operations attributable to Raytheon Company		**411**		389		287
Diluted EPS from continuing operations attributable to Raytheon Company	**$**	**1.47**	$	1.36	$	0.98

(1) Amounts reflect a U.S. statutory tax rate of 21%, which became effective in 2018 with the adoption of the Tax Cuts and Jobs Act of 2017 (2017 Act).

Pension and Other Postretirement Benefits (PRB) Costs

We have pension plans covering the majority of our employees hired prior to January 1, 2007, including certain employees in foreign countries (Pension Benefits). We must apply both Financial Accounting Standards (FAS) requirements under U.S. GAAP and Cost Accounting Standards (CAS) requirements. U.S. GAAP outlines the methodology used to determine net periodic pension and PRB expense or income for financial reporting purposes (FAS expense). CAS prescribes the allocation to and recovery of pension and PRB costs on U.S. government contracts (CAS expense). The CAS requirements for pension and PRB costs and its calculation methodology differ from the FAS requirements and calculation methodology. As a result, while both CAS and FAS calculation methodologies use long-term assumptions requiring judgment, each method results in different calculated amounts of pension and PRB cost. In addition, we are subject to the funding requirements under the Pension Protection Act of 2006 (PPA), which amended the Employee Retirement Income Security Act of 1974 (ERISA). Under the PPA, we are required to fully fund our pension plans over a rolling seven-year period as determined annually based upon the PPA calculated funded status at the beginning of each year. The funding requirements are primarily based on the year's expected service cost and amortization of other previously unfunded liabilities. Due to the differences in requirements and calculation methodologies, our FAS expense is not indicative of the PPA funding requirements.

The results of each segment only include pension and PRB expense as determined under CAS.Our FAS expense is split between operating income and non-operating income where only the service cost component of FAS expense is included in operating income. The difference between our CAS expense and the service cost component of our FAS expense is the FAS/CAS Operating Adjustment and is reported as a separate line in our segment results. The FAS/CAS Operating Adjustment effectively decreases the amount of pension expense in operating income so that such amount is equal to the service cost component of FAS expense under U.S. GAAP. The FAS/CAS Operating Adjustment was $1,454 million, $1,428 million and $1,303 million of income in 2019, 2018 and 2017, respectively. The non-service related components of FAS expense are included in retirement benefits non-service expense in non-operating (income) expense, net and were $688 million, $1,230 million and $913 million in 2019, 2018 and 2017, respectively.

On December 27, 2011, the CAS Pension Harmonization Rule (CAS Harmonization) was published in the Federal Register. The rule was intended to improve the alignment of the pension cost recovered through contract pricing under CAS and the pension funding requirements under the PPA. The rule shortened the CAS amortization period for gains and losses from 15 to 10 years and requires the use of a discount rate based on high quality corporate bonds, consistent with PPA, to measure liabilities in determining the CAS pension expense. CAS Harmonization increased pension costs under CAS starting in 2014 due to the transition phase in of 0% in 2013, 25% in 2014, 50% in 2015, 75% in 2016 and 100% in 2017 and beyond.

Due to the low interest rate environment, Congress provided for temporary pension funding relief through a provision in the Surface Transportation Extension Act of 2012 (STE Act). The provision was extended through 2020 by the Highway and Transportation Funding Act of 2014 (HATFA) and the Bipartisan Budget Act (BBA) of 2015. The provision adjusts the 24-month average high quality corporate bond rates used to determine the PPA funded status so that they are within a floor and cap, or "corridor," based on the 25-year average of corporate bond rates. Beginning after 2020, the provision will be gradually phased out. This provision impacts CAS expense as well because CAS Harmonization incorporates the PPA interest rate into CAS calculations. The BBA of 2015 also increases the insurance premiums that we are required to pay the Pension Benefit Guarantee Corporation (PBGC). However, we do not expect the increases to have a material effect on our financial position, results of operations or liquidity.

The assumptions in the calculations of our pension FAS expense and CAS expense, which involve significant judgment, are described below.

FAS Expense—Our long-term return on plan assets (ROA) and discount rate assumptions are the key variables in determining the net periodic benefit cost and the pension benefit obligation of our pension plans under U.S. GAAP. Our long-term ROA assumption only impacts the retirement benefits non-service expense. The discount rate assumption impacts the service cost component of FAS expense and retirement benefits non-service expense, while also impacting the pension benefit obligation.

The long-term ROA represents the average rate of earnings expected over the long term on the assets invested to provide for anticipated future benefit payment obligations. The long-term ROA used to calculate net periodic pension cost is set annually at the beginning of each year. Given the long-term nature of the ROA assumption, which we believe should not be solely reactive to short-term market conditions that may not persist, we expect the long-term ROA to remain unchanged unless there are significant changes in our investment strategy, the underlying economic assumptions or other major factors.

To establish our long-term ROA assumption we employ a “building block” approach. Under this building block method, the overall expected investment return equals the weighted-average of the individual expected return for each asset class based on the target asset allocation and the long-term capital market assumptions. The expected return for each asset class is composed of inflation plus a risk-free rate of return, plus an expected risk premium for that asset class. The resulting return is then adjusted for administrative, investment management and trading expenses as well as recognition of excess returns, also known as alpha, for active management. We then annually consider whether it is appropriate to change our long-term ROA assumption by reviewing the existing assumption against a statistically determined reasonable range of outcomes. The building block approach and the reasonable range of outcomes are based upon our asset allocation assumptions and long-term capital market assumptions. Such assumptions incorporate the economic outlook for various asset classes over short- and long-term periods and also take into consideration other factors, including historical market performance, inflation and interest rates.

Actuarial Standard of Practice No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* (ASOP 27) requires the selection of a reasonable long-term ROA assumption that considers multiple criteria including the purposes of measurement, the actuary’s professional judgment, historical and current economic data and estimates of future experience and has no significant bias. We evaluate our long-term ROA assumption against a reasonable range of possible outcomes which we define as between the 35th to 65th percentile likelihood of achieving a long-term return over future years. We believe that validating our ROA assumption within this reasonable range ensures an unbiased result while also ensuring that the ROA assumption is not solely reactive to short-term market conditions that may not persist, and is consistent with external actuarial practices.

The reasonable range of long-term returns that was used to validate the long-term ROA assumption for the calculation of the net periodic benefit cost for2019, 2018 and 2017 is shown below.

Percentile	**2019**	2018	2017
35th	**5.49%**	5.67%	5.82%
65th	**7.57%**	7.81%	7.96%

2017 ROA Assumption—At year end 2016, we determined that the 8.0% long-term ROA assumption no longer fell within the range of reasonable outcomes, driven primarily by the current outlook on economic assumptions used to develop the reasonable range. As a result, we employed the building block approach described above to develop our 2017 long-term ROA assumption. The building block approach resulted in a long-term ROA assumption of 7.5% for 2017. To validate this assumption, we compared the result against the reasonable range of outcomes and confirmed that the 7.5% fell between the 55th and 60th percentile of the reasonable range for 2017 with the 50th percentile at 6.89%.

Based upon our application of the building block approach and our review of the resulting assumption against the 35th to 65th percentile reasonable range and an analysis of our historical results, we established a 2017 long-term ROA domestic assumption of 7.5% for purposes of determining the net periodic benefit cost for 2017 and determined that the assumption is reasonable and consistent with the provisions of ASOP 27.

2018 ROA Assumption—The long-term domestic ROA of 7.5% fell between the 60th and 65th percentiles of the applicable reasonable range for 2018. The 50th percentile of this reasonable range was 6.74%.

2019 ROA Assumption—The long-term domestic ROA of 7.5% fell between the 60th and 65th percentiles of the applicable reasonable range for 2019. The 50th percentile of this reasonable range was 6.53%.

2020 ROA Assumption—At year end 2019, we determined that the 7.5% long-term ROA assumption no longer fell within the range of reasonable outcomes, driven primarily by the current outlook on economic assumptions used to develop the reasonable range. As a result, we employed the building block approach described above to develop our 2020 long-term ROA assumption. The building block approach resulted in a long-term ROA assumption of 7.0% for 2020. To validate this assumption, we compared the result against the reasonable range of outcomes and confirmed that the 7.0% fell between the 60th and 65th percentile of the reasonable range for 2020 with the 50th percentile at 6.31%.

Once our long-term ROA has been determined to be within the 35th to 65th percentile range of results, we review historical averages and patterns of returns to confirm the reasonableness of our long-term ROA assumption compared to past results. While history is not solely indicative of future market expectations, it does provide insight into general historical trends and long-term asset performance. Our average annual actual rate of return from 1986 to 2019 of 8.89%, determined on an arithmetic basis, exceeds our estimated 7.0% assumed return. Arithmetic annual averages represent the simple average returns over independent annual periods, whereas geometric returns reflect the compound average returns of dependent annual periods. The average annual actual return on a geometric basis for the same period was 8.25%. In addition, the actual annual returns have exceeded our long-term ROA assumption of 7.0% in five of the past ten years.

Based upon our application of the building block approach and our review of the resulting assumption against the 35th to 65th percentile reasonable range and an analysis of our historical results, we established a 2020 long-term ROA domestic assumption of 7.0% for purposes of determining the net periodic benefit cost for 2020 and determined that the assumption is reasonable and consistent with the provisions of ASOP 27.

If we significantly change our long-term investment allocation or strategy, or if there is a significant change in the economic assumptions, then our long-term ROA assumption could change in the future.

Our domestic pension plans' actual rates of return were approximately 19%, (4)% and 15% for 2019, 2018 and 2017, respectively. The difference between the actual rate of return and our long-term ROA assumption is included in deferred gains and losses.

The investment policy asset allocation ranges for our domestic pension plans, as set by our Investment Committee, for the year ended December 31, 2019 were as follows:

Asset Category	
Global equity (combined U.S. and international equity)	30%-60%
U.S. equities	20%-35%
International equities	10%-25%
Fixed income	20%-45%
Cash and cash equivalents	0%-10%
Private equity and private real estate funds	10%-20%
Real assets	0%-4%
Other (including absolute return funds)	5%-15%

The long-term ROA assumptions for our foreign Pension Benefits plans are based on the asset allocations and the economic environment prevailing in the locations where the Pension Benefits plans reside. Foreign pension assets do not make up a significant portion of the total assets for all of our Pension Benefits plans.

The discount rate represents the interest rate that should be used to determine the present value of future cash flows currently expected to be required to settle our pension obligations. The discount rate assumption is determined by using a theoretical bond portfolio model consisting of bonds rated AA or better by Moody's Investors Service for which the timing and amount of cash flows approximate the estimated benefit payments for each of our pension plans. The discount rate assumption for our domestic pension plans at December 31, 2019 is 3.29%, which represents a weighted-average discount rate across our plans, compared to the December 31, 2018 discount rate of 4.33%.

CAS Expense—In addition to providing the methodology for calculating pension costs, CAS also prescribes the method for assigning those costs to specific periods. While the ultimate liability for pension costs under FAS and CAS is similar, the pattern of cost recognition is different. The key drivers of CAS pension expense include the funded status and the method used to calculate CAS reimbursement for each of our plans. Under the prior CAS rules, the discount rate used to measure liabilities was required to be consistent with the long-term ROA assumption, which generally does not change annually given its long-term nature. In addition to certain other changes, CAS Harmonization requires contractors to compare the liability under the prior CAS methodology and assumptions to a liability using a discount rate based on high-quality corporate bonds, and use the greater of the two liability calculations in developing CAS expense. In addition, unlike FAS, we can only allocate pension costs for a plan under CAS until such plan is fully funded as determined under CAS requirements. When the estimated future CAS pension costs increase, the estimated CAS cost allocated to our contracts in the future increases.

Other FAS and CAS Considerations—An increase or decrease of 25 basis points in the discount rate assumption would have had the following approximate impacts on 2019 domestic FAS pension results:

(In millions)	Increase	Decrease
Service cost component of FAS expense	$ (17)	$ 18
Retirement benefits non-service expense	(42)	43
Projected benefit obligations	(860)	910

Changes in the high-quality corporate bond rate assumption could impact the CAS discount rate for purposes of determining CAS pension expense due to CAS Harmonization. However in 2019, the CAS pension expense was not impacted by this assumption due to the passage of the HATFA and the BBA of 2015 which extended the provisions of pension funding relief as described above. The discount rate assumption could impact CAS pension expense in future periods depending upon the interest rate and regulatory environments.

An increase or decrease of 25 basis points in the long-term ROA assumption for the domestic pension plans would have had the following approximate impacts on 2019 FAS and CAS pension results:

(In millions)	Increase	Decrease
Retirement benefits non-service expense	$ (47)	$ 47
CAS expense	8	(8)
FAS/CAS Operating Adjustment	8	(8)

A portion of the $8 million change in CAS pension expense would also be allocated to fixed-price contracts in backlog and would either increase or decrease the profit rate on those contracts at the time of such a change (i.e., a change in the long-term ROA assumption on January 1, 2019 would drive a change in estimated costs in EACs and related contract profit rates as of December 31, 2018). The contract impact resulting from the change in CAS pension expense is difficult to estimate because of changes to remaining performance periods, the amount and timing of expected new awards (i.e., the proposals expected to be awarded in the year which will bear their allocated portion of the change in CAS pension expense), and our mix of fixed-price and cost reimbursable contracts. For example, based on our contract profile at December 31, 2018, if we had 61% of our backlog in fixed-price contracts, and they were on average 50% complete, with our actual new award profile for 2019, a 25 basis point increase in our long-term ROA assumption at January 1,2019 would drive $2 million of unfavorable EAC adjustments at December 31, 2018. In addition, our fixed-price contracts in backlog as of December 31,2018 would have a lower profit rate in 2019, resulting in a $1 million unfavorable impact as costs are incurred in that year on those contracts. The total impact on 2018 would be an unfavorable $2 million driven by the aggregate EAC adjustments and the total impact on 2019 would be favorable by approximately $54 million (the FAS/CAS Operating Adjustment and retirement benefits non-service expense, partially offset by the lower profit rate impact in 2019 on fixed-price contracts in backlog at December 31,2018). A change in our long-term ROA assumption would be subject to review by our government customer for reasonableness. Given our history of recovering changes to CAS pension expense, we expect the assumption change would be allocable and allowable, per regulatory guidelines, as long as the assumption is reasonable.

The impact of changing our long-term ROA for our domestic pension plans from 8.0% to 7.5% in 2017 increased our retirement benefits non-service expense by $87 million, decreased our CAS expense by $18 million and decreased our FAS/CAS Operating Adjustment to income by $18 million in 2017, since long-term ROA does not impact the service cost component of FAS expense. The CAS impact is primarily driven by whether the pre-CAS Harmonization methodology applies, which uses a discount rate based on the long-term ROA assumption, or the post-CAS Harmonization methodology applies, which uses a discount rate based on high-quality corporate bond rates. The actual CAS impact is not linear and can vary significantly from the theoretical impact described above because it relies on the actual change in the long-term ROA and the corresponding relationship between the long-term ROA, which is used under the pre-CAS Harmonization methodology, and the high-quality corporate bond rates, which are used under the post-CAS Harmonization methodology. In addition, the timing of the change relative to the transition period for CAS Harmonization affects the CAS impact. The $18 million decrease in our CAS expense in 2017 was included in our EACs and did not have a significant impact on our 2016 results based on our overall ending overhead positions.

In accordance with both FAS and CAS, a calculated “market-related value” of our plan assets is used to develop the amount of deferred asset gains or losses to be amortized. The market-related value of assets is determined using actual asset gains or losses over a certain prior period (three years for FAS and five years for CAS, subject to certain limitations under CAS on the difference between the market-related value and actual market value of assets). Because of this difference in the number of years over which actual asset gains or losses are recognized and subsequently amortized, retirement benefits non-service expense generally tends to reflect recent asset gains or losses faster than CAS. The funded status of our pension plans under CAS is another driver of our CAS expense, but has no impact on our FAS expense. As noted above, CAS expense is only recognized for plans that are not fully funded; consequently, if plans become or cease to be fully funded under CAS due to our asset or liability experience, our CAS expense will change accordingly.

Under FAS, a “corridor” approach may be elected and applied in the recognition of asset and liability gains or losses which limits expense recognition to the net outstanding gains and losses in excess of the greater of 10% of the projected benefit obligation (PBO) or the calculated “market-related value” of assets. We do not use a “corridor” approach in the calculation of FAS pension expense.

Our pension and PRB plans’ investments are stated at fair value. Investments in equity securities are valued at the last reported sales price when an active market exists. Investments in fixed income securities are generally valued using methods based upon market transactions for comparable securities and various relationships between securities which are generally recognized by institutional market participants. Investments in funds are estimated at fair market value, which primarily utilizes net asset values reported by the investment manager or fund administrator. We review additional valuation and pricing information from fund managers, including audited financial statements, to evaluate the net asset values.

The change in accumulated other comprehensive loss (AOCL) related to pension and PRB plans was as follows:

(In millions)	**2019**	2018	2017
Beginning balance	**$ (10,738)**	$ (11,766)	$ (11,115)
Amortization of net losses included in net income	**1,068**	1,655	1,191
Gain (loss) arising during the period	**(1,890)**	(627)	(1,842)
Ending balance	**$ (11,560)**	$ (10,738)	$ (11,766)

The balance in AOCL related to our pension and PRB plans is composed primarily of differences between changes in discount rates, differences between actual and expected asset returns, differences between actual and assumed demographic experience and changes in plan provisions. Changes to our pension and PRB obligation as a result of these variables are initially reflected in other comprehensive income. The deferred gains and losses are amortized and included in future retirement benefits non-service expense over the average employee service period of approximately ten years at December 31, 2019. The $1.9 billion in 2019 losses arising during the period were driven primarily by the decrease in the discount rate from 4.33% at December 31, 2018 to 3.29% at December 31, 2019, which had an impact of approximately $3.5 billion, as well as other actuarial factors, partially offset by actual returns, which were higher than our expected return, and had an impact of approximately $2.1 billion.

The $0.6 billion in 2018 losses arising during the period were driven primarily by actual returns, which were lower than our expected return, and had an impact of approximately $2.2 billion, as well as other actuarial factors, partially offset by an increase in the discount rate from 3.72% at December 31, 2017 to 4.33% at December 31, 2018, which had an impact of approximately $1.9 billion.

The $1.8 billion in 2017 losses arising during the period were driven primarily by the decrease in the discount rate from 4.36% at December 31, 2016 to 3.72% at December 31, 2017, which had an impact of approximately $2.1 billion, as well as other actuarial factors, partially offset by actual returns, which were higher than our expected return, and had an impact of approximately $1.3 billion.

Goodwill

We evaluate our goodwill for impairment annually as of the first day of our fiscal fourth quarter and in any interim period in which circumstances arise that indicate our goodwill may be impaired. Indicators of impairment include, but are not limited to, the loss of significant business, significant decreases in federal government appropriations or funding for our contracts, or other significant adverse changes in industry or market conditions. No events occurred during the periods presented that indicated the existence of an impairment with respect to our goodwill. We estimate the fair value of our reporting units using a discounted cash flow (DCF) model based on our most recent long-range plan in place at the time of our impairment testing, and compare the estimated fair value of each reporting unit to its net book value, including goodwill. We discount the cash flow forecasts using the weighted-average cost of capital method at the date of evaluation. The weighted-average cost of capital is comprised of the estimated required rate of return on equity, based on publicly available data for peer companies plus an equity risk premium related to specific company risk factors, and the after tax rate of return on debt, each weighted at the relative values of the estimated debt and equity for the industry. Preparation of forecasts for use in the long-range plan and the selection of the discount rate involve significant judgments that we base primarily on existing firm orders, expected future orders, contracts with suppliers, labor agreements and general market conditions. Significant changes in these forecasts or the discount rate selected could affect the estimated fair value of one or more of our reporting units and could result in a goodwill impairment charge in a future period. When available and as appropriate, we also use comparative market multiples to corroborate our DCF model results. There was no indication of goodwill impairment as a result of our 2019 annual impairment analysis, as the fair values of each of our reporting units substantially exceeded their respective net book values, including goodwill.

Based on our 2019 impairment analysis the reporting unit that was closest to impairment was the Forcepoint reporting unit, which had a fair value in excess of net book value, including goodwill, of approximately 50%. All other factors equal, a 10% decrease in expected future cash flows for our Forcepoint reporting unit would result in an excess of fair value over net book value of approximately 35%. Alternatively, all other factors being equal, a 100 basis points increase in the discount rate used in the calculation of the fair value of our Forcepoint reporting unit would result in an excess of fair value over net book value of approximately 40%. Based on our 2019 impairment analysis of our other reporting units, the reporting unit that was closest to impairment had a fair value in excess of net book value, including goodwill, of approximately 185%. If we are required to record an impairment charge in the future, it could materially affect our results of operations.

ACCOUNTING STANDARDS

For a discussion of recent accounting pronouncements, see the Accounting Standards section in “Note 1: Summary of Significant Accounting Policies” within Item 8 of this Form 10-K.

CONSOLIDATED RESULTS OF OPERATIONS

Total Net Sales

The composition of external net sales by products and services for each segment in2019 was approximately the following:

(% of segment total external net sales)	IDS	IIS	MS	SAS	Forcepoint
Products[(1)]	90%	45%	95%	100%	90%
Services	10%	55%	5%	—%	10%

(1) Products net sales includes software related sales, including software subscriptions.

				% of Total Net Sales		
(In millions, except percentages)	**2019**	2018	2017	**2019**	2018	2017
Net sales						
Products	**$ 24,435**	$ 22,633	$ 21,416	**83.8%**	83.6%	84.5%
Services	**4,741**	4,425	3,932	**16.2%**	16.4%	15.5%
Total net sales	**$ 29,176**	$ 27,058	$ 25,348	**100.0%**	100.0%	100.0%

Total Net Sales - 2019 vs. 2018—The increase in total net sales of $2,118 million in 2019 compared to 2018 was primarily due to higher external net sales of $725 million at IDS and $589 million at SAS. The increase in net sales at IDS was primarily due to higher net sales on certain European Patriot programs awarded in 2018 and the second quarter of 2019, higher net sales on an international air and missile defense system program awarded in the third quarter of 2019, driven primarily by the recognition of previously deferred precontract and inventoried costs and higher net sales on a missile defense radar program for an international customer with awards in the second and fourth quarters of 2019, partially offset by lower net sales on certain international Patriot programs due to the scheduled completion of certain production phases of the programs. The increase in net sales at SAS was primarily due to higher net sales on classified programs principally driven by 2018 awards, higher net sales on the Next Generation Overhead Persistent Infrared (Next Gen OPIR) program for the U.S. Air Force awarded in the third quarter of 2018, higher net sales on Identification Friend or Foe (IFF) production programs primarily due to increased customer demand and higher net sales on tactical radar systems development programs due to scheduled increases in program activity.

Products and Services Net Sales - 2019 vs. 2018—The increase in products net sales of $1,802 million in 2019 compared to 2018 was primarily due to higher external products net sales of $614 million at SAS and $601 million at IDS, both primarily due to higher products net sales on the programs described above in Total Net Sales. The increase in services net sales of $316 million in 2019 compared to 2018 was primarily due to higher external services net sales of $160 million at IIS principally due to higher services net sales from the consolidation of Range Generation Next LLC (RGNext) in the first quarter of 2019, higher services net sales on certain classified programs and higher services net sales on the Development, Operations and Maintenance (DOMino) cyber program for the DHS due to planned program schedule requirements, partially offset by lower services net sales on programs in support of the U.S. Army's Warfighter Field Operations Customer Support (Warfighter FOCUS) activities, which continue to transition to a number of competitively-awarded replacement programs, with the remaining change spread across numerous programs with no individual or common significant driver. In the first quarter of 2019, we amended and restated the RGNext joint venture agreement and acquired an additional 10% equity ownership in the joint venture, increasing our equity ownership to 60% and giving us control of the operations of RGNext with the partner having only protective rights. The results of RGNext are included in IIS's segment results effective as of the February 8, 2019 consolidation date. See "Note 4: Acquisitions, Divestitures and Goodwill" within Item 8 of this Form 10-K for additional detail.

Total Net Sales - 2018 vs. 2017—The increase in total net sales of $1,710 million in 2018 compared to 2017 was primarily due to higher external net sales of $545 million at IIS and $482 million at MS. The increase in external net sales at IIS was primarily due to higher net sales on classified programs in both cyber and space, higher net sales in support of the DOMino cyber program for the DHS, which was awarded in the fourth quarter of 2017, and higher net sales on programs in support of the U.S. Army's Warfighter FOCUS activities driven principally by customer determined activity levels. The increase in external net sales at MS was primarily due to higher net sales on classified programs, partially offset by lower net sales on the Paveway program principally driven by reductions of expected costs in the third quarter of 2017 to fulfill industrial cooperation agreements, and decreases in production costs and unit pricing.

Products and Services Net Sales - 2018 vs. 2017—The increase in products net sales of $1,217 million in 2018 compared to 2017 was primarily due to higher external products net sales of $446 million at MS and $326 million at SAS. The increase in products net sales at MS was primarily due to higher products net sales on certain classified programs described above in Total Net Sales and higher products net sales on the Standard Missile-3 (SM-3) program due to planned increases in production, partially offset by lower products net sales on the Paveway program described above in Total Net Sales. The increase in products net sales at SAS was primarily due to higher products net sales on a domestic tactical radar systems production program due to scheduled increases in production and higher products net sales on surveillance and targeting systems programs primarily due to a production program for the U.S. Air Force awarded in the third quarter of 2018 and planned increases in production on certain surveillance and targeting systems programs. The increase in services net sales of $493 million in 2018 compared to 2017 was primarily due to higher external services net sales of $421 million at IIS principally due to higher services net sales on the DOMino cyber and U.S. Army's Warfighter FOCUS programs described above in Total Net Sales and higher services net sales on certain classified programs.

Sales to Major Customers

(In millions, except percentages)		2019		2018		2017	% of Total Net Sales 2019	2018	2017
Sales to the U.S. government[(1)(2)]	**$**	**20,111**	$	18,447	$	16,860	**69%**	68%	67%
U.S. direct commercial sales and other U.S. sales		**483**		506		403	**2%**	2%	2%
Foreign military sales through the U.S. government		**4,198**		3,502		3,311	**14%**	13%	13%
Foreign direct commercial sales and other foreign sales[(1)]		**4,384**		4,603		4,774	**15%**	17%	19%
Total net sales	**$**	**29,176**	$	27,058	$	25,348	**100%**	100%	100%

(1) Excludes foreign military sales through the U.S. government.
(2) Includes sales to the DoD of $19,260 million, or 66% of total net sales, in 2019, $17,628 million, or 65% of total net sales, in 2018 and $16,152 million, or 64% of total net sales, in 2017.

As described above in Domestic Considerations, U.S. defense spending levels are difficult to predict due to numerous factors, including U.S. government budget appropriation decisions, geopolitical events and macroeconomic conditions.

Total Cost of Sales

Cost of sales, for both products and services, consists of labor, materials and subcontractors costs, as well as related allocated costs. For each of our contracts, we manage the nature and amount of direct costs at the contract level, and manage indirect costs through cost pools as required by government accounting regulations. The estimate of the actual amount of direct and indirect costs forms the basis for estimating our total costs at completion of the contract.

(In millions, except percentages)		2019		2018		2017	% of Total Net Sales 2019	2018	2017
Cost of sales									
Products	**$**	**17,747**	$	16,108	$	15,252	**60.8%**	59.5%	60.2%
Services		**3,666**		3,465		3,088	**12.6%**	12.8%	12.2%
Total cost of sales	**$**	**21,413**	$	19,573	$	18,340	**73.4%**	72.3%	72.4%

Total Cost of Sales - 2019 vs. 2018—The increase in total cost of sales of $1,840 million in 2019 compared to 2018 was primarily due to higher external cost of sales at IDS, MS, and SAS. The increase in cost of sales at IDS was primarily due to the programs described above in Total Net Sales. The increase in cost of sales at MS was primarily due to higher cost of sales on classified programs, partially offset by lower cost of sales on the Paveway program due to planned decreases in production, with the remaining change spread across numerous programs with no individual or common significant driver. The increase in cost of sales at SAS was primarily due to the programs described above in Total Net Sales.

Products and Services Cost of Sales - 2019 vs. 2018—The increase in products cost of sales of $1,639 million in 2019 compared to 2018 was primarily due to higher external products cost of sales at IDS, SAS and MS. The increases in products cost of sales at IDS and SAS were primarily due to the programs described above in Total Net Sales. The increase in products cost of sales at MS was due to higher cost of sales on certain classified programs described above in Total Cost of Sales, partially offset by lower cost of sales on the Paveway program described above in Total Cost of Sales, with the remaining change spread across numerous programs with no individual or common significant driver. The increase in services cost of sales of $201 million in 2019 compared to 2018 was primarily due to higher external services cost of sales at IDS and IIS. The increase in services cost of sales at IDS was primarily due to an international technical and logistics support contract awarded in the third quarter of 2019, driven by the recognition of previously deferred precontract costs, increased support services on missile defense radar programs and increased Patriot support services for an international customer. The increase in services cost of sales at IIS was primarily due to the programs described above in Total Net Sales.

Total Cost of Sales - 2018 vs. 2017—The increase in total cost of sales of $1,233 million in 2018 compared to 2017 was primarily due to higher external cost of sales at IIS and MS. The increase in total costs of sales at IIS was primarily due to the programs described above in Total Net Sales. The increase in total costs of sales at MS was primarily due to the classified programs described above in Total Net Sales.

Products and Services Cost of Sales - 2018 vs. 2017—The increase in products cost of sales of $856 million in 2018 compared to 2017 was primarily due to higher external products cost of sales at MS primarily due to the certain classified programs described above in Total Net Sales. The increase in services cost of sales of $377 million in 2018 compared to 2017 was primarily due to higher external services cost of sales at IIS primarily due to the programs described above in Total Net Sales.

General and Administrative Expenses

				% of Total Net Sales		
(In millions, except percentages)	**2019**	2018	2017	**2019**	2018	2017
Administrative and selling expenses	**$ 2,257**	$ 2,106	$ 2,077	**7.7%**	7.8%	8.2%
Research and development expenses	**732**	841	700	**2.5%**	3.1%	2.8%
Total general and administrative expenses	**$ 2,989**	$ 2,947	$ 2,777	**10.2%**	10.9%	11.0%

The increase in administrative and selling expenses of $151 million in 2019 compared to 2018 was primarily due to $51 million of costs related to the proposed merger with UTC and higher administrative and selling expenses at IDS primarily related to activities to support an advanced radar pursuit.

Administrative and selling expenses in 2018 were relatively consistent with 2017.

Included in administrative and selling expenses is the provision for state income taxes, which generally can be recovered through the pricing of products and services to the U.S. government. Net state income taxes allocated to our contracts were $31 million, $18 million and $32 million in 2019, 2018 and 2017, respectively.

The decrease in research and development expenses of $109 million in 2019 compared to 2018 was primarily due to lower independent research and development activity at MS due to an increase in customer-funded research and development.

The increase in research and development expenses of $141 million in 2018 compared to 2017 was primarily due to higher research and development expenses at SAS related to advanced capabilities and at IDS related to next-generation technologies.

Total Operating Expenses

				% of Total Net Sales		
(In millions, except percentages)	**2019**	2018	2017	**2019**	2018	2017
Total operating expenses	**$ 24,402**	$ 22,520	$ 21,117	**83.6%**	83.2%	83.3%

The increase in total operating expenses of $1,882 million in 2019 compared to 2018 was primarily due to the increase in total cost of sales of $1,840 million, the primary drivers of which are described above in Total Cost of Sales.

The increase in total operating expenses of $1,403 million in 2018 compared to 2017 was primarily due to the increase in total cost of sales of $1,233 million, the primary drivers of which are described above in Total Cost of Sales.

Operating Income

				% of Total Net Sales		
(In millions, except percentages)	**2019**	2018	2017	**2019**	2018	2017
Operating income	**$ 4,774**	$ 4,538	$ 4,231	**16.4%**	16.8%	16.7%

The increase in operating income of $236 million in 2019 compared to 2018 was due to the increase in total net sales of $2,118 million, the primary drivers of which are described above in Total Net Sales, partially offset by the increase in total operating expenses of $1,882 million, the primary drivers of which are described above in Total Operating Expenses.

The increase in operating income of $307 million in 2018 compared to 2017 was due to the increase in total net sales of $1,710 million, the primary drivers of which are described above in Total Net Sales, partially offset by the increase in total operating expenses of $1,403 million, the primary drivers of which are described above in Total Operating Expenses.

Total Non-Operating (Income) Expense, Net

(In millions)		**2019**		2018		2017
Non-operating (income) expense, net						
Retirement benefits non-service expense	**$**	**688**	$	1,230	$	913
Interest expense		**180**		184		205
Interest income		**(42)**		(31)		(21)
Other (income) expense, net		**(38)**		8		21
Total non-operating (income) expense, net	**$**	**788**	$	1,391	$	1,118

The decrease in total non-operating (income) expense, net of $603 million in 2019 compared to 2018, was primarily due to a decrease in retirement benefits non-service expense of $542 million principally driven by the recognition of a non-cash pension settlement charge of $288 million during the third quarter of 2018 and a decrease in the amortization of net actuarial loss in 2019 compared to 2018 due to a decrease in the unamortized loss at December 31, 2018 compared to December 31, 2017. The settlement charge was the acceleration of actuarial losses previously included in AOCL for certain Raytheon-sponsored pension plans that purchased a group annuity contract from an insurance company to transfer $923 million of our outstanding pension benefit obligations in the third quarter of 2018. See “Note 14: Pension and Other Employee Benefits” within Item 8 of this Form 10-K for further details. Included in the change in other (income) expense, net was a $48 million change in the mark-to-market of marketable securities held in trusts associated with certain of our nonqualified deferred compensation and employee benefit plans, due to net gains of $43 million in 2019 compared to net losses of $5 million in 2018, a $17 million charge related to the settlement of our treasury rate locks in the fourth quarter of 2019 without the issuance of debt due to merger considerations and a non-cash gain of $14 million in the third quarter of 2019 related to the revaluation of an investment in equity securities of a non-publicly traded company due to the availability of updated pricing data from a recent transaction.

The increase in total non-operating (income) expense, net, of $273 million in 2018 compared to 2017, was primarily due to an increase in retirement benefits non-service expense of $317 million, partially offset by a decrease in interest expense of $21 million and a decrease in other (income) expense, net of $13 million. The increase in retirement benefits non-service expense was principally driven by the recognition of a non-cash pension settlement charge of $288 million during the third quarter of 2018, as described above. The remaining change was primarily related to changes in the discount rate, offset by asset performance and the impact of discretionary pension contributions. The decrease in interest expense was primarily due to the repurchase of long-term debt in the second quarter of 2017. The decrease in other (income) expense, net was principally driven by a $39 million before tax charge associated with the make-whole provision on the early repurchase of long-term debt in the second quarter of 2017, partially offset by a $26 million change in the mark-to-market to fair value of marketable securities held in trusts associated with certain of our non-qualified deferred compensation and employee benefit plans, due to net losses of $5 million in 2018 compared to net gains of $21 million in 2017.

Federal and Foreign Income Taxes

(In millions)		**2019**		2018		2017
Federal and foreign income taxes	**$**	**658**	$	264	$	1,114

The increase in federal and foreign income taxes of $394 million in 2019 compared to 2018 was primarily due to an increase in our effective tax rate, as discussed below.

The decrease in federal and foreign income taxes of $850 million in 2018 compared to 2017 was primarily due to the decrease in the statutory federal rate and foreign derived intangible income (FDII), both as a result of the enactment of the 2017 Act, as discussed below.

Our effective tax rate differed from the U.S. statutory rate due to the following:

	2019	2018	2017
Statutory tax rate	**21.0 %**	21.0 %	35.0 %
Foreign derived intangible income (FDII)	**(3.3)**	(4.2)	—
Research and development tax credit (R&D tax credit)	**(2.3)**	(2.4)	(1.5)
Equity compensation	**(0.3)**	(1.0)	(1.2)
Foreign income tax rate differential	**0.8**	1.3	0.2
Prior year true-up	**0.4**	(1.1)	0.1
Tax benefit related to discretionary pension contributions	**—**	(3.0)	—
R&D tax credit claims related to the 2014–2017 tax years	**—**	(2.1)	—
Irish restructuring	**—**	(2.0)	—
Change in valuation allowance	**—**	2.0	—
Domestic manufacturing deduction benefit	**—**	—	(2.5)
Remeasurement of deferred taxes	**—**	—	3.2
One-time transition tax on previously undistributed foreign earnings	**—**	—	2.3
Other items, net	**0.2**	(0.1)	0.2
Effective tax rate	**16.5 %**	8.4 %	35.8 %

Our effective tax rate reflects the U.S. statutory rate adjusted for various permanent differences between book and tax reporting.

In the fourth quarter of 2018, Forcepoint completed an Irish restructuring transaction resulting in a deferred tax asset of approximately $63 million. We have evaluated both the positive and negative evidence to support our ability to realize the deferred tax asset associated with the restructuring. We believe it is more likely than not that the benefit from this restructuring transaction will not be realized. Accordingly, we provided a valuation allowance of $63 million in the fourth quarter of 2018 on the deferred tax asset related to this transaction.

In the third quarter of 2018, the Company recognized a net tax benefit of $110 million related to the completion of the 2017 tax return and additional amended R&D tax credit claims related to the 2014–2016 tax years.

Also in the third quarter of 2018, we made a discretionary contribution to our pension plans of $1.25 billion. In the second quarter of 2018, we determined we would make this contribution and as a result recorded a net tax benefit of $95 million in the second quarter of 2018. This was primarily due to the remeasurement of the related deferred tax asset balance at the 2017 tax rate of 35% versus the 2018 tax rate of 21% since the discretionary contribution was deductible on our 2017 tax return.

On December 22, 2017, the President signed the Tax Cuts and Jobs Act of 2017 (2017 Act) which enacted a wide range of changes to the U.S. corporate income tax system. The 2017 Act reduced the U.S. corporate statutory federal tax rate to 21% effective in 2018, eliminated the domestic manufacturing deduction benefit and introduced other tax base broadening measures, changed rules for expensing and capitalizing business expenditures, established a territorial tax system for foreign earnings as well as a minimum tax on certain foreign earnings, provided for a one-time transition tax on previously undistributed foreign earnings, and introduced new rules for the treatment of certain foreign income, including FDII.

Also on December 22, 2017, the Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin No. 118 (SAB 118), which provided companies with additional guidance on how to account for the 2017 Act in their financial statements, allowing companies to use a measurement period. As of December 31, 2017, we made a reasonable estimate of the effects on our existing deferred tax balances to reflect the new 21% corporate income tax rate under the 2017 Act and the one-time transition tax on previously undistributed foreign earnings and recognized provisional amounts totaling $171 million in accordance with SAB 118, which was included as a component of income tax expense from continuing operations. As of December 31, 2018, we had finalized our provisional estimates for the remeasurement of our existing U.S. deferred tax balances and the one-time transition tax for which we recorded a $1 million tax benefit in 2018.

We recognize excess tax benefits and tax deficiencies related to our equity compensation in the income statement which could result in fluctuations in our effective tax rate period over period depending on changes to our stock price and how many awards vest in the period.

Our effective tax rate in 2019 was lower than the statutory federal tax rate of 21% primarily due to FDII, which decreased the rate by 3.3% and the R&D tax credit, which decreased the rate by 2.3%. The offsetting increase of 1.1% is composed of various unrelated items, which individually and collectively are not significant.

Our effective tax rate in 2018 was lower than the statutory federal tax rate of 21% primarily due to FDII, which decreased the rate by 4.2%, the tax benefit recognized related to the discretionary pension contribution, which decreased the rate by 3.0%, the R&D tax credit, which decreased the rate by 2.4%, additional R&D tax credit claims related to the 2014–2017 tax years, which decreased the rate by 2.1%, a prior year true-up primarily due to the remeasurement of the deferred tax asset balance at December 31, 2017, which decreased the rate by 1.1% and the tax benefit recognized upon settlement of equity awards, which decreased the rate by 1.0%. The foreign rate differential increased the rate by 1.3%. The remaining decrease of 0.1% is composed of various unrelated items, which individually and collectively are not significant.

Our effective tax rate in 2017 was higher than the statutory federal tax rate of 35% primarily due to the remeasurement of U.S. deferred tax balances, which increased the rate by approximately 3.2% and the one-time transition tax on undistributed foreign earnings, which increased the rate by 2.3%. Items which decreased our effective tax rate were the domestic manufacturing deduction, which decreased the rate by approximately 2.5%, the R&D tax credit, which decreased the rate by approximately 1.5% and the tax benefit recognized upon settlement of stock-based awards, which decreased the rate by 1.2%. The remaining increase of 0.5% is composed of various unrelated items, which individually and collectively are not significant.

Our effective tax rate in 2019 was 8.1% higher than in 2018 primarily due to the tax benefit recognized related to the discretionary pension contribution, which decreased the 2018 rate by 3.0%, the additional R&D tax credit claims related to the 2014–2017 tax years, which decreased the 2018 rate by 2.1%, a prior year true-up primarily due to the remeasurement of the deferred tax asset balance at December 31, 2017, which decreased the 2018 rate by 1.1% and FDII, which increased the rate by 0.9%. The remaining increase of 1.0% is composed of various items, which individually and collectively are not significant.

Our effective tax rate in 2018 was 27.4% lower than in 2017 primarily due to the decrease in the statutory federal rate, which decreased the rate by 14.0%, FDII, which decreased the rate by 4.2%, the remeasurement of U.S. deferred tax balances, which increased the 2017 rate by 3.2%, the tax benefit recognized related to the discretionary pension contribution, which decreased the rate by 3.0%, the one-time transition tax on undistributed foreign earnings, which increased the 2017 rate by 2.3%, and additional R&D tax credit claims related to the 2014-2017 tax years, which decreased the rate by 2.1%, partially offset by the repeal of the domestic manufacturing deduction, which unfavorably impacted the rate by 2.5%. The remaining decrease of 1.1% is composed of various unrelated items, which individually and collectively are not significant.

On March 4, 2019, the Treasury Department and the Internal Revenue Service (IRS) issued proposed regulations providing guidance for the determination of the deduction amount of FDII. Although these rules would affect amounts recorded or amounts expected to be recorded and could increase our income tax expense, we do not expect any material changes to our financial statements if the regulations are finalized as currently drafted.

On September 5, 2019, the Treasury Department and the IRS issued proposed regulations to address changes to tax revenue recognition under the 2017 Act. Subject to further guidance and the final form of the regulations, the Company may have to accelerate the recognition of certain revenue previously deferred for tax purposes. The estimated impact to cash taxes could be an increase of up to approximately $250 million in each of the four years following the release of the final regulations.

Income from Continuing Operations

(In millions)		2019		2018		2017
Income from continuing operations	**$**	**3,328**	$	2,883	$	1,999

The increase in income from continuing operations of $445 million in 2019 compared to 2018 was primarily due to a decrease of $603 million in non-operating (income) expense, net, primarily related to the decrease in retirement benefits non-service expense described above in Total Non-Operating (Income) Expense, Net and an increase of $236 million in operating income, described above in Operating Income, partially offset by an increase of $394 million in federal and foreign income taxes related to the increase in our effective tax rate described above in Federal and Foreign Income Taxes.

The increase in income from continuing operations of $884 million in 2018 compared to 2017 was primarily due to a decrease of $850 million in federal and foreign income taxes, related to the decrease in our effective tax rate described above in Federal and Foreign Income Taxes, and an increase of $307 million in operating income, described above in Operating Income, partially offset by an increase of $273 million in non-operating (income) expense, net, the primary drivers of which are described above in Total Non-Operating (Income) Expense, Net and include the recognition of a non-cash pension settlement charge of $288 million during the third quarter of 2018.

Net Income

(In millions)		2019		2018		2017
Net income	**$**	**3,329**	$	2,882	$	2,001

The increase in net income of $447 million in 2019 compared to 2018 was primarily due to the increase in income from continuing operations of $445 million described above in Income from Continuing Operations.

The increase in net income of $881 million in 2018 compared to 2017 was primarily due to the increase in income from continuing operations of $884 million described above in Income from Continuing Operations.

Diluted EPS from Continuing Operations Attributable to Raytheon Company Common Stockholders

(In millions, except per share amounts)		2019		2018		2017
Income from continuing operations attributable to Raytheon Company	**$**	**3,342**	$	2,910	$	2,022
Diluted weighted-average shares outstanding		**280.2**		286.8		291.4
Diluted EPS from continuing operations attributable to Raytheon Company	**$**	**11.92**	$	10.15	$	6.94

The increase in diluted EPS from continuing operations attributable to Raytheon Company common stockholders of $1.77 in 2019 compared to 2018 was primarily due to the increase in income from continuing operations described above in Income from Continuing Operations, and a decrease in weighted-average shares outstanding, which was driven by the common stock share activity shown in the table below.

The increase in diluted EPS from continuing operations attributable to Raytheon Company common stockholders of $3.21 in 2018 compared to 2017 was primarily due to the increase in income from continuing operations described above in Income from Continuing Operations, and a decrease in weighted-average shares outstanding, which was driven by the common stock share activity shown in the table below. Diluted EPS from continuing operations attributable to Raytheon Company common stockholders was increased by $0.01 in 2018 for the impact of our redeemable noncontrolling interest redemption value adjustments, as discussed in "Note 1: Summary of Significant Accounting Policies" within Item 8 of this Form 10-K.

Our common stock share activity for the years ended2019, 2018, and 2017 was as follows:

(Shares in millions)	**2019**	2018	2017
Beginning balance	**282.1**	288.4	292.8
Stock plans activity	**1.1**	0.9	1.1
Share repurchases	**(4.8)**	(7.2)	(5.5)
Ending balance	**278.4**	282.1	288.4

SEGMENT RESULTS

We report our results in the following segments: IDS; IIS; MS; SAS; and Forcepoint.

The following provides some context for viewing our segment performance through the eyes of management.

Given the nature of our business, bookings, total net sales and operating income (and the related operating margin percentage), which we disclose and discuss at the segment level, are most relevant to an understanding of management's view of our segment performance, and often these measures have significant interrelated effects, as described below. In addition, we disclose and discuss backlog, which represents future sales that we expect to recognize over the remaining contract period, which is generally several years. We also disclose total operating expenses and the components of total operating expenses within our segment disclosures.

Bookings—We disclose the amount of bookings and notable contract awards for each segment. Bookings generally represent the dollar value of new external contracts awarded to us during the reporting period and include firm orders for which funding has not been appropriated. We believe bookings are an important measure of future performance and are an indicator of potential future changes in total net sales, because we cannot record revenues under a new contract without first having a booking in the current or a preceding period.

Bookings are impacted by the timing and amounts of awards in a given period, which are subject to numerous factors, including: (1) the desired capability by the customer and urgency of customer needs; (2) customer budgets and other fiscal constraints; (3) political and economic and other environmental factors; (4) the timing of customer negotiations; (5) the timing of governmental approvals and notifications; and (6) the timing of option exercises or increases in scope.

Bookings (in millions)		**2019**		2018		2017
Integrated Defense Systems	**$**	**9,634**	$	8,698	$	4,934
Intelligence, Information and Services		**6,891**		6,128		6,615
Missile Systems		**10,833**		8,833		9,672
Space and Airborne Systems		**8,335**		7,852		5,907
Forcepoint		**647**		651		590
Total	**$**	**36,340**	$	32,162	$	27,718

Included in bookings were international bookings of $10,352 million, $9,850 million and $8,479 million in 2019, 2018 and 2017, respectively, which included foreign military bookings through the U.S. government. International bookings amounted to 28% of total bookings in 2019 and 31% of total bookings in 2018 and 2017. Classified bookings amounted to 22%, 21%, and 17% of total bookings in 2019, 2018 and 2017, respectively.

We record bookings for not-to-exceed contract awards (e.g., undefinitized contract awards, binding letter agreements) based on reasonable estimates of the expected contract definitization. We subsequently adjust bookings to reflect the actual amounts definitized, or prior to definitization when facts and circumstances indicate that our previously estimated amounts are no longer reasonable. The timing of awards that may cover multiple fiscal years influences the size of bookings in each year. Bookings exclude unexercised contract options and potential orders under ordering-type contracts (e.g., indefinite-delivery, indefinite-quantity (IDIQ) type contracts), and are reduced for contract cancellations and terminations of bookings recognized in the current year. We reflect contract cancellations and terminations from prior year bookings, as well as the impact of changes in foreign exchange rates, directly as an adjustment to backlog in the period in which the cancellation or termination occurs and the impact is determinable. Contract cancellations and terminations include contract underruns on cost-type programs.

Backlog—We disclose period-end backlog for each segment. Backlog, which is equivalent to our remaining performance obligations, represents the dollar value of firm orders for which work has not been performed. Backlog generally increases with bookings and generally converts into sales as we incur costs under the related contractual commitments. Therefore, we discuss changes in backlog, including any individually significant cancellations, for each of our segments, as we believe such discussion provides an understanding of the awarded but not executed portions of our contracts. Backlog excludes unexercised contract options and potential orders under ordering-type contracts (e.g., indefinite-delivery, indefinite-quantity (IDIQ)). Backlog is affected by changes in foreign exchange rates.

Backlog (in millions) December 31:	**2019**	2018	2017
Integrated Defense Systems	**$ 14,180**	$ 11,557	$ 9,186
Intelligence, Information and Services	**6,674**	6,233	6,503
Missile Systems	**15,835**	13,976	13,426
Space and Airborne Systems	**11,525**	10,126	8,611
Forcepoint	**538**	528	484
Total(1)	**$ 48,752**	$ 42,420	$ 38,210

(1) Included in the change in backlog at December 31, 2019 compared to December 31, 2018 was backlog adjustments of $0.8 billion, primarily related to contract underruns and contract deobligations. Included in the change in backlog at December 31, 2018 compared to December 31, 2017 was backlog adjustments of $0.9 billion, primarily related to contract underruns and contract deobligations, and the effect of the change in foreign exchange rates.

Total Net Sales—We generally express changes in total net sales in terms of volume. Volume generally refers to increases or decreases in revenues related to varying amounts of total operating expenses incurred on individual contracts (i.e., from performance against contractual commitments on our bookings related to engineering, production or service activity). Therefore, we discuss volume changes attributable principally to individual programs or product lines unless there is a discrete event (e.g., a major contract termination, natural disaster or major labor strike), or some other unusual item that has a material effect on changes in a segment's volume for a reported period. Due to the nature of our contracts, the amount of costs incurred and related revenues will naturally fluctuate over the lives of our contracts. As a result, in any reporting period, the changes in volume on numerous contracts are likely to be due to normal fluctuations in our engineering, production or service activities, depending on the phase of the contracts' lifecycle.

Total net sales by segment were as follows:

Total Net Sales (in millions)	**2019**	2018	2017
Integrated Defense Systems	**$ 6,927**	$ 6,180	$ 5,804
Intelligence, Information and Services	**7,151**	6,722	6,177
Missile Systems	**8,726**	8,298	7,787
Space and Airborne Systems	**7,427**	6,748	6,430
Forcepoint	**658**	634	608
Eliminations	**(1,712)**	(1,514)	(1,423)
Total business segment sales	**29,177**	27,068	25,383
Acquisition Accounting Adjustments	**(1)**	(10)	(35)
Total	**$ 29,176**	$ 27,058	$ 25,348

Total Operating Expenses—We generally disclose operating expenses for each segment in terms of the following: (1) cost of sales—labor; (2) cost of sales—materials and subcontractors; and (3) other cost of sales and other operating expenses. Included in cost of sales—labor is the incurred direct labor costs associated with the performance of contracts in the current period and any applicable overhead and fringe costs. Included in cost of sales—materials and subcontractors is the incurred direct materials costs, subcontractor costs (which could include effort performed by other Raytheon segments or locations) and applicable overhead allocations in the current period. Included in other costs of sales and other operating expenses is other direct costs not captured in labor or materials and subcontractors costs, such as previously deferred precontract costs recognized in the period, applicable overhead allocations, general and administrative expenses, which include administrative and selling expenses (including bid and proposal costs) and research and development expenses, other direct costs (such as ancillary services and travel expenses) and adjustments for loss contracts.

Operating Income (and the related operating margin percentage)—We generally express changes in segment operating income in terms of volume, net changes in EAC adjustments or changes in contract mix and other program performance.

The impact of changes in volume on operating income excludes the impact of net EAC adjustments and the impact of changes in contract mix and other program performance and is calculated based on changes in costs on individual programs at an overall margin for the segment. As such, changes in volume do not impact operating margins.

Changes in net EAC adjustments relate to changes in operating income and margin due to revisions to total estimated revenues and costs at completion. These changes reflect improved or deteriorated operating performance or award fee rates. For a full description of our EAC process, refer to Critical Accounting Estimates. Given that we have thousands of individual contracts and the types and complexity of the assumptions and estimates we must make on an on-going basis, we have both favorable and unfavorable EAC adjustments. We had the following aggregate EAC adjustments for the periods presented:

EAC Adjustments (in millions)	**2019**	2018	2017
Gross favorable	**$ 1,167**	$ 1,028	$ 1,116
Gross unfavorable	**(647)**	(536)	(674)
Total net EAC adjustments	**$ 520**	$ 492	$ 442

In recent years, our net EAC adjustments generally have been between 1.5% and 2.0% of total net sales. Our net EAC adjustments as a percentage of total net sales were 1.8% in 2019 and 2018 and 1.7% in 2017.

Significant EAC adjustments in 2019, 2018 and 2017 are discussed in the Operating Income and Margin section of each business segment's discussion below. The $28 million increase in net EAC adjustments in 2019 compared to 2018 was primarily due to the increase in net EAC adjustments at IDS and IIS, partially offset by the decrease in net EAC adjustments at MS, all of which are described below in the respective segment's results. The $50 million increase in net EAC adjustments in 2018 compared to 2017 was primarily due to the increase in net EAC adjustments at SAS and IIS, partially offset by the decrease in net EAC adjustments at IDS, all of which are described below in the respective segment's results.

Changes in contract mix and other program performance refer to changes in operating income and margin due to a change in the relative volume of contracts with higher or lower fee rates such that the overall average margin rate for the segment changes, and other drivers of program performance including margin rate increases or decreases due to EAC adjustments in prior periods. A higher or lower expected fee rate at the initial award of a contract typically correlates to the contract's risk profile, which is often specifically driven by the type of customer and related procurement regulations, the type of contract (e.g., fixed-price vs. cost-plus), the maturity of the product or service and the scope of work. Changes in contract mix and other performance also include all other items which are not related to volume or EAC adjustments (e.g., real estate transactions).

Operating income by segment was as follows:

Operating Income (in millions)		**2019**		2018		2017
Integrated Defense Systems	**$**	**1,111**	$	1,023	$	935
Intelligence, Information and Services[(1)]		**658**		538		455
Missile Systems		**959**		973		1,010
Space and Airborne Systems		**991**		884		862
Forcepoint		**8**		5		33
Eliminations		**(184)**		(170)		(148)
Total business segment operating income		**3,543**		3,253		3,147
Acquisition Accounting Adjustments		**(112)**		(126)		(160)
FAS/CAS Operating Adjustment		**1,454**		1,428		1,303
Corporate and Reclassification[(1)(2)]		**(111)**		(17)		(59)
Total	**$**	**4,774**	$	4,538	$	4,231

(1) In the third quarter of 2019, the Company revalued an investment in equity securities of a non-publicly traded company due to the availability of updated pricing data from a recent transaction and recognized a non-cash gain of $14 million. The gain is included in IIS's operating income in 2019 as it is part of management's evaluation of the segment's performance and reclassified to other (income) expense, net on our consolidated statements of operations for financial reporting purposes as the gain is not related to our core operations. No amounts were recorded in 2018 or 2017.

(2) In the fourth quarter of 2019, we were selected by the U.S. Army for the Lower Tier Air and Missile Defense Sensor (LTAMDS). The net expenses related to the LTAMDS project of $13 million in 2019 are included in Corporate operating income as they are not included in management's evaluation of business segment results. No amounts were recorded in 2018 or 2017.

Integrated Defense Systems

(In millions, except percentages)		**2019**		2018		2017	% Change **2019 compared to 2018**	% Change 2018 compared to 2017
Total net sales	**$**	**6,927**	$	6,180	$	5,804	**12.1%**	6.5%
Total operating expenses								
Cost of sales—labor		**2,390**		2,231		2,138	**7.1%**	4.3%
Cost of sales—materials and subcontractors		**2,303**		2,022		1,845	**13.9%**	9.6%
Other cost of sales and other operating expenses		**1,123**		904		886	**24.2%**	2.0%
Total operating expenses		**5,816**		5,157		4,869	**12.8%**	5.9%
Operating income	**$**	**1,111**	$	1,023	$	935	**8.6%**	9.4%
Operating margin		**16.0%**		16.6%		16.1%		

Change in Operating Income (in millions)		**Year Ended 2019 Versus Year Ended 2018**		Year Ended 2018 Versus Year Ended 2017
Volume	**$**	**135**	$	42
Net change in EAC adjustments		**60**		(33)
Mix and other performance		**(107)**		79
Total change in operating income	**$**	**88**	$	88

(In millions, except percentages)		**2019**		2018		2017	% Change **2019 compared to 2018**	% Change 2018 compared to 2017
Bookings	**$**	**9,634**	$	8,698	$	4,934	**10.8%**	76.3%
Total Backlog		**14,180**		11,557		9,186	**22.7%**	25.8%

IDS is a leader in integrated air and missile defense; large land- and sea-based radar solutions; command, control, communications, computers, cyber and intelligence solutions; naval combat and ship electronic and sensing systems; and undersea sensing and effects solutions. IDS delivers combat-proven performance against the complete spectrum of airborne and ballistic missile threats and is a world leader in the technology, development, and production of sensors and mission systems. IDS provides solutions to the U.S. Department of Defense (DoD), and more than 50 international customers which represent more than half of IDS's business.

Total Net Sales—The increase in total net sales of $747 million in 2019 compared to 2018 was primarily due to higher net sales of $402 million on certain European Patriot programs awarded in 2018 and the second quarter of 2019, higher net sales of $279 million on an international air and missile defense system program awarded in the third quarter of 2019, driven primarily by the recognition of previously deferred precontract and inventoried costs of $130 million and higher net sales of $145 million on a missile defense radar program for an international customer with awards in the second and fourth quarters of 2019, partially offset by lower net sales of $343 million on certain international Patriot programs due to the scheduled completion of certain production phases of the programs.

The increase in total net sales of $376 million in 2018 compared to 2017 was primarily due to higher net sales of $426 million on an international Patriot program awarded in the first quarter of 2018, which included an estimated $90 million of net sales recognized in the first quarter of 2018 from previously inventoried costs, higher net sales of $113 million on various Patriot programs for an international customer driven by planned increases in production, higher net sales of $84 million on an international Patriot program awarded in the second quarter of 2018, and higher net sales of $71 million on close combat tactical radar programs and higher net sales of $64 million on a naval radar program both driven by awards in 2018, partially offset by lower net sales of $371 million on certain international Patriot programs due to the scheduled completion of certain production phases of the programs.

Total Operating Expenses—The increase in total operating expenses of $659 million in 2019 compared to 2018 was primarily due to an increase in materials and subcontractors costs of $281 million, an increase in other cost of sales and other operating expenses of $219 million and an increase in labor costs of $159 million. The increase in materials and subcontractors costs was principally due to higher activity on the certain European Patriot programs, and on the international air and missile defense system program awarded in the third quarter of 2019, both described above in Total Net Sales, and the completion of a transaction to satisfy all of our existing offset obligations on various Patriot programs for a MENA customer, partially offset by lower activity on the certain international Patriot programs described above in Total Net Sales. The increase in other cost of sales and other operating expenses was primarily due to a change in the amount of previously deferred precontract costs recognized based on contract awards, primarily due to $67 million recognized in the third quarter of 2019 related to the international air and missile defense system program awarded in the third quarter of 2019, and $58 million recognized in the fourth quarter of 2019 related to the additional award on the missile defense radar program for an international customer, both described above in Total Net Sales. The increase in labor costs was primarily due to higher activity on the certain European Patriot programs described above in Total Net Sales, higher activity on a naval radar program driven by awards in the first and fourth quarters of 2019, higher activity on Patriot engineering services support for U.S. and international customers primarily driven by increased scope, and higher activity on the missile defense radar program for an international customer described above in Total Net Sales, partially offset by lower activity on the certain international Patriot programs described above in Total Net Sales and lower activity on an international Patriot program awarded in the first quarter of 2018 driven by the recognition of previously inventoried costs in the first quarter of 2018.

The increase in total operating expenses of $288 million in 2018 compared to 2017 was primarily due to an increase in materials and subcontractors costs of $177 million, driven principally by activity on the international Patriot program awarded in the first quarter of 2018, the naval radar program and the close combat tactical radar programs described above in Total Net Sales, partially offset by activity on the certain international Patriot programs described above in Total Net Sales.

Operating Income and Margin—The increase in operating income of $88 million in 2019 compared to 2018 was primarily due to an increase in volume of $135 million and a net change in EAC adjustments of $60 million, partially offset by a change in mix and other performance of $107 million. The increase in volume was primarily due to activity on the programs described above in Total Net Sales. The net change in EAC adjustments was primarily driven by $30 million of favorable profit adjustments in the first quarter of 2019 related to the offset transaction discussed above in Total Operating Expenses due to a reduction of expected costs to fulfill our offset obligations on several contracts, and a $26 million negative profit adjustment in the third quarter of 2018 on a fixed price radar development program due to schedule delays from challenges in first-time production.

In total, the offset transaction resulted in $44 million of operating income in the first quarter of 2019. The change in mix and other performance was principally driven by lower sales on an international Patriot program awarded in the first quarter of 2018 driven by the recognition of previously inventoried costs in the first quarter of 2018 and lower sales on various Patriot programs for an international customer driven by the scheduled completion of certain production phases of the programs, with the remaining change spread across numerous programs with no individual or common significant driver. Included in the change in mix and other performance was a $6 million gain on a real estate transaction in the first quarter of 2019. The decrease in operating margin in 2019 compared to 2018 was primarily due to the change in mix and other performance, partially offset by the net change in EAC adjustments.

The increase in operating income of $88 million in 2018 compared to 2017 was primarily due to a change in mix and other performance of $79 million and an increase in volume of $42 million, partially offset by a net change in EAC adjustments of $33 million. The change in mix and other performance was principally driven by higher sales on the international Patriot program awarded in the first quarter of 2018 and the various Patriot programs for an international customer described above in Total Net Sales, which had a combined impact of $134 million, partially offset by other activity with no individual or common significant driver. Included in the change in mix and other performance was $10 million of gains on real estate transactions in 2017. The increase in volume was primarily due to the activity on the programs described above in Total Net Sales. The net change in EAC adjustments was primarily driven by a $26 million negative profit adjustment in the third quarter of 2018 on a fixed price radar development program due to schedule delays from challenges in first-time production. The increase in operating margin in 2018 compared to 2017 was primarily due to the change in mix and other performance, partially offset by the net change in EAC adjustments.

Backlog and Bookings—Backlog was $14,180 million, $11,557 million and $9,186 million at December 31, 2019, 2018 and 2017, respectively. The increase in backlog of $2,623 million at December 31, 2019 compared to December 31, 2018 was primarily due to bookings in excess of sales at our Integrated Air and Missile Defense (IAMD) product line. The increase in backlog of $2,371 million at December 31, 2018 compared to December 31, 2017 was primarily due to bookings in excess of sales at our IAMD product line.

The bookings increase of $936 million in 2019 compared to 2018 was driven primarily by the $708 million increase in the specifically disclosed bookings below. In 2019, IDS booked $1.8 billion on a direct commercial contract to provide National Advanced Surface-to-Air Missile System (NASAMS) to the State of Qatar, $1.1 billion on two direct commercial contracts to provide advanced Patriot air and missile defense capability to existing international customers, $827 million on the AMDR program for the U.S. Navy, $504 million on NASAMS for Australia, $486 million to provide advanced Patriot air and missile defense capability for Romania, $420 million on the Army Navy/Transportable Radar Surveillance-Model 2 (AN/TPY-2) radar program for the Kingdom of Saudi Arabia (KSA), $375 million to provide advanced Patriot air and missile defense capability for the State of Qatar, $360 million to provide Patriot engineering services support for the U.S. Army and international customers, $355 million to provide technical and logistics support for the Hawk and Patriot air and missile defense program for the KSA, $206 million on the Multi-Function Radio Frequency System (MFRFS) program for the U.S. Army, $205 million on the Aegis weapon system for the U.S. Navy and international customers, $170 million to provide Consolidated Contractor Logistics Support (CCLS) for the Missile Defense Agency (MDA), $105 million to provide advanced Patriot air and missile defense capability for Germany, $103 million to provide advanced Patriot air and missile defense capability for the U.S. Army and other international customers and $93 million to provide engineering support services for an international customer.

The bookings increase of $3,764 million in 2018 compared to 2017 was driven primarily by the $3,289 million increase in the specifically disclosed bookings below. In 2018, IDS booked $1.6 billion to provide advanced Patriot air and missile defense capability to an international customer, $1.3 billion to provide advanced Patriot air and missile defense capability for Poland, $676 million to provide advanced Patriot air and missile defense capability for Sweden, $380 million to provide Guidance Enhanced Missiles (GEM-T) for an international customer, $375 million to provide advanced Patriot air and missile defense capability for Romania, $317 million to provide Patriot engineering services support for U.S. and international customers, $316 million on the AMDR program for the U.S. Navy, $276 million for the Collins class submarine program for the Royal Australian Navy, $228 million for the AN/TPY-2 radar sustainment program for the MDA, $205 million to provide CCLS for the MDA, $191 million for the Forward Expeditionary Advanced Vehicle Radar (FEAVR) program for the U.S. Army, $142 million to provide Patriot spares for an international customer, $141 million to provide Patriot depot support for an international customer, $95 million on the MFRFS program for the U.S. Army, $83 million for the Barracuda mine neutralization system for the U.S. Navy and $76 million for a lightweight torpedo program for the U.S. Navy and international customers.

In 2017, IDS booked $1,030 million for the Upgraded Early Warning Radar (UEWR) system for Qatar, $448 million to provide advanced Patriot air and missile defense capabilities for certain international customers, including $145 million for Qatar and $303 million for two other international customers, $440 million on the AMDR program for the U.S. Navy, $304 million on an Early Warning Surveillance Radar System (EWSRS) support program for an international customer, $303 million to provide CCLS for the MDA, $263 million to provide Patriot engineering services support for U.S. and international customers, $180 million on the MFRFS program for the U.S. Army and $144 million on the AN/TPY-2 radar sustainment program for the MDA.

Intelligence, Information and Services

(In millions, except percentages)	2019	2018	2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Total net sales	**$ 7,151**	$ 6,722	$ 6,177	**6.4%**	8.8%
Total operating expenses					
Cost of sales—labor	**2,926**	2,762	2,610	**5.9%**	5.8%
Cost of sales—materials and subcontractors	**2,748**	2,610	2,309	**5.3%**	13.0%
Other cost of sales and other operating expenses	**819**	812	803	**0.9%**	1.1%
Total operating expenses	**6,493**	6,184	5,722	**5.0%**	8.1%
Operating income	**$ 658**	$ 538	$ 455	**22.3%**	18.2%
Operating margin	**9.2%**	8.0%	7.4%		

Change in Operating Income (in millions)	**Year Ended 2019 Versus Year Ended 2018**	Year Ended 2018 Versus Year Ended 2017
Volume	**$ 31**	$ 32
Net change in EAC adjustments	**33**	41
Mix and other performance	**56**	10
Total change in operating income	**$ 120**	$ 83

(In millions, except percentages)	2019	2018	2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Bookings	**$ 6,891**	$ 6,128	$ 6,615	**12.5%**	(7.4)%
Total Backlog	**6,674**	6,233	6,503	**7.1%**	(4.2)%

IIS provides a full range of technical and professional services to intelligence, defense, federal and commercial customers worldwide. IIS specializes in global Intelligence, Surveillance and Reconnaissance (ISR); navigation; DoD space and weather solutions; cybersecurity; analytics; training; logistics; mission support; advanced software-based complex systems; automation and sustainment solutions; and international and domestic Air Traffic Management (ATM) systems. Key customers include the U.S. Intelligence Community, the DoD, the Federal Aviation Administration (FAA), the National Oceanic and Atmospheric Administration (NOAA), the Department of Homeland Security (DHS), NASA and a number of international customers. In the first quarter of 2019, we amended and restated the RGNext joint venture agreement and acquired an additional 10% equity ownership in the joint venture, increasing our equity ownership to 60% and giving us control of the operations of RGNext with the partner having only protective rights. The results of RGNext are included in IIS's segment results effective as of the February 8, 2019 consolidation date. See "Note 4: Acquisitions, Divestitures and Goodwill" within Item 8 of this Form 10-K for additional detail.

Total Net Sales—The increase in total net sales of $429 million in 2019 compared to 2018 was primarily due to higher net sales of $286 million on classified programs in both cyber and space and higher net sales of $205 million from the consolidation of RGNext in the first quarter of 2019, partially offset by lower net sales of $377 million on programs in support of the U.S.

Army's Warfighter FOCUS activities, which continue to transition to a number of competitively-awarded replacement programs, with the remaining change spread across numerous programs with no individual or common significant driver.

The increase in total net sales of $545 million in 2018 compared to 2017 was primarily due to higher net sales of $258 million on classified programs in both cyber and space, higher net sales of $90 million in support of the DOMino cyber program for the DHS, which was awarded in the fourth quarter of 2017, and higher net sales of $80 million on programs in support of the U.S. Army's Warfighter FOCUS activities driven principally by customer determined activity levels.

Total Operating Expenses—The increase in total operating expenses of $309 million in 2019 compared to 2018 was primarily due to an increase in labor costs of $164 million and an increase in materials and subcontractors costs of $138 million. The increase in labor costs was driven principally by the activity on the programs described above in Total Net Sales. Included in the change in materials and subcontractors costs was lower activity on programs in support of the U.S. Army's Warfighter FOCUS activities described above in Total Net Sales and higher activity on classified programs in both cyber and space described above in Total Net Sales, with the remaining change spread across numerous programs with no individual or common significant driver.

The increase in total operating expenses of $462 million in 2018 compared to 2017 was primarily due to an increase in materials and subcontractors costs of $301 million and an increase in labor costs of $152 million. The increase in materials and subcontractors costs was driven principally by activity on the classified programs and the DOMino cyber program for the DHS described above in Total Net Sales. The increase in labor costs was driven principally by activity on the classified programs described above in Total Net Sales, a change in the type of labor support on an air traffic control program for the FAA, activity on a U.S. Air Force program due to increased contract activities, and activity on the DOMino cyber program for the DHS and the U.S. Army's Warfighter FOCUS activities both described above in Total Net Sales, partially offset by activity on the Joint Polar Satellite System (JPSS) Common Ground System (CGS) for NASA due to planned decreases in contract activities.

Operating Income and Margin—The increase in operating income of $120 million in 2019 compared to 2018 was primarily due to a change in mix and other performance of $56 million, a net change in EAC adjustments of $33 million and an increase in volume of $31 million. The change in mix and other performance was primarily due to the non-cash gain of $21 million from the remeasurement of our equity method investment in RGNext in the first quarter of 2019 as described above and activity on the programs in support of the U.S. Army's Warfighter FOCUS activities described above in Total Net Sales. Included in the change in mix and other performance was a non-cash gain of $14 million from the revaluation of an investment in equity securities of a non-publicly traded company in the third quarter of 2019 and a $13 million gain in the first quarter of 2019 on the sale of residual materials and supplies previously used to support the Warfighter FOCUS programs. The net change in EAC adjustments was primarily driven by higher labor efficiencies on classified programs in both cyber and space in 2019. The increase in volume was primarily due to the activity on the programs described above in Total Net Sales, with the remaining change spread across numerous programs with no individual or common significant driver. The increase in operating margin in 2019 compared to 2018 was primarily due to the change in mix and other performance and the net change in EAC adjustments.

The increase in operating income of $83 million in 2018 compared to 2017 was primarily due to a net change in EAC adjustments of $41 million and an increase in volume of $32 million. The net change in EAC adjustments was driven principally by higher labor efficiencies on the programs in support of the U.S. Army's Warfighter FOCUS activities in 2018. The increase in volume was primarily due to the activity on the classified programs described above in Total Net Sales. Included in mix and other performance in 2017 was a $2 million gain on a real estate transaction. The increase in operating margin in 2018 compared to 2017 was primarily due to the net change in EAC adjustments.

Backlog and Bookings—Backlog was $6,674 million, $6,233 million and $6,503 million at December 31, 2019, 2018 and 2017, respectively. The increase in backlog of $441 million at December 31, 2019 compared to December 31, 2018 was primarily due to the consolidation of RGNext, as described above. The decrease in backlog of $270 million at December 31, 2018 compared to December 31, 2017 was primarily at our Navigation and Modernization Solutions (NMS) product line principally due to sales in excess of bookings.

The bookings increase of $763 million in 2019 compared to 2018 was driven primarily by the $353 million increase in the specifically disclosed bookings below and an increase in bookings on less significant awards not specifically disclosed. In

2019, IIS booked $462 million on domestic and foreign training programs in support of Warfighter FOCUS activities, $293 million on the DOMino cyber program for the DHS, $171 million to perform operations and sustainment for the U.S. Air Force's Launch and Test Range System (LTRS), $128 million on the Air and Space Operations Center Weapon System (AOC WS) program for the U.S. Air Force, $105 million to provide cybersecurity support for an international customer and $98 million to provide support for the North Warning System for the Canadian government. IIS also booked $2,770 million on a number of classified contracts.

The bookings decrease of $487 million in 2018 compared to 2017 was driven primarily by the $1,581 million decrease in the specifically disclosed bookings below, partially offset by an increase in bookings on less significant awards not specifically disclosed primarily within our NMS and C2, Space and Intelligence (CSI) product lines. In 2018, IIS booked $497 million on domestic training programs and $322 million on foreign training programs in support of Warfighter FOCUS activities, $108 million to provide ISR support for the U.S. Air Force and $99 million on the AOC WS program for the U.S. Air Force. IIS also booked $2,648 million on a number of classified contracts.

In 2017, IIS booked approximately $1.4 billion on U.S. Air Force programs, $810 million on domestic training programs and $342 million on foreign training programs in support of Warfighter FOCUS activities, $233 million to upgrade the Phalanx Close-In Weapon System (CIWS) for the Royal Canadian Navy, $148 million on the Standard Terminal Automation Replacement System (STARS) program for the FAA, $106 million to provide ISR support for the U.S. Air Force, $98 million on the DOMino cyber program for the DHS, and $77 million to support the Naval Communications Station, Harold E Holt (HEH) facility for Australia. IIS also booked $2,041 million on a number of classified contracts, including $448 million on two multi-year awards for certain classified customers.

Missile Systems

(In millions, except percentages)	2019	2018	2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Total net sales	**$ 8,726**	$ 8,298	$ 7,787	**5.2 %**	6.6 %
Total operating expenses					
Cost of sales—labor	**2,834**	2,539	2,303	**11.6 %**	10.2 %
Cost of sales—materials and subcontractors	**3,769**	3,705	3,386	**1.7 %**	9.4 %
Other cost of sales and other operating expenses	**1,164**	1,081	1,088	**7.7 %**	(0.6)%
Total operating expenses	**7,767**	7,325	6,777	**6.0 %**	8.1 %
Operating income	**$ 959**	$ 973	$ 1,010	**(1.4)%**	(3.7)%
Operating margin	**11.0%**	11.7%	13.0%		

Change in Operating Income (in millions)	Year Ended 2019 Versus Year Ended 2018	Year Ended 2018 Versus Year Ended 2017
Volume	**$ 56**	$ 74
Net change in EAC adjustments	**(73)**	(2)
Mix and other performance	**3**	(109)
Total change in operating income	**$ (14)**	$ (37)

(In millions, except percentages)	2019	2018	2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Bookings	**$ 10,833**	$ 8,833	$ 9,672	**22.6%**	(8.7)%
Total Backlog	**15,835**	13,976	13,426	**13.3%**	4.1 %

MS designs, develops, integrates and produces missile and combat systems for the armed forces of the U.S. and allied nations. Leveraging its capabilities in advanced airframes, guidance and navigation systems, high-resolution sensors, surveillance, hypersonic systems, targeting and netted systems, MS provides and supports a broad range of advanced weapon systems including missiles, smart munitions, close-in weapon systems, projectiles, kinetic kill vehicles, directed energy effectors and advanced combat sensor solutions. Key customers include the U.S. Navy, Army, Air Force and Marine Corps, the MDA, and the armed forces of more than 50 allied nations.

Total Net Sales—The increase in total net sales of $428 million in 2019 compared to 2018 was primarily due to higher net sales of $309 million on classified programs, partially offset by lower net sales of $270 million on the Paveway program due to planned decreases in production, with the remaining change spread across numerous programs with no individual or common significant driver.

The increase in total net sales of $511 million in 2018 compared to 2017 was primarily due to higher net sales of $485 million on classified programs, partially offset by lower net sales of $219 million on the Paveway program principally driven by reductions of expected costs in the third quarter of 2017 to fulfill industrial cooperation agreements, and decreases in production costs and unit pricing.

Total Operating Expenses—The increase in total operating expenses of $442 million in 2019 compared to 2018 was primarily due to an increase in labor costs of $295 million and an increase in other cost of sales and other operating expenses of $83 million. Almost half of the increase in labor costs was driven by increased activity on the classified programs described above in Total Net Sales, with the remaining change spread across numerous programs with no individual or common significant driver. The increase in other cost of sales and other operating expenses was driven principally by a $73 million change in the amount of previously deferred precontract costs recognized based on contract awards.

The increase in total operating expenses of $548 million in 2018 compared to 2017 was primarily due to an increase in materials and subcontractors costs of $319 million and an increase in labor costs of $236 million. The increase in materials and subcontractors costs was primarily due to activity on the classified programs described above in Total Net Sales and activity on the SM-3 program due to planned increases in production. The increase in labor costs was driven principally by activity on the classified programs described above in Total Net Sales.

Operating Income and Margin—The decrease in operating income of $14 million in 2019 compared to 2018 was primarily due to a net change in EAC adjustments of $73 million, partially offset by an increase in volume of $56 million. The net change in EAC adjustments was primarily driven by a $39 million loss reserve recorded in the second quarter of 2019 for a potential termination for default on a U.S. customer program, as we determined we would not be able to execute the technical scope and other requirements, partially due to conditions outside our control, as discussed further in Commitments and Contingencies. Included in the net change in EAC adjustments was a total favorable adjustment of $26 million on two contracts in the second quarter of 2019 primarily driven by reductions of expected costs to fulfill industrial cooperation agreements for an international customer due to a favorable change in requirements. The increase in volume was principally driven by activity on the classified programs described above in Total Net Sales. The decrease in operating margin in 2019 compared to 2018 was primarily due to the net change in EAC adjustments.

The decrease in operating income of $37 million in 2018 compared to 2017 was primarily due to a change in mix and other performance of $109 million, partially offset by an increase in volume of $74 million. The change in mix and other performance was principally driven by activity on international Paveway programs, which had an impact of $37 million, and activity on the classified programs described above in Total Net Sales. The increase in volume was principally driven by activity on the classified programs described above in Total Net Sales. Included in the net change in EAC adjustments were reductions of expected costs to fulfill industrial cooperation agreements for an international customer resulting in adjustments of $37 million and $36 million on two contracts due to a favorable change in requirements in the third quarter of 2017 and a negative profit adjustment of $26 million in the fourth quarter of 2018 on a next generation precision strike weapon contract due to an increase in costs to complete the program, including costs to fulfill higher order quantities on the final option year than previously expected, partially offset by an unfavorable $40 million adjustment on a $1.4 billion contract, driven by the final contract modification in the third quarter of 2017 which was less than we anticipated based upon the previous contract price negotiations. The decrease in operating margin in 2018 compared to 2017 was primarily due to the change in mix and other performance.

Backlog and Bookings—Backlog was $15,835 million, $13,976 million and $13,426 million at December 31, 2019, 2018 and 2017, respectively. The increase in backlog of $1,859 million at December 31, 2019 compared to December 31, 2018 was primarily due to bookings in excess of sales within our Strategic and Naval Systems (SNS) product line. The increase in backlog of $550 million at December 31, 2018 compared to December 31, 2017 was primarily due to bookings in excess of sales within our SNS product line, partially offset by sales in excess of bookings in the Air Warfare Systems (AWS) product line.

The bookings increase of $2,000 million in 2019 compared to 2018 was driven primarily by the $1,655 million increase in the specifically disclosed bookings below. In 2019, MS booked $1,037 million for Standard Missile-6 (SM-6) for the U.S. Navy, $1,010 million for SM-3 for the MDA and an international customer, $912 million for Advanced Medium-Range Air-to-Air Missile (AMRAAM) for the U.S. Air Force and Navy and international customers, $552 million for AIM-9X Sidewinder short-range air-to-air missiles for the U.S. Navy and Air Force and international customers, $507 million for Evolved Seasparrow Missile (ESSM) for the U.S. Navy and international customers, $507 million for Phalanx for the U.S. Navy and Army and international customers, $504 million for Tomahawk for the U.S. Navy and an international customer, $398 million for Paveway for the U.S. Air Force and international customers, $234 million for Excalibur for the U.S. Army and an international customer, $229 million for Tube-launched, Optically-tracked, Wireless-guided (TOW) missiles for the U.S. Army and Marine Corps and international customers, $198 million for the Coyote Rapid Development Program (CRDP) for U.S. customers, $197 million for Rolling Airframe Missile (RAM) for the U.S. Navy and international customers, $176 million for Miniature Air Launched Decoy (MALD) for the U.S. Air Force and Navy, $173 million for StormBreaker for the U.S. Air Force and Navy, $137 million for Commander’s Independent Thermal Viewers (CITV) for the U.S. Army and $132 million for High-Speed Anti-Radiation Missile (HARM) for the U.S. Air Force and Navy and international customers. MS also booked $2,827 million on a number of classified contracts.

The bookings decrease of $839 million in 2018 compared to 2017 was driven primarily by the $396 million decrease in the specifically disclosed bookings below and a decrease in bookings on less significant awards not specifically disclosed. In 2018, MS booked $1,106 million for SM-3 for the MDA and an international customer, $725 million for Phalanx CIWS for the U.S. Navy and Army and international customers, $699 million for AMRAAM for the U.S. Air Force and Navy and international customers, $554 million for AIM-9X Sidewinder short-range air-to-air missiles for U.S. Navy and Air Force and international customers, $471 million for StormBreaker, formerly called Small Diameter Bomb II (SDB II™), for the U.S. Air Force and Navy, $470 million for SM-6 for the U.S. Navy, $337 million for RAM for the U.S. Navy and international customers, $269 million for TOW missiles for the U.S. Army and Marine Corps and international customers, $267 million for Paveway for the U.S. Air Force and international customers, $235 million for Standard Missile-2 (SM-2) for the U.S. Navy and international customers, $226 million for Tomahawk for the U.S. Navy and Air Force and international customers, $216 million for ESSM for the U.S. Navy and international customers, $164 million for Javelin for the U.S. Army and international customers, $163 million for MALD for the U.S. Air Force, $114 million for CITV for the U.S. Army and an international customer, $113 million on the High-speed Unmanned Long-range Kinetic-kill (HULK) program for the U.S. Army, $112 million for Excalibur for the U.S. Army, $110 million for the Iron Dome Tamir production program for an international customer, $94 million for Horizontal Technology Integration (HTI) forward looking infrared (FLIR) kits for the U.S. Army and an international customer, and $75 million for the David's Sling weapon system’s Stunner Missile for an international customer. MS also booked $1,555 million on a number of classified contracts, including $127 million on a major contract.

In 2017, MS booked $2.2 billion for Paveway for the U.S. Air Force and international customers, $816 million for AMRAAM for the U.S. Air Force and Navy and international customers, $673 million for SM-3 for the MDA and international customers, $661 million for SM-2 for the U.S. Navy and international customers, $538 million for the Redesigned Kill Vehicle (RKV) program for the MDA, $468 million for the Joint Standoff Weapon (JSOW) for the U.S. Navy and Air Force and international customers, $424 million for Tomahawk for the U.S. Navy and international customers, $378 million for TOW missiles for the U.S. Army and Marine Corps and international customers, $347 million for AIM-9X Sidewinder short-range air-to-air missiles for the U.S. Navy, Air Force and Army and international customers, $214 million for Phalanx CIWS for the U.S. Navy and international customers, $214 million for Excalibur for the U.S. Army, $156 million for HTI FLIR kits for the U.S. Army and an international customer, $135 million for Javelin for the U.S. Army and international customers, $116 million for the Long Range Precision Fires (LRPF) Missile system for the U.S. Army and $104 million for Mobile Range for the U.S. Navy, Army and Air Force. MS also booked $1,027 million on classified contracts, including $223 million on a major contract.

Space and Airborne Systems

(In millions, except percentages)		2019		2018		2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Total net sales	**$**	**7,427**	$	6,748	$	6,430	**10.1%**	4.9 %
Total operating expenses								
Cost of sales—labor		**3,261**		2,857		2,673	**14.1%**	6.9 %
Cost of sales—materials and subcontractors		**1,958**		1,810		1,877	**8.2%**	(3.6)%
Other cost of sales and other operating expenses		**1,217**		1,197		1,018	**1.7%**	17.6 %
Total operating expenses		**6,436**		5,864		5,568	**9.8%**	5.3 %
Operating income	**$**	**991**	$	884	$	862	**12.1%**	2.6 %
Operating margin		**13.3%**		13.1%		13.4%		

Change in Operating Income (in millions)		Year Ended 2019 Versus Year Ended 2018		Year Ended 2018 Versus Year Ended 2017
Volume	**$**	**66**	$	38
Net change in EAC adjustments		**8**		44
Mix and other performance		**33**		(60)
Total change in operating income	**$**	**107**	$	22

(In millions, except percentages)		2019		2018		2017	% Change 2019 compared to 2018	% Change 2018 compared to 2017
Bookings	**$**	**8,335**	$	7,852	$	5,907	**6.2%**	32.9%
Total Backlog		**11,525**		10,126		8,611	**13.8%**	17.6%

SAS is a leader in the design, development and manufacture of integrated sensor and communication systems for advanced missions. These missions include intelligence, surveillance and reconnaissance; precision engagement; manned and unmanned aerial operations; and space. Leveraging state-of-the-art technologies, mission systems and domain knowledge, SAS designs, manufactures, supports and sustains civil and military electro-optical/infrared (EO/IR) sensors; airborne radars for surveillance and fire control applications; lasers; precision guidance systems; signals intelligence systems; processors; electronic warfare systems; tactical and strategic communications; and space-qualified systems. Key customers are the U.S. Navy, Air Force, and Army, international allies and classified customers.

Total Net Sales—The increase in total net sales of $679 million in 2019 compared to 2018 was primarily due to higher net sales of $199 million on classified programs principally driven by 2018 awards, higher net sales of $115 million on the Next Gen OPIR program for the U.S. Air Force awarded in the third quarter of 2018, higher net sales of $89 million on IFF production programs primarily due to increased customer demand and higher net salesof $64 million on tactical radar systems development programs due to scheduled increases in program activity.

The increase in total net sales of $318 million in 2018 compared to 2017 was primarily due to higher net sales of $91 million on a domestic tactical radar systems production program due to scheduled increases in production and higher net sales of $85 million on surveillance and targeting systems programs primarily due to a production program for the U.S. Air Force awarded in the third quarter of 2018 and planned increases in production on certain surveillance and targeting systems programs.

Total Operating Expenses—The increase in total operating expenses of $572 million in 2019 compared to 2018 was primarily due to an increase in labor costs of $404 million and an increase in materials and subcontractors costs of $148 million. The increase in labor costs was primarily due to activity on the classified, Next Gen OPIR and tactical radar systems development programs described above in Total Net Sales. The increase in materials and subcontractors costs was primarily due to activity on a surveillance and targeting systems production program for the U.S. Air Force awarded in the third quarter of 2018 and activity on the classified programs described above in Total Net Sales.

The increase in total operating expenses of $296 million in 2018 compared to 2017 was primarily due to an increase in labor costs of $184 million and an increase in other costs of sales and other operating expenses of $179 million. The increase in labor costs was primarily due to activity on classified programs. The increase in other costs of sales and other operating expenses was primarily driven by an increase in general and administrative expenses of $84 million driven by higher independent research and development costs and an increase in other direct costs of $34 million principally due to an increase in software royalty and licensing costs based on the timing of program requirements.

Operating Income and Margin—The increase in operating income of $107 million in 2019 compared to 2018 was primarily driven by an increase in volume of $66 million and a change in mix and other performance of $33 million. Almost half of the increase in volume was due to activity on the classified programs and the Next Gen OPIR program described above in Total Net Sales, with the remaining change spread across numerous programs with no individual or common significant driver. Included in the change in mix and other performance was a $21 million gain on a real estate transaction in the fourth quarter of 2019, which was more than offset by activity on the classified programs described above and a gain of $8 million in the second quarter of 2018 from the sale of our commercial cloud-based call center analytics business. The remaining change was spread across numerous programs with no individual or common significant driver. The increase in operating margin in 2019 compared to 2018 was primarily due to the change in mix and other performance.

The increase in operating income of $22 million in 2018 compared to 2017 was primarily driven by a net change in EAC adjustments of $44 million and an increase in volume of $38 million, partially offset by a change in mix and other performance of $60 million. The net change in EAC adjustments was primarily driven by a change in net EAC adjustments on tactical communication systems development and production programs due to an increase in estimated labor costs in 2017 and labor and material production efficiencies in 2018 and a change in net EAC adjustments on a protected communication systems development program due to an increase in estimated labor and material costs in 2017, partially offset by a change in net EAC adjustments on surveillance and targeting systems programs due to labor and material production efficiencies in 2017 and an increase in estimated labor and material costs in 2018, with the remaining change spread across numerous programs with no individual or common significant driver. The increase in volume was driven by activity on the programs discussed above in Total Net Sales. The change in mix and other performance was primarily driven by lower activity on two international tactical radar systems programs due to scheduled completion of certain production phases. Included in mix and other performance was a gain of $8 million from the sale of our commercial cloud-based call center analytics business in the second quarter of 2018, which was recorded as a reduction to cost of sales, and a gain of $15 million on a real estate transaction in the second quarter of 2017. The decrease in operating margin in 2018 compared to 2017 was primarily due to the change in mix and other performance, partially offset by the net change in EAC adjustments.

Backlog and Bookings—Backlog was $11,525 million, $10,126 million and $8,611 million at December 31, 2019, 2018 and 2017, respectively. The increase in backlog of $1,399 million at December 31, 2019 compared to December 31, 2018 was primarily due to bookings in excess of sales principally within our Intelligence, Surveillance and Reconnaissance Systems (ISRS), Secure Sensor Solutions (S^3), Integrated Communications Systems (ICS) and Electronic Warfare Systems (EWS) product lines. The increase in backlog of $1,515 million at December 31, 2018 compared to December 31, 2017 was primarily due to bookings in excess of sales principally within our ISRS and Space Systems (SS) product lines.

The bookings increase of $483 million in 2019 compared to 2018 was driven primarily by the $240 million increase in the specifically disclosed bookings below and an increase in bookings on less significant awards not specifically disclosed. In 2019, SAS booked $476 million on the Next Generation Jammer (NGJ) program for the U.S. Navy, $307 million on the Advanced Synthetic Aperture Radar System (ASARS) program for the U.S. Air Force, $239 million for airborne radars for the U.S. Navy, $227 million for radar components for the U.S. Navy, $212 million for the Multi-Spectral Targeting System (MTS) for the U.S. Air Force and various U.S. government customers, $189 million on the Global Aircrew Strategic Network Terminal (Global ASNT) program for the U.S. Air Force, $139 million on the Family of Advanced Beyond Line of Sight Terminals (FAB-T) program for the U.S. Air Force, $136 million for radar components for South Korea, $131 million for the Next Gen OPIR program for the U.S. Air Force, $112 million for missile seekers for the U.S. Navy and an international customer and $104 million for radar warning receivers for the U.S. Air Force. SAS also booked $2,082 million on a number of classified contracts.

The bookings increase of $1,945 million in 2018 compared to 2017 was driven primarily by the $1,849 million increase in the specifically disclosed bookings below. In 2018, SAS booked $429 million for the Next Gen OPIR program for the U.S. Air Force, $349 million for radar components for the U.S. Navy and the Royal Australian Air Force, $347 million to provide support and sustainment services to the U.K. Royal Air Force's Shadow aircraft fleet, $287 million for the MTS for the U.S. Air Force, $136 million on the NGJ program for the U.S. Navy, $109 million for Active Electronically Scanned Array (AESA) radars for the U.S. Air Force and $90 million on the next-generation MTS for the U.S. Air Force. SAS also booked $2,367 million on a number of classified contracts, including $441 million for a major domestic classified program.

In 2017, SAS booked $256 million for AESA radars for the U.S. Air Force, $250 million on two contracts for international customers, one for military processors and one for radar warning receivers, approximately $200 million on classified and unclassified space programs and $175 million for radar components for the U.S. Navy and the Royal Australian Air Force. SAS also booked $1,384 million on a number of classified contracts.

Forcepoint

(In millions, except percentages)	2019	2018	2017	% Change: 2019 compared to 2018	% Change: 2018 compared to 2017
Total net sales	**$ 658**	$ 634	$ 608	**3.8 %**	4.3 %
Total operating expenses					
Cost of sales	**156**	128	116	**21.9 %**	10.3 %
Selling and marketing	**280**	278	246	**0.7 %**	13.0 %
Research and development	**120**	138	143	**(13.0)%**	(3.5)%
General and administrative	**94**	85	70	**10.6 %**	21.4 %
Total operating expenses	**650**	629	575	**3.3 %**	9.4 %
Operating income	**$ 8**	$ 5	$ 33	**60.0 %**	(84.8)%
Operating margin	**1.2%**	0.8%	5.4%		

(In millions, except percentages)	2019	2018	2017	% Change: 2019 compared to 2018	% Change: 2018 compared to 2017
Bookings	**$ 647**	$ 651	$ 590	**(0.6)%**	10.3%
Total Backlog	**538**	528	484	**1.9 %**	9.1%

Forcepoint develops cybersecurity products serving commercial and government organizations worldwide. Forcepoint was created in May 2015 as a joint venture of Raytheon and Vista Equity Partners that brought together the capabilities of the legacy Raytheon Cyber Products (RCP) and Websense, Inc. (Websense) businesses. On November 18, 2019, Raytheon acquired Vista Equity Partners' interest in Forcepoint, such that Forcepoint is now wholly owned by Raytheon. Refer to "Note 11: Redeemable Noncontrolling Interests" within Item 8 of this Form 10-K for additional information. Forcepoint delivers a portfolio of human-centric cybersecurity capabilities that incorporate behavior based insights, including risk adaptive data loss prevention; user and entity behavior analytics (UEBA) and cloud access security broker (CASB) capabilities; insider threat solutions; next-generation firewall (NGFW) technology; cloud and on premise web and email security; and cross domain transfer products.

Total Net Sales—The increase in total net sales of $24 million in 2019 compared to 2018 was primarily driven by $32 million of higher Global Government and Critical Infrastructure sales primarily due to a higher volume of product bookings. Total net sales excluded the unfavorable impact related to the deferred revenue acquisition accounting adjustments described below in Acquisition Accounting Adjustments.

The increase in total net sales of $26 million in 2018 compared to 2017 was primarily driven by $31 million of higher Global Government and Critical Infrastructure sales from a higher volume of bookings. Total net sales excluded the unfavorable impact related to the deferred revenue acquisition accounting adjustments described below in Acquisition Accounting Adjustments.

Total Operating Expenses—We disclose our operating expenses for the segment, which excludes amortization of acquired intangible assets and certain other acquisition and acquisition related expenses, in terms of the following:

– Cost of sales—labor and overhead costs associated with analytic and technical support services; infrastructure costs associated with maintaining our databases; and labor, materials and overhead costs associated with providing our product offerings;
– Selling and marketing—labor costs related to personnel engaged in selling and marketing and customer support functions; costs related to public relations, advertising, promotions and travel; and related overhead costs;
– Research and development—labor costs for the development and management of new and existing products; and related overhead costs; and
– General and administrative—labor costs for our executive, finance and administrative personnel; third party professional service fees; and related overhead costs.

Total operating expenses in 2019 increased $21 million compared to 2018 primarily driven by an increase in cost of sales of $28 million and an increase in general and administrative expenses of $9 million, partially offset by a decrease in research and development expenses of $18 million. The increase in cost of sales was principally due to staffing to support fulfillment of higher services sales. The increase in general and administrative expenses was principally driven by increased professional service fees to increase support capabilities to align with future growth. The decrease in research and development expenses was principally driven by optimization of our research and development labor force, including an increase in capitalized labor costs related to the development of our software-as-a-service platform. Total operating expenses excluded amortization of acquired intangible assets as described below in Acquisition Accounting Adjustments and certain unallocated costs which are included in Corporate.

Total operating expenses in 2018 increased $54 million compared to 2017 primarily driven by an increase in selling and marketing expenses of $32 million, an increase in general and administrative expenses of $15 million and an increase in cost of sales of $12 million. The increase in selling and marketing expenses was principally driven by higher costs for the sales organization due to increased staffing and training. The increase in general and administrative expenses was principally driven by increased staffing and professional services fees to increase support capabilities to align with future growth. The increase in cost of sales was principally driven by a change in sales mix due to increased hardware sales and increased staffing to support fulfillment of higher bookings volume. Total operating expenses excluded amortization of acquired intangible assets as described below in Acquisition Accounting Adjustments and certain unallocated costs which are included in Corporate.

Operating Income and Margin—The increase in operating income of $3 million and the related increase in operating margin in 2019 compared to 2018 was primarily due to the increase in total net sales described above in Total Net Sales, partially offset by the increase in expenses described above in Total Operating Expenses.

The decrease in operating income of $28 million in 2018 compared to 2017 was primarily due to the increase in total operating expenses described above in Total Operating Expenses, partially offset by the increase in total net sales described above in Total Net Sales. The decrease in operating margin in 2018 compared to 2017 was primarily due to the increase in total operating expenses described above in Total Operating Expenses.

Backlog and Bookings—Backlog was $538 million, $528 million and $484 million at December 31, 2019, 2018 and 2017, respectively. Backlog at December 31, 2019 was relatively consistent with December 31, 2018. The increase in backlog of $44 million at December 31, 2018 compared to December 31, 2017 was primarily due to bookings in excess of sales within the Global Governments and Critical Infrastructure product line.

Bookings decreased by $4 million in 2019 compared to 2018 due to a $32 million decrease in Enterprise Security bookings, partially offset by a $28 million increase in Global Government and Critical Infrastructure bookings.

Bookings increased by $61 million in 2018 compared to 2017 primarily due to a $39 million increase in Global Governments and Critical Infrastructure bookings and a $22 million increase in Enterprise Security bookings.

Acquisition Accounting Adjustments

Acquisition Accounting Adjustments include the adjustments to record acquired deferred revenue at fair value as part of our purchase price allocation process, referred to as the deferred revenue adjustment, and the amortization of acquired intangible assets related to historical acquisitions. These adjustments are not considered part of management's evaluation of segment results.

The components of Acquisition Accounting Adjustments were as follows:

(In millions)		2019		2018		2017
Deferred revenue adjustment	$	(1)	$	(10)	$	(35)
Amortization of acquired intangibles		(111)		(116)		(125)
Total Acquisition Accounting Adjustments	$	(112)	$	(126)	$	(160)

The deferred revenue adjustment related to acquisitions in the Forcepoint business segment.

Amortization of acquired intangibles related to acquisitions in the segments was as follows:

(In millions)		2019		2018		2017
Integrated Defense Systems	$	—	$	—	$	—
Intelligence, Information and Services		25		21		20
Missile Systems		—		1		1
Space and Airborne Systems		7		8		10
Forcepoint		79		86		94
Total	$	111	$	116	$	125

The change in our Acquisition Accounting Adjustments of $14 million in 2019 compared to 2018 was primarily due to a $9 million decrease in the deferred revenue adjustment, principally driven by lower amounts recognized related to the Stonesoft acquisition in the first quarter of 2016.

The change in our Acquisition Accounting Adjustments of $34 million in 2018 compared to 2017 was due to a $25 million decrease in the deferred revenue adjustment, principally driven by lower amounts recognized related to the Websense acquisition in the second quarter of 2015.

FAS/CAS Operating Adjustment

The FAS/CAS Operating Adjustment represents the difference between the service cost component of our pension and PRB expense or income under FAS requirements of U.S. GAAP and our pension and PRB expense under CAS. The results of each segment only include pension and PRB expense under CAS that we generally recover through the pricing of our products and services to the U.S. government.

The pension and PRB components of the FAS/CAS Operating Adjustment were as follows:

(In millions)		2019		2018		2017
FAS/CAS Pension Operating Adjustment	$	1,439	$	1,415	$	1,291
FAS/CAS PRB Operating Adjustment		15		13		12
FAS/CAS Operating Adjustment	$	1,454	$	1,428	$	1,303

The components of the FAS/CAS Pension Operating Adjustment were as follows:

(In millions)	2019	2018	2017
FAS service cost (expense)	**$ (420)**	$ (504)	$ (473)
CAS expense	**1,859**	1,919	1,764
FAS/CAS Pension Operating Adjustment	**$ 1,439**	$ 1,415	$ 1,291

The key driver of the FAS/CAS Pension Operating Adjustment is that FAS service cost is the present value of the projected benefits attributable to service provided in the current year while CAS expense generally includes both the current year service related costs under CAS and gains or losses that arise when our asset and liability experience differs from our assumptions under CAS. The remaining components of FAS pension expense are recorded in retirement benefits non-service expense.

The change in our FAS/CAS Pension Operating Adjustment of $24 million in 2019 compared to 2018 was driven by an $84 million decrease in our FAS service cost, partially offset by a $60 million decrease in our CAS expense. The decrease in our FAS service cost was principally driven by the higher discount rate at December 31, 2018 compared to the discount rate at December 31, 2017. The decrease in our CAS expense was primarily due to unfavorable asset performance during 2018.

The change in our FAS/CAS Pension Operating Adjustment of $124 million in 2018 compared to 2017 was driven by a $155 million increase in CAS expense, partially offset by a $31 million increase in FAS service cost. The increase in CAS expense was primarily due to a decrease in the discount rate used to measure liabilities in determining CAS expense for 2018 compared to 2017 as described above in Critical Accounting Estimates and our actuarial update, which takes into account updated census data. The change in the discount rate used to measure liabilities for purposes of determining CAS pension expense has been included in our contracts through our overhead forward pricing rates. The increase in FAS service cost was primarily driven by the lower discount rate at December 31, 2017 compared to the discount rate at December 31, 2016.

The components of the FAS/CAS PRB Operating Adjustment were as follows:

(In millions)	2019	2018	2017
FAS service cost (expense)	**$ (3)**	$ (5)	$ (6)
CAS expense	**18**	18	18
FAS/CAS PRB Operating Adjustment	**$ 15**	$ 13	$ 12

For 2020 compared to 2019, we currently expect our FAS service cost to increase by $82 million and our CAS expense to increase by $109 million driven by the differences in the assumptions and the recognition period for gains and losses under CAS. Both FAS service cost and CAS expense are subject to our actuarial update, as discussed above. After 2020, the FAS/CAS Operating Adjustment becomes more difficult to predict because FAS service cost and CAS expense are based on a number of key assumptions for future periods.

Corporate and Reclassification

Corporate operating income (expense) consists of unallocated costs and certain other corporate costs not considered part of management’s evaluation of reportable segment operating performance or the allocation of resources to the segments.

Operating income (expense) related to Corporate and Reclassification was as follows:

(In millions)	2019	2018	2017
Corporate and other unallocated costs	**$ (97)**	$ (17)	$ (59)
Reclassification of Investment Revaluation	**(14)**	—	—
Corporate and Reclassification	**$ (111)**	$ (17)	$ (59)

The change in operating income (expense) related to Corporate and other unallocated costs of $80 million in 2019 compared to 2018 was primarily due to $51 million of costs in 2019 related to the proposed merger with UTC. Included in the change in operating income (expense) related to Corporate and other unallocated costs was $13 million of net expenses related to the LTAMDS project, for which the company was selected in the fourth quarter of 2019. The net expenses related to the LTAMDS project are included in Corporate and other unallocated costs as they are not included in management's evaluation of business segment results.

In the third quarter of 2019, the Company revalued an investment in equity securities of a non-publicly traded company due to the availability of updated pricing data from a recent transaction and recognized a non-cash gain of $14 million. The gain is included in IIS's operating income in 2019 as it is part of management's evaluation of the segment's performance and reclassified through Corporate and Reclassification to other (income) expense, net on our consolidated statements of operations for financial reporting purposes as the gain is not related to our core operations.

Operating income (expense) related to Corporate and other unallocated costs in 2018 included miscellaneous favorable items not allocated to segments results and was relatively consistent with 2017.

FINANCIAL CONDITION AND LIQUIDITY

Overview

We currently expect that cash and cash equivalents, cash flow from operations and other available financing resources will be sufficient to meet anticipated operating, capital expenditure, investment, debt service and other financing requirements during the next 12 months and for the foreseeable future. Our need for, cost of and access to funds are dependent on future operating results, as well as other external conditions.

In addition, the following table highlights selected measures of our liquidity and capital resources at December 31:

(In millions)	**2019**	2018
Cash and cash equivalents	**$ 4,292**	$ 3,608
Working capital[(1)]	**3,291**	3,674
Amount available under our credit facilities	**1,250**	950

(1) Amounts have been recast to reflect the adoption of ASU 2016-02, *Leases (Topic 842)*.

Operating Activities

(In millions)	**2019**	2018	2017
Net cash provided by (used in) operating activities from continuing operations	**$ 4,482**	$ 3,428	$ 2,747
Net cash provided by (used in) operating activities	**4,480**	3,428	2,745

The increase of $1,052 million in net cash provided by operating activities in 2019 compared to 2018 was primarily due to a decrease in pension contributions driven by the $1.25 billion discretionary contribution in the third quarter of 2018, as discussed below in Pension Plan Contributions, partially offset by higher net tax payments as discussed below in Tax Payments and Refunds. The increase of $683 million in net cash provided by operating activities in 2018 compared to 2017 was primarily due to lower net tax payments, as discussed below in Tax Payments and Refunds, and the timing of vendor payments, partially offset by an increase in pension contributions, as discussed below.

Pension Plan Contributions—We may make both required and discretionary contributions to our pension plans. Required contributions are primarily determined in accordance with the Pension Protection Act of 2006 (PPA), which amended the Employee Retirement Income Security Act of 1974 (ERISA) rules, and are affected by the actual return on plan assets (ROA) and plan funded status. The funding requirements under the PPA require us to fully fund our pension plans over a rolling seven-year period as determined annually based upon the funded status at the beginning of the year. The PPA funded status is based on actual asset performance, averaged over three years and PPA discount rates, which are based on a 24-month average of high quality corporate bond rates, as published by the IRS. As discussed in Critical Accounting Estimates, the STE Act, the HATFA and the BBA of 2015 were passed by Congress and signed by the President in 2012, 2014 and 2015, respectively. The STE Act includes a provision for temporary pension funding relief due to the low interest rate environment. The provision adjusts the 24-month average high quality corporate bond rates used to determine the PPA funded status so that they are within a floor and cap, or "corridor," based on the 25-year average of corporate bond rates. The STE Act gradually phased out this interest rate provision beginning in 2013. The HATFA and the BBA of 2015 extended the phase out provisions through 2020. As a result, the interest rates used to determine PPA funded status will continue to be adjusted within a "corridor" and do not begin to phase out until after 2020.

We made the following required and discretionary contributions during the years ended December 31:

(In millions)	2019	2018	2017
Required pension contributions	**$ 343**	$ 889	$ 615
Discretionary pension contributions	**—**	1,250	1,000
PRB contributions	**37**	22	27
Total	**$ 380**	$ 2,161	$ 1,642

The decrease in required pension contributions of $546 million in 2019 compared to 2018 was primarily driven by the $1.25 billion discretionary pension contribution made in the third quarter 2018, of which we elected to apply approximately $1 billion to partially offset required contributions in 2019 and 2020, roughly split evenly between the two years. The increase in required pension contributions of $274 million in 2018 compared to 2017 was primarily driven by the low interest rate environment.

We expect to make required contributions to our pension and PRB plans of $369 million in 2020. We periodically evaluate whether to make discretionary pension contributions. Due to the differences in requirements and calculation methodologies, our FAS pension expense or income is not indicative of the funding requirement or amount of CAS recovered.

Timing of contributions to the pension and PRB plans under PPA differs from the recovery of CAS expense. Cumulatively, our contributions have exceeded our recovery of CAS expense creating a prepayment credit under the CAS rules. As of December 31, 2019 and 2018, our prepayment credit balances were $7.4 billion and $7.7 billion, respectively. Future contributions in excess of CAS expense will increase the prepayment credit balance while CAS expense in excess of contributions will reduce the prepayment credit balance. Actual plan asset investment returns also impact the prepayment credit balance.

Tax Payments and Refunds—We made (received) the following net tax payments (refunds) during the years ended December 31:

(In millions)	2019	2018	2017
Federal	**$ 754**	$ (69)	$ 765
Foreign	**43**	63	77
State	**34**	23	36

The increase in net tax payments of $814 million in 2019 compared to 2018 was primarily due to the timing and amount of pension contributions. Federal and foreign net tax payments for 2020 are expected to approximate $914 million. The increase in expected federal and foreign net tax payments in 2020 is primarily due to an expected increase in operating income.

The decrease in net tax payments of $861 million in 2018 compared to 2017 was primarily due to the impact of the Tax Cuts and Jobs Act of 2017 (2017 Act) and the timing and amount of pension contributions.

Interest Payments—We made interest payments on our outstanding debt of $193 million, $194 million and $214 million in 2019, 2018 and 2017, respectively. Interest payments in 2019 were relatively consistent with 2018. The decrease in interest payments in 2018 compared to 2017 was primarily due to the repayment of $591 million of long-term debt in the second quarter of 2017.

Investing Activities

(In millions)	2019	2018	2017
Net cash provided by (used in) investing activities from continuing operations	**$ (1,006)**	$ (521)	$ (817)
Net cash provided by (used in) investing activities	**(1,003)**	(521)	(817)

The change in net cash provided by (used in) investing activities of $482 million in 2019 compared to 2018 was primarily due to our short-term investments activity, as described below in Short-term Investments Activity, and an increase in additions to property, plant and equipment as described below in Additions to Property, Plant and Equipment and Capitalized Internal-

Use Software. The change in net cash provided by (used in) investing activities of $296 million in 2018 compared to 2017 was primarily due to our short-term investment activity, as described below in Short-term Investments Activity, partially offset by an increase in additions to property, plant and equipment as described below in Additions to Property, Plant and Equipment and Capitalized Internal-Use Software.

Additions to Property, Plant and Equipment and Capitalized Internal-Use Software—Additions to property, plant and equipment and capitalized internal-use software were as follows:

(In millions)	**2019**	2018	2017
Additions to property, plant and equipment	**$ 942**	$ 763	$ 543
Additions to capitalized internal-use software	**65**	58	68

The increases in additions to property, plant and equipment of $179 million in 2019 compared to 2018 and $220 million in 2018 compared to 2017 were both primarily driven by program related requirements, due to recent and anticipated growth, and investment in productivity initiatives, including high-technology production facilities and continued factory automation upgrades.

We expect full-year property, plant and equipment and capitalized internal-use software expenditures to be between approximately $825–$900 million and $60–$85 million, respectively, in 2020, consistent with the anticipated needs of our business and for specific investments including capital assets and facility improvements.

Short-term Investments Activity—We may invest in marketable securities in accordance with our short-term investment policy and cash management strategy. Marketable securities are classified as available-for-sale and are recorded at fair value as short-term investments in our consolidated balance sheets. Activity related to short-term investments was as follows:

(In millions)	**2019**	2018	2017
Purchases of short-term investments	**$ —**	$ —	$ (696)
Maturities of short-term investments	**—**	309	517

Acquisitions and Divestitures—In pursuing our business strategies, we acquire and make investments in certain businesses that meet strategic and financial criteria and divest of certain non-core businesses, investments and assets when appropriate. In the first quarter of 2019, we amended and restated the RGNext joint venture agreement and acquired an additional 10% equity ownership in the joint venture increasing our equity ownership to 60%. See "Note 4: Acquisitions, Divestitures and Goodwill" within Item 8 of this Form 10-K for additional detail. In May 2018, we completed the sale of our commercial cloud-based call center analytics solutions business for $11 million in cash, net of transaction-related costs. In 2017, Forcepoint acquired RedOwl Analytics Inc. and the Skyfence CASB business for a total of $93 million.

Financing Activities

(In millions)	**2019**	2018	2017
Net cash provided by (used in) financing activities	**$ (2,803)**	$ (2,398)	$ (2,116)

We generally use cash provided by operating activities and proceeds from the issuance of new debt as our primary source for the repayment of debt, payment of dividends, pension contributions and the repurchase of our common stock. The change of $405 million in net cash provided by (used in) financing activities in 2019 compared to 2018 was primarily due to a $588 million payment related to the acquisition of noncontrolling interest in Forcepoint and net repayments of commercial paper of $300 million in the third quarter of 2019, partially offset by the activity on our share repurchase programs, as discussed below in Share Repurchases.

The change of $282 million in net cash provided by (used in) financing activities in 2018 compared to 2017 was primarily due to the activity on our share repurchases as discussed below and net proceeds from commercial paper issuances of $300 million in 2017, partially offset by the repayment of $591 million of long-term debt in the second quarter of 2017.

Share Repurchases—From time to time, our Board of Directors authorizes the repurchase of shares of our common stock.In November 2015, our Board authorized the repurchase of up to $2.0 billion of our outstanding common stock. In November 2017, our Board also authorized the repurchase of up to an additional $2.0 billion of our outstanding common stock. At December 31, 2019, we had approximately $0.7 billion available under the 2017 repurchase program. However, the merger agreement with UTC restricts us from repurchasing shares other than to satisfy tax withholding obligations. For more information refer to "Note 2: Proposed Merger with United Technologies Corporation (UTC)" within Item 8 of this Form 10-K.

Share repurchases also include shares surrendered by employees to satisfy tax withholding obligations in connection withrestricted stock, restricted stock units (RSUs) and Long-term Performance Plan (LTPP) awards issued to employees.

Our share repurchases were as follows:

	2019		2018		2017	
(In millions)	**$**	**Shares**	$	Shares	$	Shares
Shares repurchased under our share repurchase programs	**$ 800**	**4.4**	$ 1,325	6.7	$ 800	4.9
Shares repurchased to satisfy tax withholding obligations	**69**	**0.4**	93	0.5	85	0.6
Total share repurchases	**$ 869**	**4.8**	$ 1,418	7.2	$ 885	5.5

Cash Dividends—Our Board of Directors authorized the following cash dividends:

(In millions, except per share amounts)	**2019**	2018	2017
Cash dividends per share	**$ 3.77**	$ 3.47	$ 3.19
Dividends paid	**1,036**	975	910

In March 2019, our Board of Directors authorized an 8.6% increase to our annual dividend payout rate from $3.47 to $3.77 per share. In March 2018, our Board of Directors authorized an 8.8% increase to our annual dividend payout rate from $3.19 to $3.47 per share. Dividends are subject to quarterly approval by our Board of Directors.

Acquisition of Noncontrolling Interest in Forcepoint—In October 2019, Vista Equity Partners formally exercised its put right to require Raytheon to purchase Vista Equity Partners' interest in Forcepoint. As a result, the parties engaged in a formal process under the joint venture agreement to determine the fair value, as defined in the joint venture agreement, of such interest. On November 18, 2019, Raytheon completed the acquisition of Vista Equity Partners' interest in Forcepoint for $588 million in cash.

Long-term Debt—In the second quarter of 2017, we exercised our call rights to repurchase, at prices based on fixed spreads to the U.S. Treasury rates, $591 million of our long-term debt due March and December 2018 at a loss of $39 million before tax, $25 million net of tax, which is included in other (income) expense, net.

CAPITAL RESOURCES

Long-term Debt—Total long-term debt, including the current portion of long-term debt was $4.8 billion at both December 31, 2019 and December 31, 2018. Our outstanding debt bears contractual interest at fixed interest rates ranging from 2.5% to 7.2% and matures at various dates from 2020 through 2044. We expect to pay down the $500 million of long-term debt due in February 2020 using cash on hand.

Cash and Cash Equivalents—Cash and cash equivalents were $4.3 billion and $3.6 billion at December 31, 2019 and December 31, 2018, respectively. We may invest in: U.S. Treasuries; AAA/Aaa rated money market funds; certificates of deposit, time deposits and commercial paper of banks with a minimum long-term debt rating of A or A2 and minimum short-term debt rating of A-1 and P-1; and commercial paper of corporations with a minimum long-term debt rating of A- or A3 and minimum short-term debt rating of A-2 and P-2. Cash and cash equivalents balances held at our foreign subsidiaries were $245 million and $326 million at December 31, 2019 and December 31, 2018, respectively. Our undistributed earnings of our foreign subsidiaries are not permanently reinvested. We continuously evaluate our liquidity needs and ability to meet global cash requirements as a part of our overall capital deployment strategy. Factors that affect our global capital deployment strategy include anticipated cash flows, the ability to repatriate cash in a tax efficient manner, funding requirements for operations and investment activities, acquisitions and divestitures, and capital market conditions.

Commercial Paper—The Company may issue up to $1.25 billion of unsecured commercial paper notes, as the commercial paper is backed by our credit facility. In 2019, we made net repayments of $300 million to reduce our short-term commercial paper borrowings outstanding to zero at December 31, 2019. The maximum amount of short-term commercial paper borrowings outstanding during 2019 was $300 million. At December 31, 2018, short-term commercial paper borrowings outstanding were $300 million, which had a weighted-average interest rate and original maturity period of 2.954% and 16 days, respectively.

Credit Facilities—In September 2019, we entered into a $1.25 billion revolving credit facility maturing in November 2021 and terminated the previous $1.25 billion revolving credit facility maturing in November 2020 without penalty. Under the credit facility, we can borrow, issue letters of credit and backstop commercial paper. Borrowings under this facility bear interest at various rate options, including LIBOR plus a margin based on our credit ratings. Based on our credit ratings at December 31, 2019, borrowings would generally bear interest at LIBOR plus 80.5 basis points. The credit facility is composed of commitments from 20 separate highly rated lenders, each committing no more than 10% of the facility. As of December 31, 2019 and December 31, 2018 there were no borrowings or letters of credit outstanding under our credit facilities.

Under the $1.25 billion credit facility we must comply with certain covenants, including a ratio of total debt to total capitalization of no more than 60%. Our ratio of total debt to total capitalization, as those terms are defined in the credit facility, was 28.0% at December 31, 2019. We are providing this ratio as this metric is used by our lenders to monitor our leverage and is also a threshold that could limit our ability to utilize this facility. We were in compliance with our credit facility covenants as of December 31, 2019 and December 31, 2018.

In May 2019, we entered into treasury rate lock contracts with a notional amount of $375 million, which were settled in the fourth quarter of 2019 without the issuance of debt due to merger-related considerations.

Shelf Registrations—We have an effective shelf registration statement with the SEC, filed in March 2019, which covers the registration of debt securities, common stock, preferred stock and warrants.

CONTRACTUAL OBLIGATIONS

The following is a schedule of our contractual obligations outstanding at December 31, 2019:

	Payment due by period				
(In millions)	Total	Less than 1 year (2020)	1–3 years (2021–2022)	3–5 years (2023–2024)	After 5 years (2025 and thereafter)
Debt[1]	$ 4,792	$ 1,500	$ 1,100	$ 300	$ 1,892
Interest payments	1,877	181	278	223	1,195
Operating leases	1,052	242	385	187	238
Purchase obligations	11,018	7,310	2,657	1,007	44
Required pension and PRB contributions	3,902	369	1,753	1,780	N/A[2]
Total	$ 22,641	$ 9,602	$ 6,173	$ 3,497	$ 3,369

(1) Debt includes scheduled principal payments only.
(2) Amounts beyond 2024 for required pension and PRB contributions are not included.

Interest payments in the table above include interest on debt that is redeemable at our option. Purchase obligations in the table above represent enforceable and legally binding agreements with suppliers to purchase goods or services. We enter into contracts with customers, primarily the U.S. government, which entitle us to full recourse for costs incurred, including purchase obligations, in the event the contract is terminated by the customer for convenience. These purchase obligations are included above notwithstanding the amount for which we are entitled to full recourse from our customers.

Required pension and PRB contributions in the table above are strictly based on the current funded status of our pension and PRB plans and our current assumptions outlined in the Pension and Other Postretirement Benefit (PRB) Costs section of Critical Accounting Estimates. Actual results will vary based upon discount rates, asset returns, changes in actuarial assumptions, demographic experience and regulatory requirements for each year. Assuming high quality corporate bond rates remain consistent with our current assumption, discount rates used to determine funding requirements under the BBA of 2015 will be approximately 5.3% for 2020, 4.9% for 2021, 4.5% for 2022, 4.1% for 2023, and 3.7% for 2024.

As of December 31, 2019 and December 31, 2018, the total amount of unrecognized tax benefits for uncertain tax positions and the accrual for the related interest, net of the federal benefit, was $232 million and $92 million, respectively, and was included in accrued retiree benefits and other long-term liabilities. These amounts were not included in the table above because we are unable to make a reasonably reliable estimate of when a cash settlement, if any, will occur with a tax authority as the timing of examinations and ultimate resolutions of those examinations is uncertain.

OFF-BALANCE SHEET ARRANGEMENTS

At December 31, 2019, we had no significant off-balance sheet arrangements other than guarantees to third parties on behalf of our affiliates as described below in Commitments and Contingencies. Such arrangements are not material to our overall liquidity or capital resources, market risk support or credit risk support as described below.

COMMITMENTS AND CONTINGENCIES

Environmental Matters—We are involved in various stages of investigation and cleanup related to remediation of various environmental sites. Our estimate of the liability of total environmental remediation costs includes the use of a discount rate and takes into account that a portion of these costs is eligible for future recovery through the pricing of our products and services to the U.S. government. We regularly assess the probability of recovery of these costs, which requires us to make assumptions about the extent of cost recovery under our contracts and the amount of future contract activity. We consider such recovery probable based on government contracting regulations and our long history of receiving reimbursement for such costs, and accordingly have recorded the estimated future recovery of these costs from the U.S. government within prepaid expenses and other current assets in our consolidated balance sheets. Our estimates regarding remediation costs to be incurred were as follows at December 31:

(In millions, except percentages)	**2019**	2018
Total remediation costs—undiscounted	**$ 188**	$ 193
Weighted-average discount rate	**5.1%**	5.1%
Total remediation costs—discounted	**$ 124**	$ 128
Recoverable portion	**81**	82

We also lease certain government-owned properties and generally are not liable for remediation of preexisting environmental contamination at these sites. As a result, we generally do not provide for these costs in our consolidated financial statements.

Due to the complexity of environmental laws and regulations, the varying costs and effectiveness of alternative cleanup methods and technologies, the uncertainty of insurance coverage, and the unresolved extent of our responsibility, it is difficult to determine the ultimate outcome of environmental matters. However, we do not expect any additional liability to have a material adverse effect on our financial position, results of operations or liquidity.

Environmental remediation costs expected to be incurred are:

(In millions)	
2020	$ 25
2021	16
2022	13
2023	11
2024	11
Thereafter	112

Financing Arrangements and Other—We issue guarantees, and banks and surety companies issue, on our behalf, letters of credit and surety bonds, to meet various bid, performance, warranty, retention and advance payment obligations for us or our affiliates. These instruments expire on various dates through 2028. Additional guarantees of project performance for which there is no stated value also remain outstanding. The stated values outstanding consisted of the following at December 31:

(In millions)		2019		2018
Guarantees	$	**219**	$	201
Letters of credit		**3,485**		2,503
Surety bonds		**83**		166

We provide guarantees and letters of credit to certain affiliates to assist them in obtaining financing on more favorable terms, making bids on contracts and performing their contractual obligations. While we expect our affiliates to satisfy their loans and meet their project performance and other contractual obligations, their failure to do so may result in a future obligation to us. We periodically evaluate the risk of our affiliates failing to meet their obligations. At December 31, 2019, we believe the risk that our affiliates will not be able to meet their obligations is minimal for the foreseeable future based on their current financial condition. All obligations were current at December 31, 2019. At both December 31, 2019 and December 31, 2018, we had an estimated liability of$3 million related to these guarantees.

We have entered into industrial cooperation agreements, sometimes in the form of either offset agreements or ICIP agreements, as a condition to obtaining orders for our products and services from certain customers in foreign countries. At December 31, 2019, the aggregate amount of our offset agreements, both agreed to and anticipated to be agreed to, had an outstanding notional value of approximately $9.5 billion. To the extent we have entered into purchase obligations that satisfy our offset agreements, those amounts are included within the table in Contractual Obligations. These agreements are designed to return economic value to the foreign country by requiring us to engage in activities supporting local defense or commercial industries, promoting a balance of trade, developing in-country technology capabilities or addressing other local development priorities. Offset agreements may be satisfied through activities that do not require a direct cash payment, including transferring technology, providing manufacturing, training and other consulting support to in-country projects, and the purchase by third parties (e.g., our vendors) of supplies from in-country vendors. These agreements may also be satisfied through our use of cash for activities such as subcontracting with local partners, purchasing supplies from in-country vendors, providing financial support for in-country projects and making investments in local ventures. Such activities may also vary by country depending upon requirements as dictated by their governments. We typically do not commit to offset agreements until orders for our products or services are definitive. The amounts ultimately applied against our offset agreements are based on negotiations with the customers and typically require cash outlays that represent only a fraction of the notional value in the offset agreements. Offset programs usually extend over several or more years and may provide for penalties in the event we fail to perform in accordance with offset requirements. Historically, we have not been required to pay any penalties of significance.

As a U.S. government contractor, we are subject to many levels of audit and investigation by the U.S. government relating to our contract performance and compliance with applicable rules and regulations. Agencies that oversee contract performance include: the Defense Contract Audit Agency (DCAA); the Defense Contract Management Agency (DCMA); the Inspectors General of the U.S. Department of Defense (DoD) and other departments and agencies; the Government Accountability Office (GAO); the Department of Justice (DOJ); and Congressional Committees. Other areas of our business operations may also be subject to audit and investigation by these and/or other agencies. From time to time, agencies investigate or conduct audits to determine whether our operations are being conducted in accordance with applicable requirements. Such investigations and audits may be initiated due to a number of reasons, including as a result of a whistleblower complaint. Such investigations and audits could result in administrative, civil or criminal liabilities, including repayments, fines or penalties being imposed upon us, the suspension of government export licenses or the suspension or debarment from future U.S. government contracting. U.S. government investigations often take years to complete and many result in no adverse action against us. Our final allowable incurred costs for each year are also subject to audit and have, from time to time, resulted in disputes between us and the U.S. government, with litigation resulting at the Court of Federal Claims (COFC) or the Armed Services Board of Contract Appeals (ASBCA) or their related courts of appeals. In addition, the DOJ has, from time to time, convened grand juries to investigate possible irregularities by us. We also provide products and services to customers outside of the U.S., and those sales are subject to local government laws, regulations and procurement policies and practices. Our compliance with such local government regulations or any applicable U.S. government regulations (e.g., the Foreign Corrupt Practices Act (FCPA) and International Traffic in Arms Regulations (ITAR)) may also be investigated or audited. Other than as specifically disclosed herein, we do not expect these audits, investigations or disputes to have a material effect on our financial position, results of operations or liquidity, either individually or in the aggregate.

We do not expect any material impact on our financial results from regional disputes with Qatar and less than 7% of our backlog at December 31, 2019 relates to contracts in Qatar.

Although we currently do not expect to be prevented from doing business in the Kingdom of Saudi Arabia (KSA), if government action impairs our ability to fulfill our contractual obligations or otherwise to continue to do business in KSA, it would have a material adverse effect on our financial results. KSA represents less than 5% of our sales and $2.9 billion of our backlog at December 31, 2019. This includes the majority of the precision guided munitions described below, integrated air and missile defense systems, as well as other products and services.

We have several direct commercial sales contracts for precision guided munitions with certain Middle Eastern customers for which U.S. government approvals from the State Department and Congress through the Congressional Notification process were previously delayed. On May 24, 2019, the Administration announced an emergency certification authorizing the immediate export of 22 pending arms sales to Jordan, the United Arab Emirates (UAE) and KSA, waiving the requirement of Congressional Notification of these arms sales. As a result, we were able to obtain the necessary regulatory approvals and licenses for all of our contracts except for those that were not subject to the emergency certification. On contracts not subject to the emergency certification, we had approximately $1.2 billion of total contract value, recognized approximately $400 million of sales for work performed to date and received approximately $500 million in advances as of December 31, 2019. Additionally, one of those contracts, which has a contract value of $835 million, also requires U.K. government approval. In June 2019, the U.K.'s Court of Appeal determined that the U.K. government was not fully compliant with the legal requirements in issuing export licenses for weapons to KSA. While the U.K.'s Court of Appeal did not prohibit the issuance of licenses in the future, the U.K. government will need to comply with the ruling before issuing licenses or obtain a reversal of the decision on appeal. If we ultimately do not receive all of the regulatory approvals and licenses, it would have a material effect on our financial results.

In July 2019, the U.S. government suspended Turkey's participation in the F-35 Joint Strike Fighter program because Turkey accepted delivery of the Russian-built S-400 air and missile defense system, and on October 14, 2019, the Administration imposed sanctions on several Turkish ministers and departments, including the Ministry of National Defence, due to Turkey's military advance into Syria. Also in October 2019, certain European countries imposed arms embargoes on Turkey. On October 23, 2019, the Administration removed all of the sanctions imposed on October 14, 2019; however, the U.S. government and other governments may impose additional sanctions or embargoes. For a limited number of our programs, we procure materials and components from Turkish suppliers on a sole-source basis. We also have an immaterial amount of sales and backlog related to Turkey. Such sanctions or actions, and any potential reciprocal actions, could impact our businesses' sources of supply and ability to make certain contractual deliveries, as well as our ability to sell to Turkey; however, at this time, we do not expect any potential actions to have a material adverse effect on our financial results.

In the second quarter of 2019, we identified and notified a U.S. customer that we determined we would not be able to execute on the technical scope and other requirements of an $85 million Missile Systems fixed-price program, partially due to conditions outside our control. As a result, although we continue to work with the customer to determine changes to the contract that would be mutually acceptable, we accrued a loss of $39 million in the second quarter of 2019 at Missile Systems for a potential termination for default on the program. Our estimate of the loss was based on progress payments received to date, firm commitments to suppliers on the program and administrative costs of the customer. We believe it is remote that we will ultimately be liable for damages or the customer's potential excess reprocurement costs, and we are unable to estimate these amounts for which we could be liable given the complexities of determining such costs under the applicable regulations.

Raytheon has received a subpoena from the Securities and Exchange Commission (SEC) seeking information in connection with an investigation into whether there were improper payments made by Thales-Raytheon Systems (TRS), Raytheon or anyone acting on their behalf in connection with TRS or Raytheon contracts in certain Middle East countries since 2014. Raytheon maintains a rigorous anti-corruption compliance program, is cooperating fully with the SEC's inquiry, and is examining whether there has been any conduct that is in violation of Raytheon policy. At this point there is no ability to predict the outcome of the SEC's inquiry. Based on the information available to date, however, we do not believe the results of this inquiry will have a material adverse effect on our financial condition, results of operations or liquidity.

On June 23, 2016, the U.K. held a referendum in which British citizens approved an exit from the European Union (EU), commonly referred to as "Brexit." On January 31, 2020, the U.K. formally left the EU with a withdrawal agreement, which includes a transition period that is currently scheduled to end on December 31, 2020. During the transition period, the U.K. will remain part of the EU's customs union and single market, and will work towards negotiating a trade deal with the EU before the transition period ends. As a result of the referendum, and the subsequent formal U.K. exit, there has been volatility in exchange rates versus the U.S. dollar. The British pound is the functional currency for approximately 2% of our sales. In addition, for any contracts that are not denominated in the same currency as the functional currency (for example, contracts denominated in British pounds where the functional currency is the U.S. dollar), we enter into foreign currency forward contracts to hedge our risk related to foreign currency exchange rate fluctuations. As a result, we currently do not expect the U.K.'s exit from the EU to have a material impact on our financial position, results of operations or liquidity.

In addition, various other claims and legal proceedings generally incidental to the normal course of business are pending or threatened against, or initiated by, us. We do not expect any of these proceedings to result in any additional liability or gains that would materially affect our financial position, results of operations or liquidity. In connection with certain of our legal matters, we may be entitled to insurance recovery for qualified legal costs or other incurred costs. We do not expect any insurance recovery to have a material impact on the financial exposure that could result from these matters.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our primary market exposures are to interest rates and foreign exchange rates.

We generally supplement our working capital requirements with a combination of variable-rate short-term and fixed-rate long-term financing. We may enter into interest rate swap agreements or treasury rate lock contracts with commercial and investment banks to manage interest rates associated with our financing arrangements. We enter into foreign currency forward contracts with commercial banks to fix the foreign currency exchange rates on specific commitments, payments to vendors and customer receipts denominated in foreign currencies. The market-risk sensitive instruments we use for hedging are directly related to a particular asset, liability or transaction for which a firm commitment is in place. We do not hold or issue derivative financial instruments for trading or speculative purposes.

The following tables provide information as of December 31, 2019 and December 31, 2018 about our market risk exposure associated with changing interest rates. For long-term debt obligations, the table presents principal cash flows by maturity date and average interest rates related to outstanding obligations. There were no interest rate swaps outstanding at December 31, 2019 or December 31, 2018.

Principal payments and interest rate detail for long-term debt by contractual maturity date as of December 31, 2019 and December 31, 2018, respectively, were as follows:

December 31, 2019 (in millions, except percentages)	**2020**	**2021**	**2022**	**2023**	**2024**	**Thereafter**	**Total**	**Fair Value**
Fixed-rate debt	**$ 1,500**	**$ —**	**$ 1,100**	**$ —**	**$ 300**	**$ 1,892**	**$ 4,792**	**$ 5,337**
Average interest rate	**3.550%**	**—**	**2.500%**	**—**	**3.150%**	**5.406%**	**4.017%**	

December 31, 2018 (in millions, except percentages)	2019	2020	2021	2022	2023	Thereafter	Total	Fair Value
Fixed-rate debt	$ —	$ 1,500	$ —	$ 1,100	$ —	$ 2,192	$ 4,792	$ 5,063
Average interest rate	—	3.550%	—	2.500%	—	5.097%	4.017%	

In May 2019, we entered into treasury rate lock contracts with a notional amount of $375 million, which were settled in the fourth quarter of 2019 without the issuance of debt due to merger-related considerations. In addition, the aggregate notional amount of our outstanding foreign currency forward contracts was $1,487 million and $1,772 million at December 31, 2019 and December 31, 2018, respectively. The net notional exposure of these foreign currency forward contracts was $746 million and $840 million at December 31, 2019 and December 31, 2018, respectively.

The fair value of asset derivatives included in other assets, net and liability derivatives included in other current liabilities in our consolidated balance sheets related to foreign currency forward contracts were as follows:

(In millions)		2019		2018
Asset derivatives related to foreign currency forward contracts	**$**	**29**	$	26
Liability derivatives related to foreign currency forward contracts		**15**		34

For foreign currency forward contracts and treasury rate lock contracts designated and qualifying for hedge accounting, we record the gain or loss on the derivative in AOCL, net of tax, and reclassify it into earnings in the same period or periods during which the hedged revenue, cost of sales or interest expense transaction affects earnings. We present the gain or loss in the same income statement line items as the earnings effect of the hedged item, which offsets the foreign exchange or interest rate gains and losses on the underlying transactions being hedged. We believe our exposure due to changes in foreign currency and interest rates is not material due to our hedging policy.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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COMPANY RESPONSIBILITY FOR FINANCIAL STATEMENTS

The financial statements and related information contained in this Annual Report have been prepared by and are the responsibility of our management. Our financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America and reflect judgments and estimates as to the expected effects of transactions and events currently being reported. Our management is responsible for the integrity and objectivity of the financial statements and other financial information included in this Annual Report. To meet this responsibility, we maintain a system of internal control over financial reporting to provide reasonable assurance that assets are safeguarded and that transactions are properly executed and recorded. The system includes policies and procedures, internal audits and our officers' reviews.

Our Audit Committee of our Board of Directors is composed solely of directors who are independent under applicable Securities and Exchange Commission (SEC) and New York Stock Exchange rules. Our Audit Committee meets periodically and, when appropriate, separately with representatives of the independent registered public accounting firm, our officers and the internal auditors to monitor the activities of each.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, was appointed by our Audit Committee to audit our financial statements and our internal control over financial reporting and their report follows. Our stockholders ratified the appointment of PricewaterhouseCoopers LLP at the 2019 Annual Meeting of Stockholders.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company. In order to evaluate the effectiveness of internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act, management has conducted an assessment, including testing, using the criteria in Internal Control – Integrated Framework, issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 2013. The Company's system of 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. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Based on its assessment, management has concluded that the Company maintained effective internal control over financial reporting as of December 31, 2019, based on criteria in Internal Control – Integrated Framework, issued by the COSO in 2013. The effectiveness of the Company's internal control over financial reporting as of December 31, 2019, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is included below.

/s/ Thomas A. Kennedy	/s/ Anthony F. O'Brien
Thomas A. Kennedy	Anthony F. O'Brien
Chairman and Chief Executive Officer	Vice President and Chief Financial Officer

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Raytheon Company

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Raytheon Company and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, of comprehensive income, of equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for certain stranded tax effects impacting accumulated other comprehensive income in 2018.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, 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 opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed 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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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 its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue Recognition - Contract Estimates at Completion

As described in Note 1 to the consolidated financial statements, the vast majority of the Company's revenues of$29.2 billion for the year ended December 31, 2019 are from long-term contracts associated with the design, development, manufacture or modification of complex aerospace or defense equipment or related services. The Company generally recognizes revenue over time as it performs on its contractual performance obligations because of continuous transfer of control to the customer. Because of control transferring over time, revenue is recognized based on the extent of progress towards completion of the performance obligation. The extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. Due to the nature of the work required to be performed on many of the Company's performance obligations, the estimation of total revenue and cost at completion is complex, subject to many variables and requires significant judgment by management on a contract by contract basis. These variables and significant judgments may include assumptions related to the estimated award fees, incentive fees, or other provisions that can either increase or decrease the transaction price, outstanding key contract matters, progress toward completion and the related program schedule, identified risks and opportunities including the ability and cost to achieve the schedule (e.g., the number and type of milestone events) and technical requirements (e.g., a newly-developed product versus a mature product), labor productivity and availability, the complexity of the work to be performed, the availability of materials, the length of time to complete the performance obligation (e.g., to estimate increases in wages and prices for materials and related support cost allocations), execution by the Company's subcontractors, the availability and timing of funding from the customer, overhead cost rates, the estimated cost of satisfying the Company's industrial cooperation agreements required under certain contracts and the likelihood of obtaining required regulatory approvals based upon all known facts and circumstances.

The principal considerations for our determination that performing procedures relating to revenue recognition - contract estimates at completion is a critical audit matter are there was significant judgment by management in developing their estimates of total revenue and total costs at completion, including significant judgments and assumptions related to the applicable aforementioned variables on a contract by contract basis. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and in evaluating audit evidence relating to management's estimates of total revenue and total cost at completion for contracts.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process, including controls over the determination of total revenue and total costs at completion. These procedures also included, among others, testing management's process for developing the estimated total revenue and total costs at completion for selected contractual performance obligations. This included evaluating the reasonableness of certain significant judgments and assumptions made by management by understanding the nature and status of the selected contract and related performance obligations, in certain instances performing retrospective reviews of contract estimates and changes in estimates over time, evaluating evidence to support selected estimated costs to complete, and inquiring of program management as to the reasonableness of the significant judgments and assumptions made by management related to the applicable aforementioned variables to support the estimates of total revenue and total costs at completion used to determine revenue recognized for the contracts selected for testing.

Pensions - Long-term Return on Plan Assets and Discount Rate Assumptions

As described in Notes 1 and 14 to the consolidated financial statements, the total projected benefit obligation of the Company's pension plans was $29.0 billion as of December 31, 2019 and the total net periodic pension benefit cost was $1.1 billion for the year then ended. The Company's long-term return on plan assets and discount rate assumptions are the key variables in determining the net periodic pension benefit cost and the projected benefit obligation of the Company's pension plans. To establish the long-term return on plan assets assumption, management employs a "building block" approach. Management then annually considers whether it is appropriate to change its long-term return on plan assets assumption by reviewing the existing assumption against a statistically determined reasonable range of outcomes. The building block approach and the reasonable range of outcomes are based upon management's asset allocation assumptions and long-term capital market assumptions. The discount rate represents the interest rate that should be used to determine the present value of future cash flows currently expected to be required to settle the Company's pension obligations. The discount rate assumption is determined by using a theoretical bond portfolio model consisting of high-quality bonds for which the timing and amount of cash flows approximate the estimated benefit payments for each pension plan.

The principal considerations for our determination that performing procedures relating to the long-term return on plan assets and discount rate assumptions for pensions is a critical audit matter are there was significant judgment by management in determining the net periodic pension benefit cost and projected benefit obligation of the Company's pension plans including the expected long-term return on plan assets and the discount rate assumptions. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and in evaluating audit evidence relating to management's long-term return on plan assets and discount rate assumptions. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the determination of the net periodic pension benefit cost and the projected benefit obligation of the Company's pension plans, including controls over the expected long-term return on plan assets and the discount rate assumptions. These procedures also included, among other, testing management's process for developing the expected long-term rate of return on plan assets and discount rate assumptions. This included utilizing professionals with specialized skill and knowledge to assist in the evaluation of the reasonableness of management's long-term return on plan assets and discount rate assumptions by evaluating the appropriateness of the building block approach used by management as well as assessing the appropriateness of the bond portfolio model and data used in management's bond portfolio models. This also included comparing management's capital market expectations to the Company's historical returns, testing of management's asset allocation assumptions, evaluating the reasonableness of management's expectations of future investment performance and comparing associated discount rates determined by management with the bond portfolios used by management to independent yield curves.

/s/ PricewaterhouseCoopers LLP
Boston, Massachusetts
February 12, 2020

We have served as the Company's auditor since 1961.

RAYTHEON COMPANY

CONSOLIDATED BALANCE SHEETS

(In millions, except per share amount) December 31:	2019	2018
Assets		
Current assets		
Cash and cash equivalents	**$ 4,292**	$ 3,608
Receivables, net	**1,364**	1,648
Contract assets	**6,122**	5,594
Inventories	**671**	758
Prepaid expenses and other current assets	**633**	529
Total current assets	**13,082**	12,137
Property, plant and equipment, net	**3,353**	2,840
Operating lease right-of-use assets	**875**	805
Goodwill	**14,882**	14,864
Other assets, net	**2,374**	2,024
Total assets	**$ 34,566**	$ 32,670
Liabilities, Redeemable Noncontrolling Interests and Equity		
Current liabilities		
Commercial paper and current portion of long-term debt	**$ 1,499**	$ 300
Contract liabilities	**3,267**	3,309
Accounts payable	**1,796**	1,964
Accrued employee compensation	**1,813**	1,509
Other current liabilities	**1,416**	1,381
Total current liabilities	**9,791**	8,463
Accrued retiree benefits and other long-term liabilities	**8,553**	6,922
Long-term debt	**3,261**	4,755
Operating lease liabilities	**706**	647
Commitments and contingencies (Note 10)		
Redeemable noncontrolling interests	**32**	411
Equity		
Raytheon Company stockholders' equity		
Common stock, par value, $0.01 per share, 1,450 shares authorized, 278 and 282 shares outstanding at December 31, 2019 and 2018, respectively	**3**	3
Additional paid-in capital	**—**	—
Accumulated other comprehensive loss	**(9,260)**	(8,618)
Retained earnings	**21,480**	20,087
Total Raytheon Company stockholders' equity	**12,223**	11,472
Noncontrolling interests in subsidiaries	**—**	—
Total equity	**12,223**	11,472
Total liabilities, redeemable noncontrolling interests and equity	**$ 34,566**	$ 32,670

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

RAYTHEON COMPANY

CONSOLIDATED STATEMENTS OF OPERATIONS

(In millions, except per share amounts) Years Ended December 31:	2019	2018	2017
Net sales			
Products	$ 24,435	$ 22,633	$ 21,416
Services	4,741	4,425	3,932
Total net sales	29,176	27,058	25,348
Operating expenses			
Cost of sales—products	17,747	16,108	15,252
Cost of sales—services	3,666	3,465	3,088
General and administrative expenses	2,989	2,947	2,777
Total operating expenses	24,402	22,520	21,117
Operating income	4,774	4,538	4,231
Non-operating (income) expense, net			
Retirement benefits non-service expense	688	1,230	913
Interest expense	180	184	205
Interest income	(42)	(31)	(21)
Other (income) expense, net	(38)	8	21
Total non-operating (income) expense, net	788	1,391	1,118
Income from continuing operations before taxes	3,986	3,147	3,113
Federal and foreign income taxes	658	264	1,114
Income from continuing operations	3,328	2,883	1,999
Income (loss) from discontinued operations, net of tax	1	(1)	2
Net income	3,329	2,882	2,001
Less: Net income (loss) attributable to noncontrolling interests in subsidiaries	(14)	(27)	(23)
Net income attributable to Raytheon Company	$ 3,343	$ 2,909	$ 2,024

Basic earnings per share attributable to Raytheon Company common stockholders:			
Income from continuing operations	$ 11.93	$ 10.16	$ 6.95
Income (loss) from discontinued operations, net of tax	—	—	0.01
Net income	11.94	10.16	6.96
Diluted earnings per share attributable to Raytheon Company common stockholders:			
Income from continuing operations	$ 11.92	$ 10.15	$ 6.94
Income (loss) from discontinued operations, net of tax	—	—	0.01
Net income	11.93	10.15	6.95
Amounts attributable to Raytheon Company common stockholders:			
Income from continuing operations	$ 3,342	$ 2,910	$ 2,022
Income (loss) from discontinued operations, net of tax	1	(1)	2
Net income	$ 3,343	$ 2,909	$ 2,024

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

RAYTHEON COMPANY

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In millions) Years Ended December 31:	2019	2018	2017
Net income	$ **3,329**	$ 2,882	$ 2,001
Other comprehensive income (loss), before tax:			
Pension and other postretirement benefit plans, net:			
Prior service cost arising during period	**(1)**	(10)	(15)
Amortization of prior service cost	**5**	6	4
Actuarial loss arising during period	**(1,886)**	(626)	(1,816)
Amortization of net actuarial loss	**1,060**	1,362	1,187
Loss due to settlements	**3**	287	3
Effect of exchange rates	**(3)**	9	(14)
Pension and other postretirement benefit plans, net	**(822)**	1,028	(651)
Foreign exchange translation	**7**	(36)	80
Cash flow hedges	**4**	(12)	10
Unrealized gains (losses) on investments and other, net	**(3)**	1	(1)
Other comprehensive income (loss), before tax	**(814)**	981	(562)
Income tax benefit (expense) related to items of other comprehensive income (loss)	**172**	(213)	38
Other comprehensive income (loss), net of tax	**(642)**	768	(524)
Reclassification of stranded tax effects	**—**	(1,451)	—
Total comprehensive income (loss)	**2,687**	2,199	1,477
Less: Comprehensive income (loss) attributable to noncontrolling interests in subsidiaries	**(14)**	(27)	(23)
Comprehensive income (loss) attributable to Raytheon Company	$ **2,701**	$ 2,226	$ 1,500

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

RAYTHEON COMPANY

CONSOLIDATED STATEMENTS OF EQUITY

(In millions)	Common stock	Additional paid-in capital	Accumulated other comprehensive income (loss)	Retained earnings	Total Raytheon Company stockholders' equity	Noncontrolling interests in subsidiaries[1]	Total equity
Balance at December 31, 2016	$ 3	$ —	$ (7,411)	$ 17,565	$ 10,157	$ —	$ 10,157
Net income (loss)				2,024	2,024	—	2,024
Other comprehensive income (loss), net of tax			(524)		(524)		(524)
Adjustment of redeemable noncontrolling interests to redemption value				(41)	(41)		(41)
Dividends declared		2		(929)	(927)		(927)
Common stock plans activity		159			159		159
Share repurchases		(161)		(724)	(885)		(885)
Balance at December 31, 2017	3	—	(7,935)	17,895	9,963	—	9,963
Net income (loss)				2,909	2,909	—	2,909
Other comprehensive income (loss), net of tax			768		768		768
Reclassification of stranded tax effects			(1,451)	1,451	—		—
Adjustment of redeemable noncontrolling interests to redemption value				73	73		73
Dividends declared		2		(991)	(989)		(989)
Common stock plans activity		166			166		166
Share repurchases		(168)		(1,250)	(1,418)		(1,418)
Balance at December 31, 2018	3	—	(8,618)	20,087	11,472	—	11,472
Net income (loss)				**3,343**	**3,343**	**—**	**3,343**
Other comprehensive income (loss), net of tax			**(642)**		**(642)**		**(642)**
Adjustment of redeemable noncontrolling interests to redemption value				**1**	**1**		**1**
Acquisition of redeemable noncontrolling interest		**(75)**		**(125)**	**(200)**		**(200)**
Dividends declared		**2**		**(1,054)**	**(1,052)**		**(1,052)**
Common stock plans activity		**170**			**170**		**170**
Share repurchases		**(97)**		**(772)**	**(869)**		**(869)**
Balance at December 31, 2019	**$ 3**	**$ —**	**$ (9,260)**	**$ 21,480**	**$ 12,223**	**$ —**	**$ 12,223**

(1) Excludes redeemable noncontrolling interests which are not considered equity. See "Note 11: Redeemable Noncontrolling Interests" for additional information .

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

RAYTHEON COMPANY

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In millions) Years Ended December 31:	2019	2018	2017
Cash flows from operating activities			
Net income	$ 3,329	$ 2,882	$ 2,001
(Income) loss from discontinued operations, net of tax	(1)	1	(2)
Income from continuing operations	3,328	2,883	1,999
Adjustments to reconcile to net cash provided by (used in) operating activities from continuing operations, net of the effect of acquisitions and divestitures			
Depreciation and amortization	605	568	550
Stock-based compensation	184	165	173
Loss on repayment of long-term debt	—	—	39
Deferred income taxes	(28)	(24)	252
Changes in assets and liabilities			
Receivables, net	296	(327)	(157)
Contract assets and contract liabilities	(534)	28	88
Inventories	87	(166)	14
Prepaid expenses and other current assets	45	73	204
Income taxes receivable/payable	(275)	174	(193)
Accounts payable	(168)	406	(94)
Accrued employee compensation	295	165	111
Other current liabilities	71	(108)	106
Accrued retiree benefits	731	(421)	(250)
Other, net	(155)	12	(95)
Net cash provided by (used in) operating activities from continuing operations	4,482	3,428	2,747
Net cash provided by (used in) operating activities from discontinued operations	(2)	—	(2)
Net cash provided by (used in) operating activities	4,480	3,428	2,745
Cash flows from investing activities			
Additions to property, plant and equipment	(942)	(763)	(543)
Proceeds from sales of property, plant and equipment	25	2	46
Additions to capitalized internal-use software	(65)	(58)	(68)
Purchases of short-term investments	—	—	(696)
Maturities of short-term investments	—	309	517
Payments for purchases of acquired companies, net of cash received	(8)	—	(93)
Proceeds from sale of business, net of transaction costs	—	11	—
Payments for settlement of treasury rate lock	(17)	—	—
Other	1	(22)	20
Net cash provided by (used in) investing activities from continuing operations	(1,006)	(521)	(817)
Net cash provided by (used in) investing activities from discontinued operations	3	—	—
Net cash provided by (used in) investing activities	(1,003)	(521)	(817)
Cash flows from financing activities			
Dividends paid	(1,036)	(975)	(910)
Net borrowings (payments) on commercial paper	(300)	—	300
Repayments of long-term debt	—	—	(591)
Loss on repayment of long-term debt	—	—	(38)
Repurchases of common stock under share repurchase programs	(800)	(1,325)	(800)
Repurchases of common stock to satisfy tax withholding obligations	(69)	(93)	(85)
Acquisition of noncontrolling interest in Forcepoint	(588)	—	—
Contribution from noncontrolling interest in Forcepoint	—	—	8
Other	(10)	(5)	—
Net cash provided by (used in) financing activities	(2,803)	(2,398)	(2,116)
Net increase (decrease) in cash, cash equivalents and restricted cash	674	509	(188)
Cash, cash equivalents and restricted cash at beginning of year	3,624	3,115	3,303
Cash, cash equivalents and restricted cash at end of year	$ 4,298	$ 3,624	$ 3,115

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1: Summary of Significant Accounting Policies

Consolidation and Classification—The consolidated financial statements include the accounts of Raytheon Company, and all wholly-owned, majority-owned and otherwise controlled domestic and foreign subsidiaries. All intercompany transactions have been eliminated. For classification of certain current assets and liabilities, we use the duration of the related contract or program as our operating cycle, which is generally longer than one year. In addition, we reclassified certain amounts to conform to our current period presentation. As used in these notes, the terms "we," "us," "our," "Raytheon" and the "Company" mean Raytheon Company and its subsidiaries, unless the context indicates another meaning.

Effective January 1, 2019, we adopted the requirements of Accounting Standards Update (ASU) 2016-02, *Leases (Topic 842)* using the modified retrospective approach as discussed below in Accounting Standards. We reclassified certain balance sheet amounts to conform to our current period presentation.

Use of Estimates—Our consolidated financial statements are based on the application of U.S. Generally Accepted Accounting Principles (GAAP), which require us to make estimates and assumptions about future events that affect the amounts reported in our consolidated financial statements and the accompanying notes. Future events and their effects cannot be determined with certainty. Therefore, the determination of estimates requires the exercise of judgment. Actual results could differ from those estimates, and any such differences may be material to our consolidated financial statements.

Revenue Recognition—The vast majority of our revenues are from long-term contracts associated with the design, development, manufacture or modification of complex aerospace or defense equipment or related services. These contracts primarily are with the U.S. government (including foreign military sales contracted through the U.S. government). Our contracts with the U.S. government typically are subject to the Federal Acquisition Regulation (FAR) and are priced based on estimated or actual costs of producing goods or providing services. The FAR provides guidance on the types of costs that are allowable in establishing prices for goods and services provided under U.S. government contracts. The pricing for non-U.S. government contracts is based on the specific negotiations with each customer.

Under the typical payment terms of our U.S. government fixed-price contracts, the customer pays us either performance-based payments (PBPs) or progress payments. PBPs are interim payments equal to a negotiated percentage of the contract price based on quantifiable measures of performance or on the achievement of specified events or milestones. Progress payments are interim payments up to 80% of costs incurred as the work progresses. Because the customer retains a portion of the contract price until completion of the contract, our U.S. government fixed-price contracts generally result in revenue recognized in excess of billings which we present as contract assets on the balance sheet. Amounts billed and due from our customers are classified as receivables on the balance sheet. The portion of the payments retained by the customer until final contract settlement is not considered a significant financing component because the intent is to protect the customer. For our U.S. government cost-type contracts, the customer generally pays us for our actual costs incurred within a short period of time. For non-U.S. government contracts, we typically receive interim payments as work progresses, although for some contracts, we may be entitled to receive an advance payment. We recognize a liability for these advance payments in excess of revenue recognized and present it as contract liabilities on the balance sheet. The advance payment typically is not considered a significant financing component because it is used to meet working capital demands that can be higher in the early stages of a contract and to protect us from the other party failing to adequately complete some or all of its obligations under the contract.

To determine the proper revenue recognition method for contracts for complex aerospace or defense equipment or related services, we evaluate whether two or more contracts should be combined and accounted for as one single contract and whether the combined or single contract should be accounted for as more than one performance obligation. This evaluation requires significant judgment and the decision to combine a group of contracts or separate the combined or single contract into multiple performance obligations could change the amount of revenue and profit recorded in a given period. For most of our contracts, the customer contracts with us to provide a significant service of integrating a complex set of tasks and components into a single project or capability (even if that single project results in the delivery of multiple units). Hence, the entire contract is accounted for as one performance obligation. Less commonly, however, we may promise to provide distinct goods or services within a contract, for example when a contract covers multiple phases of the product lifecycle (e.g., development, production, maintenance and support), in which case we separate the contract into more than one performance obligation. If a contract is separated into more than one performance obligation, we allocate the total transaction price to each performance obligation in an amount based on the estimated relative standalone selling prices of the promised goods or services underlying each performance obligation. We infrequently sell standard products with observable standalone sales. In cases where we do, the observable standalone sales are used to determine the standalone selling price. More frequently, we sell a customized customer specific solution, and in these cases we typically use the expected cost plus a margin approach to estimate the standalone selling price of each performance obligation.

We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. For certain contracts that meet the foregoing requirements, primarily international direct commercial sale contracts, we are required to obtain certain regulatory approvals. In these cases, we recognize revenue based on the likelihood of obtaining regulatory approvals based upon all known facts and circumstances.

We generally recognize revenue over time as we perform on our contractual performance obligations because of continuous transfer of control to the customer. For U.S. government contracts, this continuous transfer of control to the customer is supported by clauses in the contract that allow the customer to unilaterally terminate the contract for convenience, pay us for costs incurred plus a reasonable profit and take control of any work in process. Similarly, for non-U.S. government contracts, the customer typically controls the work in process as evidenced either by contractual termination clauses or by our rights to payment for work performed to date plus a reasonable profit to deliver products or services that do not have an alternative use to the Company.

Because of control transferring over time, revenue is recognized based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. We generally use the cost-to-cost measure of progress for our contracts because it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost measure of progress, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. Revenues, including estimated fees or profits, are recorded proportionally as costs are incurred. Costs to fulfill include labor, materials and subcontractors' costs, other direct costs and an allocation of indirect costs including pension and any other postretirement benefit (PRB) expense under U.S. government Cost Accounting Standards (CAS).

Due to the nature of the work required to be performed on many of our performance obligations, the estimation of total revenue and cost at completion (the process described below in more detail) is complex, subject to many variables and requires significant judgment by management on a contract by contract basis. It is common for our long-term contracts to contain award fees, incentive fees, or other provisions that can either increase or decrease the transaction price. These variable amounts generally are awarded upon achievement of certain performance metrics, program milestones or cost targets and can be based upon customer discretion. We estimate variable consideration at the most likely amount to which we expect to be entitled. We include estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Our estimates of variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available to us.

Contracts are often modified to account for changes in contract specifications and requirements. We consider contract modifications to exist when the modification either creates new or changes the existing enforceable rights and obligations. Most of our contract modifications are for goods or services that are not distinct from the existing contract due to the significant integration service provided in the context of the contract and are accounted for as if they were part of that existing contract. The effect of a contract modification on the transaction price and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis.

We have a companywide standard and disciplined quarterly Estimate at Completion (EAC) process in which management reviews the progress and execution of our performance obligations. As part of this process, management reviews information including, but not limited to, any outstanding key contract matters, progress towards completion and the related program

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

schedule, identified risks and opportunities and the related changes in estimates of revenues and costs. The risks and opportunities include management's judgment about the ability and cost to achieve the schedule (e.g., the number and type of milestone events), technical requirements (e.g., a newly-developed product versus a mature product) and other contract requirements. Management must make assumptions and estimates regarding labor productivity and availability, the complexity of the work to be performed, the availability of materials, the length of time to complete the performance obligation (e.g., to estimate increases in wages and prices for materials and related support cost allocations), execution by our subcontractors, the availability and timing of funding from our customer, and overhead cost rates, among other variables. These estimates also include the estimated cost of satisfying our industrial cooperation agreements, sometimes in the form of either offset obligations or in-country industrial participation (ICIP) agreements, required under certain contracts. These obligations may or may not be distinct depending on their nature.

Based on this analysis, any quarterly adjustments to net sales, cost of sales and the related impact to operating income are recognized as necessary in the period they become known. These adjustments may result from positive program performance, and may result in an increase in operating income during the performance of individual performance obligations, if we determine we will be successful in mitigating risks surrounding the technical, schedule and cost aspects of those performance obligations or realizing related opportunities. Likewise, these adjustments may result in a decrease in operating income if we determine we will not be successful in mitigating these risks or realizing related opportunities. Changes in estimates of net sales, cost of sales and the related impact to operating income are recognized quarterly on a cumulative catch-up basis, which recognizes in the current period the cumulative effect of the changes on current and prior periods based on a performance obligation's percentage of completion. A significant change in one or more of these estimates could affect the profitability of one or more of our performance obligations. When estimates of total costs to be incurred exceed total estimates of revenue to be earned on a performance obligation related to complex aerospace or defense equipment or related services, or product maintenance or separately priced extended warranty, a provision for the entire loss on the performance obligation is recognized in the period the loss is identified.

Net EAC adjustments had the following impact on our operating results:

(In millions, except per share amounts)	**2019(1)**	2018(1)	2017
Operating income	**$ 520**	$ 492	$ 442
Income from continuing operations attributable to Raytheon Company	**411**	389	287
Diluted EPS from continuing operations attributable to Raytheon Company	**$ 1.47**	$ 1.36	$ 0.98

(1) Amounts reflect a U.S. statutory tax rate of 21%, which became effective in 2018 with the adoption of the Tax Cuts and Jobs Act of 2017 (2017 Act).

In addition, net revenue recognized from our performance obligations satisfied in previous periods was $709 million, $636 million and $520 million in 2019, 2018 and 2017, respectively. This primarily relates to EAC adjustments that impacted revenue.

We also sell security software through our Forcepoint business segment. For the majority of these arrangements, we recognize revenue over the term of the agreement because the software requires continuous updates to provide the intended security functionality. To a lesser extent in all of our business segments, we enter into other types of contracts including service arrangements and non-subscription software and licensing agreements. We recognize revenue for these arrangements over time or at a point in time depending on our evaluation of when the customer obtains control of the promised goods or services. For software arrangements that include multiple performance obligations, including hardware, perpetual software licenses, subscriptions, term licenses and maintenance and/or services, we allocate revenue to each performance obligation based on estimates of the price that we would charge the customer for each promised product or service if it were sold on a standalone basis.

Certain events have caused increased attention on U.S. defense sales to the Kingdom of Saudi Arabia (KSA). KSA represents less than 5% of our sales and $2.9 billion of our remaining performance obligations at December 31, 2019. Although we currently do not expect to be prevented from doing business in KSA, if government action impairs our ability to fulfill our contractual obligations or otherwise to continue to do business in KSA, it would have a material adverse effect on our financial results.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Research and Development Expenses—Research and development expenses are included in general and administrative expenses in our consolidated statements of operations and have primarily been for product development for the U.S. government. Expenditures for Company-sponsored research and development projects are expensed as incurred, and were $732 million, $841 million and $700 million in 2019, 2018 and 2017, respectively. Customer-sponsored research and development projects performed under contracts are accounted for as contract costs as the work is performed and included in receivables, net or contract assets in our consolidated balance sheets, depending on whether costs have been billed or not.

Federal, Foreign and State Income Taxes—The Company and its domestic subsidiaries provide for federal income taxes on pretax accounting income at rates in effect under existing tax law. Foreign subsidiaries record provisions for income taxes at applicable foreign tax rates in a similar manner. Such provisions differ from the amounts currently payable because certain items of income and expense are recognized in different time periods for financial reporting purposes than for income tax purposes. The Company provides for a U.S. tax liability on outside basis differences in our foreign subsidiaries related to earnings which have been previously taxed in the U.S. and undistributed earnings generated after December 31, 2017. This U.S. deferred tax liability generally relates to foreign currency movement. The Company also records foreign withholding taxes applicable to distributions of foreign earnings. The Company continues to assert indefinite reinvestment on outside basis differences related to all other items, such as acquisition accounting adjustments prior to January 1, 2018. With the exception of Forcepoint, payments made for state income taxes are included in administrative and selling expenses as these costs can generally be recovered through the pricing of products and services to the U.S. government in the period in which the tax is payable. Accordingly, the state income tax provision (benefit) is allocated to contracts when it is paid (recovered) or otherwise agreed as allocable with the U.S. government. Payments made for state income taxes related to Forcepoint are included in federal and foreign income tax expense.

Other (Income) Expense, Net—Other (income) expense, net, consists primarily of gains and losses from our investments held in trusts used to fund certain of our non-qualified deferred compensation and employee benefit plans, gains and losses on the early repurchase of long-term debt and certain financing fees. Periodically we enter into equity method or other investments that are not related to our core operations, including investments in early stage technology companies. We record the income or loss from these investments as a component of other (income) expense, net. We record losses beyond the carrying amount of the investment only when we guarantee obligations of the investee or commit to provide the investee further financial support.

Cash and Cash Equivalents—Cash and cash equivalents consist of cash and highly liquid investments with original maturities of 90 days or less at the date of purchase. The estimated fair value of cash and cash equivalents approximates the carrying value due to their short maturities. Cash and cash equivalents excludes $6 million and $16 million of restricted cash at December 31, 2019 and December 31, 2018, respectively, which for purposes of our consolidated statements of cash flows, is included in cash, cash equivalents and restricted cash.

Short-term Investments—We may invest in marketable securities in accordance with our short-term investment policy and cash management strategy. Marketable securities are classified as available-for-sale and are recorded at fair value as short-term investments in our consolidated balance sheets. These investments are deemed Level 2 assets under the fair value hierarchy as their fair value is determined under a market approach using valuation models that utilize observable inputs, including maturity date, issue date, settlements date and current rates. At December 31, 2019 and 2018, we had no short-term investments as all short-term investments outstanding at December 31, 2017 matured in the first quarter of 2018. We did not have any sales of short-term investments in 2019 or 2018. For purposes of computing realized gains and losses on available-for-sale securities, we determine cost on a specific identification basis.

Receivables, Net—Receivables, net, include amounts billed and currently due from customers. The amounts due are stated at their net estimated realizable value. We maintain an allowance for doubtful accounts to provide for the estimated amount of receivables that will not be collected. The allowance is based upon an assessment of customer creditworthiness, historical payment experience, the age of outstanding receivables and collateral to the extent applicable.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Receivables, net, consisted of the following at December 31:

(In millions)	2019	2018
U.S. government contracts (including foreign military sales)	**$ 777**	$ 1,121
Other customers	**594**	539
Allowance for doubtful accounts	**(7)**	(12)
Total receivables, net	**$ 1,364**	$ 1,648

Contract Assets—Contract assets include unbilled amounts typically resulting from sales under long-term contracts when the cost-to-cost method of revenue recognition is utilized and revenue recognized exceeds the amount billed to the customer, and right to payment is not just subject to the passage of time. Amounts may not exceed their net realizable value. Contract assets are generally classified as current.

Inventories—Inventories are stated at the lower of its cost (first-in, first-out or average cost) or net realizable value. An impairment for excess or inactive inventory is recorded based upon an analysis that considers current inventory levels, historical usage patterns, future sales expectations and salvage value.

Inventories consisted of the following at December 31:

(In millions)	2019	2018
Materials and purchased parts	**$ 78**	$ 75
Work in process	**574**	662
Finished goods	**19**	21
Total	**$ 671**	$ 758

Precontract costs are costs incurred to fulfill a contract prior to contract award. Precontract costs, including general and administrative expenses that are specifically chargeable to the customer, are deferred in inventories if we determine that the costs are probable of recovery under a specific anticipated contract. All other precontract costs, including start-up costs, are expensed as incurred. Costs that are deferred are recognized as contract costs upon the receipt of the anticipated contract. We included deferred precontract costs of $182 million and $163 million in inventories as work in process at December 31, 2019 and December 31, 2018, respectively.

Deferred Commissions—Our incremental direct costs of obtaining a contract, which consist of sales commissions primarily for our security software sales at Forcepoint, are deferred and amortized over the period of contract performance or a longer period, generally the estimated life of the customer relationship, if renewals are expected and the renewal commission is not commensurate with the initial commission. We classify deferred commissions as current or noncurrent based on the timing of when we expect to recognize the expense. The current and noncurrent portions of deferred commissions are included in prepaid expenses and other current assets, and other assets, net, respectively, in our consolidated balance sheets. At both December 31, 2019 and December 31, 2018, we had deferred commissions of $55 million. Amortization expense related to deferred commissions was $26 million, $45 million and $28 million in 2019, 2018 and 2017, respectively.

Property, Plant and Equipment, Net—Property, plant and equipment, net, are stated at cost less accumulated depreciation. Major improvements are capitalized while expenditures for maintenance, repairs and minor improvements are expensed. We include gains and losses on the sales of plant and equipment that are allocable to our contracts in overhead as we generally can recover these costs through the pricing of products and services to the U.S. government. For all other sales or asset retirements, the assets and related accumulated depreciation and amortization are eliminated from the accounts, and any resulting gain or loss is reflected in operating income.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Provisions for depreciation generally are computed using a combination of accelerated and straight-line methods and are based on estimated useful lives as follows:

	Years
Machinery and equipment	3–10
Buildings	20–45

Leasehold improvements are amortized over the lesser of the remaining lease term or the estimated useful life of the improvement.

Leases—We determine if an arrangement is a lease or contains an embedded lease at inception. For lease agreements with both lease and nonlease components (e.g., common-area maintenance costs), we account for the nonlease components separately. Consideration is allocated to the lease and nonlease components based on the estimated standalone prices.

All of our existing leases are operating leases. Operating lease right-of-use assets and operating lease liabilities are recognized based on the present value of the future lease payments over the lease term at the commencement date. The current portion of operating lease liabilities is included in other current liabilities in our consolidated balance sheets. For the majority of our leases, the discount rate used to determine the present value of the lease payments is our incremental borrowing rate as of the lease commencement date, as the implicit rate is not readily determinable. The operating lease right-of-use assets also includes any initial direct costs and any lease payments made at or before the commencement date, and is reduced for any unrestricted incentives received at or before the commencement date.

Some of our leases include options to extend or terminate the lease. We include these options in the recognition of our right-of-use assets and lease liabilities when it is reasonably certain that we will exercise the option. Very few of our leases include variable lease-related payments, such as escalation clauses based on consumer price index (CPI) rates, or residual guarantees. Variable payments that are based on an index or a rate are included in the recognition of our right-of-use assets and lease liabilities using the index or rate at lease commencement; however, changes to these lease payments due to rate or index updates are recorded as lease expense in the period incurred. Amounts probable of payment under residual guarantees are also included in the recognition of our right-of-use assets and lease liabilities.

Impairment of Goodwill and Long-lived Assets—We evaluate our goodwill for impairment annually or whenever events or circumstances indicate that the carrying value of goodwill may not be recoverable. We perform our annual impairment test as of the first day of the fourth quarter utilizing a two-step methodology that requires us to first identify potential goodwill impairment and then measure the amount of the related goodwill impairment loss, if any. We have identified our operating segments as reporting units under the impairment test assessment criteria outlined in U.S. GAAP. In performing our annual impairment test in the fourth quarters of 2019, 2018 and 2017 we did not identify any goodwill impairment.

We determine whether long-lived assets are to be held for use or disposal. Upon indication of possible impairment of long-lived assets held for use, we evaluate the recoverability of such assets by measuring the carrying amount of the assets against the related estimated undiscounted future cash flows. When an evaluation indicates that the future undiscounted cash flows are not sufficient to recover the carrying value of the asset group, the asset group is adjusted to its estimated fair value. In order for long-lived assets to be considered held for disposal, we must have committed to a plan to dispose of the assets. Once deemed held for disposal, the assets are stated at the lower of the carrying amount or fair value.

Computer Software, Net—Internal use computer software, net, included in other assets, net, which consists primarily of our enterprisewide software solutions, is stated at cost less accumulated amortization and is amortized using the straight-line method over its estimated useful life, generally 10 years. Computer software development costs related to software products developed for external use are capitalized, when significant, after establishment of technological feasibility and marketability. There have been no such costs capitalized to date as the costs incurred during the period between technological feasibility to general release have not been significant.

Contract Liabilities—Our contract liabilities consist of advance payments and billings in excess of revenue recognized and deferred revenue. We may also receive up-front payments related to software license sales primarily for Forcepoint, which

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

in most cases we recognize ratably over the license term. Our contract assets and liabilities are reported in a net position on a contract-by-contract basis at the end of each reporting period. We classify advance payments and billings in excess of revenue recognized as current, and deferred revenue as current or noncurrent based on the timing of when we expect to recognize revenue. The noncurrent portion of deferred revenue is included in accrued retiree benefits and other long-term liabilities in our consolidated balance sheets.

In order to determine revenue recognized in the period from contract liabilities, we first allocate revenue to the individual contract liability balance outstanding at the beginning of the period until the revenue exceeds that balance. If additional advances are received on those contracts in subsequent periods, we assume all revenue recognized in the reporting period first applies to the beginning contract liability as opposed to a portion applying to the new advances for the period.

Redeemable Noncontrolling Interests—Redeemable noncontrolling interest is recognized at the greater of the estimated redemption value as of the balance sheet date or the initial value adjusted for the noncontrolling interest holder's share of the cumulative impact of net income (loss), other changes in accumulated other comprehensive income (loss) and additional contributions. Adjustments to the redemption value over the period from the date of acquisition to the redemption date are immediately recorded to retained earnings. We reflect the redemption value adjustments in the earnings per share (EPS) calculation if redemption value is in excess of the fair value of noncontrolling interest which resulted in a $0.01 favorable impact to both basic and diluted EPS in2018. There was no impact to basic or diluted EPS in 2019 or 2017 related to the redemption value adjustments.

Other Comprehensive Income (Loss)—Other comprehensive income (loss) includes gains and losses associated with pension andPRB plans, foreign exchange translation adjustments, gains and losses on derivative instruments qualified as cash flow hedges included in the assessment of effectiveness, and unrealized gains (losses) on available-for-sale investments. The computation of other comprehensive income (loss) and its components are presented in the consolidated statements of comprehensive income.

A rollforward of accumulated other comprehensive income (loss) was as follows:

(In millions)	Pension and PRB plans, net[(1)]	Foreign exchange translation	Cash flow hedges[(2)]	Unrealized gains (losses) on investments and other, net[(3)]	Total
Balance at December 31, 2016	$ (7,234)	$ (175)	$ —	$ (2)	$ (7,411)
Before tax amount	(651)	80	10	(1)	(562)
Tax (expense) benefit	42	—	(4)	—	38
Net of tax amount	(609)	80	6	(1)	(524)
Balance at December 31, 2017	(7,843)	(95)	6	(3)	(7,935)
Before tax amount	1,028	(36)	(12)	1	981
Tax (expense) benefit	(216)	—	3	—	(213)
Net of tax amount	812	(36)	(9)	1	768
Reclassification of stranded tax effects	(1,452)	—	1	—	(1,451)
Balance at December 31, 2018	(8,483)	(131)	(2)	(2)	(8,618)
Before tax amount	**(822)**	**7**	**4**	**(3)**	**(814)**
Tax (expense) benefit	**173**	**—**	**(1)**	**—**	**172**
Net of tax amount	**(649)**	**7**	**3**	**(3)**	**(642)**
Balance at December 31, 2019	**$ (9,132)**	**$ (124)**	**$ 1**	**$ (5)**	**$ (9,260)**

(1) Pension and PRB plans, net, is shown net of cumulative tax benefits of $2,428 million and $2,255 million at December 31, 2019 and December 31, 2018, respectively.
(2) Cash flow hedges are shown net of cumulative tax of zero and tax benefits of $1 million at December 31, 2019 and December 31, 2018, respectively.
(3) Unrealized gains (losses) on investments and other, net, are shown net of cumulative tax expense of $1 million at both December 31, 2019 and December 31, 2018.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

In the first quarter of 2018, we reclassified the stranded tax effects related to the enactment of the 2017 Act from accumulated other comprehensive loss (AOCL) to retained earnings in accordance with ASU 2018-02, *Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*. These stranded tax effects related to the deferred tax amounts at December 31, 2017 recorded through other comprehensive income prior to the enactment date using the prior 35% statutory tax rate that remained in other comprehensive income despite the fact that the related deferred tax assets and liabilities were remeasured to reflect the newly enacted tax rate of 21%. See Accounting Standards, below, for additional details.

Other material amounts reclassified out of AOCL related to the amortization of net actuarial loss associated with our pension plans were$1,050 million, $1,351 million and $1,177 million before tax in 2019, 2018 and 2017, respectively. This component of AOCL is included in the calculation of net periodic pension expense (income). See "Note 14: Pension and Other Employee Benefits" for additional details.

We expect $3 million net of tax of net unrealized gains on our cash flow hedges atDecember 31, 2019 to be reclassified into earnings at then-current values over the next 12 months as the underlying hedged transactions occur.

Translation of Foreign Currencies—Assets and liabilities of foreign subsidiaries are translated at current exchange rates and the effects of these translation adjustments are reported as a component of AOCL in equity. Prior to the enactment of the 2017 Act, deferred taxes were not recognized for translation-related temporary differences of foreign subsidiaries as their undistributed earnings were considered to be indefinitely reinvested. After the enactment of the 2017 Act, we no longer assert indefinite reinvestment on our foreign subsidiaries outside basis differences generated after December 31, 2017. Unrealized foreign currency gains and losses associated with the subsidiary's net assets, including unremitted earnings, represent translation gains and losses that are reported as part of other comprehensive income (loss). Therefore, the deferred tax effect of the translation gains and losses are also recorded through other comprehensive income (loss) after December 31, 2017. At December 31, 2019, we had a cumulative translation loss on the unremitted earnings, and therefore, have not recorded a deferred tax asset as it is not likely that the asset will be realized in the future. Income and expenses in foreign currencies are translated at the average exchange rate during the period.

Foreign exchange transaction gains and losses in2019, 2018 and 2017 were not material.

Treasury Stock—Repurchased shares are retired immediately upon repurchase. We account for treasury stock under the cost method. Upon retirement the excess over par value is charged against additional paid-in capital until reduced to zero, with the remainder recorded as a reduction to retained earnings.

Pension and Other Postretirement Benefits (PRB) Costs—We have pension plans covering the majority of our employees hired before January 1, 2007, including certain employees in foreign countries. We calculate our pension costs as required under U.S. GAAP, and the calculations and assumptions utilized require judgment. U.S. GAAP outlines the methodology used to determine pension expense or income for financial reporting purposes. Pension and PRB expense is split between operating income and non-operating income, where only the service cost component is included in operating income and the non-service components are included in retirement benefits non-service expense. For purposes of determining retirement benefits non-service expense under U.S. GAAP, a calculated "market-related value" of our plan assets is used to develop the amount of deferred asset gains or losses to be amortized. The market-related value of assets is determined using actual asset gains or losses over a three-year period. Under U.S. GAAP, a "corridor" approach may be elected and applied in the recognition of asset and liability gains or losses which limits expense recognition to the net outstanding gains and losses in excess of the greater of 10% of the projected benefit obligation (PBO) or the calculated "market-related value" of assets. We do not use a "corridor" approach in the calculation of Financial Accounting Standards (FAS) pension expense.

We recognize the funded status of a postretirement benefit plan (defined benefit pension and other benefits) as an asset or liability in our consolidated balance sheets. Funded status represents the difference between the PBO of the plan and the market value of the plan's assets. Previously unrecognized deferred amounts such as demographic or asset gains or losses and the impact of historical plan changes are included in AOCL. Changes in these amounts in future years will be reflected through AOCL and amortized in future pension expense generally over the estimated average remaining employee service period.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Derivative Financial Instruments—We enter into foreign currency forward contracts with commercial banks to fix the foreign currency exchange rates on specific commitments, payments and receipts denominated in foreign currencies. Our foreign currency forward contracts are transaction driven and relate directly to a particular asset, liability or transaction for which commitments are in place. We execute these instruments with financial institutions that we judge to be credit-worthy. The majority of our foreign currency forward contracts are denominated in currencies of major industrial countries. We do not hold or issue derivative financial instruments for trading or speculative purposes.

We designate most foreign currency forward contracts as cash flow hedges of forecasted purchases and sales denominated in foreign currencies. For foreign currency forward contracts designated and qualified for cash flow hedge accounting, we record the effective portion of the gain or loss on the derivative in AOCL, net of tax, and reclassify it into earnings in the same period or periods during which the hedged revenue or cost of sales transaction affects earnings. Realized gains and losses resulting from these cash flow hedges offset the foreign exchange gains and losses on the underlying transactions being hedged. We classify the cash flows from these instruments in the same category as the cash flows from the hedged items. To a lesser extent, we have gains and losses on derivatives not designated for hedge accounting or representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness, which are recognized currently in net sales or cost of sales.

The aggregate notional amount of the outstanding foreign currency forward contracts was $1,487 million and $1,772 million at December 31, 2019 and December 31, 2018, respectively. The net notional exposure of these contracts was $746 million and $840 million at December 31, 2019 and December 31, 2018, respectively. The foreign currency forward contracts at December 31, 2019 have maturities at various dates through 2030 as follows: $922 million in 2020; $315 million in 2021; $122 million in 2022; and $128 million thereafter.

We recognize all derivative financial instruments as either assets or liabilities at fair value in our consolidated balance sheets.The fair value of asset derivatives included in other assets, net and liability derivatives included in other current liabilities in our consolidated balance sheets related to foreign currency forward contracts were as follows:

(In millions)		**2019**		2018
Asset derivatives related to foreign currency forward contracts	**$**	**29**	$	26
Liability derivatives related to foreign currency forward contracts		**15**		34

The fair value of these derivatives is Level 2 in the fair value hierarchybecause they are determined based on a market approach utilizing externally quoted foreign currency forward rates for similar contracts. Our foreign currency forward contracts contain offset or netting provisions to mitigate credit risk in the event of counterparty default, including payment default and cross default. We measure and record the impact of counterparty credit risk into our valuation and at December 31, 2019 and December 31, 2018, the fair value of our counterparty default exposure was less than $1 million and was spread across numerous highly rated counterparties.

We may also enter into pay-variable, receive-fixed interest rate swaps to manage interest rate risk associated with our fixed-rate financing obligations. We account for our interest rate swaps as fair value hedges of a portion of our fixed-rate financing obligations, and accordingly record gains and losses from changes in the fair value of these swaps in interest expense, along with the offsetting gains and losses on the fair value adjustment of the hedged portion of our fixed-rate financing obligations. We also record in interest expense the net amount paid or received under the swap for the period and the amortization of gain or loss from the early termination of interest rate swaps. There were no interest rate swaps outstanding at December 31, 2019 or December 31, 2018.

We may also enter into and designate treasury rate lock contracts as cash flow hedges to reduce variability in cash flows due to changes in interest payments attributable to increases or decreases in the benchmark interest rate during the period leading up to the probable issuance of long-term debt. Cash flows associated with these instruments are presented in the same category as the cash flows from the hedged item. In May 2019, prior to entering into an Agreement and Plan of Merger (the Merger Agreement) with United Technologies Corporation (UTC), we entered into treasury rate lock contracts with a notional amount of $375 million. These treasury rate lock contracts were designated as cash flow hedges and were included in the assessment of effectiveness. However, in the fourth quarter of 2019 a decision was made to not issue the debt due to merger-related considerations, and these treasury rate locks were settled without the issuance of debt. We recognized the $17 million loss

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

included in accumulated other comprehensive income at the time of settlement in other (income) expense, net. There wereno treasury rate lock contracts outstanding at December 31, 2019 or December 31, 2018.

Fair Values—Fair value is defined as the price that would be received for an asset or the exit price that would be paid to transfer a liability in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. The fair value hierarchy requires an entity to maximize the use of observable inputs, where available. The following summarizes the three levels of inputs required:

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

Level 2: Observable inputs, other than Level 1 prices, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or that we corroborate with observable market data for substantially the full term of the related assets or liabilities.

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

Assets and liabilities measured at fair value on a recurring basis consisted of marketable securities held in trusts and foreign currency forward contracts as of December 31, 2019 and 2018. Fair value information for those assets and liabilities, including their classification in the fair value hierarchy, is included in "Note 14: Pension and Other Employee Benefits" (for marketable securities held in trusts) and Derivative Financial Instruments, above (for foreign currency forward contracts). Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. We did not have any significant nonfinancial assets or nonfinancial liabilities that would be recognized or disclosed at fair value on a recurring basis as of December 31, 2019 and 2018. We did not have any material amounts of Level 3 assets or liabilities atDecember 31, 2019 and 2018.

Earnings per Share (EPS)—We compute basic EPS attributable to Raytheon Company common stockholders by dividing income from continuing operations attributable to Raytheon Company common stockholders, income (loss) from discontinued operations attributable to Raytheon Company common stockholders, and net income attributable to Raytheon Company, by our weighted-average common shares outstanding, including participating securities outstanding, as described below, during the period. Diluted EPS reflects the potential dilution beyond shares for basic EPS that could occur if securities or other contracts to issue common stock were exercised, converted into common stock, or resulted in the issuance of common stock that would have shared in our earnings. We compute basic and diluted EPS using actual income from continuing operations attributable to Raytheon Company common stockholders, income (loss) from discontinued operations attributable to Raytheon Company common stockholders and net income attributable to Raytheon Company, and our actual weighted-average shares outstanding rather than the numbers presented within our consolidated financial statements, which are rounded to the nearest million. As a result, it may not be possible to recalculate EPS as presented in our consolidated financial statements. Furthermore, it may not be possible to recalculate EPS attributable to Raytheon Company common stockholders by adjusting EPS from continuing operations by EPS from discontinued operations.

We include all unvested stock awards that contain non-forfeitable rights to dividends or dividend equivalents, whether paid or unpaid, in the number of shares outstanding in our basic EPS calculation as they are considered participating securities. As a result, we have included all of our outstanding unvested awards of restricted stock, as well as restricted stock units (RSUs) and Long-term Performance Plan (LTPP) awards that meet the retirement eligible criteria in our calculation of basic EPS. We disclose EPS for common stock and unvested stock-based payment awards, and separately disclose distributed and undistributed earnings. Distributed earnings represent common stock dividends and dividends earned on unvested awards of restricted stock and stock-based payment awards of retirement eligible employees. Undistributed earnings represent earnings that were available for distribution but were not distributed. Common stock and unvested stock-based payment awards earn dividends equally.

As described in "Note 11: Redeemable Noncontrolling Interests," prior to our acquisition of Vista Equity Partners' interest in Forcepoint in the fourth quarter of 2019, we recorded redeemable noncontrolling interest related to their interest. We reflected the redemption value adjustments for redeemable noncontrolling interest in both the basic and diluted EPS calculation for the portion of redemption value that was in excess of the fair value of noncontrolling interest.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Employee Stock Plans—Stock-based compensation cost is measured at the grant date based on the calculated fair value of the award. The expense is recognized over the employees' requisite service period, generally the vesting period of the award. The expense is amortized over the service period using the graded vesting method for our restricted stock and RSUs and the straight-line amortization method for our LTPP. The expense related to our Forcepoint long-term incentive plans is recognized over the requisite service period when achievement of the performance conditions is considered probable. We account for forfeitures when they occur, consistent with our government recovery accounting practice. The gross excess tax benefit received upon exercise of stock options or vesting of a stock-based award, if any, is reflected in the consolidated statements of cash flows as an operating activity.

Risks and Uncertainties—We provide a wide range of technologically advanced products, services and solutions for principally governmental customers in the U.S. and abroad, and are subject to certain business risks specific to that industry. Total sales to the U.S. government, excluding foreign military sales, were 69% of total net sales in 2019, 68% of total net sales in 2018 and 67% of total net sales in 2017. Total sales to customers outside the U.S., including foreign military sales through the U.S. government, were 29% of total net sales in 2019, 30% of total net sales in 2018 and 32% of total net sales in 2017. Sales to the U.S. government may be affected by changes in procurement policies, budget considerations, changing concepts of national defense, political developments abroad and other factors. Sales to international customers may be affected by changes in the priorities and budgets of international customers and geopolitical uncertainties, which may be driven by changes in threat environments, volatility in worldwide economic conditions, regional and local economic and political factors, U.S. foreign policy and other risks and uncertainties.

Remaining Performance Obligations—Remaining performance obligations represents the transaction price of firm orders for which work has not been performed and excludes unexercised contract options and potential orders under ordering-type contracts (e.g., indefinite-delivery, indefinite-quantity (IDIQ)). As of December 31, 2019, the aggregate amount of the transaction price allocated to remaining performance obligations was $48,752 million. We expect to recognize revenue on approximately half and three-quarters of the remaining performance obligations over the next 12 and 24 months, respectively, with the remainder recognized thereafter.

Accounting Standards—In August 2018, the Financial Accounting Standards Board (FASB) issued ASU 2018-13, *Fair Value Measurement: Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement (Topic 820)*, which eliminates the disclosure requirement of the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy and modifies certain disclosure requirements related to Level 3 recurring and nonrecurring fair value measurements. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. Effective January 1, 2019, we elected to early adopt the requirements of the new standard on a prospective basis. The standard did not have an impact on our financial position, results of operations or liquidity.

In August 2018, the FASB issued ASU 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-24): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement that is a Service Contract*, which aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. The new standard is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019, with early adoption permitted. Effective January 1, 2019, we elected to early adopt the requirements of the new standard on a prospective basis. The standard did not have a material impact on our financial position, results of operations or liquidity.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which requires lessees to recognize a right-of-use asset and lease liability for most lease arrangements. Effective January 1, 2019, we adopted the requirements of the new lease standard using the modified retrospective approach, applying the new lease requirements at the beginning of the earliest period presented. In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which, among other things, allows us to carry forward the historical lease classification. We did not elect the practical expedient to use hindsight in determining the lease term and in assessing impairment of right-of-use assets. The standard resulted in the recognition of operating lease right-of-use assets of $805 million and operating lease liabilities of $841 million, of which $194 million was classified as current and is included in other current liabilities in our consolidated balance sheet, as of December 31, 2018, with immaterial changes to other balance sheet accounts. The standard had no impact on our results of operations or cash flows. In addition, new disclosures are provided to enable users to assess the amount, timing and uncertainty of cash flows arising from leases.

In February 2018, the FASB issued ASU 2018-02, Income *Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, which allows companies to reclassify stranded tax effects resulting from the 2017 Act, from accumulated other comprehensive income to retained earnings. These stranded tax effects refer to the tax amounts included in accumulated other comprehensive income at the previous 35% U.S. statutory tax rate, for which the related deferred tax asset or liability was remeasured to the new 21% U.S. corporate statutory federal tax rate in the period of the 2017 Act enactment. The new standard is effective for fiscal years beginning after December 15, 2018, with early adoption permitted, and can be applied either in the period of adoption or retrospectively to each period impacted by the 2017 Act. We elected to early adopt the new standard in the first quarter of 2018 and we elected to reclassify the stranded income tax effects of the 2017 Act from accumulated other comprehensive income to retained earnings in the period of adoption. This resulted in an increase to AOCL of $1,451 million and an increase in retained earnings of $1,451 million in the first quarter of 2018, almost all of which related to our pension and PRB plans, net. The standard did not have an impact on our results of operations or liquidity. Income tax effects remaining in accumulated other comprehensive income will be released into earnings as the related before tax amounts are reclassified to earnings.

Other new pronouncements adopted and issued but not effective until after December 31, 2019, including ASU 2016-13, *Financial Instruments—Credit Losses (Topic 326),* did not and are not expected to have a material impact on our financial position, results of operations or liquidity.

Note 2: Proposed Merger with United Technologies Corporation (UTC)

On June 9, 2019, Raytheon, United Technologies Corporation, a Delaware corporation (UTC), and Light Merger Sub Corp., a Delaware corporation and wholly-owned subsidiary of UTC (Merger Sub), entered into an Agreement and Plan of Merger (the Merger Agreement). The Merger Agreement provides for, among other things and subject to the satisfaction or waiver of specified conditions, the merger of Merger Sub with and into Raytheon (the Merger), with Raytheon surviving the Merger as a wholly-owned subsidiary of UTC.

At the effective time of the Merger (the Effective Time), each share of common stock of Raytheon issued and outstanding immediately prior to the Effective Time (except for shares held by Raytheon as treasury stock) will be converted into the right to receive 2.3348 shares of common stock of UTC (and, if applicable, cash in lieu of fractional shares), less any applicable withholding taxes. At the Effective Time, Raytheon's stockholders will hold approximately 43%, and UTC's stockholders will hold approximately 57%, of the outstanding shares of common stock of UTC.

The Merger Agreement also provides that, prior to the consummation of the Merger, UTC will complete the previously announced separation of its commercial businesses, Otis and Carrier, from its other businesses (the Separation), and the pro rata distributions to its stockholders of 100% of the common stock of the entity holding the Otis business and 100% of the common stock of the entity holding the Carrier business (the Distributions).

The Merger was approved by Raytheon's stockholders at a special meeting of Raytheon's stockholders held on October 11, 2019. The issuance of shares of UTC Common Stock in connection with the Merger was approved by UTC's stockholders at a special meeting of UTC's stockholders held on October 11, 2019.

The parties' obligations to consummate the Separation, the Distributions and the Merger remains subject to customary conditions, including the expiration or termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (HSR Act), and the receipt of other required regulatory approvals. In addition, the parties' obligations to consummate the Merger are subject to the prior completion of the Separation and the Distributions.

The Merger Agreement includes customary representations, warranties and covenants of Raytheon and UTC (generally excluding the Otis business and the Carrier business). Between the date of execution of the Merger Agreement and the Effective Time, each of Raytheon and UTC (generally with respect to its aerospace business) has agreed to use reasonable best efforts to conduct its businesses in all material respects in the ordinary course consistent with past practice and to comply with certain operating covenants. In addition, the Merger Agreement generally restricts certain actions by both Raytheon and UTC, including the incurrence or issuance of new debt in excess of $1 billion in the aggregate (unless used to refinance existing debt), acquisitions or divestitures in excess of $500 million in the aggregate, and repurchases or issuances of shares other than in accordance with our existing equity award programs. In addition, the Merger Agreement provides that, immediately prior to the consummation of the Merger, the adjusted net indebtedness of UTC's aerospace business will not exceed an amount as provided for under the Merger Agreement.

Subject to certain exceptions, each of Raytheon and UTC has agreed to use reasonable best efforts to cause the Merger to be completed. The Merger Agreement includes certain termination provisions for both UTC and Raytheon and provides that, in connection with a termination of the Merger Agreement under specified circumstances, Raytheon will be required to pay UTC a termination fee of $1.785 billion, or UTC will be required to pay Raytheon a termination fee of $2.365 billion.

The Merger is targeted to close early in the second quarter of 2020, subject to and following completion by UTC of the Separation and Distributions.

Note 3: Earnings Per Share (EPS)

EPS from continuing operations attributable to Raytheon Company common stockholders and unvested stock-based payment awards was as follows:

	2019	2018	2017
Basic EPS attributable to Raytheon Company common stockholders:			
Distributed earnings	**$ 3.76**	$ 3.46	$ 3.18
Undistributed earnings	**8.17**	6.70	3.77
Total	**$ 11.93**	$ 10.16	$ 6.95
Diluted EPS attributable to Raytheon Company common stockholders:			
Distributed earnings	**$ 3.76**	$ 3.45	$ 3.18
Undistributed earnings	**8.16**	6.70	3.76
Total	**$ 11.92**	$ 10.15	$ 6.94

Income attributable to participating securities was as follows:

(In millions)	**2019**	2018	2017
Income from continuing operations attributable to participating securities	**$ 32**	$ 30	$ 24
Income (loss) from discontinued operations, net of tax attributable to participating securities	**—**	—	—
Net income attributable to participating securities	**$ 32**	$ 30	$ 24

The weighted-average shares outstanding for basic and diluted EPS were as follows:

(In millions)	**2019**	2018	2017
Shares for basic EPS(1)	**280.0**	286.5	291.1
Effect of dilutive securities	**0.2**	0.3	0.3
Shares for diluted EPS	**280.2**	286.8	291.4

(1) Includes participating securities of 2.7 million, 2.9 million and 3.5 million for 2019, 2018 and 2017, respectively.

Our Board of Directors is authorized to issue up to 200 million shares of preferred stock, $0.01 par value per share, in multiple series with terms as determined by them. There were no shares of preferred stock outstanding at December 31, 2019 or December 31, 2018.

Note 4: Acquisitions, Divestitures and Goodwill

In pursuing our business strategies, we acquire and make investments in certain businesses that meet strategic and financial criteria, and divest of certain non-core businesses, investments and assets when appropriate.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

In 2013, we formed the Range Generation Next LLC (RGNext) joint venture with General Dynamics Information Technology (GDIT) through our Intelligence, Information and Services (IIS) segment, in which we held a 50% equity ownership that was accounted for using the equity method. On February 8, 2019, we amended and restated the RGNext joint venture agreement and acquired an additional 10% equity ownership in the joint venture, increasing our equity ownership to 60% and giving us control of the operations of RGNext. Effective as of February 8, 2019, we consolidate the results of RGNext in our consolidated financial statements and report its results in our IIS segment. We also remeasured our equity method investment in RGNext to fair value, which resulted in a non-cash gain of $21 million in the first quarter of 2019 that was recorded in operating income through a reduction to cost of sales at our IIS segment; recognized redeemable noncontrolling interest for GDIT's interest in RGNext at a fair value of $32 million; and recognized $90 million of net assets, including cash acquired, at fair value. As part of our purchase price allocation, we recorded $19 million of goodwill, primarily related to the value of the existing workforce, and $34 million of intangible assets, primarily related to customer relationships with a weighted-average life of 7 years.

In May 2018, we completed the sale of our commercial cloud-based call center analytics solutions business for $11 million in cash, net of transaction-related costs. This business was part of our Space and Airborne Systems (SAS) segment. The Company recognized a gain of $8 million before tax, $5 million net of tax, which was recorded as a reduction to cost of sales at our SAS segment in the second quarter of 2018.

In 2017, our Forcepoint business completed the acquisitions of RedOwl Analytics Inc., a security analytics business, and the Skyfence cloud access security broker (CASB) business for total consideration of $93 million, net of cash received, and exclusive of retention payments. Vista Equity Partners contributed 19.7% of the purchase price for the Skyfence acquisition. Both acquisitions expand and enhance Forcepoint's strategy to deliver cybersecurity systems that help customers understand people's behaviors and intent as they interact with data and intellectual property wherever it may reside. In connection with these acquisitions, we recorded $77 million of goodwill, primarily related to expected synergies from combining operations and the value of the existing workforce, and $12 million of intangible assets, primarily related to technology and customer relationships.

Pro forma financial information and revenue from the date of acquisition has not been provided for these acquisitions as they are not material either individually or in the aggregate.

We funded each of the above acquisitions using cash on hand. The operating results of these businesses have been included in our consolidated results as of the respective closing dates of the acquisitions. The purchase price of these businesses has been allocated to the estimated fair value of net tangible and intangible assets acquired, with any excess purchase price recorded as goodwill. The total amount of goodwill that is expected to be deductible for tax purposes related to these acquisitions was $28 million at December 31, 2019.

A rollforward of goodwill by segment was as follows:

(In millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
Balance at December 31, 2017	$ 1,706	$ 2,967	$ 4,154	$ 4,106	$ 1,938	$ 14,871
Acquisitions and divestitures	—	—	—	(3)	—	(3)
Effect of foreign exchange rates and other	(2)	(2)	—	—	—	(4)
Balance at December 31, 2018	1,704	2,965	4,154	4,103	1,938	14,864
Acquisitions and divestitures	**—**	**19**	**—**	**—**	**—**	**19**
Effect of foreign exchange rates and other	**(1)**	**—**	**—**	**—**	**—**	**(1)**
Balance at December 31, 2019	**$ 1,703**	**$ 2,984**	**$ 4,154**	**$ 4,103**	**$ 1,938**	**$ 14,882**

For information on our intangible assets, see "Note 7: Other Assets, Net."

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Note 5: Contract Assets and Contract Liabilities

Net contract assets (liabilities) consisted of the following at December 31:

(In millions)	2019	2018	$ Change	% Change
Contract assets	**$ 6,122**	$ 5,594	**$ 528**	**9.4%**
Contract liabilities—current	**(3,267)**	(3,309)	**42**	**1.3%**
Contract liabilities—noncurrent	**(143)**	(150)	**7**	**4.7%**
Net contract assets (liabilities)	**$ 2,712**	$ 2,135	**$ 577**	**27.0%**

The $577 million increase in our net contract assets (liabilities) from December 31, 2018 to December 31, 2019 was primarily due to a $528 million increase in our contract assets, principally due to the timing of milestone payments on certain international programs.

On May 24, 2019, the Administration announced an emergency certification authorizing the immediate export of 22 pending arms sales to Jordan, the United Arab Emirates (UAE) and the KSA, waiving the requirement of Congressional Notification of these arms sales. As a result, we were able to obtain the necessary regulatory approvals and licenses for contracts subject to the emergency certification. For those contracts for which we have not yet obtained the regulatory approval and licenses and that were not subject to the emergency certification, we had approximately $1.2 billion of total contract value, recognized approximately $400 million of sales for work performed to date and received approximately $500 million in advances as of December 31, 2019. On a contract-by-contract basis, we had $100 million and $200 million of net contract assets and net contract liabilities, respectively, related to the contracts pending approval.

Impairment losses recognized on our receivables and contract assets were de minimis in 2019, 2018 and 2017.

Contract assets consisted of the following at December 31:

(In millions)	2019	2018
Unbilled	**$ 13,308**	$ 12,058
Progress payments	**(7,186)**	(6,464)
Total contract assets	**$ 6,122**	$ 5,594

The U.S. government has title to the assets related to unbilled amounts on U.S. government contracts that provide progress payments. Included in contract assets at December 31, 2019 was $24 million which is expected to be collected outside of one year.

Contract assets include retentions arising from contractual provisions. At December 31, 2019, retentions were $94 million. We anticipate collecting $20 million of these retentions in 2020 and the balance thereafter.

In 2019, 2018 and 2017, we recognized revenue of $1,919 million, $1,453 million and $1,434 million related to our contract liabilities at January 1, 2019, January 1, 2018 and January 1, 2017, respectively.

Note 6: Property, Plant and Equipment, Net

Property, plant and equipment, net, consisted of the following at December 31:

(In millions)	2019	2018
Land	**$ 81**	$ 84
Buildings and improvements	**3,068**	2,835
Machinery and equipment	**5,436**	4,844
Property, plant and equipment, gross	**8,585**	7,763
Accumulated depreciation and amortization	**(5,232)**	(4,923)
Total	**$ 3,353**	$ 2,840

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Depreciation and amortization expense of property, plant and equipment, net, was $420 million, $374 million and $350 million in 2019, 2018 and 2017, respectively.

Note 7: Other Assets, Net

Other assets, net, consisted of the following at December 31:

(In millions)	2019	2018
Marketable securities held in trusts[(1)]	**$ 753**	$ 642
Computer software, net of accumulated amortization of $1,249 and $1,201 at December 31, 2019 and 2018, respectively	**252**	261
Other intangible assets, net of accumulated amortization of $873 and $760 at December 31, 2019 and 2018, respectively	**283**	361
Deferred tax asset[(2)]	**534**	331
Other noncurrent assets, net	**552**	429
Total	**$ 2,374**	$ 2,024

(1) For further details, refer to "Note 14: Pension and Other Employee Benefits."
(2) For further details, refer to "Note 15: Income Taxes."

Computer software amortization expense was $73 million, $75 million and $71 million in 2019, 2018 and 2017, respectively.

Other intangible assets, net, consisted primarily of completed technology, intellectual property and acquired customer relationships. These intangible assets are being amortized over their estimated useful lives which range from 1 to 15 years using either a straight-line or accelerated amortization method based on the pattern of economic benefits we expect to realize from such assets. Amortization expense for other intangible assets was $112 million, $119 million and $129 million in 2019, 2018 and 2017, respectively.

Computer software and other intangible asset amortization expense is expected to be approximately $154 million in 2020, $118 million in 2021, $80 million in 2022, $45 million in 2023 and $27 million in 2024.

Note 8: Commercial Paper and Long-term Debt

Commercial Paper—In 2019, we made net repayments of $300 million to reduce our short-term commercial paper borrowings outstanding to zero at December 31, 2019. At December 31, 2018, short-term commercial paper borrowings outstanding were $300 million, which had a weighted-average interest rate and original maturity period of 2.954% and 16 days, respectively. The commercial paper notes outstanding had original maturities of not more than 90 days from the date of issuance.

Long-term Debt—Long-term debt, including the current portion of long-term debt, consisted of the following at December 31:

(In millions, except percentages)	2019	2018
$500 notes due 2020, 4.40%	**$ 500**	$ 499
$1,000 notes due 2020, 3.125%	**999**	998
$1,100 notes due 2022, 2.50%	**1,097**	1,096
$300 notes due 2024, 3.15%	**298**	298
$382 notes due 2027, 7.20%	**374**	373
$185 notes due 2028, 7.00%	**185**	185
$600 notes due 2040, 4.875%	**592**	592
$425 notes due 2041, 4.70%	**420**	419
$300 notes due 2044, 4.20%	**295**	295
Total debt issued and outstanding	**$ 4,760**	$ 4,755

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The notes are redeemable by us at any time at redemption prices based on U.S. Treasury rates. In the second quarter of 2017, we exercised our call rights to repurchase, at prices based on fixed spreads to the U.S. Treasury rates, $591 million of our long-term debt due March and December 2018 at a loss of $39 million before tax, $25 million net of tax, which is included in other (income) expense, net.

The carrying value of long-term debt is recorded at amortized cost. The fair value of long-term debt is determined using quoted prices in inactive markets, which falls within Level 2 of the fair value hierarchy. The estimated fair value of long-term debt was the following at December 31:

(In millions)		**2019**		2018
Fair value of long-term debt[(1)]	**$**	**5,337**	$	5,063

(1) Fair value of long-term debt at December 31, 2019 includes current portion of long-term debt fair value of $1,513 million.

The adjustments to the principal amounts of long-term debt were as follows at December 31:

(In millions)		**2019**		2018
Principal	**$**	**4,792**	$	4,792
Unamortized issue discounts		**(26)**		(30)
Unamortized interest rate lock costs		**(6)**		(7)
Total	**$**	**4,760**	$	4,755

The aggregate amounts of principal payments due on long-term debt for the next five years are:

(In millions)		
2020	$	1,500
2021		—
2022		1,100
2023		—
2024		300
Thereafter		1,892

In September 2019, we entered into a $1.25 billion revolving credit facility maturing in November 2021 and terminated the previous $1.25 billion revolving credit facility maturing in November 2020 without penalty. Under the credit facility, we can borrow, issue letters of credit and backstop commercial paper. Borrowings under this facility bear interest at various rate options, including LIBOR plus a margin based on our credit ratings. Based on our credit ratings at December 31, 2019, borrowings would generally bear interest at LIBOR plus 80.5 basis points. The credit facility is composed of commitments from 20 separate highly rated lenders, each committing no more than 10% of the facility. As of December 31, 2019 and December 31, 2018 there were no borrowings or letters of credit outstanding under our credit facilities.

Under the credit facility we must comply with certain covenants, including a ratio of total debt to total capitalization of no more than 60%. Our ratio of total debt to total capitalization, as those terms are defined in the credit facility, was 28.0% at December 31, 2019. We are providing this ratio as this metric is used by our lenders to monitor our leverage and is also a threshold that could limit our ability to utilize this facility. We were in compliance with our credit facility covenants as of December 31, 2019 and December 31, 2018.

Total cash paid for interest on commercial paper and long-term debt was $193 million, $194 million and $214 million in 2019, 2018 and 2017, respectively.

Note 9: Leases

We enter into operating leases primarily for: real estate, including for manufacturing, engineering, research, administration, sales and warehousing facilities; information technology equipment; and other equipment. At December 31, 2019 and December 31, 2018, we did not have any finance leases. Approximately 90% of our future lease commitments, and related

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

lease liability, relate to our real estate leases. Some of our leases also include options to extend the lease or terminate the lease. A small portion of our leases include variable escalation clauses, which are typically based on CPI rates, or other variable lease-related payments.

The components of lease expense were as follows:

(In millions)	**2019**	2018	2017
Operating lease cost	**$ 240**	$ 236	$ 232
Variable lease cost[(1)]	**—**	—	—
Sublease income	**(1)**	(4)	(3)
Total lease cost	**$ 239**	$ 232	$ 229

(1) Variable lease cost was less than $1 million for 2019, 2018 and 2017, respectively.

Gains and losses on sale and leaseback transactions were de minimis in2019, 2018 and 2017.

At December 31, 2019, our future lease payments under non-cancellable leases were as follows:

(In millions)	
2020	$ 242
2021	217
2022	168
2023	116
2024	71
Thereafter	238
Total future lease payments[(1)]	1,052
Imputed interest	(133)
Total lease liabilities	$ 919

(1) Total future lease payments exclude future lease payments related to leases that were signed but had not yet commenced. There were none as of December 31, 2019.

Our lease liabilities recognized in our consolidated balance sheet atDecember 31, 2019 were as follows:

(In millions)	
Operating lease liabilities—current	$ 213
Operating lease liabilities—noncurrent	706
Total lease liabilities	$ 919

The weighted-average remaining lease term related to our operating leases was8 years and 7 years as of December 31, 2019 and December 31, 2018, respectively. The weighted-average discount rate related to our operating leases was 3.1% as of both December 31, 2019 and December 31, 2018.

Other information related to leases was as follows:

(In millions)	**2019**	2018	2017
Cash paid for amounts included in the measurement of operating lease liabilities	**$ 243**	$ 250	$ 218
Right-of-use assets obtained in exchange for new operating lease obligations	**271**	182	239

There were no material restrictions or covenants imposed by our leases atDecember 31, 2019 or December 31, 2018. In addition, we did not have any related party leases and our sublease transactions were de minimis.

Note 10: Commitments and Contingencies

Environmental Matters—We are involved in various stages of investigation and cleanup related to remediation of various environmental sites. Our estimate of the liability of total environmental remediation costs includes the use of a discount rate and takes into account that a portion of these costs is eligible for future recovery through the pricing of our products and services to the U.S. government. We regularly assess the probability of recovery of these costs, which requires us to make assumptions about the extent of cost recovery under our contracts and the amount of future contract activity. We consider such recovery probable based on government contracting regulations and our long history of receiving reimbursement for such costs, and accordingly have recorded the estimated future recovery of these costs from the U.S. government within prepaid expenses and other current assets in our consolidated balance sheets. Our estimates regarding remediation costs to be incurred were as follows at December 31:

(In millions, except percentages)		**2019**		2018
Total remediation costs—undiscounted	**$**	**188**	$	193
Weighted-average discount rate		**5.1%**		5.1%
Total remediation costs—discounted	**$**	**124**	$	128
Recoverable portion		**81**		82

We also lease certain government-owned properties and generally are not liable for remediation of preexisting environmental contamination at these sites. As a result, we generally do not provide for these costs in our consolidated financial statements.

Due to the complexity of environmental laws and regulations, the varying costs and effectiveness of alternative cleanup methods and technologies, the uncertainty of insurance coverage, and the unresolved extent of our responsibility, it is difficult to determine the ultimate outcome of environmental matters. However, we do not expect any additional liability to have a material adverse effect on our financial position, results of operations or liquidity.

Environmental remediation costs expected to be incurred are:

(In millions)		
2020	$	25
2021		16
2022		13
2023		11
2024		11
Thereafter		112

Financing Arrangements and Other—We issue guarantees, and banks and surety companies issue, on our behalf, letters of credit and surety bonds, to meet various bid, performance, warranty, retention and advance payment obligations for us or our affiliates. These instruments expire on various dates through 2028. Additional guarantees of project performance for which there is no stated value also remain outstanding. The stated values outstanding consisted of the following at December 31:

(In millions)		**2019**		2018
Guarantees	**$**	**219**	$	201
Letters of credit		**3,485**		2,503
Surety bonds		**83**		166

We provide guarantees and letters of credit to certain affiliates to assist them in obtaining financing on more favorable terms, making bids on contracts and performing their contractual obligations. While we expect our affiliates to satisfy their loans and meet their project performance and other contractual obligations, their failure to do so may result in a future obligation to us. We periodically evaluate the risk of our affiliates failing to meet their obligations. At December 31, 2019, we believe the risk that our affiliates will not be able to meet their obligations is minimal for the foreseeable future based on their current

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

financial condition. All obligations were current at December 31, 2019. At both December 31, 2019 and December 31, 2018, we had an estimated liability of $3 million related to these guarantees.

We have entered into industrial cooperation agreements, sometimes in the form of either offset agreements or ICIP agreements, as a condition to obtaining orders for our products and services from certain customers in foreign countries. At December 31, 2019, the aggregate amount of our offset agreements, both agreed to and anticipated to be agreed to, had an outstanding notional value of approximately $9.5 billion. These agreements are designed to return economic value to the foreign country by requiring us to engage in activities supporting local defense or commercial industries, promoting a balance of trade, developing in-country technology capabilities or addressing other local development priorities. Offset agreements may be satisfied through activities that do not require a direct cash payment, including transferring technology, providing manufacturing, training and other consulting support to in-country projects, and the purchase by third parties (e.g., our vendors) of supplies from in-country vendors. These agreements may also be satisfied through our use of cash for activities such as subcontracting with local partners, purchasing supplies from in-country vendors, providing financial support for in-country projects and making investments in local ventures. Such activities may also vary by country depending upon requirements as dictated by their governments. We typically do not commit to offset agreements until orders for our products or services are definitive. The amounts ultimately applied against our offset agreements are based on negotiations with the customers and typically require cash outlays that represent only a fraction of the notional value in the offset agreements. Offset programs usually extend over several or more years and may provide for penalties in the event we fail to perform in accordance with offset requirements. Historically, we have not been required to pay any penalties of significance.

As a U.S. government contractor, we are subject to many levels of audit and investigation by the U.S. government relating to our contract performance and compliance with applicable rules and regulations. Agencies that oversee contract performance include: the Defense Contract Audit Agency (DCAA); the Defense Contract Management Agency (DCMA); the Inspectors General of the U.S. Department of Defense (DoD) and other departments and agencies; the Government Accountability Office (GAO); the Department of Justice (DOJ); and Congressional Committees. Other areas of our business operations may also be subject to audit and investigation by these and/or other agencies. From time to time, agencies investigate or conduct audits to determine whether our operations are being conducted in accordance with applicable requirements. Such investigations and audits may be initiated due to a number of reasons, including as a result of a whistleblower complaint. Such investigations and audits could result in administrative, civil or criminal liabilities, including repayments, fines or penalties being imposed upon us, the suspension of government export licenses or the suspension or debarment from future U.S. government contracting. U.S. government investigations often take years to complete and many result in no adverse action against us. Our final allowable incurred costs for each year are also subject to audit and have, from time to time, resulted in disputes between us and the U.S. government, with litigation resulting at the Court of Federal Claims (COFC) or the Armed Services Board of Contract Appeals (ASBCA) or their related courts of appeals. In addition, the DOJ has, from time to time, convened grand juries to investigate possible irregularities by us. We also provide products and services to customers outside of the U.S., and those sales are subject to local government laws, regulations and procurement policies and practices. Our compliance with such local government regulations or any applicable U.S. government regulations (e.g., the Foreign Corrupt Practices Act (FCPA) and International Traffic in Arms Regulations (ITAR)) may also be investigated or audited. Other than as specifically disclosed herein, we do not expect these audits, investigations or disputes to have a material effect on our financial position, results of operations or liquidity, either individually or in the aggregate.

Raytheon has received a subpoena from the Securities and Exchange Commission (SEC) seeking information in connection with an investigation into whether there were improper payments made by Thales-Raytheon Systems (TRS), Raytheon or anyone acting on their behalf in connection with TRS or Raytheon contracts in certain Middle East countries since 2014. Raytheon maintains a rigorous anti-corruption compliance program, is cooperating fully with the SEC's inquiry, and is examining whether there has been any conduct that is in violation of Raytheon policy. At this point there is no ability to predict the outcome of the SEC's inquiry. Based on the information available to date, however, we do not believe the results of this inquiry will have a material adverse effect on our financial condition, results of operations or liquidity.

In addition, various other claims and legal proceedings generally incidental to the normal course of business are pending or threatened against, or initiated by, us. We do not expect any of these proceedings to result in any additional liability or gains that would materially affect our financial position, results of operations or liquidity. In connection with certain of our legal matters, we may be entitled to insurance recovery for qualified legal costs or other incurred costs. We do not expect any insurance recovery to have a material impact on the financial exposure that could result from these matters.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Note 11: Redeemable Noncontrolling Interests

Forcepoint is a cybersecurity company that we created in May 2015 as a joint venture with Vista Equity Partners. The joint venture agreement between Raytheon and Vista Equity Partners provided Vista Equity Partners with the ability to liquidate its ownership through a put option, which became exercisable on May 29, 2017. The put option allowed Vista Equity Partners to require Raytheon to purchase all of Vista Equity Partners' interest in Forcepoint for cash at a price equal to fair value as determined under the joint venture agreement. Vista Equity Partners' interest in Forcepoint was presented as redeemable noncontrolling interest, outside of stockholders' equity, in our consolidated balance sheets.

In October 2019, Vista Equity Partners formally exercised its put right to require Raytheon to purchase Vista Equity Partners' interest in Forcepoint. As a result, the parties engaged in a formal process under the joint venture agreement to determine the fair value, as defined in the joint venture agreement, of such interest. On November 18, 2019, Raytheon completed the acquisition of Vista Equity Partners' interest in Forcepoint for $588 million in cash. As part of the acquisition, we eliminated the historical adjustments to the carrying value of the redeemable noncontrolling interest of $128 million, with the offset to retained earnings. In addition, we eliminated the carrying value of the redeemable noncontrolling interest of $263 million and recognized a loss in additional paid-in capital of $324 million for the difference between the purchase price and the carrying value, excluding $1 million which was reclassed to AOCL. In addition, the related transaction costs of $4 million were charged to additional paid-in capital. Any reduction to additional paid-in capital in excess of zero was recorded as a reduction to retained earnings.

As discussed in "Note 4: Acquisitions, Divestitures and Goodwill," in February 2019, we amended and restated the RGNext joint venture agreement and acquired an additional 10% equity ownership in the joint venture, increasing our equity ownership to 60% and giving us control of the operations, with GDIT obtaining only protective rights. As a result, we now consolidate the results of RGNext in our consolidated financial statements. The amendment to the RGNext joint venture agreement provides GDIT with the ability to liquidate its ownership and receive an amount equal to its contributed capital (the redemption value). As such, GDIT's interest in RGNext is presented as redeemable noncontrolling interest, outside of stockholders' equity, in our consolidated balance sheets, and is recorded at the greater of its carrying value or the redemption value.

A rollforward of redeemable noncontrolling interests was as follows:

(In millions)	Forcepoint	RGNext	Total
Balance at December 31, 2017	$ 512	$ —	$ 512
Net income (loss)	(27)	—	(27)
Other comprehensive income (loss), net of tax	(1)	—	(1)
Adjustment of noncontrolling interests to redemption value	(73)	—	(73)
Balance at December 31, 2018	411	—	411
RGNext initial recognition	**—**	**32**	**32**
Net income (loss)	**(19)**	**5**	**(14)**
Other comprehensive income (loss), net of tax(1)	**—**	**—**	**—**
Distributions related to noncontrolling interest	**—**	**(5)**	**(5)**
Adjustment of noncontrolling interests to redemption value	**(1)**	**—**	**(1)**
Acquisition of noncontrolling interest in Forcepoint	**(391)**	**—**	**(391)**
Balance at December 31, 2019	**$ —**	**$ 32**	**$ 32**

(1) Other comprehensive income (loss), net of tax, related to Forcepoint was income of less than $1 million in 2019.

Note 12: Stockholders' Equity

The changes in shares of our common stock outstanding were as follows:

(In millions)	2019	2018	2017
Beginning balance	**282.1**	288.4	292.8
Stock plans activity	**1.1**	0.9	1.1
Share repurchases	**(4.8)**	(7.2)	(5.5)
Ending balance	**278.4**	282.1	288.4

From time to time, our Board of Directors authorizes the repurchase of shares of our common stock. In November 2015, our Board authorized the repurchase of up to $2.0 billion of our outstanding common stock. In November 2017, our Board also authorized the repurchase of up to an additional $2.0 billion of our outstanding common stock. At December 31, 2019, we had approximately $0.7 billion available under the 2017 repurchase program. However, the merger agreement with UTC restricts us from repurchasing shares other than to satisfy tax withholding obligations. For more information refer to "Note 2: Proposed Merger with United Technologies Corporation (UTC)."

Share repurchases also include shares surrendered by employees to satisfy tax withholding obligations in connection with restricted stock, RSUs and LTPP awards issued to employees.

Our share repurchases were as follows:

	2019		2018		2017	
(In millions)	$	Shares	$	Shares	$	Shares
Shares repurchased under our share repurchase programs	**$ 800**	**4.4**	$ 1,325	6.7	$ 800	4.9
Shares repurchased to satisfy tax withholding obligations	**69**	**0.4**	93	0.5	85	0.6
Total share repurchases	**$ 869**	**4.8**	$ 1,418	7.2	$ 885	5.5

Due to the volume of repurchases made under our share repurchase program in both 2019 and 2018 and the acquisition of Vista Equity Partners' redeemable noncontrolling interest in Forcepoint in November 2019 as further discussed in "Note 11: Redeemable Noncontrolling Interests," additional paid-in capital was reduced to zero during 2019 and 2018, with the remainder of the excess of $1,025 million and $1,250 million, respectively, recorded as a reduction to retained earnings.

In March 2019, our Board of Directors authorized an 8.6% increase to our annual dividend payout rate from $3.47 to $3.77 per share. Our Board of Directors declared dividends of $3.77, $3.47 and $3.19 per share in 2019, 2018 and 2017, respectively. Dividends are subject to quarterly approval by our Board of Directors.

Note 13: Stock-based Compensation Plans

On May 30, 2019, our stockholders approved the Raytheon 2019 Stock Plan. The 2019 Stock Plan provides for stock-based awards to be issued as restricted stock, RSUs, stock grants, stock options or stock appreciation rights, including awards based on performance criteria. The plan authorizes the issuance of 2.7 million shares in addition to shares remaining available for awards under the Raytheon 2010 Stock Plan as of December 31, 2018. The total maximum number of shares originally authorized for issuance under the 2019 Stock Plan, the 2010 Stock Plan and other prior Raytheon plans is 44.5 million. The 2019 Stock Plan provides that awards to our officers, employees and consultants are generally granted by the Management Development and Compensation Committee (MDCC) of our Board of Directors and are compensatory in nature, while awards to our non-employee directors are granted by the Board's Governance and Nominating Committee. Shares issued to fulfill the stock-based awards will be funded through the issuance of shares under the 2019 Stock Plan. Each stock-based award is subject to the change in control provision in the related agreement. At December 31, 2019, there were 8.0 million shares available for new awards and 2.8 million shares outstanding under the 2019 Stock Plan, the 2010 Stock Plan and other prior Raytheon plans.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Stock-based compensation expense and the associated tax benefit recognized were as follows:

(In millions)	2019	2018	2017
Stock-based compensation expense			
Restricted stock expense	**$ 99**	$ 98	$ 94
RSU expense	**35**	32	28
LTPP expense	**37**	36	38
Total stock-based compensation expense	**$ 171**	$ 166	$ 160
Stock-based tax benefit recognized	**35**	29	30

At December 31, 2019, there was $186 million of compensation expense related to nonvested awards not yet recognized which is expected to be recognized over a weighted-average period of 1.5 years.

Restricted Stock and Restricted Stock Units

Shares of restricted stock vest over a specified period of time as determined by the MDCC, generally four years for employee awards and one year for non-employee directors. Recipients of restricted stock are entitled to full dividend and voting rights beginning on the date of grant. Non-vested shares of restricted stock are subject to forfeiture under certain circumstances and restricted as to disposition until vested. At the date of grant, each share of restricted stock is credited to common stock at par value. The fair value of restricted stock is calculated under the intrinsic value method at the date of grant and is charged to income as compensation expense generally over the vesting period with a corresponding credit to additional paid-in capital.

RSUs also vest over a specified period of time as determined by the MDCC, are compensatory in nature and are primarily awarded to retirement eligible employees. Retirement eligible recipients of RSUs are entitled to full dividend rights beginning on the date of grant. In addition, RSUs granted to retirement eligible employees continue to vest, but do not accelerate, on the scheduled vesting dates into retirement subject to the recipient's compliance with certain post-employment covenants. Since recipients of RSUs with continued vesting provisions have satisfied the service requirement of the award at the date of grant, the Company recognizes all of the stock-based compensation expense associated with the RSUs awarded to retirement eligible employees in the period the award is granted. The expense is based on the fair value of the RSUs, calculated under the intrinsic value method at the date of grant.

Restricted stock and RSU activity was as follows:

	Shares/units (in thousands)	Weighted-average grant date fair value per share
Outstanding at December 31, 2016	3,294	$ 106.56
Granted	1,025	152.93
Vested	(1,194)	91.77
Forfeited	(229)	120.33
Outstanding at December 31, 2017	2,896	127.98
Granted	774	212.96
Vested	(977)	112.54
Forfeited	(215)	150.67
Outstanding at December 31, 2018	2,478	158.66
Granted	**959**	**180.05**
Vested	**(882)**	**130.35**
Forfeited	**(166)**	**172.50**
Outstanding at December 31, 2019	**2,389**	**$ 176.73**

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The total fair value of restricted stock and RSUs vested and the related tax benefit realized were as follows:

(In millions)		2019		2018		2017
Fair value of restricted stock and RSUs vested	$	**160**	$	206	$	193
Tax benefit realized related to vested restricted stock/RSUs[(1)]		**30**		39		63

(1) Includes $11 million, $18 million and $29 million of excess tax benefits realized in 2019, 2018 and 2017, respectively.

Long-term Performance Plan

In 2004, we established the LTPP, which provides for restricted stock unit awards granted from our stock plans to our senior leadership. Recipients of LTPP awards have no voting rights and receive dividend equivalent units. The vesting of LTPP awards and related dividend equivalent units is based upon the achievement of specific pre-established levels of performance at the end of a three-year performance cycle. In the event of a retirement, vesting for LTPP awards will not accelerate and instead will vest in accordance with the original vesting conditions on a pro-rated basis.

The performance goals for the three outstanding performance cycles at December 31, 2019 are independent of each other and based on three metrics, as defined in the LTPP award agreements: return on invested capital (ROIC), weighted at 50%; total shareholder return (TSR) relative to a peer group, weighted at 25%; and cumulative free cash flow from continuing operations (CFCF), weighted at 25%. The ultimate award, which is determined at the end of the three-year cycle, can range from zero to 200% of the target award and includes dividend equivalents, which are not included in the aggregate target award numbers.

Compensation expense for the LTPP awards is recognized on a straight-line basis from the grant date through the end of the performance period based upon the value determined under the intrinsic value method for the CFCF and ROIC portions of the LTPP award and the Monte Carlo simulation method for the TSR portion of the LTPP award. Compensation expense for the CFCF and ROIC portions of the awards will be adjusted based upon the expected achievement of those performance goals.

The assumptions used in the Monte Carlo model for the TSR portion of the LTPP awards granted during each year were as follows:

	2019	2018	2017
Expected stock price volatility	**18.48%**	16.87%	18.74%
Peer group stock price volatility	**20.67%**	18.41%	20.01%
Correlations of returns	**54.49%**	52.49%	56.55%
Risk free interest rate	**2.49%**	2.21%	1.53%

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

LTPP award activity was as follows[(1)]:

	Units (in thousands)	Weighted-average grant date fair value per share
Outstanding at December 31, 2016	665	$ 110.32
Granted	142	152.29
Increase due to expected performance	193	125.14
Vested	(273)	97.59
Forfeited	(4)	137.57
Outstanding at December 31, 2017	723	127.16
Granted	117	205.76
Increase due to expected performance	71	135.27
Vested	(303)	112.15
Forfeited	(24)	164.58
Outstanding at December 31, 2018	584	150.15
Granted	**145**	**176.13**
Increase due to expected performance	**96**	**187.90**
Vested	**(236)**	**120.52**
Forfeited	**(10)**	**170.42**
Outstanding at December 31, 2019	**579**	**$ 174.72**

(1) This table excludes dividend equivalent units outstanding of 33 thousand at both December 31, 2019 and December 31, 2018 and 28 thousand at December 31, 2017, based on expected performance at each reporting date.

The total fair value of LTPP awards vested and the related tax benefit realized were as follows:

(In millions)	**2019**	2018	2017
Fair value of LTPP awards vested	**$ 45**	$ 67	$ 44
Tax benefit realized related to vested LTPP awards[(1)]	**10**	24	15

(1) Includes $3 million, $13 million and $7 million of excess tax benefits realized in 2019, 2018 and 2017, respectively.

Forcepoint Plans

In 2015, Forcepoint established long-term incentive plans that provide for awards of unit appreciation rights and profits interests in the Forcepoint entity to its management and key employees. Awards are approved by the Board of Forcepoint. These awards vest over a specified period of time and settlement is subject to a liquidity event defined as either a change in control or an initial public offering of the entity. In 2019, Forcepoint issued 11 thousand unit appreciation rights, 8 thousand were forfeited, and 24 thousand were outstanding at December 31, 2019. Also in 2019, Forcepoint issued 37 thousand profits interests, 34 thousand were forfeited, and 119 thousand were outstanding at December 31, 2019. At December 31, 2019, there were 174 thousand and 29 thousand combined unit appreciation rights and/or profits interests authorized and available for issuance, respectively, under these plans. The fair value of the awards is determined using the Black-Scholes valuation model and compensation expense is recognized over the requisite service period when achievement of the liquidity event is considered probable. In certain limited circumstances other vesting conditions may apply and the impact attributable to these vesting conditions was expense of $13 million in 2019, income of $1 million in 2018 and expense of $13 million in 2017.

The weighted-average assumptions used in the Black-Scholes model and the weighted-average grant date fair value for the Forcepoint awards granted were as follows:

	2019	2018	2017
Unit Price	**$ 1,244.48**	$ 1,508.01	$ 1,101.31
Expected life (in years)	**1.99**	3.01	2.29
Expected unit price volatility	**39.19%**	43.66%	49.51%
Risk free interest rate	**2.06%**	2.69%	1.46%
Dividend yield	**—%**	—%	—%
Grant date fair value	**$ 368.61**	$ 486.94	$ 339.72

Note 14: Pension and Other Employee Benefits

We have pension plans covering the majority of our employees hired prior to January 1, 2007, including certain employees in foreign countries (Pension Benefits). Our primary pension obligations relate to our domestic Internal Revenue Service (IRS) qualified pension plans. In addition, we provide certain health care and life insurance benefits to retired employees and to eligible employees upon retirement through other postretirement benefit (PRB) plans.

The fair value of plan assets for our domestic and foreign Pension Benefits plans was as follows:

(In millions)	2019	2018
Domestic Pension Benefits plan	**$ 20,366**	$ 18,488
Foreign Pension Benefits plan	**951**	833

We maintain a defined contribution plan that includes a 401(k) plan. Covered employees hired or rehired on or after January 1, 2007 are eligible for a Company contribution based on age and service, instead of participating in our pension plans. These and other covered employees are eligible to contribute up to a specific percentage of their pay to the 401(k) plan, subject to IRS compensation and contribution limits. We match the employee contributions. The match is generally 3% or 4% of the employee's pay and is invested in the same way as the employee contributions. Total expense for our contributions was $357 million, $326 million and $303 million in 2019, 2018 and 2017, respectively.

At December 31, 2019 and December 31, 2018, there was $20.6 billion and $17.0 billion invested in our defined contribution plan, respectively. At December 31, 2019 and December 31, 2018, $2.1 billion and $1.6 billion of these amounts were invested in our stock fund, respectively.

We also sponsor nonqualified defined benefit and defined contribution plans to provide benefits in excess of qualified plan limits. We have set aside certain assets in separate trusts, which we expect to be used to pay for trust obligations. The fair value of marketable securities held in trusts, which are considered Level 1 assets under the fair value hierarchy, consisted of the following at December 31:

(In millions)	2019	2018
Marketable securities held in trusts	**$ 753**	$ 642

Included in marketable securities held in trusts in the table above was $476 million and $420 million at December 31, 2019 and December 31, 2018, respectively, related to the nonqualified defined contribution plans. The liabilities related to the nonqualified defined contribution plans were $489 million and $431 million at December 31, 2019 and December 31, 2018, respectively.

We also maintain additional contractual pension benefits agreements for certain executive officers. The liability associated with such agreements was $39 million and $36 million at December 31, 2019 and December 31, 2018, respectively.

Contributions and Benefit Payments

We may make both required and discretionary contributions to our pension plans. Required contributions are primarily determined in accordance with the Pension Protection Act of 2006 (PPA), which amended the Employee Retirement Income Security Act of 1974 (ERISA) rules, and are affected by the actual return on plan assets (ROA) and plan funded status. The funding requirements under the PPA require us to fully fund our pension plans over a rolling seven-year period as determined annually based upon the funded status at the beginning of the year.

Due to the low interest rate environment, Congress provided for temporary pension funding relief through a provision in the Surface Transportation Extension Act of 2012 (STE Act). The provision was extended through 2020 by the Highway and Transportation Funding Act of 2014 (HATFA) and the Bipartisan Budget Act (BBA) of 2015. The provision adjusts the 24-month average high quality corporate bond rates used to determine the PPA funded status so that they are within a floor and cap, or “corridor,” based on the 25-year average of corporate bond rates. Beginning after 2020, the provision will be gradually phased out.

We made the following contributions to our pension and PRB plans during the years ended December 31:

(In millions)	**2019**	2018	2017
Required pension contributions	**$ 343**	$ 889	$ 615
Discretionary pension contributions	**—**	1,250	1,000
PRB contributions	**37**	22	27
Total	**$ 380**	$ 2,161	$ 1,642

We periodically evaluate whether to make additional discretionary contributions. We did not make any discretionary pension contributions in 2019. We made a $1.25 billion discretionary pension contribution in third quarter 2018 and elected to apply approximately $1 billion to partially offset required contributions in 2019 and 2020, roughly split evenly between the two years. We expect to make required contributions of approximately $319 million and $50 million to our pension and PRB plans, respectively, in 2020.

The table below reflects the total Pension Benefits expected to be paid from the plans or from our assets, including both our share of the benefit cost and the participants’ share of the cost, which is funded by participant contributions. PRB benefits expected to be paid reflect our portion only.

(In millions)	Pension Benefits	PRB
2020	$ 1,984	$ 61
2021	1,874	58
2022	1,806	55
2023	1,646	53
2024	1,583	50
Thereafter (next 5 years)	7,641	218

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Defined Benefit Retirement Plan Summary Financial Information

The tables below outline the components of net periodic benefit expense (income) of our domestic and foreign Pension Benefits and PRB plans.

	Pension Benefits		
Components of Net Periodic Pension Expense (Income) (in millions)	**2019**	2018	2017
Operating expense			
Service cost	**$ 420**	$ 504	$ 473
Non-operating expense			
Interest cost	**1,046**	1,004	1,088
Expected return on plan assets	**(1,436)**	(1,435)	(1,377)
Amortization of prior service cost	**5**	6	5
Amortization of net actuarial loss	**1,050**	1,351	1,177
Loss recognized due to settlements	**1**	286	1
Total pension non-service expense	**666**	1,212	894
Net periodic pension expense (income)	**$ 1,086**	$ 1,716	$ 1,367

Net periodic pension expense (income) includes income from foreign Pension Benefits plans of$3 million in 2019, income of $8 million in 2018 and expense of $2 million in 2017.

In July 2018, certain Raytheon-sponsored pension plans purchased a group annuity contract from an insurance company to transfer $923 million of our outstanding pension benefit obligations related to certain U.S. retirees and beneficiaries of our previously discontinued operations. As a result of the transaction, the insurance company is now required to pay and administer the retirement benefits owed to the approximately 13,000 U.S. retirees and beneficiaries, with no change to their monthly retirement benefit payment amounts. In connection with this transaction, in the third quarter of 2018 we recognized a non-cash pension settlement charge of $288 million before tax, $228 million net of tax, in non-operating (income) expense, net, primarily related to the accelerated recognition of actuarial losses included in AOCL for those plans.

	PRB		
Components of Net Periodic PRB Expense (Income) (in millions)	**2019**	2018	2017
Operating expense			
Service cost	**$ 3**	$ 5	$ 6
Non-operating expense			
Interest cost	**28**	27	30
Expected return on plan assets	**(18)**	(21)	(21)
Amortization of prior service cost	**—**	—	(1)
Amortization of net actuarial loss	**10**	11	10
Loss recognized due to settlements	**2**	1	1
Total PRB non-service expense	**22**	18	19
Net periodic PRB expense (income)	**$ 25**	$ 23	$ 25

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Funded Status – Amounts Recognized on our Balance Sheets (in millions) December 31:	Pension Benefits		PRB	
	2019	2018	**2019**	2018
Noncurrent assets	**$ 174**	$ 126	**$ —**	$ —
Current liabilities	**(160)**	(150)	**(18)**	(18)
Noncurrent liabilities	**(7,687)**	(6,111)	**(369)**	(354)
Net amount recognized on our balance sheets	**$ (7,673)**	$ (6,135)	**$ (387)**	$ (372)

Reconciliation of Amounts Recognized on our Balance Sheets (in millions) December 31:	Pension Benefits		PRB	
	2019	2018	**2019**	2018
Accumulated other comprehensive loss:				
Prior service (cost) credit	**$ (23)**	$ (27)	**$ —**	$ —
Net actuarial loss	**(11,389)**	(10,590)	**(148)**	(121)
Accumulated other comprehensive loss	**(11,412)**	(10,617)	**(148)**	(121)
Accumulated contributions in excess of (below) net periodic expense	**3,739**	4,482	**(239)**	(251)
Net amount recognized on our balance sheets	**$ (7,673)**	$ (6,135)	**$ (387)**	$ (372)

Sources of Change in Accumulated Other Comprehensive Loss (in millions)	Pension Benefits		PRB	
	2019	2018	**2019**	2018
Prior service (cost) credit arising during period	**$ (1)**	$ (10)	**$ —**	$ —
Amortization of prior service cost (credit) included in net income	**5**	6	**—**	—
Net change in prior service (cost) credit not recognized in net income during the period	**4**	(4)	**—**	—
Actuarial gain (loss) arising during period	**(1,847)**	(630)	**(39)**	4
Amortization of net actuarial (gain) loss	**1,050**	1,351	**10**	11
Loss recognized due to settlements	**1**	286	**2**	1
Net change in actuarial gain (loss) not included in net income during the period	**(796)**	1,007	**(27)**	16
Effect of exchange rates	**(3)**	9	**—**	—
Total change in accumulated other comprehensive loss during period	**$ (795)**	$ 1,012	**$ (27)**	$ 16

The amounts in AOCL atDecember 31, 2019 expected to be recognized as components of net periodic pension or PRB expense in2020 are as follows:

(In millions)	Pension Benefits	PRB
Amortization of net actuarial gain (loss)	$ (1,197)	$ (13)
Amortization of prior service (cost) credit	(4)	—
Total	$ (1,201)	$ (13)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The projected benefit obligation (PBO) represents the present value of Pension Benefits earned through the end of the year, with an allowance for future salary increases. The accumulated benefit obligation (ABO) is similar to the PBO, but does not provide for future salary increases. The PBO, ABO and asset values for our domestic qualified pension plans were as follows:

(In millions)	2019	2018
PBO for domestic qualified pension plans	$ 26,597	$ 23,359
ABO for domestic qualified pension plans	24,213	21,595
Asset values for domestic qualified pension plans	20,366	18,488

The PBO and fair value of plan assets for Pension Benefits plans with PBOs in excess of plan assets were $27,994 million and $20,146 million, respectively, at December 31, 2019 and $24,561 million and $18,300 million, respectively, at December 31, 2018.

The ABO and fair value of plan assets for Pension Benefits plans with ABOs in excess of plan assets were $25,313 million and $20,146 million, respectively, at December 31, 2019 and $22,554 million and $18,300 million, respectively, at December 31, 2018. The ABO for all Pension Benefits plans was $26,307 million and $23,447 million at December 31, 2019 and December 31, 2018, respectively.

The tables below provide a reconciliation of benefit obligations, plan assets and related actuarial assumptions of our domestic and foreign Pension Benefits and PRB plans.

	Pension Benefits		PRB	
Change in Projected Benefit Obligation (in millions)	**2019**	2018	**2019**	2018
PBO at beginning of year	$ 25,456	$ 28,569	$ 672	$ 745
Service cost	420	504	3	5
Interest cost	1,046	1,004	28	27
Plan participants' contributions	4	6	58	49
Amendments	1	10	—	—
Plan settlements	(7)	(474)	(9)	(10)
Actuarial loss (gain)	3,926	(1,580)	71	(39)
Foreign exchange loss (gain)	24	(56)	—	—
Benefits paid	(1,880)	(2,527)	(112)	(105)
PBO at end of year	$ 28,990	$ 25,456	$ 711	$ 672

The PBO for our domestic and foreign Pension Benefits plans was $28,108 million and $882 million, respectively, at December 31, 2019 and $24,656 million and $800 million, respectively, at December 31, 2018.

	Pension Benefits		PRB	
Change in Plan Assets (in millions)	**2019**	2018	**2019**	2018
Fair value of plan assets at beginning of year	$ 19,321	$ 21,002	$ 300	$ 358
Actual return (loss) on plan assets	3,516	(775)	50	(14)
Company contributions	343	2,139	37	22
Plan participants' contributions	4	6	58	49
Plan settlements	(7)	(474)	(9)	(10)
Foreign exchange gain (loss)	20	(50)	—	—
Benefits paid	(1,880)	(2,527)	(112)	(105)
Fair value of plan assets at end of year	$ 21,317	$ 19,321	$ 324	$ 300

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Retirement Plan Assumptions

The tables below outline the actuarial assumptions of our domestic and foreign Pension Benefits and PRB plans.

	Pension Benefits		
Weighted-Average Net Periodic Benefit Cost Assumptions	**2019**	2018	2017
Discount rate	**4.28%**	3.68%	4.31%
Expected long-term rate of return on plan assets	**7.38%**	7.38%	7.39%
Rate of compensation increase			
Range	**2%–7%**	2%–7%	2%–7%
Average	**4.43%**	4.43%	4.43%

	PRB		
Weighted-Average Net Periodic Benefit Cost Assumptions	**2019**	2018	2017
Discount rate	**4.31%**	3.72%	4.28%
Expected long-term rate of return on plan assets	**6.25%**	6.25%	6.25%
Rate of compensation increase			
Range	**2%–7%**	2%–7%	2%–7%
Average	**4.50%**	4.50%	4.50%
Health care trend rate*	**4.00%**	4.00%	4.00%

* Currently at the ultimate trend rate.

	Pension Benefits		PRB	
Weighted-Average Year-End Benefit Obligation Assumptions	**2019**	2018	**2019**	2018
Discount rate	**3.25%**	4.28%	**3.29%**	4.31%
Rate of compensation increase				
Range	**3%–8%**	2%–7%	**3%–8%**	2%–7%
Average	**4.40%**	4.40%	**4.50%**	4.50%
Health care trend rate*			**3.50%**	4.00%

* Currently at the ultimate trend rate.

Our long-term return on plan assets (ROA) and discount rate assumptions are the key variables in determining the net periodic benefit cost and the pension benefit obligation of our pension plans under U.S. GAAP. Our long-term ROA assumption only impacts the retirement benefits non-service expense. The discount rate assumption impacts the service cost component of FAS expense and retirement benefits non-service expense, while also impacting the pension benefit obligation.

The discount rate represents the interest rate that should be used to determine the present value of future cash flows currently expected to be required to settle our pension and PRB obligations. The discount rate assumption is determined by using a theoretical bond portfolio model consisting of bonds rated AA or better by Moody’s Investors Service for which the timing and amount of cash flows approximate the estimated benefit payments for each of our pension plans. The weighted-average year-end benefit obligation discount rate for our domestic Pension Benefits plans was 3.29% and 4.33% at December 31, 2019 and December 31, 2018, respectively. Our foreign Pension Benefits plan assumptions have been included in the Pension Benefits assumptions in the table above.

The long-term ROA represents the average rate of earnings expected over the long term on the assets invested to provide for anticipated future benefit payment obligations. The long-term ROA used to calculate net periodic pension cost is set annually at the beginning of each year. Given the long-term nature of the ROA assumption, which we believe should not be solely reactive to short-term market conditions that may not persist, we expect the long-term ROA to remain unchanged unless there are significant changes in our investment strategy, the underlying economic assumptions or other major factors.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

To establish our long-term ROA assumption we employ a “building block” approach. Under this building block method, the overall expected investment return equals the weighted-average of the individual expected return for each asset class based on the target asset allocation and the long-term capital market assumptions. The expected return for each asset class is composed of inflation plus a risk-free rate of return, plus an expected risk premium for that asset class. The resulting return is then adjusted for administrative, investment management and trading expenses as well as recognition of excess returns, also known as alpha, for active management. We then annually consider whether it is appropriate to change our long-term ROA assumption by reviewing the existing assumption against a statistically determined reasonable range of outcomes. The building block approach and the reasonable range of outcomes are based upon our asset allocation assumptions and long-term capital market assumptions. Such assumptions incorporate the economic outlook for various asset classes over short- and long-term periods and also take into consideration other factors, including historical market performance, inflation and interest rates.

Actuarial Standard of Practice No. 27, *Selection of Economic Assumptions for Measuring Pension Obligations* (ASOP 27) requires the selection of a reasonable long-term ROA assumption that considers multiple criteria including the purposes of measurement, the actuary’s professional judgment, historical and current economic data and estimates of future experience and has no significant bias. We evaluate our long-term ROA assumption against a reasonable range of possible outcomes which we define as between the 35th to 65th percentile likelihood of achieving a long-term return over future years. We believe that validating our ROA assumption within this reasonable range ensures an unbiased result while also ensuring that the ROA assumption is not solely reactive to short-term market conditions that may not persist, and is consistent with external actuarial practices.

The reasonable range of long-term returns that was used to validate the long-term ROA assumption for the calculation of the net periodic benefit cost for 2019, 2018 and 2017 is shown below.

Percentile	**2019**	2018	2017
35th	**5.49%**	5.67%	5.82%
65th	**7.57%**	7.81%	7.96%

2017 ROA Assumption—At year end 2016, we determined that the 8.0% long-term ROA assumption no longer fell within the range of reasonable outcomes, driven primarily by the current outlook on economic assumptions used to develop the reasonable range. As a result, we employed the building block approach described above to develop our 2017 long-term ROA assumption. The building block approach resulted in a long-term ROA assumption of 7.5% for 2017. To validate this assumption, we compared the result against the reasonable range of outcomes and confirmed that the 7.5% fell between the 55th and 60th percentile of the reasonable range for 2017 with the 50th percentile at 6.89%.

Based upon our application of the building block approach and our review of the resulting assumption against the 35th to 65th percentile reasonable range and an analysis of our historical results, we established a 2017 long-term ROA domestic assumption of 7.5% for purposes of determining the net periodic benefit cost for 2017 and determined that the assumption is reasonable and consistent with the provisions of ASOP 27.

2018 ROA Assumption—The long-term domestic ROA of 7.5% fell between the 60th and 65th percentiles of the applicable reasonable range for 2018. The 50th percentile of this reasonable range was 6.74%.

2019 ROA Assumption—The long-term domestic ROA of 7.5% fell between the 60th and 65th percentiles of the applicable reasonable range for 2019. The 50th percentile of this reasonable range was 6.53%.

Our domestic pension plans’ actual rates of return were approximately 19%, (4)% and 15% for 2019, 2018 and 2017, respectively. The difference between the actual rate of return and our long-term ROA assumption is included in deferred gains and losses.

The long-term ROA assumptions for our foreign Pension Benefits plans are based on the asset allocations and the economic environment prevailing in the locations where the Pension Benefits plans reside. Foreign pension assets do not make up a significant portion of the total assets for all of our Pension Benefits plans.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

For purposes of determining pension expense under U.S. GAAP, a "corridor" approach may be elected and applied in the recognition of asset and liability gains or losses which limits expense recognition to the net outstanding gains and losses in excess of the greater of 10% of the projected benefit obligation (PBO) or the calculated "market-related value" of assets. We do not use a "corridor" approach in the calculation of FAS pension expense.

The effect of a 1% increase or decrease in the assumed health care trend rate for each future year on total service cost and interest cost is less than a $1 million increase or decrease and on the accumulated postretirement benefit obligation is a $4 million increase or decrease.

Plan Assets

Substantially all our domestic Pension Benefits Plan (Plan) assets, which consist of investments in cash and cash equivalents, U.S. and international equities, real assets, private equity funds, private real estate funds, fixed income and other investments such as absolute return funds, insurance contracts and derivatives, are held in a master trust, which was established for the investment of assets of our Company-sponsored retirement plans. The assets of the master trust are overseen by our Investment Committee comprised of members of senior management drawn from appropriate diversified levels of the executive management team.

The Investment Committee is responsible for setting the policy that provides the framework for management of the Plan assets. In accordance with its responsibilities and charter, the Investment Committee meets on a regular basis to review the performance of the Plan assets and compliance with the investment policy. The policy sets forth an investment structure for managing Plan assets, including setting the asset allocation ranges, which are expected to provide an appropriate level of overall diversification and total investment return over the long term while maintaining sufficient liquidity to pay the benefits of the Plan. In developing the asset allocation ranges, third-party asset allocation and liability studies are periodically performed that consider the current and expected positions of the Plan assets and funded status. Based on these studies and other appropriate information, the Investment Committee establishes asset allocation ranges taking into account acceptable risk targets and associated returns.

The investment policy asset allocation ranges for the Plan, as set by the Investment Committee, for the year ended December 31, 2019 were as follows:

Asset Category	
Global equity (combined U.S. and international equity)	30%-60%
U.S. equities	20%-35%
International equities	10%-25%
Fixed income	20%-45%
Cash and cash equivalents	0%-10%
Private equity and private real estate funds	10%-20%
Real assets	0%-4%
Other (including absolute return funds)	5%-15%

The Investment Committee appoints the investment fiduciary, who is responsible for making investment decisions within the framework of the Investment Policy, for setting the long-term target allocation within the investment policy asset allocation ranges and for supervising the internal pension investment team. The pension investment team is comprised of experienced investment professionals, who are all employees of the Company. The investment fiduciary reports back to the Investment Committee. The investment fiduciary may seek authorization from the Investment Committee to change the asset allocation ranges with a focus on managing the Plan in a prudent manner.

Taking into account the asset allocation ranges, the investment fiduciary determines the specific allocation of the Plan's investments within various asset classes. The Plan utilizes select investment strategies which are executed through separate account or fund structures with external investment managers who demonstrate experience and expertise in the appropriate asset classes and styles. The selection of investment managers is done with careful evaluation of all aspects of performance and risk, due diligence of internal operations and controls, reputation, systems evaluation, fees and a review of investment

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

managers' policies and processes. Investment performance is monitored frequently against appropriate benchmarks and within a compliance framework with the assistance of third-party performance measurement and evaluation tools, analytics and metrics.

Consistent with managing the Plan in a prudent manner, multiple investment strategies are employed to diversify risk such that no single investment or manager holding represents a significant exposure to the total investment portfolio. Plan assets are invested in numerous strategies with the intent to build a diversified portfolio. Plan assets can be invested in funds that track an index and are designed to achieve broad market diversification. The Plan had $4.6 billion invested in such funds across seven indices as of December 31, 2019. Excluding funds that track an index, no individual investment strategy represented more than 5% of the Plan as of December 31, 2019. Further, within each separate account strategy, guidelines are established which set forth the list of authorized investments, the typical portfolio characteristics and diversification required by limiting the amount that can be invested by sector, country and issuer.

The Plan's investments are stated at fair value. Investments in equity securities are valued at the last reported sales price when an active market exists. Investments in fixed income securities are generally valued using methods based upon market transactions for comparable securities and various relationships between securities which are generally recognized by institutional market participants. Investments in funds are estimated at fair market value, which primarily utilizes net asset values reported by the investment manager or fund administrator. We review additional valuation and pricing information from fund managers, including audited financial statements, to evaluate the net asset values.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The fair value of our Plan assets by asset category and by level (as described in "Note 1: Summary of Significant Accounting Policies") at December 31, 2019 and December 31, 2018 were as follows:

December 31, 2019 (in millions)	Total	Level 1	Level 2	Level 3	Not subject to leveling[7]
U.S. equities[1]	**$ 5,563**	**$ 715**	**$ —**	**$ —**	**$ 4,848**
International equities[1]	**3,403**	**2,838**	**13**	**—**	**552**
Real assets[2]	**157**	**—**	**—**	**—**	**157**
Fixed income					
U.S. government and agency securities	**2,026**	**1,836**	**190**	**—**	**—**
Corporate debt securities/instruments[3]	**3,039**	**378**	**2,308**	**—**	**353**
Global multi-sector fixed income[4]	**303**	**303**	**—**	**—**	**—**
Securitized and structured credit[5]	**573**	**—**	**—**	**—**	**573**
Cash and cash equivalents[6]	**603**	**43**	**—**	**—**	**560**
Absolute return funds	**1,564**	**—**	**—**	**—**	**1,564**
Private equity funds	**1,579**	**—**	**—**	**—**	**1,579**
Private real estate funds	**1,403**	**—**	**—**	**—**	**1,403**
Insurance contracts	**32**	**—**	**—**	**32**	**—**
Total investments	**20,245**	**6,113**	**2,511**	**32**	**11,589**
Net receivables and payables	**121**	**—**	**—**	**—**	**121**
Total assets	**$ 20,366**	**$ 6,113**	**$ 2,511**	**$ 32**	**$ 11,710**

(1) U.S. and International equities primarily include investments across the spectrum of large, medium and small market capitalization stocks.
(2) Real assets primarily include investments in physical and permanent assets, including infrastructure.
(3) Corporate debt securities/instruments primarily include investments in investment grade and non-investment grade fixed income securities.
(4) Global multi-sector fixed income primarily includes investments that invest globally among several sectors including governments, investment grade corporate bonds, high yield corporate bonds and emerging market securities.
(5) Securitized and structured credit primarily includes investments that pool together various cash flow producing financial assets that are structured in a way that can achieve desired targeted credit, maturity or other characteristics and are typically collateralized by residential mortgages, commercial mortgages and other assets, and other fixed income related securities.
(6) Cash and cash equivalents are primarily investments in highly liquid money market funds and bank sponsored collective funds. Included in cash and cash equivalents is excess cash in investment manager accounts which is available for immediate use and is used to fund daily operations and execute the investment policy. Excess cash in investment manager accounts is not considered to be part of the cash target allocation set forth in the investment policy.
(7) Receivables, payables and certain investments that are valued using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amount presented for the total domestic pension benefits plan assets.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

December 31, 2018 (in millions)	Total	Level 1	Level 2	Level 3	Not subject to leveling[7]
U.S. equities[1]	$ 4,701	$ 2,189	$ —	$ —	$ 2,512
International equities[1]	3,141	2,522	4	—	615
Real assets[2]	53	—	—	—	53
Fixed income					
U.S. government and agency securities	1,923	1,727	196	—	—
Corporate debt securities/instruments[3]	2,907	329	2,088	—	490
Global multi-sector fixed income[4]	400	400	—	—	—
Securitized and structured credit[5]	534	—	—	—	534
Cash and cash equivalents[6]	486	39	—	—	447
Absolute return funds	1,432	—	—	—	1,432
Private equity funds	1,419	—	—	—	1,419
Private real estate funds	1,264	—	—	—	1,264
Insurance contracts	31	—	—	31	—
Total investments	18,291	7,206	2,288	31	8,766
Net receivables and payables	197	—	—	—	197
Total assets	$ 18,488	$ 7,206	$ 2,288	$ 31	$ 8,963

(1) U.S. and International equities primarily include investments across the spectrum of large, medium and small market capitalization stocks.
(2) Real assets primarily include investments in physical and permanent assets, including infrastructure.
(3) Corporate debt securities/instruments primarily include investments in investment grade and non-investment grade fixed income securities.
(4) Global multi-sector fixed income primarily includes investments that invest globally among several sectors including governments, investment grade corporate bonds, high yield corporate bonds and emerging market securities.
(5) Securitized and structured credit primarily includes investments that pool together various cash flow producing financial assets that are structured in a way that can achieve desired targeted credit, maturity or other characteristics and are typically collateralized by residential mortgages, commercial mortgages and other assets, and other fixed income related securities.
(6) Cash and cash equivalents are primarily investments in highly liquid money market funds and bank sponsored collective funds. Included in cash and cash equivalents is excess cash in investment manager accounts which is available for immediate use and is used to fund daily operations and execute the investment policy. Excess cash in investment manager accounts is not considered to be part of the cash target allocation set forth in the investment policy.
(7) Receivables, payables and certain investments that are valued using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amount presented for the total domestic pension benefits plan assets.

The Plan limits the use of derivatives through direct or separate account investments such that the derivatives used are liquid and able to be readily valued in the market. Derivative usage in separate account structures is limited to hedging or adjusting market exposure in a non-speculative manner. The fair market value of the Plan's derivatives through direct or separate account investments was approximately $(8) million and $6 million as of December 31, 2019 and December 31, 2018, respectively.

In addition, assets are held in trust for non-U.S. Pension Benefits plans, primarily in the U.K. and Canada, which are governed in accordance with specific jurisdictional requirements. Investments in the non-U.S. Pension Benefits plans consist primarily of fixed income and equities and had a fair market value of $951 million and $833 million at December 31, 2019 and December 31, 2018, respectively. Investments with significant unobservable inputs (Level 3) are immaterial in the non-U.S. Pension Benefits plans.

The fair market value of assets related to our PRB Benefits was $324 million and $300 million as of December 31, 2019 and December 31, 2018, respectively. These assets included $144 million and $141 million at December 31, 2019 and December 31, 2018, respectively, which were invested in the master trust described above and are therefore invested in the same assets described above. The remaining investments are held within Voluntary Employees' Beneficiary Association (VEBA) trusts. The assets of the VEBA trusts are also overseen by the Investment Committee and managed by the same investment fiduciary that manages the master trust's investments. These assets are generally invested in mutual funds and are valued primarily using quoted prices in active markets (Level 1). There were no Level 3 investments in the VEBA trusts at December 31, 2019 or December 31, 2018.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The table below details assets by category for our VEBA trusts. These assets consisted primarily of publicly-traded equity securities and publicly-traded fixed income securities.

	% of Plan Assets at Dec 31:	
Asset category	**2019**	2018
Fixed income securities	**43%**	42%
U.S. equities	**38%**	36%
International equities	**10%**	10%
Cash and cash equivalents	**9%**	12%
Total	**100%**	100%

Note 15: Income Taxes

The provision for federal and foreign income taxes consisted of the following:

(In millions)	**2019**	2018	2017
Current income tax expense (benefit)			
Federal	**$ 638**	$ 245	$ 822
Foreign	**48**	43	40
State	**—**	—	—
Deferred income tax expense (benefit)			
Federal	**(26)**	(42)	235
Foreign	**1**	15	18
State	**(3)**	3	(1)
Total	**$ 658**	$ 264	$ 1,114

The expense for income taxes differed from the U.S. statutory rate due to the following:

	2019	2018	2017
Statutory tax rate	**21.0 %**	21.0 %	35.0 %
Foreign derived intangible income (FDII)	**(3.3)**	(4.2)	—
Research and development tax credit (R&D tax credit)	**(2.3)**	(2.4)	(1.5)
Equity compensation	**(0.3)**	(1.0)	(1.2)
Foreign income tax rate differential	**0.8**	1.3	0.2
Prior year true-up	**0.4**	(1.1)	0.1
Tax benefit related to discretionary pension contributions	**—**	(3.0)	—
R&D tax credit claims related to the 2014–2017 tax years	**—**	(2.1)	—
Irish restructuring	**—**	(2.0)	—
Change in valuation allowance	**—**	2.0	—
Domestic manufacturing deduction benefit	**—**	—	(2.5)
Remeasurement of deferred taxes	**—**	—	3.2
One-time transition tax on previously undistributed foreign earnings	**—**	—	2.3
Other items, net	**0.2**	(0.1)	0.2
Effective tax rate	**16.5 %**	8.4 %	35.8 %

In 2017, the Tax Cuts and Jobs Act of 2017 (2017 Act) was enacted, which reduced the U.S. corporate tax rate from 35% to 21% effective in 2018. See below for a detailed discussion of the 2017 Act.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

In the fourth quarter of 2018, Forcepoint completed an Irish restructuring transaction resulting in a deferred tax asset of approximately $63 million. We have evaluated both the positive and negative evidence to support our ability to realize the deferred tax asset associated with the restructuring. We believe it is more likely than not that the benefit from this restructuring transaction will not be realized. Accordingly, we provided a valuation allowance of $63 million in the fourth quarter of 2018 on the deferred tax asset related to this transaction.

In the third quarter of 2018, the Company recognized a net tax benefit of $110 million related to the completion of the 2017 tax return and additional amended R&D tax credit claims related to the 2014–2016 tax years.

Also in the third quarter of 2018, we made a discretionary contribution to our pension plans of $1.25 billion. In the second quarter of 2018, we determined we would make this contribution and as a result recorded a net tax benefit of $95 million in the second quarter of 2018. This was primarily due to the remeasurement of the related deferred tax asset balance at the 2017 tax rate of 35% versus the 2018 tax rate of 21% since the discretionary contribution was deductible on our 2017 tax return.

We are subject to income taxes in the U.S. and numerous foreign jurisdictions. All IRS examinations related to originally filed returns are closed through the 2016 tax year. In 2018, we amended tax returns for tax years 2014–2016 to reflect refund claims related to increased R&D tax credits, which will be subject to audit. We are also under audit by multiple state and foreign tax authorities.

(In millions)	2019	2018	2017
Domestic income from continuing operations before taxes	**$ 3,889**	$ 2,937	$ 3,027
Foreign income from continuing operations before taxes	**97**	210	86

We will generally be free of additional U.S. federal tax consequences on distributed foreign subsidiary earnings due to a dividends received deduction implemented as part of the move to a territorial tax system for earnings distributed after January 1, 2018. We provide for foreign withholding taxes to the extent applicable to distributions of foreign earnings. We continue to assert indefinite reinvestment on outside basis differences generated on or before December 31, 2017. No provision has been made for U.S. deferred taxes related to any remaining historical outside basis differences in our non-U.S. subsidiaries. Determination of the amount of unrecognized deferred tax liability on outside basis differences is not practicable because these differences primarily relate to non-earnings and profits (E&P) book tax differences, such as acquisition accounting, and could be recognized upon a sale or other transactions of a subsidiary.

We made (received) the following net tax payments (refunds) during the years ended December 31:

(In millions)	2019	2018	2017
Federal	**$ 754**	$ (69)	$ 765
Foreign	**43**	63	77
State	**34**	23	36

We believe that our income tax reserves are adequate; however, amounts asserted by taxing authorities could be greater or less than amounts accrued and reflected in our consolidated balance sheets. Accordingly, we could record adjustments to the amounts for federal, foreign and state tax-related liabilities in the future as we revise estimates or as we settle or otherwise resolve the underlying matters. In the ordinary course of business, we may take new positions that could increase or decrease our unrecognized tax benefits in future periods.

The balance of our unrecognized tax benefits, exclusive of interest, was $227 million and $92 million at December 31, 2019 and December 31, 2018, respectively, the majority of which would affect our earnings if recognized. The increase in the balance of our unrecognized tax benefits is related to positions taken on state tax returns.

We accrue interest and penalties related to unrecognized tax benefits in tax expense. Interest and penalties recognized during 2019, 2018 and 2017 and accrued as of December 31, 2019 and December 31, 2018 were de minimis.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

A rollforward of our unrecognized tax benefits was as follows:

(In millions)	2019	2018	2017
Unrecognized tax benefits, beginning of year	$ 92	$ 9	$ 7
Additions based on current year tax positions	46	20	1
Additions based on prior year tax positions	90	68	4
Reductions based on prior year tax positions	—	(5)	(1)
Settlements based on prior year tax positions	(1)	—	(2)
Unrecognized tax benefits, end of year	$ 227	$ 92	$ 9

With the exception of Forcepoint, we generally defer our state income tax expense to the extent we can recover this expense through the pricing of our products and services to the U.S. government. We include this deferred amount in prepaid expenses and other current assets until allocated to our contracts, which generally occurs upon payment or when otherwise agreed as allocable with the U.S. government. Current state income tax expense allocated to our contracts was $31 million, $18 million and $32 million in 2019, 2018 and 2017, respectively. We include state income tax expense allocated to our contracts in administrative and selling expenses.

Deferred income taxes consisted of the following at December 31:

(In millions)	2019	2018
Noncurrent deferred tax assets (liabilities)		
Accrued employee compensation and benefits	$ 246	$ 209
Other accrued expenses and reserves	(21)	77
Contract balances and inventories	(611)	(494)
Pension benefits	1,701	1,306
Other retiree benefits	68	67
Operating lease right-of-use assets	(204)	(187)
Operating lease liabilities	214	196
Net operating loss and tax credit carryforwards	405	83
Depreciation and amortization	(921)	(827)
Partnership outside basis difference	(25)	(29)
Other	21	12
Valuation allowance	(360)	(84)
Deferred income taxes—noncurrent	$ 513	$ 329

As of December 31, 2019, we had U.S. federal, foreign and state net operating loss (NOL) carryforwards related to Forcepoint of $106 million, $67 million and $285 million, respectively, which expire at various dates through 2037. We believe it is more likely than not that the majority of the deferred tax asset will be realized to the extent of existing deferred tax liabilities.

We also had foreign NOL carryforwards unrelated to Forcepoint of $87 million as of December 31, 2019, of which the majority may be carried forward indefinitely. The NOL carryforwards are primarily generated in the U.K., France, Saudi Arabia, and Guam. We have sufficient taxable income to realize these deferred tax assets in the U.K.; however, we believe it is more likely than not that the benefit from the foreign NOL carryforwards in France, Saudi Arabia and Guam will not be realized and provided a valuation allowance of $18 million related to these deferred tax assets. The total valuation allowance recorded in 2019 related to NOL carryforwards was $14 million.

As of December 31, 2019, we also had state tax credit carryforwards of $336 million, of which $326 million expire at various dates through 2039 and $10 million may be carried forward indefinitely. We believe it is more likely than not that the benefit from the majority of these state tax credit carryforwards will not be realized and have provided a valuation allowance of

$241 million on the deferred tax asset related to these carryforwards in 2019, which was recorded through administrative and selling expenses. If or when recognized, the tax benefits related to any reversal of the valuation allowance on deferred tax assets as of December 31, 2019, will be recognized through administrative and selling expenses as these benefits can generally be recovered through the pricing of products and services to the U.S. government in the period in which the credit is utilized.

The Tax Cuts and Jobs Act

On December 22, 2017, the President signed the Tax Cuts and Jobs Act of 2017 (2017 Act) which enacted a wide range of changes to the U.S. corporate income tax system. The 2017 Act reduced the U.S. corporate statutory federal tax rate to 21% effective in 2018, eliminated the domestic manufacturing deduction benefit and introduced other tax base broadening measures, changed rules for expensing and capitalizing business expenditures, established a territorial tax system for foreign earnings as well as a minimum tax on certain foreign earnings, provided for a one-time transition tax on previously undistributed foreign earnings, and introduced new rules for the treatment of certain foreign income, including FDII.

Also on December 22, 2017, the Securities and Exchange Commission (SEC) issued Staff Accounting Bulletin No. 118 (SAB 118), which provided companies with additional guidance on how to account for the 2017 Act in their financial statements, allowing companies to use a measurement period. As of December 31, 2017, we made a reasonable estimate of the effects on our existing deferred tax balances to reflect the new 21% corporate income tax rate under the 2017 Act and the one-time transition tax on previously undistributed foreign earnings and recognized provisional amounts totaling $171 million in accordance with SAB 118, which was included as a component of income tax expense from continuing operations. As of December 31, 2018, we had finalized our provisional estimates for the remeasurement of our existing U.S. deferred tax balances and the one-time transition tax for which we recorded a $1 million tax benefit in 2018.

Deferred tax assets and liabilities—At the date of enactment, the Company had a net deferred tax asset for the difference between the tax basis and the book basis of the U.S. assets and liabilities. Due to the 2017 Act, the future impact associated with the reversal of the net deferred tax asset will be subject to tax at a lower corporate tax rate. Consequently in 2017, we recorded a tax expense of $100 million to reduce the Company's deferred tax asset due to the remeasurement of the U.S. deferred tax assets and liabilities for the reduction in the corporate tax rate from 35% to 21%. At December 31, 2018, we finalized our provisional estimate for the remeasurement of our existing deferred tax balances with no additional adjustment.

Transition tax—The one-time transition tax is based on our total post-1986 E&P for which we have previously deferred U.S. income taxes. In 2017, we recorded a provisional amount for our one-time transition tax liability, using an applicable tax rate of 15.5%, resulting in an increase in income tax expense of$71 million after accounting for foreign tax credits. In 2018, we recorded a $1 million tax benefit to finalize our provisional calculation for the one-time transition tax for foreign E&P. This refinement was a result of completing the data gathering and analysis based on the 2017 Act and guidance issued to date in 2018, including IRS Notices 2018-07, 2018-13 and 2018-26. No provision has been made for deferred taxes related to any remaining historical outside basis differences in our non-U.S. subsidiaries as we continue to assert indefinite reinvestment on outside basis differences not related to amounts that have been previously taxed in the U.S. or undistributed earnings generated after December 31, 2017.

In addition to the changes described above, the 2017 Act imposes a U.S. tax on global intangible low taxed income (GILTI) that is earned by certain foreign affiliates owned by a U.S. shareholder. The computation of GILTI is generally intended to impose tax on the earnings of a foreign corporation that are deemed to exceed a certain threshold return relative to the underlying business investment. The Company made a policy election to treat future taxes related to GILTI as a current period expense in the reporting period in which the tax is incurred.

Note 16: Business Segment Reporting

Our reportable segments, organized based on capabilities and technologies, are: Integrated Defense Systems (IDS); Intelligence, Information and Services (IIS); Missile Systems (MS); Space and Airborne Systems (SAS); and Forcepoint.

IDS is a leader in integrated air and missile defense; large land- and sea-based radar solutions; command, control, communications, computers, cyber and intelligence solutions; naval combat and ship electronic and sensing systems; and undersea sensing and effects solutions. IDS delivers combat-proven performance against the complete spectrum of airborne and ballistic missile threats and is a world leader in the technology, development, and production of sensors and mission systems.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

IIS provides a full range of technical and professional services to intelligence, defense, federal and commercial customers worldwide. IIS specializes in global Intelligence, Surveillance and Reconnaissance (ISR); navigation; DoD space and weather solutions; cybersecurity; analytics; training; logistics; mission support; advanced software-based complex systems; automation and sustainment solutions; and international and domestic Air Traffic Management (ATM) systems.

MS designs, develops, integrates and produces missile and combat systems for the armed forces of the U.S. and allied nations. Leveraging its capabilities in advanced airframes, guidance and navigation systems, high-resolution sensors, surveillance, hypersonic systems, targeting and netted systems, MS provides and supports a broad range of advanced weapon systems including missiles, smart munitions, close-in weapon systems, projectiles, kinetic kill vehicles, directed energy effectors and advanced combat sensor solutions.

SAS is a leader in the design, development and manufacture of integrated sensor and communication systems for advanced missions. These missions include intelligence, surveillance and reconnaissance; precision engagement; manned and unmanned aerial operations; and space. Leveraging state-of-the-art technologies, mission systems and domain knowledge, SAS designs, manufactures, supports and sustains civil and military electro-optical/infrared (EO/IR) sensors; airborne radars for surveillance and fire control applications; lasers; precision guidance systems; signals intelligence systems; processors; electronic warfare systems; tactical and strategic communications; and space-qualified systems.

Forcepoint develops cybersecurity products serving commercial and government organizations worldwide. Forcepoint was created in May 2015 as a joint venture of Raytheon and Vista Equity Partners that brought together the capabilities of the legacy Raytheon Cyber Products (RCP) and Websense, Inc. (Websense) businesses. On November 18, 2019, Raytheon acquired Vista Equity Partners' interest in Forcepoint, such that Forcepoint is now wholly owned by Raytheon. Refer to "Note 11: Redeemable Noncontrolling Interests." Forcepoint delivers a portfolio of human-centric cybersecurity capabilities that incorporate behavior based insights, including risk adaptive data loss prevention; user and entity behavior analytics (UEBA) and cloud access security broker (CASB) capabilities; insider threat solutions; next-generation firewall (NGFW) technology; cloud and on premise web and email security; and cross domain transfer products.

Segment total net sales and operating income include intersegment sales and profit generally recorded at cost-plus a specified fee, which may differ from what the selling entity would be able to obtain on sales to external customers. Eliminations include intersegment sales and profit eliminations. Corporate operating income includes expenses that represent unallocated costs and certain other corporate costs not considered part of management's evaluation of reportable segment operating performance and the allocation of resources to the segment. Acquisition Accounting Adjustments include the adjustments to record acquired deferred revenue at fair value as part of our purchase price allocation process and the amortization of acquired intangible assets related to historical acquisitions.

Segment financial results were as follows:

Total Net Sales (in millions)	**2019**	2018	2017
Integrated Defense Systems	**$ 6,927**	$ 6,180	$ 5,804
Intelligence, Information and Services	**7,151**	6,722	6,177
Missile Systems	**8,726**	8,298	7,787
Space and Airborne Systems	**7,427**	6,748	6,430
Forcepoint	**658**	634	608
Eliminations	**(1,712)**	(1,514)	(1,423)
Total business segment sales	**29,177**	27,068	25,383
Acquisition Accounting Adjustments	**(1)**	(10)	(35)
Total	**$ 29,176**	$ 27,058	$ 25,348

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Intersegment Sales (in millions)		**2019**		2018		2017
Integrated Defense Systems	**$**	**87**	$	65	$	64
Intelligence, Information and Services		**700**		666		666
Missile Systems		**210**		161		132
Space and Airborne Systems		**686**		596		540
Forcepoint		**29**		26		21
Total	**$**	**1,712**	$	1,514	$	1,423

Operating Income (in millions)		**2019**		2018		2017
Integrated Defense Systems	**$**	**1,111**	$	1,023	$	935
Intelligence, Information and Services(1)		**658**		538		455
Missile Systems		**959**		973		1,010
Space and Airborne Systems		**991**		884		862
Forcepoint		**8**		5		33
Eliminations		**(184)**		(170)		(148)
Total business segment operating income		**3,543**		3,253		3,147
Acquisition Accounting Adjustments		**(112)**		(126)		(160)
FAS/CAS Operating Adjustment		**1,454**		1,428		1,303
Corporate and Reclassification(1)(2)		**(111)**		(17)		(59)
Total	**$**	**4,774**	$	4,538	$	4,231

(1) In the third quarter of 2019, the Company revalued an investment in equity securities of a non-publicly traded company due to the availability of updated pricing data from a recent transaction and recognized a non-cash gain of $14 million. The gain is included in IIS's operating income in 2019 as it is part of management's evaluation of the segment's performance and reclassified to other (income) expense, net on our consolidated statements of operations for financial reporting purposes as the gain is not related to our core operations. No amounts were recorded in 2018 or 2017.

(2) In the fourth quarter of 2019, we were selected by the U.S. Army for the Lower Tier Air and Missile Defense Sensor (LTAMDS). The net expenses related to the LTAMDS project of $13 million in 2019 are included in Corporate operating income as they are not included in management's evaluation of business segment results. No amounts were recorded in 2018 or 2017.

Intersegment Operating Income (in millions)		**2019**		2018		2017
Integrated Defense Systems	**$**	**8**	$	6	$	5
Intelligence, Information and Services		**68**		68		64
Missile Systems		**20**		15		13
Space and Airborne Systems		**67**		60		51
Forcepoint		**21**		21		15
Total	**$**	**184**	$	170	$	148

We must calculate our pension and PRB costs under both FAS requirements under U.S. GAAP and CAS requirements. U.S. GAAP outlines the methodology used to determine pension expense or income for financial reporting purposes, which is not indicative of the funding requirements for pension and PRB plans that we determine by other factors. CAS prescribes the allocation to and recovery of pension and PRB costs on U.S. government contracts. The results of each segment only include pension and PRB expense as determined under CAS. The CAS requirements for pension costs and its calculation methodology differ from the FAS requirements and calculation methodology. As a result, while both FAS and CAS use long-term assumptions in their calculation methodologies, each method results in different calculated amounts of pension and PRB costs. Our FAS expense is split between operating income and non-operating income where only the service cost component of FAS expense is included in operating income. The FAS/CAS Operating Adjustment, which is reported as a separate line in our segment results above, represents the difference between the service cost component of our pension and PRB expense or income under FAS in accordance with U.S. GAAP and our pension and PRB expense under CAS.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

The pension and PRB components of the FAS/CAS Operating Adjustment were as follows:

(In millions)		2019		2018		2017
FAS/CAS Pension Operating Adjustment	**$**	**1,439**	$	1,415	$	1,291
FAS/CAS PRB Operating Adjustment		**15**		13		12
FAS/CAS Operating Adjustment	**$**	**1,454**	$	1,428	$	1,303

Capital Expenditures (in millions)		2019		2018		2017
Integrated Defense Systems	**$**	**309**	$	242	$	200
Intelligence, Information and Services		**50**		46		22
Missile Systems		**232**		337		221
Space and Airborne Systems		**304**		136		158
Forcepoint		**17**		13		14
Corporate		**28**		24		19
Total[1]	**$**	**940**	$	798	$	634

(1) Total capital expenditures may not agree to our consolidated statements of cash flows due to non-cash transactions.

Depreciation and Amortization (in millions)		2019		2018		2017
Integrated Defense Systems	**$**	**118**	$	98	$	98
Intelligence, Information and Services		**49**		51		50
Missile Systems		**129**		98		84
Space and Airborne Systems		**132**		140		132
Forcepoint		**14**		17		17
Acquisition Accounting Adjustments		**111**		116		125
Corporate		**52**		48		44
Total	**$**	**605**	$	568	$	550

Total Assets (in millions)		2019		2018[2]
Integrated Defense Systems[1]	**$**	**5,103**	$	4,826
Intelligence, Information and Services[1]		**4,291**		4,238
Missile Systems[1]		**8,408**		8,229
Space and Airborne Systems[1]		**6,979**		6,740
Forcepoint[1]		**2,424**		2,529
Corporate		**7,361**		6,108
Total	**$**	**34,566**	$	32,670

(1) Total assets includes intangible assets. Related amortization expense is included in Acquisition Accounting Adjustments.
(2) Amounts have been recast to reflect the adoption of ASU 2016-02, *Leases (Topic 842)*. Operating lease right-of-use assets are all recorded at Corporate.

Property, Plant and Equipment, Net, by Geographic Area (in millions)		2019		2018
United States	**$**	**3,251**	$	2,751
All other (principally Europe)		**102**		89
Total	**$**	**3,353**	$	2,840

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We disaggregate our revenue from contracts with customers by geographic location, customer-type and contract-type for each of our segments, as we believe it best depicts how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors. See details in the tables below.

	2019						
Disaggregation of Total Net Sales (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Other	Total
United States							
Sales to the U.S. government[1]							
Fixed-price contracts	$ 897	$ 1,035	$ 3,175	$ 2,696	$ 179	$ —	$ 7,982
Cost-type contracts	1,854	4,461	2,986	2,812	16	—	12,129
Direct commercial sales and other U.S. sales							
Fixed-price contracts	6	122	33	121	175	—	457
Cost-type contracts	—	22	—	3	1	—	26
Asia/Pacific							
Foreign military sales through the U.S. government							
Fixed-price contracts	174	245	487	163	—	—	1,069
Cost-type contracts	70	37	58	33	—	—	198
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	719	181	169	238	67	—	1,374
Cost-type contracts	78	—	2	—	—	—	80
Middle East and North Africa							
Foreign military sales through the U.S. government							
Fixed-price contracts	740	12	594	322	—	—	1,668
Cost-type contracts	290	21	11	84	—	—	406
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	1,221	39	592	43	34	—	1,929
Cost-type contracts	—	—	92	—	—	—	92
All other (principally Europe)							
Foreign military sales through the U.S. government							
Fixed-price contracts	555	1	138	68	—	—	762
Cost-type contracts	50	—	37	8	—	—	95
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	176	230	139	150	156	—	851
Cost-type contracts	10	45	3	—	—	—	58
Total net sales	6,840	6,451	8,516	6,741	628	—	29,176
Intersegment sales	87	700	210	686	29	(1,712)	—
Acquisition Accounting Adjustments	—	—	—	—	1	(1)	—
Reconciliation to business segment sales	$ 6,927	$ 7,151	$ 8,726	$ 7,427	$ 658	$ (1,713)	$ 29,176

(1) Excludes foreign military sales through the U.S. government.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

	2019					
Total Net Sales by Geographic Area (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
United States	$ 2,757	$ 5,640	$ 6,194	$ 5,632	$ 371	$ 20,594
Asia/Pacific	1,041	463	716	434	67	2,721
Middle East and North Africa	2,251	72	1,289	449	34	4,095
All other (principally Europe)	791	276	317	226	156	1,766
Total net sales	$ 6,840	$ 6,451	$ 8,516	$ 6,741	$ 628	$ 29,176

	2019					
Total Net Sales by Major Customer (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
Sales to the U.S. government(1)	$ 2,751	$ 5,496	$ 6,161	$ 5,508	$ 195	$ 20,111
U.S. direct commercial sales and other U.S. sales	6	144	33	124	176	483
Foreign military sales through the U.S. government	1,879	316	1,325	678	—	4,198
Foreign direct commercial sales and other foreign sales(1)	2,204	495	997	431	257	4,384
Total net sales	$ 6,840	$ 6,451	$ 8,516	$ 6,741	$ 628	$ 29,176

(1) Excludes foreign military sales through the U.S. government.

	2019					
Total Net Sales by Contract-Type (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
Fixed-price contracts	$ 4,488	$ 1,865	$ 5,327	$ 3,801	$ 611	$ 16,092
Cost-type contracts	2,352	4,586	3,189	2,940	17	13,084
Total net sales	$ 6,840	$ 6,451	$ 8,516	$ 6,741	$ 628	$ 29,176

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

Disaggregation of Total Net Sales (in millions)	2018 Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Other	Total
United States							
Sales to the U.S. government[1]							
Fixed-price contracts	$ 818	$ 1,008	$ 2,953	$ 2,480	$ 118	$ —	$ 7,377
Cost-type contracts	1,706	4,110	2,675	2,565	14	—	11,070
Direct commercial sales and other U.S. sales							
Fixed-price contracts	5	118	41	111	209	—	484
Cost-type contracts	1	18	—	3	—	—	22
Asia/Pacific							
Foreign military sales through the U.S. government							
Fixed-price contracts	189	243	450	152	—	—	1,034
Cost-type contracts	79	45	61	22	—	—	207
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	711	198	173	211	70	—	1,363
Cost-type contracts	117	—	1	1	—	—	119
Middle East and North Africa							
Foreign military sales through the U.S. government							
Fixed-price contracts	849	20	452	237	—	—	1,558
Cost-type contracts	170	5	23	69	—	—	267
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	1,137	15	785	95	33	—	2,065
Cost-type contracts	—	—	96	—	—	—	96
All other (principally Europe)							
Foreign military sales through the U.S. government							
Fixed-price contracts	151	2	124	56	—	—	333
Cost-type contracts	27	—	70	6	—	—	103
Direct commercial sales and other foreign sales[1]							
Fixed-price contracts	145	230	231	144	154	—	904
Cost-type contracts	10	44	2	—	—	—	56
Total net sales	6,115	6,056	8,137	6,152	598	—	27,058
Intersegment sales	65	666	161	596	26	(1,514)	—
Acquisition Accounting Adjustments	—	—	—	—	10	(10)	—
Reconciliation to business segment sales	$ 6,180	$ 6,722	$ 8,298	$ 6,748	$ 634	$ (1,524)	$ 27,058

(1) Excludes foreign military sales through the U.S. government.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

	2018					
Total Net Sales by Geographic Area (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
United States	$ 2,530	$ 5,254	$ 5,669	$ 5,159	$ 341	$ 18,953
Asia/Pacific	1,096	486	685	386	70	2,723
Middle East and North Africa	2,156	40	1,356	401	33	3,986
All other (principally Europe)	333	276	427	206	154	1,396
Total net sales	$ 6,115	$ 6,056	$ 8,137	$ 6,152	$ 598	$ 27,058

	2018					
Total Net Sales by Major Customer (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
Sales to the U.S. government[(1)]	$ 2,524	$ 5,118	$ 5,628	$ 5,045	$ 132	$ 18,447
U.S. direct commercial sales and other U.S. sales	6	136	41	114	209	506
Foreign military sales through the U.S. government	1,465	315	1,180	542	—	3,502
Foreign direct commercial sales and other foreign sales[(1)]	2,120	487	1,288	451	257	4,603
Total net sales	$ 6,115	$ 6,056	$ 8,137	$ 6,152	$ 598	$ 27,058

(1) Excludes foreign military sales through the U.S. government.

	2018					
Total Net Sales by Contract-Type (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Total
Fixed-price contracts	$ 4,005	$ 1,834	$ 5,209	$ 3,486	$ 584	$ 15,118
Cost-type contracts	2,110	4,222	2,928	2,666	14	11,940
Total net sales	$ 6,115	$ 6,056	$ 8,137	$ 6,152	$ 598	$ 27,058

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

	2017						
Disaggregation of Total Net Sales (in millions)	Integrated Defense Systems	Intelligence, Information and Services	Missile Systems	Space and Airborne Systems	Forcepoint	Other	Total
United States							
Sales to the U.S. government[(1)]							
Fixed-price contracts	$ 812	$ 1,090	$ 2,914	$ 2,233	$ 111	$ —	$ 7,160
Cost-type contracts	1,507	3,576	1,991	2,614	12	—	9,700
Direct commercial sales and other U.S. sales							
Fixed-price contracts	6	130	1	51	202	—	390
Cost-type contracts	1	9	—	2	1	—	13
Asia/Pacific							
Foreign military sales through the U.S. government							
Fixed-price contracts	167	181	410	113	—	—	871
Cost-type contracts	138	51	64	9	—	—	262
Direct commercial sales and other foreign sales[(1)]							
Fixed-price contracts	596	193	309	284	59	—	1,441
Cost-type contracts	145	—	1	1	—	—	147
Middle East and North Africa							
Foreign military sales through the U.S. government							
Fixed-price contracts	1,066	18	371	191	—	—	1,646
Cost-type contracts	154	1	22	30	—	—	207
Direct commercial sales and other foreign sales[(1)]							
Fixed-price contracts	979	18	1,013	175	25	—	2,210
Cost-type contracts	—	—	—	—	—	—	—
All other (principally Europe)							
Foreign military sales through the U.S. government							
Fixed-price contracts	7	3	157	51	—	—	218
Cost-type contracts	22	2	78	5	—	—	107
Direct commercial sales and other foreign sales[(1)]							
Fixed-price contracts	128	209	320	131	142	—	930
Cost-type contracts	12	30	4	—	—	—	46
Total net sales	5,740	5,511	7,655	5,890	552	—	25,348
Intersegment sales	64	666	132	540	21	(1,423)	—
Acquisition Accounting Adjustments	—	—	—	—	35	(35)	—
Reconciliation to business segment sales	$ 5,804	$ 6,177	$ 7,787	$ 6,430	$ 608	$ (1,458)	$ 25,348

(1) Excludes foreign military sales through the U.S. government.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

	2017											
Total Net Sales by Geographic Area (in millions)		Integrated Defense Systems		Intelligence, Information and Services		Missile Systems		Space and Airborne Systems		Forcepoint		Total
United States	$	2,326	$	4,805	$	4,906	$	4,900	$	326	$	17,263
Asia/Pacific		1,046		425		784		407		59		2,721
Middle East and North Africa		2,199		37		1,406		396		25		4,063
All other (principally Europe)		169		244		559		187		142		1,301
Total net sales	$	5,740	$	5,511	$	7,655	$	5,890	$	552	$	25,348

	2017											
Total Net Sales by Major Customer (in millions)		Integrated Defense Systems		Intelligence, Information and Services		Missile Systems		Space and Airborne Systems		Forcepoint		Total
Sales to the U.S. government[1]	$	2,319	$	4,666	$	4,905	$	4,847	$	123	$	16,860
U.S. direct commercial sales and other U.S. sales		7		139		1		53		203		403
Foreign military sales through the U.S. government		1,554		256		1,102		399		—		3,311
Foreign direct commercial sales and other foreign sales[1]		1,860		450		1,647		591		226		4,774
Total net sales	$	5,740	$	5,511	$	7,655	$	5,890	$	552	$	25,348

(1) Excludes foreign military sales through the U.S. government.

	2017											
Total Net Sales by Contract-Type (in millions)		Integrated Defense Systems		Intelligence, Information and Services		Missile Systems		Space and Airborne Systems		Forcepoint		Total
Fixed-price contracts	$	3,761	$	1,842	$	5,495	$	3,229	$	539	$	14,866
Cost-type contracts		1,979		3,669		2,160		2,661		13		10,482
Total net sales	$	5,740	$	5,511	$	7,655	$	5,890	$	552	$	25,348

Note 17: Quarterly Operating Results (Unaudited)

2019 (in millions, except per share amounts and workdays)		First		Second		Third		Fourth
Total net sales	**$**	**6,729**	**$**	**7,159**	**$**	**7,446**	**$**	**7,842**
Gross margin		**1,852**		**1,954**		**1,947**		**2,010**
Income from continuing operations		**775**		**813**		**861**		**879**
Net income attributable to Raytheon Company		**781**		**817**		**860**		**885**
EPS from continuing operations attributable to Raytheon Company common stockholders[1]								
Basic	**$**	**2.77**	**$**	**2.92**	**$**	**3.08**	**$**	**3.17**
Diluted		**2.77**		**2.92**		**3.08**		**3.16**
EPS attributable to Raytheon Company common stockholders[1]								
Basic		**2.77**		**2.92**		**3.08**		**3.16**
Diluted		**2.77**		**2.92**		**3.08**		**3.16**
Workdays[2]		**63**		**64**		**63**		**59**

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (CONTINUED)

2018 (in millions, except per share amounts and workdays)	First	Second	Third[3]	Fourth
Total net sales	$ 6,267	$ 6,625	$ 6,806	$ 7,360
Gross margin	1,735	1,848	1,935	1,967
Income from continuing operations	624	790	641	828
Net income attributable to Raytheon Company	633	800	644	832
EPS from continuing operations attributable to Raytheon Company common stockholders[1]				
Basic	$ 2.20	$ 2.78	$ 2.25	$ 2.93
Diluted	2.20	2.78	2.25	2.93
EPS attributable to Raytheon Company common stockholders[1]				
Basic	2.20	2.78	2.25	2.93
Diluted	2.19	2.78	2.25	2.93
Workdays[2]	64	64	63	58

(1) EPS is computed independently for each of the quarters presented; therefore, the sum of the quarterly EPS may not equal the total computed for each year.
(2) Number of workdays per our fiscal calendar, which excludes holidays and weekends.
(3) In the third quarter of 2018, we recognized a non-cash pension settlement charge of $288 million for certain Raytheon-sponsored pension plans that purchased a group annuity contract from an insurance company to transfer some of our outstanding pension benefit obligations.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Management has conducted an evaluation, under the supervision and with the participation of the Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a–15(e) and 15d–15(e) of the Securities Exchange Act of 1934) as of December 31, 2019.

Conclusion of Evaluation—Based on this evaluation, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of December 31, 2019 were effective.

Inherent Limitations on Effectiveness of Controls—In designing and evaluating our disclosure controls and procedures, management recognizes that any control, no matter how well designed and operated, can provide only reasonable, not absolute, assurance of achieving the desired control objectives. Due to the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that misstatements due to error or fraud will not occur or that all control issues and instances of fraud, if any, within the Company have been detected.

Evaluation of Internal Control Over Financial Reporting

Management's Report on Internal Control Over Financial Reporting—Management's Report on Internal Control Over Financial Reporting is set forth in Item 8 of this Annual Report on Form 10-K.

Report of the Independent Registered Public Accounting Firm—The effectiveness of our internal control over financial reporting as ofDecember 31, 2019 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is set forth in Item 8 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting—There were no changes in our internal control over financial reporting during the fourth quarter of 2019 that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information regarding members of our Board of Directors will be contained in our definitive proxy statement for the2020 Annual Meeting of Stockholders under the caption "Election of Directors" or in an amendment on Form 10-K/A and is incorporated herein by reference. Information regarding our executive officers is contained in Part I of this Form 10-K under the caption "Information About Our Executive Officers." If applicable, information regarding Section 16(a) noncompliance will be contained in our definitive proxy statement under the caption "Delinquent Section 16(a) Reports" or in an amendment on Form 10-K/A and is incorporated herein by reference. Information regarding our Audit Committee and our Audit Committee Financial Expert will be contained in our definitive proxy statement under the caption "The Board of Directors and Board Committees" or in an amendment on Form 10-K/A and is incorporated herein by reference.

We have adopted a code of ethics that applies to all of our directors, officers, employees and representatives. Information regarding our Code of Ethics will be contained in our definitive proxy statement for the 2020 Annual Meeting of Stockholders under the caption "Corporate Governance—Code of Conduct and Conflicts of Interest Policy" or in an amendment on Form 10-K/A and is incorporated herein by reference.

Information regarding the procedures by which our stockholders may recommend nominees to our Board of Directors will be contained in our definitive proxy statement for the 2020 Annual Meeting of Stockholders under the caption "Corporate Governance—Director Nomination by Shareholders" or in an amendment on Form 10-K/A .

ITEM 11. EXECUTIVE COMPENSATION

This information will be contained in our definitive proxy statement for the2020 Annual Meeting of Stockholders under the captions "Executive Compensation," "Director Compensation" and "The Board of Directors and Board Committees—Compensation Committee Interlocks and Insider Participation" or in an amendment on Form 10-K/A and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information regarding security ownership of certain beneficial owners and for directors and executive officers will be contained in our definitive proxy statement for the 2020 Annual Meeting of Stockholders under the caption "Stock Ownership" or in an amendment on Form 10-K/A and is incorporated herein by reference.

Securities Authorized for Issuance Under Equity Compensation Plans

The following table provides information about our equity compensation plans that authorize the issuance of shares of our common stock. This information is provided as of December 31, 2019.

Plan Category	(A) Number of securities to be issued upon exercise of outstanding options, warrants and rights[(1)]	(B) Weighted average exercise price of outstanding options, warrants and rights[(2)]	(C) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column A)
Equity compensation plans approved by stockholders	1,295,594	$—	8,017,201
Equity compensation plans not approved by stockholders	—	—	—
Total	1,295,594	$—	8,017,201

(1) This amount includes 762,072 shares, which is the aggregate of the actual number of shares that will be issued pursuant to the 2017 Long-term Performance Plan (LTPP) awards and the maximum number of shares that may be issued upon settlement of outstanding 2018 and 2019 LTPP awards, including estimated dividend equivalent amounts. The shares to be issued pursuant to the 2017, 2018 and 2019 LTPP awards will be issued under the Raytheon 2019 Stock Plan. The material terms of the 2017, 2018 and 2019 LTPP awards are described in more detail in "Note 13: Stock-based Compensation Plans" within Item 8 of this Form 10-K. These awards are granted as restricted stock units (RSUs) and though generally settled in stock, may be settled in cash, stock or a combination of both cash and stock at the discretion of the Management Development and Compensation Committee (MDCC).

This amount also includes 533,522 shares that may be issued upon settlement of RSUs, generally issued to retirement-eligible and non-U.S. employees. The shares to be issued in settlement of the RSUs will be issued under the 2019 Stock Plan. The RSUs generally vest one-third per year on the second, third and fourth anniversaries of the date of grant.

(2) Since RSU awards do not have an exercise price, and there are no other options, warrants or rights outstanding at December 31, 2019, the weighted-average exercise price is zero.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

This information will be contained in our definitive proxy statement for the2020 Annual Meeting of Stockholders under the captions "Corporate Governance—Director Independence" and "Corporate Governance—Transactions with Related Persons" or in an amendment on Form 10-K/A and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

This information will be contained in our definitive proxy statement for the2020 Annual Meeting of Stockholders under the caption "Independent Auditors: Audit and Non-Audit Fees" or in an amendment on Form 10-K/A and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) Financial Statements and Schedules

(1) The following financial statements of Raytheon Company, supplemental information and report of independent registered public accounting firm are included in this Form 10-K:

Consolidated Balance Sheets at December 31, 2019 and 2018

Consolidated Statements of Operations for the Years Ended December 31, 2019, 2018 and 2017

Consolidated Statements of Comprehensive Income for the Years Ended December 31, 2019, 2018 and 2017

Consolidated Statements of Equity for the Years Ended December 31, 2019, 2018 and 2017

Consolidated Statements of Cash Flows for the Years Ended December 31, 2019, 2018 and 2017

Notes to Consolidated Financial Statements

Five-Year Statistical Summary (Unaudited)

Report of PricewaterhouseCoopers LLP dated February 12, 2020 on the Company's financial statements filed as a part hereof for the fiscal years ended December 31, 2019, 2018 and 2017 and on the Company's internal control over financial reporting as of December 31, 2019 is included in Part II, Item 8 of this Annual Report on Form 10-K. The independent registered public accounting firm's consent with respect to this report appears in Exhibit 23 of this Annual Report on Form 10-K.

(2) List of financial statement schedules:

All schedules have been omitted because they are not required, not applicable or the information is otherwise included.

(b) Exhibits:

The following list of exhibits includes exhibits submitted with this Form 10-K as filed with the Securities and Exchange Commission (SEC) and those incorporated by reference to other filings.

2.1	Agreement and Plan of Merger, dated as of June 9, 2019, by and among United Technologies Corporation, Light Merger Sub Corp. and Raytheon Corporation, filed as an exhibit to the Company's Current Report on Form 8-K filed June 10, 2019, is hereby incorporated by reference.
3.1	Restated Certificate of Incorporation of Raytheon Company, restated as of April 2, 2002, filed as an exhibit to the Company's Registration Statement on Form S-3, File No. 333-85648, is hereby incorporated by reference.
3.2	Certificate of Amendment of Restated Certificate of Incorporation of Raytheon Company, amended as of May 5, 2005, filed as an exhibit to the Company's Current Report on Form 8-K filed May 9, 2005, is hereby incorporated by reference.
3.3	Certificate of Amendment of Restated Certificate of Incorporation of Raytheon Company, as amended as of June 2, 2010, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 27, 2010, is hereby incorporated by reference.
3.4	Amendment to Article V of Restated Certificate of Incorporation, as amended as of May 29, 2014, filed as Appendix A to the Company's Definitive Proxy Statement filed on April 25, 2014, is hereby incorporated by reference.

3.5	Raytheon Company Amended and Restated By-Laws, as amended as of March 20, 2019, filed as an exhibit to the Company's Current Report on Form 8-K filed March 22, 2019, is hereby incorporated by reference.
4.1	Indenture relating to Senior Debt Securities dated as of July 3, 1995, between Raytheon Company and The Bank of New York, Trustee, filed as an exhibit to the former Company's Registration Statement on Form S-3, File No. 33-59241, is hereby incorporated by reference.
4.2	Indenture relating to Subordinated Debt Securities dated as of July 3, 1995, between Raytheon Company and The Bank of New York, Trustee, filed as an exhibit to the former Company's Registration Statement on Form S-3, File No. 33-59241, is hereby incorporated by reference.
4.3	Supplemental Indenture dated as of December 17, 1997, between Raytheon Company and The Bank of New York, Trustee, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 1997, is hereby incorporated by reference.
4.4	Second Supplemental Indenture, dated as of May 9, 2001, between Raytheon Company and The Bank of New York, Trustee, filed as an exhibit to the Company's Current Report on Form 8-K filed May 10, 2001, is hereby incorporated by reference.
4.5	Form of Senior Debt Securities, filed as an exhibit to the Company's Registration Statement on Form S-3, File No. 333-58474, is hereby incorporated by reference.
4.6	Form of Subordinated Debt Securities, filed as an exhibit to the Company's Registration Statement on Form S-3, File No. 333-58474, is hereby incorporated by reference.
4.7	Agreement of Resignation, Appointment and Acceptance, dated April 1, 2005, between Raytheon Company and The Bank of New York appointing Successor Trustee, Paying Agent and Registrar in connection with certain securities originally authorized and issued under the Indenture dated as of July 3, 1995, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 27, 2005, is hereby incorporated by reference.

No other instruments defining the rights of holders of long-term debt are filed since the total amount of securities authorized under any such instrument does not exceed 10% of the total assets of the Company on a consolidated basis. The Company agrees to furnish a copy of such instruments to the SEC upon request.

4.8	Description of Securities*
10.1	Raytheon Company 2001 Stock Plan, as amended on September 21, 2005, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 25, 2005, is hereby incorporated by reference.#
10.2	Raytheon 2010 Stock Plan, as amended as of May 24, 2017, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017, is hereby incorporated by reference.#
10.3	Raytheon Company 1997 Nonemployee Directors Restricted Stock Plan, as amended on September 21, 2005, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 25, 2005, is hereby incorporated by reference.#
10.4	Raytheon Company Excess Savings Plan, as amended and restated effective as of January 1, 2009, as further amended effective January 1, 2010 and November 1, 2013, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, is hereby incorporated by reference.#
10.5	Raytheon Company Excess Pension Plan, as amended and restated effective as of January 1, 2009, as further amended effective January 1, 2009, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, is hereby incorporated by reference.#
10.6	Raytheon Company Supplemental Executive Retirement Plan, as amended and restated effective as of January 1, 2009, as further amended effective January 1, 2011, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, is hereby incorporated by reference.#

10.7	Raytheon Company Deferred Compensation Plan, as amended and restated effective as of January 1, 2009, as further amended effective January 1, 2009, January 1, 2010, May 6, 2010 and November 1, 2013, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, is hereby incorporated by reference.#
10.8	Raytheon 2017 Incentive Plan, filed as Appendix A to the Company's definitive proxy statement filed on April 21, 2017, is hereby incorporated by reference.#
10.9	Form of Incentive Stock Option Agreement under the Raytheon Company 2001 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 26, 2004, is hereby incorporated by reference.#
10.10	Form of Nonqualified Stock Option Agreement under the Raytheon Company 2001 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 26, 2004, is hereby incorporated by reference.#
10.11	Form of Restricted Stock Award Agreement under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017, is hereby incorporated by reference.#
10.12	Form of Restricted Stock Unit Award Agreement under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017, is hereby incorporated by reference.#
10.13	Form of Performance Stock Unit Award Agreement with respect to the Long-term Performance Plan, under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017, is hereby incorporated by reference.#
10.14	Form of Restricted Stock Unit Award Agreement for U.K. employees under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 26, 2010, is hereby incorporated by reference.#
10.15	Form of Restricted Stock Unit Award Agreement for Certain Retirement Eligible Employees under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017, is hereby incorporated by reference.#
10.16	Form of Restricted Stock Unit Award Agreement for Certain Retirement Eligible Non U.S. Employees under the Raytheon 2010 Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended July 2, 2017 is hereby incorporated by reference.#
10.17	Form of Restricted Stock Award Agreement under the 1997 Nonemployee Directors Restricted Stock Plan, filed as an exhibit to the Company's Current Report on Form 8-K filed May 9, 2005, is hereby incorporated by reference.#
10.18	Form of Stock Award Agreement under the 1997 Nonemployee Directors Restricted Stock Plan, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 29, 2008, is hereby incorporated by reference.#
10.19	Raytheon 2019 Stock Plan, filed as Appendix A to the Company's definitive proxy statement, filed on April 16, 2019, is hereby incorporated by reference.#
10.20	Form of Restricted Stock Award Agreement under the Raytheon 2019 Stock Plan.*#
10.21	Form of Restricted Stock Unit Award Agreement under the Raytheon 2019 Stock Plan.*#
10.22	Form of Restricted Stock Unit Award Agreement under the Raytheon 2019 Stock Plan (recipients outside U.S.).*#
10.23	Form of Performance Stock Unit Award Agreement with respect to the Long-term Performance Plan under the Raytheon 2019 Stock Plan.*#

10.24	Form of Restricted Stock Award Agreement for Non-Employee Directors under the Raytheon 2019 Stock Plan*#
10.25	Form of Deferred Restricted Award Agreement for Non-Employee Directors under the Raytheon 2019 Stock Plan*#
10.26	Form of Change in Control Severance Agreement between the Company and certain executive officers (providing for benefits in the event of a qualified termination upon a change in control of three times base salary and bonus), filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2009, is hereby incorporated by reference.#
10.27	Form of Change in Control Severance Agreement between the Company and certain executive officers (providing for benefits in the event of a qualified termination upon a change in control of two times base salary and bonus), filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2009, is hereby incorporated by reference.#
10.28	Form of Amendment to Change in Control Severance Agreement between the Company and its executive officers, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2009, is hereby incorporated by reference.#
10.29	Form of Change in Control Severance Agreement between the Company and certain executive officers (providing for benefits in the event of a qualified termination upon a change in control of one times base salary and bonus), filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016, is hereby incorporated by reference.#
10.30	Summary of Executive Severance and Change in Control Guidelines, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2013, is hereby incorporated by reference.#
10.31	Agreement between Raytheon Company and William H. Swanson, filed as an exhibit to the Company's Current Report on Form 8-K filed July 28, 2014, is hereby incorporated by reference.#
10.32	Summary of Key Employee Permanent Domestic Relocation Policy, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2009, is hereby incorporated by reference.#
10.33	Letter Agreement dated February 21, 2006 between Raytheon Company and David C. Wajsgras, filed as an exhibit to the Company's Current Report on Form 8-K filed February 28, 2006, is hereby incorporated by reference.#
10.34	Summary of the Raytheon Company Results-Based Incentive Program, filed as an exhibit to the Company's Current Report on Form 8-K filed December 14, 2006, is hereby incorporated by reference.#
10.35	Summary of the Raytheon Company Long-term Performance Plan, filed as an exhibit to the Company's Annual Report for the year ended December 31, 2013, is hereby incorporated by reference.#
10.36	Form of Indemnification Agreement between the Company and each of its directors and executive officers, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended September 23, 2007, is hereby incorporated by reference.#
10.37	Form of Clawback Policy Acknowledgment, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2009, is hereby incorporated by reference.#
10.38	Agreement dated January 15, 2015 by and between Raytheon Company and Jay B. Stephens, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 29, 2015, is hereby incorporated by reference.#
10.39	Transition Agreement dated July 30, 2015 between Raytheon Company and Daniel J. Crowley, filed as an exhibit to the Company's Current Report on Form 8-K filed August 11, 2015, is hereby incorporated by reference.#
10.40	Letter Agreement dated January 21, 2015 by and between the Company and Anthony F. O'Brien, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016, is hereby incorporated by reference.#

10.41	Letter Agreement dated December 16, 2014 by and between the Company and Frank R. Jimenez, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016, is hereby incorporated by reference.#
10.42	Amendment to Letter Agreement dated January 23, 2015 by and between the Company and Frank R. Jimenez, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended April 3, 2016, is hereby incorporated by reference.#
10.43	Summary of Executive Perquisites, filed as an exhibit to the Company's Annual Report on Form 10-K for the year ended December 31, 2017, is hereby incorporated by reference.#
10.44	Enhanced Severance Plan for Senior Leadership Team Members, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, is hereby incorporated by reference.#
10.45	Letter Agreement, dated July 23, 2015, by the Company and Wesley D. Kremer, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, is hereby incorporated by reference.#
10.46	Amendment to Letter Agreement, dated March 21, 2019, by the Company and Wesley D. Kremer, filed as an exhibit to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2019, is hereby incorporated by reference.#
10.47	Competitive Advance and Revolving Credit Agreement by and among Raytheon Company, as the Borrower, the Lenders named therein, and JPMorgan Chase Bank, N.A. as Administrative Agent, dated as of September 30, 2019, filed as an exhibit to the Company's Current Report on Form 8-K filed October 3, 2019, is hereby incorporated by reference.
21	Subsidiaries of Raytheon Company.*
23	Consent of Independent Registered Public Accounting Firm.*
31.1	Certification of Thomas A. Kennedy pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.*
31.2	Certification of Anthony F. O'Brien pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.*
32.1	Certification of Thomas A. Kennedy pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.**
32.2	Certification of Anthony F. O'Brien pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.**
101.INS	eXtensible Business Reporting Language (XBRL) Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document.*
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.*
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.*
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.*
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.*
104	The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2019, formatted in Inline XBRL and contained in Exhibit 101.

(Exhibits marked with an asterisk (*) are filed electronically herewith.)

(Exhibits marked with two asterisks (**) are deemed to be furnished electronically herewith, and not filed.)

(Exhibits marked with a pound sign (#) are compensatory plans or arrangements.)

ITEM 16. FORM 10-K SUMMARY

Not applicable.

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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.

RAYTHEON COMPANY

/s/ Michael J. Wood

Michael J. Wood
Vice President, Controller and Chief Accounting Officer

Dated: February 12, 2020

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the dates indicated.

SIGNATURES	TITLE	DATE
/s/ Thomas A. Kennedy **Thomas A. Kennedy**	Chairman and Chief Executive Officer (Principal Executive Officer)	February 12, 2020
/s/ Anthony F. O'Brien **Anthony F. O'Brien**	Vice President and Chief Financial Officer (Principal Financial Officer)	February 12, 2020
/s/ Michael J. Wood **Michael J. Wood**	Vice President, Controller and Chief Accounting Officer (Principal Accounting Officer)	February 12, 2020
/s/ Tracy A. Atkinson **Tracy A. Atkinson**	Director	February 12, 2020
/s/ Robert E. Beauchamp **Robert E. Beauchamp**	Director	February 12, 2020
/s/ Adriane M. Brown **Adriane M. Brown**	Director	February 12, 2020
/s/ Stephen J. Hadley **Stephen J. Hadley**	Director	February 12, 2020
/s/ Letitia A. Long **Letitia A. Long**	Director	February 12, 2020
/s/ George R. Oliver **George R. Oliver**	Director	February 12, 2020
/s/ Dinesh C. Paliwal **Dinesh C. Paliwal**	Director	February 12, 2020
/s/ Ellen M. Pawlikowski **Ellen M. Pawlikowski**	Director	February 12, 2020
/s/ William R. Spivey **William R. Spivey**	Director	February 12, 2020
/s/ Marta R. Stewart **Marta R. Stewart**	Director	February 12, 2020
/s/ James A. Winnefeld, Jr. **James A. Winnefeld, Jr.**	Director	February 12, 2020
/s/ Robert O. Work **Robert O. Work**	Director	February 12, 2020

Exhibit 4.8

DESCRIPTION OF SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934

The following summary describes the common stock, $0.01 par value, of Raytheon Company (the "Company," "we," "our," "us," and "our"), which are the only securities of the Company registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended.

The following description is a summary and does not purport to be complete. It is subject to, and qualified in its entirety by reference to, our restated certificate of incorporation, as amended (which we refer to as our "restated certificate of incorporation") and our amended and restated bylaws (which we refer to as our "bylaws"), each of which are incorporated by reference as an exhibit to this Annual Report on Form 10-K of which this Exhibit 4.8 is a part. The terms of these securities also may be affected by the General Corporation Law of the State of Delaware (which we refer to below as the "DGCL").

We are authorized to issue up to 1,450,000,000 shares of common stock, $0.01 par value per share and 200,000,000 shares of preferred stock, $0.01 par value per share, of which 4,000,000 shares have been designated as Series A Junior Participating Preferred Stock, $0.01 par value. We may issue preferred stock from time to time in one or more series, without stockholder approval, when authorized by our Board of Directors. Our Board of Directors has been authorized, subject to limitations provided in our restated certificate of incorporation to provide for the issuance of shares of our preferred stock in multiple series. With respect to each series of our preferred stock, our Board of Directors has the authority to fix the number of shares of such series and the voting powers (if any), designation, preferences and relative, participating, optional or other special rights, and qualifications, limitations, or restrictions of such series. As of the date of the Annual Report of which this Exhibit 4.8 is a part, no shares of preferred stock are outstanding.

Holders of our common stock are entitled to one vote per share and shall vote together as a single class on all matters to be voted on by our stockholders. Pursuant to our restated certificate of incorporation there are no cumulative voting rights in the election of directors. The approval of corporate actions may also require the approval of the holders of any series of our preferred stock.

Our common stock will be the only type of our capital stock entitled to vote in the election and removal of directors and other matters presented to our stockholders from time to time, unless we issue voting preferred stock or our restated certificate of incorporation is amended or the law requires otherwise.

Our common stockholders will be entitled to receive dividends and distributions declared by our Board of Directors, to the extent permitted by outstanding shares of preferred stock and by our restated certificate of incorporation. If a dividend is declared, it will be distributed pro rata to our common stockholders on a per share basis.

If we are liquidated or dissolved, our common stockholders will be entitled to receive our assets and funds available for distribution to common stockholders in proportion to the number of shares they hold. Our common stockholders may not receive any assets or funds until our creditors have been paid in full and the preferential or participating rights of our preferred stockholders have been satisfied. If we participate in a corporate merger, consolidation, purchase or acquisition of property or stock, or other reorganization, any payments or shares of stock allocated to our common stockholders will be distributed pro rata to holders of our common stock on a per share basis. If we redeem, repurchase or otherwise acquire for payment any shares of our common stock, we will treat each share of common stock identically.

Holders of our common stock will not have any preemptive, subscription or conversion rights with respect to shares of our common stock. We may issue additional shares of our common stock, if authorized by our Board of Directors, without the common stockholders' approval, unless required by Delaware law or a stock exchange on which our securities are traded. If we receive the appropriate payment, shares of our common stock that we issue will be fully paid and nonassessable.

Our Board of Directors may authorize the issuance of preferred stock with voting, conversion, liquidation and other rights that may adversely affect the rights of holders of our common stock.

Certain provisions of the DGCL could make it more difficult to consummate an acquisition of control of us by means of a tender offer, a proxy fight, open market purchases or otherwise in a transaction not approved by our Board of Directors. These provisions may reduce our vulnerability to an unsolicited proposal for the restructuring or sale of all or substantially all of our assets or an unsolicited takeover attempt which is unfair to our stockholders. The summary below does not purport to be complete and is qualified in its entirety by reference to the DGCL.

Section 203 of the DGCL restricts a wide range of transactions (“business combinations”) between a corporation and an interested stockholder. An “interested stockholder” is, generally, any person who beneficially owns, directly or indirectly, 15% or more of the corporation’s outstanding voting stock. Business combinations are broadly defined to include (i) mergers or consolidations with, (ii) sales or other dispositions of more than 10% of the corporation’s assets to, (iii) certain transactions resulting in the issuance or transfer of any stock of the corporation or any subsidiary to, (iv) certain transactions resulting in an increase in the proportionate share of stock of the corporation or any subsidiary owned by, or (v) receipt of the benefit (other than proportionately as a stockholder) of any loans, advances or other financial benefits by, an interested stockholder. Section 203 provides that an interested stockholder may not engage in a business combination with the corporation for a period of three years from the time of becoming an interested stockholder unless (a) the Board of Directors approved either the business combination or the transaction which resulted in the person becoming an interested stockholder prior to the time that person became an interested stockholder; (b) upon consummation of the transaction which resulted in the person becoming an interested stockholder, that person owned at least 85% of the corporation’s voting stock (excluding, for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, shares owned by persons who are directors and also officers and shares owned by certain employee stock plans); or (c) the business combination is approved by the Board of Directors and authorized by the affirmative vote of at least 66 2/3% of the outstanding voting stock not owned by the interested stockholder. The restrictions on business combinations with interested stockholders contained in Section 203 of the DGCL do not apply to a corporation whose certificate of incorporation or bylaws contains a provision expressly electing not to be governed by the statute; however, neither our restated certificate of incorporation nor our bylaws contains a provision electing to “opt-out” of Section 203.

Our common stock is listed on the New York Stock Exchange under the symbol “RTN.”

Exhibit 10.20

RAYTHEON 2019 STOCK PLAN

RESTRICTED STOCK AWARD AGREEMENT

This Restricted Stock Award Agreement (the "Award Agreement"), dated as of **<Award Date>** (the "Award Date") is between Raytheon Company (the "Company"), and <**First Name, Middle Initial, Last Name>**, an employee of the Company or one of its Affiliates ("you").

1. Award of Shares

The Company hereby awards you the number of restricted shares of common stock of the Company, par value $.01 per share, set forth below (the "Shares"), subject to the terms and conditions of the Raytheon 2019 Stock Plan (the "Plan") and the vesting and other provisions of this Award Agreement.

Total Restricted Shares (the "Award"): #	Vesting Date / # Shares
Vesting Schedule:	[Vesting Date 1]: (# Shares) [Vesting Date 2]: (# Shares) [Vesting Date 3]: (# Shares)

2. Status of Shares During and Upon Vesting

The Shares shall be registered in your name as of the Award Date until such time as the Shares (or other evidence of ownership of the Shares) are delivered to you or forfeited to the Company in accordance with the terms hereof (the "Restriction Period"). During the Restriction Period, unless otherwise forfeited, you shall be entitled to vote the Shares and to receive dividends paid on the Shares, but such Shares may not be sold, transferred, pledged, exchanged, hypothecated or disposed of by you, nor be made subject to execution, attachment or similar process. Subject to Sections 3 and 4 below, if you are continuously employed by the Company or an Affiliate from the Award Date until the Vesting Date noted above, the Shares associated with that Vesting Date shall vest and the restrictions on those Shares shall lapse. With respect to any Shares that vest, the Company shall deliver to you evidence of ownership of the net number of such Shares reduced by the number of Shares necessary to satisfy tax withholding obligations as described in Section 5C below.

3. Effect of Termination of Employment

If during the Restriction Period you cease to be an employee of the Company or an Affiliate for any reason other than as set forth in Section 4 below, you shall cease to be entitled to any Shares as to which the applicable restrictions have not previously lapsed. All rights in and to such Shares shall be forfeited immediately after you cease to be an employee of the Company or an Affiliate

4. Effect of Death, Leave of Absence, Disability or Change in Control

Notwithstanding anything above to the contrary, the Shares shall vest and restrictions on the Shares shall lapse as follows:

a) immediately upon your death;

b) in accordance with the Vesting Schedule in the event of (i) a Medical Leave of Absence of at least one year, (ii) Disability or (iii) a Personal Leave of Absence (but only during the period of such leave, unless you resume your employment at the end of such leave); or

c) immediately upon your termination of employment by reason of an Involuntary Termination within two (2) years following a Change in Control, if in connection with such Change in Control this Award was assumed, continued, substituted or cancelled in exchange for cash payments subject to vesting (in which case such cash payments shall become fully vested, subject to any escrow, holdback, earn-out or similar provisions applicable to holders of Stock).

5. Other Provisions

A. <u>No Guaranty of Future Awards</u>. This Award does not guarantee you the right to or expectation of future Awards under the Plan or any future plan adopted by the Company.

B. No Rights to Continued Employment. This Award shall not be deemed to create a contract or other promise of continued employment with the Company or an Affiliate and shall not in any way prohibit or restrict the ability of the Company or an Affiliate to terminate your employment at any time for any reason.

C. Taxes. In addition to amounts in respect of taxes which the Company shall be required by law to deduct or withhold from any dividend payments on the Shares, the Company may withhold from any Shares vesting hereunder a number of Shares whose market value is sufficient in amount for the Company to satisfy any applicable United States federal, state or other tax withholding requirement under the laws of the jurisdictions in which you reside or that otherwise may be applicable to you. You shall not be entitled to any Shares or dividends on any Shares until all such tax obligations have been satisfied in full.

D. Clawback. If you are an elected officer, in addition to any other remedies available to the Company (but subject to applicable law), if the Board determines that it is appropriate, the Company may recover (in whole or in part) any payment made pursuant to this Award where: (1) the payment was predicated upon achieving certain financial results that were subsequently the subject of a restatement of Company financial statements filed with the Securities and Exchange Commission; (2) the Board determines that you engaged in knowing or intentional fraudulent or illegal conduct that caused or substantially caused the need for the restatement; and (3) a lower payment would have been made to you pursuant to the Award based upon the restated financial results. In any such instance, the Company will, to the extent practicable, seek to recover from you the amount by which the payment pursuant to the Award for the relevant period exceeded the lower payment that would have been made based on the restated financial results. The Company's right of recovery applies to both the vested and unvested portion of the Award.

E. Plan. All terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

F. Notices. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, and, if to the Company, addressed to Raytheon Company, 870 Winter Street, Waltham, Massachusetts 02451, Attention: Vice President, Human Resources and Global Security, and, if to you, to your name and address as shown on the Company's payroll records.

G. Entire Agreement; Successors and Assigns. The Plan and this Award Agreement constitute the entire agreement governing the terms of the Award. The Award Agreement shall inure to the benefit of the Company's successors and assigns and may be assigned by the Company without your consent.

H. Governing Law. This Award Agreement shall be governed by the law of the Commonwealth of Massachusetts, without regard to its provisions governing conflicts of law.

Your acceptance of this Award constitutes your agreement to the terms of this Restricted Stock Award Agreement.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

Exhibit 10.21

RAYTHEON 2019 STOCK PLAN

RESTRICTED STOCK UNIT AWARD AGREEMENT

This Restricted Stock Unit Award Agreement (the "Award Agreement"), dated as of **<Award Date>** (the "Award Date") is between Raytheon Company (the "Company"), and <**First Name, Middle Initial, Last Name>**, an employee of the Company or one of its Affiliates ("you").

1. Award of Units

The Company hereby awards you the number of restricted stock units ("Units") set forth below, with respect to its common stock, par value $0.01 per share (the "Stock"), subject to the terms and conditions of the Raytheon 2019 Stock Plan (the "Plan") and the vesting and other provisions of this Award Agreement. Subject to the provisions hereof, each Unit represents the right to receive one share of Stock (a "Share") plus additional cash payments in lieu of dividends as described in Section 6 below.

Total Number of Restricted Units (the "Award"): #	Vesting Date/ # Units
Vesting Schedule: (Each period from the Award Date until the Vesting Date is a "Restriction Period".)	Vesting Date 1: (# Units) Vesting Date 2: (# Units) Vesting Date 3: (# Units)

2. Acceptance of Award

This Award is not effective or enforceable until you properly acknowledge your acceptance of the Award by returning an executed copy of this Award Agreement to _______________ as instructed below no later than _______, 20__. If you do not properly acknowledge your acceptance of this Award Agreement on or before _________, 20__, this Award will be forfeited.

Acceptance of this Award Agreement must be made only by you personally or by a person acting pursuant to a power of attorney in the event of your inability to acknowledge your acceptance due to your disability or deployment in the Armed Forces (and not by your estate, your spouse or any other person). If you desire to accept this Award, you must acknowledge your acceptance and receipt of this Award Agreement by signing and returning a copy of it to _______________________.

Assuming prompt and proper acknowledgement of your acceptance of this Award Agreement as described above, this Award will be effective as of the Award Date. Acceptance of this Award Agreement constitutes your consent to any action taken under the Plan consistent with its terms with respect to this Award and your agreement to be bound by the restrictions contained in Exhibit A attached hereto ("Post-Employment Conduct").

3. Vesting of Units on Continued Service

Subject to Sections 4, 5, and 8E below, if you are continuously employed by the Company or an Affiliate from the Award Date until the Vesting Date noted above, the Units associated with that Vesting Date shall vest and the restrictions on those Units shall lapse. If during the Restriction Period you cease to be an employee of the Company or an Affiliate for any reason, other than as set forth in Section 4 or Section 5 below, then you shall cease to be entitled to any Units or delivery of any Shares in which Units are settled as to which the applicable restrictions have not previously lapsed.

4. Effect of Termination of Employment

Notwithstanding anything herein to the contrary, if (i) on the Award Date you have attained at least the age of sixty (60) and have completed at least ten (10) years of service and (ii) you cease to be an employee of the Company or an Affiliate for any reason, other than for Cause, after the Award Date but prior to the end of the Restriction Period, you will continue to vest in your Units and receive dividend equivalents (as provided in Section 6 below) per the Vesting Schedule, as if you remained employed by the Company or an Affiliate until the end of the Restriction Period.

5. Effect of Death, Leave of Absence, Disability or Change in Control

Notwithstanding anything above to the contrary, the Units shall vest and restrictions on the Units shall lapse as follows:

a) immediately upon your death;

b) in accordance with the Vesting Schedule in the event of (i) a Medical Leave of Absence of at least one year, (ii) Disability or (iii) a Personal Leave of Absence (but only during the period of such leave, unless you resume your employment at the end of such leave); or

c) immediately upon your termination of employment by reason of an Involuntary Termination within two (2) years following a Change in Control, if in connection with such Change in Control this Award was assumed, continued, substituted or cancelled in exchange for cash payments subject to vesting (in which case such cash payments shall become fully vested, subject to any escrow, holdback, earn-out or similar provisions applicable to holders of Stock).

6. Payment; Dividend Equivalents

The Company shall deliver to you evidence of ownership of the net number of Shares equal to the number of vested Units reduced by the number of Shares previously accelerated to pay taxes, if any, and the number of Shares necessary to satisfy tax withholding obligations, both as described in Section 8E below, as soon as practicable after the Vesting Date applicable to the Units or after the vesting of the Units pursuant to Section 5 above, if earlier. During any Restriction Period, unless otherwise forfeited, you shall be entitled to receive a cash payment in lieu of dividends on the number of Shares the Units covered by this Award represent, when, if and to the extent that the Board has approved a dividend for all Company common shareholders during any Restriction Period.

7. Post-Employment Conduct

Except where prohibited by law, by accepting this Award, you agree to the Post-Employment Conduct restrictions contained in Exhibit A to this Award Agreement.

8. Other Provisions

A. No Guaranty of Future Awards. This Award does not guarantee you the right to or expectation of future Awards under the Plan or any future plan adopted by the Company.

B. No Rights as Shareholder. You shall not be considered a shareholder of the Company with respect to the Units until Shares are issued to you in payment of the Units. Therefore, you have no right to vote the Units or to receive dividends with respect to such Units except as provided in Section 6 above.

C. No Rights to Continued Employment; Recipient Obligations. This Award shall not be deemed to create a contract or other promise of continued employment with the Company or an Affiliate and shall not in any way prohibit or restrict the ability of the Company or an Affiliate to terminate your employment at any time for any reason. This Award Agreement provides for certain obligations on your part following the cessation of your employment with the Company or an Affiliate and shall not, by implication or otherwise, affect in any way your obligations to the Company or an Affiliate during the term of your employment by the Company or an Affiliate, whether pursuant to written agreements between the Company and you, the provisions of applicable Company policies that may be adopted from time to time or applicable law or regulation.

D. Restrictions on Transfer of Units. Until the vesting of, and lapse of the restrictions applicable to, any Units and the delivery of Shares in payment therefor, Units may not be sold, transferred, pledged, exchanged, hypothecated or disposed of by you and shall not be subject to execution, attachment or similar process.

E. Taxes. Taxes may be assessed and/or withheld as required by law at applicable United States federal, state and/or other tax rates (under the laws of the jurisdictions in which you reside or that may otherwise be applicable to you) with respect to Units, issuance of Shares and cash in lieu of dividends. The Company will accelerate the vesting and payment of Units to pay your Federal Insurance Contributions Act (FICA) tax on Units, the income tax withholding that results from payment of your FICA tax, and your additional FICA tax and income tax withholding attributable to the pyramiding of FICA tax and income tax withholding due to the foregoing payments. Notwithstanding anything in this Award Agreement to the contrary, any payment described in this Award Agreement shall be reduced by a number of shares, or cash amount to the extent settlement is made in cash, necessary to satisfy tax withholding obligations.

F. Clawback. If you are an elected officer, in addition to any other remedies available to the Company (but subject to applicable law), if the Board determines that it is appropriate, the Company may recover (in whole or in part) any payment made pursuant to this Award where: (1) the payment was predicated upon achieving certain financial results that were subsequently the subject of a restatement of Company financial statements filed with the Securities and Exchange Commission; (2) the Board determines that you engaged in knowing or intentional fraudulent or illegal conduct that caused or substantially caused the need for the restatement; and (3) a lower payment would have been made to you pursuant to the Award based upon the restated financial results. In any such instance, the Company will, to the extent practicable, seek to recover from you the amount by which the payment pursuant to the Award for the relevant period exceeded the lower payment that would have been made based on the restated financial results. The Company's right of recovery applies to both the vested and unvested portion of the Award.

G. Compliance with Section 409A of the Code. This Award Agreement is intended to comply with the requirements of Code Section 409A and the regulations thereunder. Notwithstanding anything in this Award Agreement to the contrary, to the extent that this Award Agreement constitutes a nonqualified deferred compensation plan to which Code Section 409A applies, (1) the administration of this Award (including time and manner of payments under it) shall comply with Code Section 409A, (2) any shares or other amounts payable under this Award Agreement on a termination of your employment may only be paid on a separation from service (as such term is defined under Code Section 409A and regulations thereunder) ("Separation from Service"), (3) each payment of compensation under this Award Agreement shall be treated as a separate payment, (4) in no event may you, directly or indirectly, designate the calendar year of a payment, and (5) no shares or other amounts which become issuable or distributable under this Award Agreement upon your Separation from Service shall actually be issued or distributed to you prior to the earlier of (i) the first (1st) day of the seventh (7th) month following the date of such Separation from Service or (ii) the date of your death, if you are deemed at the time of such Separation from Service to be a specified employee under Section 1.409A-1(i) of the Treasury Regulations issued under Code Section 409A, as determined by the Committee, and such delayed commencement is otherwise required in order to avoid a prohibited distribution under Code Section 409A(a)(2). The deferred shares or other distributable amount shall be issued or distributed in a lump sum on the first (1st) day of the seventh (7th) month following the date of your Separation from Service or, if earlier, the first day of the month immediately following the date the Company receives proof of your death.

H. Plan. All terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

I. Notices. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, addressed to Raytheon Company, 870 Winter Street, Waltham, Massachusetts 02451, Attention: Vice President, Human Resources and Global Security, and, if to you, to your address as shown on the Company's payroll records.

J. Entire Agreement; Successors and Assigns. The Plan and this Award Agreement constitute the entire agreement governing the terms of the Award. The Award Agreement shall inure to the benefit of the Company's successors and assigns and may be assigned by the Company without your consent.

K. Governing Law. This Award Agreement shall be governed by the law of the Commonwealth of Massachusetts, without regard to its provisions governing conflicts of law.

Your acceptance of this Award constitutes your agreement to the terms of this Restricted Stock Unit Award Agreement.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

(Please complete, sign and return by mail.)

Acknowledged by:

_________________________ _________________________
Signature Date

_________________________ _________________________
Print Name Employee ID

Exhibit A

Post-Employment Conduct Restrictions

The Post Employment Conduct Restrictions (the "Restrictions") attached as Exhibit A to the Restricted Stock Unit Award Agreement (the "Award Agreement") with an Award Date of **<Award Date>** are agreed to in consideration of, among other things, the grant of restricted stock units to **<First Name, Middle Initial, Last Name>** ("you"), under the Award Agreement pursuant to the Raytheon 2019 Stock Plan (the "Plan"). Capitalized terms not otherwise defined herein shall have the meaning ascribed to them in the Award Agreement or the Plan. The following terms as used herein shall mean:

Authorized Company Representative means the Company's Chief Executive Officer acting upon the advice and recommendation of the Company's General Counsel;

Restricted Activity means any activity (A) in which you contribute your knowledge, directly or indirectly, in whole or in part, as an employee, consultant, agent or director or any other similar capacity that, in any such case, involves or relates to products, services or solutions of a Restricted Business that, directly or indirectly, compete with those of the Company; or (B) that may require or involve disclosure of trade secrets, proprietary or confidential information; and

Restricted Business means any business enterprise that operates in one or more of the same markets as the Company including, but not limited to, the following companies: BAE Systems Inc., The Boeing Company, Airbus Group SE, General Dynamics Corporation, Harris Corporation, Honeywell International Inc., L3 Technologies, Inc., Lockheed Martin Corporation, MBDA Incorporated, Northrop Grumman Corporation, Collins Aerospace, SAIC, Thales, United Technologies Corporation.

By accepting the Award, you agree as follows:

1. Consideration and Acknowledgement. You acknowledge and agree that the benefits and compensation opportunities being made available to you under the Award Agreement are in addition to the benefits and compensation opportunities that otherwise are or would be available to you in connection with your employment by the Company or an Affiliate and that the continued vesting of the Award under Sections 4 and 5 of the Award Agreement is expressly made contingent upon your agreements with the Company set forth in these Restrictions. You acknowledge that the scope and duration of the Restrictions are necessary to be effective and are fair and reasonable in light of the value of the benefits and compensation opportunities being made available to you under the Award Agreement. You further acknowledge and agree that as a result of the positions you hold with the Company and the access to and extensive knowledge of the Company's confidential or proprietary information, employees, suppliers and customers, the Restrictions are reasonably required for the protection of the Company's legitimate business interests. In addition, nothing herein is intended to limit or restrict your ability to exercise any legally protected whistleblower rights (including pursuant to Rule 21F under the Securities Exchange Act of 1934).

2. Restrictions.

(a) Covenant Not To Compete - Without the prior written consent of an Authorized Company Representative, you agree that during any Restriction Period following cessation of employment you will not engage in any Restricted Activity for any: (i) Restricted Business; (ii) entity directly or indirectly controlling, controlled by, or under common control with a Restricted Business; and (iii) successor to all or part of the business of any Restricted Business as a result of a merger, reorganization, consolidation, spin-off, split-up, acquisition, divestiture, or similar transaction.

(b) Non-Solicit - Without the prior written consent of an Authorized Company Representative, you agree that during any Restriction Period following cessation of employment you will not (i) interfere with any contractual relationship between the Company or an Affiliate and any customer of, supplier or distributor to, or manufacturer for the Company or an Affiliate to the detriment of the Company or an Affiliate or (ii) induce or attempt to induce any person who is an employee of the Company or an Affiliate to perform work or services for any entity other than the Company or an Affiliate.

(c) Protection of Confidential and Proprietary Information - You agree to keep all confidential and proprietary information of the Company and its Affiliates, including joint venture partners, strictly confidential except to the extent disclosure is required by law or court order, and except to the extent that such confidential and proprietary information has become public through no fault of your own.

(d) Cooperation in Litigation and Investigations - Following the date on which you cease to be an employee of the Company or an Affiliate, you agree, to the extent reasonably requested, to cooperate with the Company in any pending or future litigation (including alternative dispute resolution proceedings) or investigations in which the Company or Affiliates is a party or is required or requested to provide testimony and regarding which, as a result of your employment with the Company or an Affiliate, you reasonably could be expected to have knowledge or information relevant to the litigation or investigation.

Notwithstanding any other provision of these Restrictions, nothing in these Restrictions shall affect your obligation to cooperate with any governmental inquiry or investigation or to give truthful testimony in court.

3. Annual Validation of Compliance. You acknowledge and agree that you shall confirm in writing to the Company, annually between January 1 and January 31, your compliance with the restrictions set forth in Section 2 hereof. **Failure to provide such annual written confirmation will result in the forfeiture of any unvested Units.**

4. Result of Breach of Section 2 or Section 3. In the event that you breach any of the covenants or agreements in Section 2 or Section 3 hereof, to the extent your Units have not fully vested, all of your remaining rights, title or interest in the Award and any dividend equivalents with respect thereto, shall cease.

5. Invalidity; Unenforceability. It is the desire and intent of the parties that the provisions of these Restrictions shall be enforced to the fullest extent permissible. Accordingly, if any particular provision of these Restrictions is adjudicated to be invalid or unenforceable, the Award Agreement shall be deemed amended to delete the portion adjudicated to be invalid or unenforceable, such deletion to apply only with respect to the operation of this provision in the particular jurisdiction in which such adjudication is made.

These Restrictions are effective as of the acceptance by you of the Award of Units under this Award Agreement and is not contingent on the vesting of your Units.

Exhibit 10.22

RAYTHEON 2019 STOCK PLAN

RESTRICTED STOCK UNIT AWARD AGREEMENT

This Restricted Stock Unit Award Agreement (the "Award Agreement"), dated as of **<Award Date>** (the "Award Date") is between Raytheon Company (the "Company"), and <**First Name, Middle Initial, Last Name>**, an employee of the Company or one of its Affiliates ("you").

1. Award of Units

The Company hereby awards you the number of restricted stock units ("Units") set forth below, with respect to its common stock, par value $0.01 per share (the "Stock"), subject to the terms and conditions of the Raytheon 2019 Stock Plan (the "Plan") and the vesting and other provisions of this Award Agreement. Subject to the provisions hereof, each Unit represents the right to receive one share of Stock (a "Share") plus additional cash payments in lieu of dividends as described in Section 5 below.

Total Number of Restricted Units (the "Award"): #	Vesting Date/ # Units
Vesting Schedule: (Each period from the Award Date until the Vesting Date is a "Restriction Period".)	Vesting Date 1: (# Units) Vesting Date 2: (# Units) Vesting Date 3: (# Units)

2. Vesting of Units

Subject to Sections 3, 4 and 6E below, if you are continuously employed by the Company or an Affiliate from the Award Date until the Vesting Date noted above, the Units associated with that Vesting Date shall vest and the restrictions on those Units shall lapse. With respect to any Units that vest, the Company shall promptly deliver to you evidence of ownership of the net number of Shares equal to the number of vested Units reduced by the number of Shares necessary to satisfy tax withholding obligations as described in Section 6E below.

3. Effect of Termination of Employment

If during the Restriction Period you cease to be an employee of the Company or an Affiliate for any reason, other than as set forth in Section 4 below, then you shall cease to be entitled to any Units or delivery of any Shares in which Units are settled as to which the applicable restrictions have not previously lapsed. All rights in and to such Units and related Shares, as well as cash in lieu of dividends as described in Section 5 below, shall be forfeited immediately after you cease to be an employee of the Company or an Affiliate.

4. Effect of Death, Leave of Absence, Disability or Change in Control

Notwithstanding anything above to the contrary, the Units shall vest and restrictions on the Units shall lapse as follows:

(a) immediately upon your death;

(b) in accordance with the Vesting Schedule in the event of (i) a Medical Leave of Absence of at least one year, (ii) Disability or (iii) a Personal Leave of Absence (but only during the period of such leave, unless you resume your employment at the end of such leave); or

(c) immediately upon your termination of employment by reason of an Involuntary Termination within two (2) years following a Change in Control, if in connection with such Change in Control this Award was assumed, continued, substituted or cancelled in exchange for cash payments subject to vesting (in which case such cash payments shall become fully vested, subject to any escrow, holdback, earn-out or similar provisions applicable to holders of Stock).

5. Payment of Dividend Equivalents

Upon the vesting and lapsing of restrictions on Units, you shall be entitled to receive a cash payment in lieu of dividends on the number of Shares those Units represent, if and to the extent that the Board has approved a dividend for all Company shareholders during the Restriction Period applicable to such Units. The dividend equivalent amount shall be a cash payment based upon the number of Units vesting hereunder multiplied by each quarterly per share dividend approved by the Board during the Restriction Period applicable to such Units (or portion of the Restriction Period preceding the Company's delivery to you of the Shares). You will not be entitled to any cash payment in lieu of dividends relating to Units covered by this Award which are forfeited prior to vesting.

6. Other Provisions

A. No Guaranty of Future Awards. This Award does not guarantee you the right to or expectation of future Awards under the Plan or any future plan adopted by the Company.

B. No Rights as Shareholder. You shall not be considered a shareholder of the Company with respect to the Units until Shares are issued to you in payment of the Units. Therefore, you have no right to vote the Units or to receive dividends with respect to such Units except as provided in Section 5 above.

C. No Rights to Continued Employment. This Award shall not be deemed to create a contract or other promise of continued employment with the Company or an Affiliate and shall not in any way prohibit or restrict the ability of the Company or an Affiliate to terminate your employment at any time for any reason.

D. Restrictions on Transfer of Units. Until the vesting of, and lapse of the restrictions applicable to, any Units and the delivery of Shares in payment therefor, Units may not be sold, transferred, pledged, exchanged, hypothecated or disposed of by you and shall not be subject to execution, attachment or similar process.

E. Taxes. Taxes may be assessed and/or withheld as required by law at applicable United States federal, state and/or other tax rates (under the laws of the jurisdictions in which you reside or that may otherwise be applicable to you) with respect to Units, issuance of Shares and cash in lieu of dividends. Notwithstanding anything in this Award Agreement to the contrary, any payment described in this Award Agreement shall be reduced by a number of shares, or cash amount to the extent settlement is made in cash, necessary to satisfy tax withholding obligations.

F. Clawback. If you are an elected officer, in addition to any other remedies available to the Company (but subject to applicable law), if the Board determines that it is appropriate, the Company may recover (in whole or in part) any payment made pursuant to this Award where: (1) the payment was predicated upon achieving certain financial results that were subsequently the subject of a restatement of Company financial statements filed with the Securities and Exchange Commission; (2) the Board determines that you engaged in knowing or intentional fraudulent or illegal conduct that caused or substantially caused the need for the restatement; and (3) a lower payment would have been made to you pursuant to the Award based upon the restated financial results. In any such instance, the Company will, to the extent practicable, seek to recover from you the amount by which the payment pursuant to the Award for the relevant period exceeded the lower payment that would have been made based on the restated financial results. The Company's right of recovery applies to both the vested and unvested portion of the Award.

G. Compliance with Section 409A of the Code. This Award Agreement is intended to comply with the requirements of Code Section 409A and the regulations thereunder. Notwithstanding anything in this Award Agreement to the contrary, to the extent that this Award Agreement constitutes a nonqualified deferred compensation plan to which Code Section 409A applies, (1) the administration of this Award (including time and manner of payments under it) shall comply with Code Section 409A, (2) any shares or other amounts payable under this Award Agreement on a termination of your employment may only be paid on a separation from service (as such term is defined under Code Section 409A and regulations thereunder) ("Separation from Service"), (3) each payment of compensation under this Award Agreement shall be treated as a separate payment, (4) in no event may you, directly or indirectly, designate the calendar year of a payment, and (5) no shares or other amounts which become issuable or distributable under this Award Agreement upon your Separation from Service shall actually be issued or distributed to you prior to the earlier of (i) the first (1st) day of the seventh (7th) month following the date of such Separation from Service or (ii) the date of your death, if you are is deemed at the time of such Separation from Service to be a specified employee under Section 1.409A-1(i) of the Treasury Regulations issued under Code Section 409A, as determined by the Committee, and such delayed commencement is otherwise required in order to avoid a prohibited distribution under Code Section 409A(a)(2). The deferred shares or other distributable amount shall be issued or distributed in a lump sum on the first (1st) day of the seventh (7th) month following the date of your Separation from Service or, if earlier, the first day of the month immediately following the date the Company receives proof of your death.

H. Plan. All terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

I. Notices. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, addressed to Raytheon Company, 870 Winter Street, Waltham, Massachusetts 02451, Attention: Vice President, Human Resources and Global Security, and, if to you, to your address as shown on the Company's payroll records.

J. Entire Agreement; Successors and Assigns. The Plan and this Award Agreement constitute the entire agreement governing the terms of the Award. The Award Agreement shall inure to the benefit of the Company's successors and assigns and may be assigned by the Company without your consent.

K. Additional Terms for Non-U.S. Participants. Notwithstanding anything to the contrary herein, if you are residing and/or working outside the United States you shall be subject to the Terms and Conditions for Non-U.S. Participants attached hereto as Addendum A and to any Country-Specific Terms and Conditions attached hereto as Addendum B. If you are a citizen or resident of a country (or are considered as such for local law purposes) other than the one in which you are currently residing or working or if you relocate to one of the countries included in the Country-Specific Terms and Conditions after the grant of the Award, the special terms and conditions for such country will apply to you to the extent the Company determines that the application of such terms and conditions is necessary or advisable in order to comply with local law or facilitate the administration of the Plan. The Terms and Conditions for Non-U.S. Participants and the Country-Specific Terms and Conditions constitute part of this Award Agreement and are incorporated herein by reference.

L. Governing Law. This Award Agreement shall be governed by the law of the Commonwealth of Massachusetts, without regard to its provisions governing conflicts of law.

Your acceptance of this Award constitutes your agreement to the terms of this Restricted Stock Unit Award Agreement.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

ADDENDUM A TO THE RESTRICTED STOCK UNIT AWARD AGREEMENT

TERMS AND CONDITIONS FOR NON-U.S. PARTICIPANTS

This Addendum includes additional terms and conditions that govern the Award granted to you if you work or reside outside the United States.

Capitalized terms used but not defined herein are defined in the Plan or the Award Agreement and have the meanings set forth therein.

1. **No Acquired Right**. You acknowledge and agree that:

(a) The Plan is established voluntarily by the Company, the grant of awards under the Plan is made at the discretion of the Committee and the Plan may be modified, amended, suspended or terminated by the Company at any time. All decisions with respect to future awards, if any, will be at the sole discretion of the Committee.

(b) This Award (and any similar awards the Company may in the future grant to you, even if such awards are made repeatedly or regularly, and regardless of their amount) and Shares acquired under the Plan, (A) are wholly discretionary and occasional, are not a term or condition of employment and do not form part of a contract of employment, or any other working arrangement, between you and the Company or any Affiliate; (B) do not create any contractual entitlement to receive future awards or benefits in lieu thereof; and (C) do not form part of salary or remuneration for purposes of determining pension payments or any other purposes, including without limitation termination indemnities, severance, resignation, payment in lieu of notice, redundancy, end of service payments, bonuses, long-term service awards, pension or retirement benefits, welfare benefits or similar payments, except as otherwise required by the applicable law of any governmental entity to whose jurisdiction the award is subject.

(c) This Award and the Shares acquired under the Plan are not intended to replace any pension rights or compensation.

(d) You are voluntarily participating in the Plan.

(e) In the event that your employer is not the Company, the grant of this Award and any similar awards the Company may grant to you in the future will not be interpreted to form an employment contract or relationship with the Company and, furthermore, the grant of this Award and any similar awards the Company may grant to you in the future will not be interpreted to form an employment contract with your employer or any Affiliate.

(f) The future value of the underlying Shares is unknown and cannot be predicted with certainty. Neither the Company nor any Affiliate shall be liable for any foreign exchange rate fluctuation between your local currency and the United States Dollar that may affect the value of the Award or the Shares.

(g) You shall have no rights, claim or entitlement to compensation or damages as a result of your cessation of employment for any reason whatsoever, whether or not later found to be invalid or in breach of contract or local labor law, insofar as these rights, claim or entitlement arise or may arise from your ceasing to have rights under this Award as a result of such cessation or loss or diminution in value of the Award or any of the Shares issuable under this Award as a result of such cessation, and you irrevocably release your employer, the Company and its Affiliates, as applicable, from any such rights, entitlement or claim that may arise. If, notwithstanding the foregoing, any such right or claim is found by a court of competent jurisdiction to have arisen, then, by signing this Award Agreement, you shall be deemed to have irrevocably waived your entitlement to pursue such rights or claim.

2. **Data Protection.**

(a) **You hereby explicitly and unambiguously consent to the collection, use and transfer, in electronic or other form, of your personal data as described in this Award Agreement by and among, as applicable, your employer, the Company and its Affiliates for the exclusive purpose of implementing, administering and managing your participation in the Plan.**

(b) **You understand that your employer, the Company and its Affiliates, as applicable, hold certain personal information about you regarding your employment, the nature and amount of your compensation and the fact and conditions of your participation in the Plan, including, but not limited to, your name, home address, telephone number and e-mail address, date of birth, social insurance number or other identification number, salary, nationality, job title, any shares of stock or directorships held in the Company and its Affiliates, details of all options, awards or any other entitlement**

to shares of stock awarded, canceled, exercised, vested, unvested or outstanding in your favor, for the purpose of implementing, administering and managing the Plan (the "Data").

(c) **You understand that the Data may be transferred to any third parties assisting in the implementation, administration and management of the Plan, that these recipients may be located in your country, or elsewhere, and that the recipient's country may have different data privacy laws and protections than your country. You understand that you may request a list with the names and addresses of any potential recipients of the Data by contacting his or her local human resources representative. You authorize the recipients to receive, possess, use, retain and transfer the Data, in electronic or other form, for the purposes of implementing, administering and managing your participation in the Plan, including any requisite transfer of such Data as may be required to a broker or other third party. You understand that the Data will be held only as long as is necessary to implement, administer and manage your participation in the Plan. You understand that you may, at any time, view the Data, request additional information about the storage and processing of the Data, require any necessary amendments to the Data or refuse or withdraw the consents herein, in any case without cost, by contacting in writing your local human resources representative. You understand, however, that refusing or withdrawing your consent may affect your ability to participate in the Plan. For more information on the consequences of refusal to consent or withdrawal of consent, you understand that you may contact your local human resources representative.**

3. **Taxes**. This provision replaces Section 6E of the Award Agreement in its entirety.

(a) All obligations of the Company under this Award Agreement shall be subject to the rights of the Company or any Affiliate to withhold amounts required to be withheld, collected or accounted for with respect to any income taxes, employment taxes, social insurance, social security, national insurance contributions, other contributions, payroll taxes, payment on account obligations and other amounts ("Taxes") with respect to the Award, if applicable. Notwithstanding anything in this Award Agreement to the contrary, any payment described in this Award Agreement shall be reduced by a number of shares, or cash amount to the extent settlement is made in cash, necessary to satisfy obligations for Taxes. If shares are withheld to cover the obligation for Taxes, then for tax purposes, you shall be deemed to have been issued the full number of Shares with respect to the vested Units notwithstanding that a number of Shares are held back for purposes of paying Taxes. To the extent the number of Shares withheld is not sufficient to cover the obligation for Taxes, you shall be required to pay to the Company or any Affiliate, or make other arrangements satisfactory to the Company or any Affiliate to provide for the payment of, any Taxes required to be withheld, collected or accounted for with respect to the Units.

(b) You acknowledge that regardless of any action the Company (or any Affiliate employing or retaining you) takes with respect to any or all Taxes with respect to the Award (including but not limited to as a result of or with respect to the grant, issuance, vesting or settlement, of such Award), the ultimate liability for all Taxes legally due by you is and remains your responsibility and that the Company (and its Affiliates) (i) make no representations or undertakings regarding the treatment of any Taxes in connection with any aspect of the Award, including the grant, vesting or settlement of the Award, and the subsequent sale of any Shares acquired at settlement; and (ii) do not commit to structure the terms of the grant or any aspect of the Award to reduce or eliminate your liability for Taxes. Further, if you are subject to taxation in more than one jurisdiction between the Award Date and the date of any relevant taxable or tax withholding event, as applicable, you acknowledge that the Company and/or your employer (or former employer, as applicable) may be required to withhold or account for Taxes in more than one jurisdiction.

ADDENDUM B TO THE RESTRICTED STOCK UNIT AWARD AGREEMENT

COUNTRY-SPECIFIC TERMS AND CONDITIONS

These Country-Specific Terms and Conditions include additional terms and conditions that govern the Award granted to you under the Plan if you reside or work in one of the countries listed below. Capitalized terms used but not defined in these Country-Specific Terms and Conditions are defined in the Plan or the Award Agreement and have the meanings set forth therein.

AUSTRALIA

1. Securities Law Notice.

OFFER TO AUSTRALIAN RESIDENT EMPLOYEES

This Offer Document sets out information regarding the participation of Australian resident employees of Raytheon Company (the "Company") and its Australian Affiliates in the grant of an award of restricted stock units made under the Raytheon 2019 Omnibus Stock Plan (the "Plan").

Investment in securities involves a degree of risk and there is no guarantee of the future value of, or returns from, securities you may acquire under the Plan. Employees who elect to participate in the Plan should consider all risk factors relevant to the acquisition of securities under the Plan as set out in this document and any associated documents.

The information contained in this document and any associated documents is general information only. It is not advice or information specific to your objectives, financial situation or needs. Australian employees should consider obtaining their own financial product advice from an independent person who is licensed by the Australian Securities and Investments Commission to give advice about participation in the Plan.

A. OFFER AND TERMS OF PARTICIPATION

This Offer Document relates to an invitation by the Company to eligible employees in Australia to accept grants of restricted stock unit awards made under the Plan. The awards will be issued at no cost to you.

The terms of your participation are set out in the Plan, the Prospectus [(as supplemented by the Supplement to Plan Prospectus for Australia)], the Award Agreement and this Offer Document.

By accepting a grant of a restricted stock unit award, you will be bound by terms set out in the Plan, the Prospectus [(as supplemented by the Prospectus Supplement for Australia)], the Award Agreement and this Offer Document.

B. HOW CAN I ASCERTAIN THE CURRENT MARKET PRICE OF SHARES UNDERLYING THE RESTRICTED SHARE UNIT AWARD IN AUSTRALIAN DOLLARS?

You could, from time to time, ascertain the market price of a share of common stock in the Company ("Company Stock") by obtaining that price from the NYSE website, the Company website or The Wall Street Journal, and multiplying that price by a published exchange rate to convert U.S. Dollars into Australian Dollars, to determine the Australian dollar equivalent of that current market price.

C. RISKS OF ACQUIRING AND HOLDING SHARES

Acquiring and holding restricted stock units and shares of Company Stock involves risk. These risks include that:

(a) There is no guarantee that the shares will grow in value - they may decline in value. Stock markets are subject to fluctuations and the price of shares can rise and fall, depending upon the Company's performance and other internal and external factors.

(b) There is no assurance that the Company will pay dividends even if its earnings increase.

(c) There are tax implications involved in acquiring and holding restricted stock units and shares of Company Stock and the tax regime applying to you may change.

D. AVAILABILITY OF PLAN.

The Company will, within a reasonable time of the Participant so requesting, provide the Participant with a copy of the Plan, without charge.

2. Tax Information. The Plan is a plan to which subdivision 83A-C of the Income Tax Assessment Act 1997 (Cth) applies (subject to conditions in that Act).

3. Data Protection.

For the purposes of Section 2 of Addendum A to the Award Agreement, the following additional provisions apply:

(a) You understand that recipients of the Data may be located in the United States;

(b) You understand that, by consenting to the disclosure of the Data to recipients located overseas, Australian Privacy Principle ("APP") 8.1 will not apply to the disclosure and as a result your employer will not be accountable under the Privacy Act 1988 (Cth) and you may not be able to seek redress under the Privacy Act 1988 (Cth) in respect of this Data; and

(c) You acknowledge that your employer's privacy policy contains information about how you may access the Data about you that it holds and seek the correction of such Data. It also contains information about how you may complain about a breach of the APPs and how your employer will deal with such a complaint.

SAUDI ARABIA

1. Securities Law Information. Neither this document nor the Units have been approved, disapproved or passed on in any way by the Capital Market Authority or any other governmental authority in the Kingdom of Saudi Arabia, nor has the Plan received authorisation or licensing from the Capital Market Authority or any other governmental authority in the Kingdom of Saudi Arabia to market or sell Units within the Kingdom of Saudi Arabia. This document does not constitute and may not be used for the purpose of an offer or invitation. No services relating to Units, including the receipt of applications and the allotment or redemption of such Units, may be rendered by the Plan within the Kingdom of Saudi Arabia.

2. No Acquired Right. The following provision supplements Section 1 of Addendum A to the Agreement:

(h) The Plan will never be considered as an addendum or complementary to your employment contract, and any amounts granted thereunder will under no circumstance be computed within any calculation for any purpose whatsoever made under your employment contract.

UNITED ARAB EMIRATES

Securities Law Notice.

A. FOR OFFERINGS CONDUCTED ON AN "OFFSHORE" BASIS ENTIRELY OUTSIDE THE UAE

By receiving this Award Agreement, the Plan and other incidental materials relating to the Units, you understand, acknowledge and agree that neither this material nor the contents therein have been approved, disapproved or passed on in any way by the Central Bank of the UAE, the UAE Securities and Commodities Authority ("SCA") or any other authorities in the UAE, nor has the Company received authorisation or licensing from the UAE Central Bank, the SCA or any other authority in the UAE to market or sell the Plan within the UAE. The SCA accepts no liability in relation to the Company and is not making any recommendation with respect to an investment in the Company. No services relating to the Plan including the receipt of applications and/or the allotment or redemption of such Plan have been or will be rendered within the UAE by the Company. Nothing contained in this material is intended to constitute UAE investment, legal, tax, accounting or other professional advice. Nothing in this material is intended to endorse or recommend a particular course of action. You should consult with an appropriate professional for specific advice rendered on the basis of your situation.

B. FOR OFFERINGS IN DUBAI INTERNATIONAL FINANCIAL CENTRE

This Award Agreement, the Plan and other incidental materials relating to the Units have not been registered with, or approved by, the Dubai Financial Services Authority. By receiving this material, you understand, acknowledge and agree that neither this material nor the contents therein shall be deemed as an offer or invitation, nor has been or will be rendered in or from the Dubai International Finance Centre including, for the avoidance of doubt, to any person therein.

C. FOR OFFERINGS IN THE ABU DHABI GLOBAL MARKET

This Award Agreement, the Plan and other incidental materials relating to the Units have not been registered with, or approved by the Abu Dhabi Global Market. By receiving this material, you understand, acknowledge and agree that neither this material nor the contents therein shall be deemed as an offer or invitation, nor has been or will be rendered in or from the Abu Dhabi Global Market including, for the avoidance of doubt, to any person therein.

UNITED KINGDOM

1. Units Payable Only in Shares. Notwithstanding any discretion in the Plan or anything to the contrary in the Award Agreement, the grant of Units does not provide you any right to receive a cash payment and the Units may be settled only in Shares.

2. Termination of Service. You have no right to compensation or damages on account of any loss in respect of Units under the Plan where the loss arises or is claimed to arise in whole or part from: (a) the termination of your office or employment; or (b) notice to terminate your office or employment. This exclusion of liability shall apply however termination of office or employment, or the giving of notice, is caused, and however compensation or damages are claimed. For the purpose of the Plan, the implied duty of trust and confidence is expressly excluded.

3. Tax Withholding. You indemnify the Company and for any Taxes that may be payable with respect to the full number of Shares vested and issued (including these Shares that are deemed issued). To the extent any Shares are withheld by the Company to pay Taxes, the Company shall pay over to the Affiliate employing you sufficient moneys to satisfy your liability under such indeminity.

4. Data Protection.

The following provisions replace Section 2 of Addendum A to the Award Agreement in its entirety:

(a) You hereby acknowledge and understand that your personal data is collected, retained, used, processed, disclosed and transferred, in electronic or other form, as described in this Award Agreement by and among, as applicable, your employer, the Company and its Affiliates, and third parties assisting in the implementation, administration and management of the Plan for the exclusive purpose of implementing, administering and managing your participation in the Plan.

(b) You understand that the Company and its Affiliates (including your employer), as applicable, hold certain personal information about him or her regarding your employment, the nature and amount of your compensation and the fact and conditions of your participation in the Plan, including, but not limited to, his or her name, home address, telephone number and e-mail address, date of birth, social insurance number or other identification number, salary, nationality, job title, any equity or directorships held in the Company and details of all options or any other entitlement to equity awarded, canceled, exercised, vested, unvested or outstanding in your favor, in connection with the implementation, management and administration of the Plan (the "Data").

(c) You understand that the Data may be transferred to the Company, its Affiliates and any third parties assisting in the implementation, administration and management of the Plan, that these recipients may be located in your country, or elsewhere, and that the recipient's country may have a different or lower standard of data privacy rights and protections than your country. You understand that you may request a list with the names and addresses of any recipients of the Data by contacting your local human resources representative. You understand that the recipients receive, possess, use, retain and transfer the Data, in electronic or other form, for the purposes of implementing, administering and managing your participation in the Plan, including transfers of such Data to a broker or other third party. You understand that the Data will be held only as long as is necessary to implement, administer and manage your participation in the Plan in accordance with applicable law. You understand that you may, at any time, request to access or be provided the Data, request additional information about the storage and processing of the Data, require any corrections or amendments to

the Data in any case without cost and to the extent permitted by law, by contacting in writing your local human resources representative. You understand, however, that objecting to the processing of your Data may affect your ability to participate in the Plan. For more information on the processing of your Data and other personal data, you are referred to the Privacy Notice provided to you by your employer.

Exhibit 10.23

RAYTHEON 2019 STOCK PLAN

Performance Stock Unit Award Agreement with respect to the [Year] - [Year] Long-Term Performance Plan

This Performance Stock Unit Award Agreement (the "Agreement"), dated as of **[Date]** (the "Award Date") is between Raytheon Company (the "Company"), and [**Name]**, an employee of the Company or one of its Affiliates ("you").

1. Award of Units

The Company hereby grants to you an award of stock units with respect to its common stock, par value $0.01 per share (the "Stock"), pursuant to the Raytheon 2019 Stock Plan (as amended from time to time, the "Plan"), subject to the terms and conditions set forth in this Agreement.

Total Target Number of Shares of Stock	**[# of Shares]**
Performance Cycle	Calendar years **[Year]** through **[Year]**

2. Conditions to Award

Pursuant to this Award, you will be entitled to a payment based on your Total Target Number of Shares of Stock set forth above and the Company's performance during the Performance Cycle with respect to (i) the Company's average "Return on Invested Capital" ("ROIC") (weighted at fifty percent (50%) of the Total Target Number of Shares of Stock); (ii) the Company's "Cumulative Free Cash Flow from Continuing Operations" ("CFCF") (weighted at twenty-five percent (25%) of the Total Target Number of Shares of Stock); and (iii) the Total Shareholder Return of the Company (compounded annually), relative to that of its Peers (weighted at twenty-five percent (25%) of the Total Target Number of Shares of Stock) (each a "metric" and collectively the "metrics"). The actual amount of such payment will be determined by multiplying the Total Target Number of Shares of Stock by the applicable Target Share Award Multiplier determined as described in this Section 2. The Target Share Award Multiplier for each metric will be determined based on the level of the Company's performance during the Performance Cycle relative to that metric as set forth in the applicable table. With respect to ROIC and CFCF, if the Company's actual performance during the Performance Cycle is between the Threshold (No Award) and Target levels, or between the Target and Maximum levels, the Target Share Award Multiplier shall be determined by interpolating between the two points on a straight-line basis. The precise extent to which the Company will have satisfied the metrics, and any shares of Stock will have been earned, will be determined by the Management Development and Compensation Committee of the Company's Board (the "Committee") as soon as practicable following the close of the Performance Cycle and, to the extent reasonably practicable, will be calculated without regard to any change in applicable accounting standards or tax statutes after the grant of this Award.

	Average 3-Year Return on Invested Capital (ROIC)	**Target Share Award Multiplier**
Maximum		
Target		
No Award		

	Cumulative 3-Year Free Cash Flow from Continuing Operations (CFCF) (in millions)	**Target Share Award Multiplier**
Maximum		
Target		
No Award		

	Total Shareholder Return		
		Rank vs. Peers	**Target Share Award Multiplier**
Maximum			
Target			
No Award			

"Return on Invested Capital" or "ROIC" is defined as income from continuing operations plus after-tax net interest expense plus one-third of operating lease expense after-tax (estimate of interest portion of operating lease expense) less after-tax FAS/CAS pension and post-retirement benefits expense/income, and excluding changes for pension and post-retirement benefits-related items, debt repurchases, the tax impact of the difference between the grant date fair value and the settlement date fair value of equity awards, and other similar non-operational items, divided by average* invested capital after capitalizing operating leases (operating lease expense times a multiplier of 8), adding financial guarantees less net investment in Discontinued Operations, and adding back the liability for defined benefit pension and other post retirement benefit plans, net of tax, and excluding the impact of changes to invested capital from pension and post-retirement benefits-related items and other similar non-operational items.

** Average invested capital is calculated based on the Company's invested capital using two points for each year during the Performance Cycle. Examples: average of invested capital on 12/31/[__] and 12/31/[__]; average of invested capital on 12/31/[__] and 12/31/[__]; average of invested capital on 12/31/[__] and 12/31/[__].*

"Cumulative Free Cash Flow from Continuing Operations" or "CFCF" is defined as operating cash flow from continuing operations less capital spending and internal use software spending over the three-year Performance Cycle, excluding the impact of changes to cash flow from pension and post-retirement benefits-related items, the tax impact of the difference between the grant date fair value and the settlement date fair value of equity awards, and other similar non-operational items.

The Company's ROIC and CFCF performance will be calculated to the extent reasonably possible, to exclude the impact of any mergers, acquisitions, dispositions or other similar corporate events involving the Company during the Performance Cycle.

"Total Shareholder Return" is defined as the total return of a stock to an investor (capital gain plus dividends). TSR is calculated using 30 trading day average stock prices at the beginning of the Performance Cycle and following the end of the cycle.

"Peers" is defined as The Boeing Company, General Dynamics Corporation, Harris Corporation, Honeywell International Inc., L-3 Technologies Inc., Lockheed Martin Corporation, Northrop Grumman Corporation, Textron Inc., and United Technologies Corporation.

3. Effect of Termination of Employment, Etc.

You must remain an employee until the end of the Performance Cycle in order to be entitled to any payment pursuant to this Award, except as provided in Section 4 below and except as follows. Subject to Section 4, if your employment with the Company ends during the Performance Cycle on account of your Retirement, as that term is defined in the Plan, or because you become disabled or die, then after the end of the Performance Cycle, you (or in the event of your death, your estate) will be entitled to a pro rata portion of the number of shares of Stock you would have received, if any, had you remained employed until the end of the Performance Cycle. The pro rata portion will be based on the number of full months in the Performance Cycle during which you were employed as compared to the total number of months in the Performance Cycle.

4. Effect of Change in Control

If a Change in Control, as defined in the Plan, should occur during the Performance Cycle, then the number of shares of Stock you will be entitled to receive will be determined as of the effective date of the Change in Control and such shares (or other consideration payable in connection with the assumption, continuation or substitution of the Award) shall become payable as set forth below.

A. Award Assumed, Continued or Substituted. If this Award is assumed, continued or substituted in connection with the Change in Control, then (i) if you remain an employee through the completion of the Performance Cycle, you will be paid the shares issuable under this Award (as determined pursuant to Section 4D) or other consideration payable in connection with such assumption, continuation or substitution promptly following the end of the Performance Cycle but no later than March 15 after the end of the Performance Cycle; or (ii) in the event of your Involuntary Termination within twenty-four (24) months following the Change in Control, the shares issuable under this Award (as determined pursuant to Section 4D) or other consideration payable in connection with such assumption, continuation or substitution shall be issued immediately upon such Involuntary Termination or as soon as practicable thereafter, but in no event more than thirty (30) days after such Involuntary Termination. If your employment terminates prior to the completion of the Performance Cycle for any reason other than an Involuntary Termination or as otherwise provided in Section 4C, the Award shall be immediately cancelled upon such termination and you shall thereupon cease to have any right or entitlement to receive any shares or other consideration under the Award.

B. Award not Assumed, Continued or Substituted. If this Award is not assumed, continued or substituted in connection with the Change in Control, then the shares issuable under this Award (as determined pursuant to Section 4D) shall be issued on the effective date of the Change in Control (or as soon as administratively practicable thereafter, but no later than thirty (30) days following the effective date of the Change in Control) provided that the Award is not deemed to constitute nonqualified deferred compensation under Code Section 409A.

C. Retirement, Death or Disability. If the Change in Control occurs after your employment with the Company ends on account of your Retirement or because you become disabled or die, then you (or in the event of your death, your estate) will be entitled to a pro rata portion of the number of shares of Stock as determined pursuant to Section 4D and such shares shall be issued to you on the effective date of the Change in Control or as soon as administratively practicable thereafter, but no later than thirty (30) days following the effective date of the Change in Control, to the extent permitted under Code Section 409A, otherwise such shares shall be issued to you on the regularly scheduled issuance date. If your employment with the Company ends on account of your Retirement or because you become disabled or die after the Change in Control occurs, then you (or in the event of your death, your estate) will be entitled to a pro rata portion of the number of shares of Stock as determined pursuant to Section 4D or other consideration payable in connection with an assumption, continuation or substitution of the Award and such shares or other consideration shall be issued upon termination of your employment, to the extent permitted under Code Section 409A, otherwise such shares shall be issued to you on the regularly scheduled issuance date. In each case, the pro rata portion will be based on the number of full months in the Performance Cycle during which you were employed as compared to the total number of months in the Performance Cycle.

D. Number of Shares of Stock. In the event the Change in Control occurs within the first calendar year of the Performance Cycle and you remain an employee through the effective date of the Change in Control, you will be entitled to receive 100% of the Total Target Number of Shares of Stock covered by this Award (as adjusted for any assumption continuation, or substitution of the Award), without regard to the extent to which the performance conditions of Section 2 above have been satisfied. In the event the Change in Control occurs on or after completion of the first calendar year of the Performance Cycle and you remain an employee through the effective date of the Change in Control, you will be entitled to receive a number of shares of Stock (as adjusted for any assumption, continuation or substitution of the Award) equal to the sum of (i) the number of shares of Stock determined by the Committee based on the Company's relative Total Shareholder Return performance over an abbreviated Performance Cycle ending with the last business day immediately preceding the effective date of the Change in Control, and (ii) the number of shares of Stock determined by the Committee based on (a) the Company's actual Return on Invested Capital and Cumulative Free Cash Flow performance for all completed calendar years of the Performance Cycle and (b) assumed Company performance of Return on Invested Capital and Cumulative Free Cash Flow at the Target level for each remaining calendar year of the Performance Cycle.

5. Payment

A. Settlement of Award. Except as otherwise provided in Sections 3 and 4 above, the actual number of shares (or amount of cash in lieu of shares) that you receive at the end of the Performance Cycle will be determined based upon the degree to which each metric is attained. You will be entitled to receive 100% of your Total Target Number of Shares of Stock if Target performance is achieved in all three metrics. If performance falls below the Threshold for a metric, no shares of Stock or cash will be awarded for that metric. When performance for a metric is at or above Threshold performance, shares of Stock or cash will be paid out based upon the applicable Target Share Award Multiplier determined as indicated in Section 2 above, up to a maximum of two times the Target performance level. Accordingly, depending upon the level of attainment of each metric, the maximum number of shares of Stock that could be issued in settlement of your Award is two times your Total Target Number of Shares of Stock. The total actual number of shares that you receive under this Award, including shares attributable to dividend equivalent amounts, will be rounded up to the nearest whole share.

B. Timing. Promptly following determination of the number of shares of Stock you have earned under this Award but no later than March 15 after the end of the Performance Cycle, such number, if any, will be paid to you together with a dividend equivalent amount of shares calculated in accordance with Section 5C below.

C. Dividend Equivalents. For each dividend declared by the Company's Board of Directors (the "Board") during the period beginning on the date of grant of this Award and ending at the end of the Performance Cycle, whether in cash or stock, if any (a "LTPP Dividend"), a dividend equivalent amount will be calculated assuming that the shares of Stock to which you ultimately become entitled under this Award (including shares attributable to dividend equivalent amounts from prior LTPP Dividends, if any) were entitled to such LTPP Dividend and that the dividend equivalent amount had been reinvested in additional shares of Stock as of the payment date of such LTPP Dividend. You will not be entitled to any dividend equivalent amount on shares of Stock covered by this Award which are not ultimately earned.

D. Form of Payment. The Committee in its discretion may settle Awards, including any dividend equivalent amounts, in shares of Stock or cash, or a combination thereof. Cash payments, if any, shall be calculated based upon the fair market value of a share of Stock on the date on which the Committee determines the extent to which the Company has satisfied the metrics and the number of shares of Stock to be issued in settlement of the Award.

E. Taxes. Taxes may be assessed and/or withheld as required by law at applicable United States federal, state and/or other tax rates (under the laws of the jurisdictions in which you reside or that may otherwise be applicable to you) with respect to units, issuance of Stock and/or cash. Notwithstanding anything in this Agreement to the contrary, any payment described in this Agreement shall be reduced by a number of shares of Stock, or cash amount to the extent settlement is made in cash, necessary to satisfy tax withholding obligations.

6. Post-Employment Conduct

Except where prohibited by law, by accepting this Award, you agree to the Post-Employment Conduct restrictions contained in Exhibit A to this Award Agreement.

7. Other Provisions

A. Future Adjustments. In the event of any merger, acquisition, disposition or other corporate event affecting the Company or any peer company during the Performance Cycle, the Committee may make such adjustments to the peer group of companies, the total return calculations of the affected companies, and the metrics set forth in Section 2 as it may determine would most nearly carry out the original purposes and intent of this Award.

B. No Guaranty of Future Awards. This Award in no way guarantees you the right to or expectation that you may receive similar awards with respect to any other similar performance cycle or period which the Committee may, in its discretion, establish and as to which the Committee may elect to grant awards under the Plan.

C. No Rights as Shareholder. You will not be considered a shareholder of the Company with respect to the shares of Stock covered by this Award or any dividend equivalent amount of shares unless and until shares of Stock are issued to you in settlement of this Award.

D. No Rights to Continued Employment. This Award shall not be deemed to create a contract or other promise of continued employment with the Company or an Affiliate and shall not in any way prohibit or restrict the ability of the Company or an Affiliate to terminate your employment at any time for any reason.

E. Compliance with Section 409A of the Internal Revenue Code This Agreement is intended to comply with the requirements of Code Section 409A and the regulations thereunder. Notwithstanding anything in this Agreement to the contrary, to the extent that this Agreement constitutes a nonqualified deferred compensation plan to which Code Section 409A applies, (1) the administration of this Award (including time and manner of payments under it) shall comply with Code Section 409A, (2) any shares or other amounts payable under this Agreement on a termination of your employment may only be paid on a separation from service (as such term is defined under Code Section 409A and regulations thereunder) ("Separation from Service"), (3) each payment of compensation under this Agreement shall be treated as a separate payment, (4) in no event may you, directly or indirectly, designate the calendar year of a payment, and (5) no shares or other amounts which become issuable or distributable under this Agreement upon your Separation from Service shall actually be issued or distributed to you prior to the earlier of (i) the first (1st) day of the seventh (7th) month following the date of such Separation from Service or (ii) the date of your death, if you are is deemed at the time of such Separation from Service to be a specified employee under Section 1.409A-1(i) of the Treasury Regulations issued under Code Section 409A, as determined by the Committee, and such delayed commencement is otherwise required in order to avoid a prohibited distribution under Code Section 409A(a)(2). The deferred shares or other distributable amount shall be issued or distributed in a lump sum on the first (1st) day of the seventh (7th) month following the date of your Separation from Service or, if earlier, the first day of the month immediately following the date the Company receives proof of your death.

F. Clawback. If you are an elected officer, in addition to any other remedies available to the Company (but subject to applicable law), if the Board determines that it is appropriate, the Company may recover (in whole or in part) any payment made pursuant to this Award where: (1) the payment was predicated upon achieving certain financial results that were subsequently the subject of a restatement of Company financial statements filed with the Securities and Exchange Commission; (2) the Board determines that you engaged in knowing or intentional fraudulent or illegal conduct that caused or substantially caused the need for the restatement; and (3) a lower payment would have been made to you pursuant to the Award based upon the restated financial results. In any such instance, the Company will, to the extent practicable, seek to recover from you the amount by which the payment pursuant to the Award for the relevant period exceeded the lower payment that would have been made based on the restated financial results.

G. Plan. All terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

H. Notices. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, addressed to Raytheon Company, 870 Winter Street, Waltham, Massachusetts 02451, Attention: Vice President, Human Resources and Global Security, and to you at your address as shown on the Company's payroll records.

Your acceptance of this Award constitutes your agreement to the terms of this Performance Stock Unit Award Agreement with respect to the **[Year] - [Year]** Long-Term Performance Plan.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

ACKNOWLEDGED AND AGREED:

____
[Name]

Exhibit A

Post-Employment Conduct

The Post Employment Conduct Restrictions (the "Restrictions") attached as Exhibit A to the Performance Stock Unit Award Agreement (the "Award Agreement") with an Award Date of **[Date]** are agreed to in consideration of, among other things, the grant of restricted stock units to **Name** ("you"), under the Award Agreement pursuant to the Raytheon 2019 Stock Plan (the "Plan"). Capitalized terms not otherwise defined herein shall have the meaning ascribed to them in the Award Agreement or the Plan. The following terms as used herein shall mean:

Authorized Company Representative means, for a Participant who was an elected officer of the Company as of the Award Date, the Company's Chief Executive Officer, and for any other Participant, the Company's Vice President of Human Resources and Global Security, in each case acting upon the advice and recommendation of the Company's General Counsel;

Restricted Activity means any activity (A) in which you contribute your knowledge, directly or indirectly, in whole or in part, as an employee, consultant, agent or director or any other similar capacity that, in any such case, involves or relates to products, services or solutions of a Restricted Business that, directly or indirectly, compete with those of the Company; or (B) that may require or involve disclosure of trade secrets, proprietary or confidential information; and

Restricted Business means any business enterprise that operates in one or more of the same markets as the Company including, but not limited to, the following companies: BAE Systems Inc., The Boeing Company, Airbus Group SE, General Dynamics Corporation, Harris Corporation, Honeywell International Inc., L3 Technologies, Inc., Lockheed Martin Corporation, MBDA Incorporated, Northrop Grumman Corporation, Collins Aerospace, SAIC, Thales, United Technologies Corporation.

By accepting the Award, you agree as follows:

1. Consideration and Acknowledgement. You acknowledge and agree that the benefits and compensation opportunities being made available to you under the Award Agreement are in addition to the benefits and compensation opportunities that otherwise are or would be available to you in connection with your employment by the Company or an Affiliate and that the payment to you of the pro rata portion of the shares of Stock after the end of the Performance Cycle under Section 3 of the Award Agreement (the "Payment") is expressly made contingent upon your agreements with the Company set forth in these Restrictions. You acknowledge that the scope and duration of the Restrictions are necessary to be effective and are fair and reasonable in light of the value of the benefits and compensation opportunities being made available to you under the Award Agreement. You further acknowledge and agree that as a result of the positions you hold with the Company and the access to and extensive knowledge of the Company's confidential or proprietary information, employees, suppliers and customers, the Restrictions are reasonably required for the protection of the Company's legitimate business interests. In addition, nothing herein is intended to limit or restrict your ability to exercise any legally protected whistleblower rights (including pursuant to Rule 21F under the Securities Exchange Act of 1934).

2. Restrictions.

(a) Covenant Not To Compete - Without the prior written consent of an Authorized Company Representative, you agree that during the period between the termination of your employment with the Company on account of your Retirement and the end of the Performance Cycle (the "Restriction Period") you will not engage in any Restricted Activity for any: (i) Restricted Business; (ii) entity directly or indirectly controlling, controlled by, or under common control with a Restricted Business; and (iii) successor to all or part of the business of any Restricted Business as a result of a merger, reorganization, consolidation, spin-off, split-up, acquisition, divestiture, or similar transaction.

(b) Non-Solicit - Without the prior written consent of an Authorized Company Representative, you agree that during the Restriction Period following cessation of employment you will not (i) interfere with any contractual relationship between the Company or an Affiliate and any customer of, supplier or distributor to, or manufacturer for the Company or an Affiliate to the detriment of the Company or an Affiliate or (ii) induce or attempt to induce any person who is an employee of the Company or an Affiliate to perform work or services for any entity other than the Company or an Affiliate.

(c) Protection of Confidential and Proprietary Information - You agree to keep all confidential and proprietary information of the Company and its Affiliates, including joint venture partners, strictly confidential except to the extent disclosure is required by law or court order, and except to the extent that such confidential and proprietary information has become public through no fault of your own.

(d) Cooperation in Litigation and Investigations - Following the date on which you cease to be an employee of the Company or an Affiliate, you agree, to the extent reasonably requested, to cooperate with the Company in any pending or future litigation (including alternative dispute resolution proceedings) or investigations in which the Company or Affiliates is a party or is required or requested to provide testimony and regarding which, as a result of your employment with the Company or an Affiliate, you reasonably could be expected to have knowledge or information relevant to the litigation or investigation. Notwithstanding any other provision of these Restrictions, nothing in these Restrictions shall affect your obligation to cooperate with any governmental inquiry or investigation or to give truthful testimony in court.

3. Annual Validation of Compliance. You acknowledge and agree that you shall confirm in writing to the Company, annually between January 1 and January 31, your compliance with the restrictions set forth in Section 2 hereof. **Failure to provide such annual written confirmation may result in the forfeiture of the Payment.**

4. Result of Breach of Section 2 or Section 3. In the event that you breach any of the covenants or agreements in Section 2 or Section 3 hereof, all of your remaining rights, title or interest in the Payment, the Award and any dividend equivalents with respect thereto, shall cease.

5. Invalidity; Unenforceability. It is the desire and intent of the parties that the provisions of these Restrictions shall be enforced to the fullest extent permissible. Accordingly, if any particular provision of these Restrictions is adjudicated to be invalid or unenforceable, the Award Agreement shall be deemed amended to delete the portion adjudicated to be invalid or unenforceable, such deletion to apply only with respect to the operation of this provision in the particular jurisdiction in which such adjudication is made.

These Restrictions are effective as of the acceptance by you of the Award of Units under this Award Agreement.

Exhibit 10.24

RAYTHEON 2019 STOCK PLAN

RESTRICTED STOCK AWARD AGREEMENT FOR DIRECTORS

This **Restricted Stock Award Agreement**, dated as of <Award Date> (the "Award Date") between Raytheon Company (the "Company"), and **name**, a Director of the Company (the "Participant").

WHEREAS, the Board of Directors of the Company ("the Board") has established, and the Company's stockholders have approved, the Raytheon 2019 Stock Plan (the "Plan"); and

WHEREAS, the Governance and Nominating Committee of the Board (the "Committee") has authority and responsibility with reference to awards to directors under the Plan; and

WHEREAS, in order to reward the Participant for services to be rendered in a manner that relates directly to the Company's financial performance and growth and to further align the interests of the Participant and the Company's stockholders through opportunities for increased stock ownership by the Participant, the Board, acting upon the recommendation of the Committee, has, as of the date hereof, granted to the Participant a Restricted Stock Award of **number** shares of Common Stock of the Company; and

WHEREAS, as required by the Plan, the parties hereto desire to evidence such award by this written agreement.

NOW, THEREFORE, in consideration of the foregoing and the Participant's acceptance of the terms and conditions hereof, the parties hereto agree as follows:

1. The shares of Common Stock granted to the Participant shall be registered in the name of the Participant and retained in the custody of the Company until such shares vest and the restrictions thereon have lapsed in accordance with Paragraph 2 below (the "Restriction Period"). During the Restriction Period, the Participant shall be entitled to vote such shares and to receive dividends paid on such shares.

2. The shares of Common Stock granted to the Participant hereunder shall vest and the restrictions on those Shares shall lapse (the "Vesting Date") on the earlier of (i) the date of the 2020 Annual Meeting of Stockholders of the Company, or (ii) upon the Participant ceasing to be a Director of the Company (A) on account of death or (B) following a Change in Control (as that term is defined in the Plan).

3. On or about the Vesting Date, the Company shall deliver to the Participant a certificate, registered in the name of the Participant, or other evidence of ownership, free of restrictions hereunder, representing the number of shares of Common Stock granted to the Participant hereunder. In lieu of receiving a certificate, the Participant may elect to have such vested shares transferred to a brokerage account designated in writing by the Participant. No payment shall be required from the Participant in connection with any delivery to the Participant of shares hereunder.

4. The granting of this Restricted Stock Award shall not be deemed to create a contract of employment or service between the Participant and the Company.

5. If during the Restriction Period the Participant ceases to be a Director of the Company for any reason other than as specified in Paragraph 2 above, then the Participant shall cease to be entitled to delivery of any of the shares as to which the applicable restrictions have not theretofore lapsed, and all rights of the Participant in and to such shares, including any prorated portion of the shares with respect to a partial year, shall be forfeited.

6. Until the lapse of the restrictions applicable to any shares of Common Stock awarded to the Participant pursuant to this Restricted Stock Award Agreement, such shares may not be sold, transferred, pledged, exchanged, hypothecated or disposed of by the Participant and shall not be subject to execution, attachment or similar process.

7. Except as expressly set forth herein, all terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

8. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, addressed to the Office of the General Counsel of the Company, 870 Winter Street, Waltham, Massachusetts 02451, and to the Participant at his or her address as shown on the Company's records, or to such other address as the Participant by notice to the Company may designate in writing from time to time.

Your acceptance of this Restricted Stock Award constitutes your agreement to the terms of this Restricted Stock Award Agreement.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

Exhibit 10.25

RESTRICTED STOCK UNIT AWARD AGREEMENT FOR NON-EMPLOYEE DIRECTORS PURSUANT TO THE RAYTHEON 2019 STOCK PLAN

This Restricted Stock Unit Award Agreement (this "Agreement"), dated as of **<Award Date>** (the "Award Date") is between Raytheon Company (the "Company"), and <**First Name, Middle Initial, Last Name>**, a Non-Employee Director of the Company ("you").

1. Award of Units

The Company hereby awards you the number of restricted stock units ("Units") set forth below, with respect to its common stock, par value $0.01 per share (the "Stock"), subject to the terms and conditions of the Raytheon 2019 Stock Plan (the "Plan") and the vesting and other provisions of this Agreement. Subject to the provisions hereof, each Unit represents the right to receive one share of Stock (a "Share") pursuant to your Deferral Election as set forth in Section 4 below plus additional cash payments in lieu of dividends as described in Section 5 below.

Total Number of Restricted Units (the "Award"):	[ ] Units
Vesting Date:	The date specified in Section 2 below
Restriction Period:	The period between the Award Date and the Vesting Date

2. Vesting of Units

The Units granted to you under this Award shall vest on the date that is the earlier of: (i) the date of the Raytheon Company Annual Meeting next following the Award Date or (ii) the date you have a Termination of Service as a Director of the Company (A) on account of death or (B) following a Change in Control.

3. Effect of Termination of Service

If during the Restriction Period you have a Termination of Service as a Director of the Company for any reason other than as set forth in Section 2(ii) above, you shall cease to be entitled to such Units or delivery of any Shares with respect thereto and all rights in and to such Units and related Shares, as well as cash in lieu of dividends as described in Section 5 below, shall be forfeited immediately.

4. Issuance of Shares

The Shares subject to Units that vest shall be issued to you (or on your behalf) in accordance with the terms and provisions of your Deferral Election. For purposes of this Agreement, "Deferral Election" means, with reference to the Units granted to you under this Award, the election filed by you with the Company prior to the first day of the calendar year in which the Award Date occurs (or prior to the date you were first elected as a Director), and pursuant to which you elected to defer, in accordance with the applicable requirements of Code Section 409A, the issuance of the Shares relating to such Units to a specified date and/or event after the date such Units vest pursuant to Section 2 above.

5. Payment of Dividend Equivalents

Upon the vesting of Units pursuant to Section 2 above, you shall be entitled to receive a cash payment in lieu of dividends on the number of Shares those Units represent, if and to the extent that the Board has approved a dividend for all Company shareholders during the Restriction Period. Such dividend equivalent amount shall be a cash payment based upon the number of Units vesting hereunder multiplied by each per share dividend approved by the Board during the Restriction Period and shall be paid as soon as practicable after the Vesting Date. For the period from the Vesting Date of the Units to the date of issuance of the Shares those Units represent (the "Deferral Period"), you shall be entitled to receive a cash payment in lieu of dividends on the number of Shares those Units represent, if and to the extent that the Board has approved a dividend for all Company shareholders during the Deferral Period applicable to such Units. Such dividend equivalent amount shall be a cash payment based upon the number of Units vested hereunder multiplied by the per share dividend approved by the Board and shall be paid to you at the same time the dividend is paid to the shareholders. You will not be entitled to any cash payment in lieu of dividends relating to Units granted to you under this Award which are forfeited prior to vesting.

6. Other Provisions

A. No Rights as Shareholder. You shall not be considered a shareholder of the Company with respect to the Units until Shares are issued to you in payment of the Units. Therefore, you have no right to vote the Units or to receive dividends with respect to such Units (although you may become entitled to receive dividend equivalent amounts to the extent provided in Section 5 above).

B. Unsecured Creditor. Your Award is unfunded; if the Units granted to you under this award vest pursuant to Section 2 above, you will be an unsecured creditor of the Company with respect to the Company's obligation to issue Shares pursuant to your Deferral Election and this Agreement and with respect to any right to receive dividend equivalent amounts pursuant to Section 5 above.

C. No Rights to Continued Service. This Award shall not be deemed to create a contract or other promise of continued service as a Director of the Company and shall not in any way prohibit or restrict the ability of the Company or its shareholders to terminate your service at any time in accordance with applicable law.

D. Restrictions on Transfer of Units. Until the vesting of any Units and the delivery of Shares in payment therefor, Units (and the underlying Shares and the right to receive dividend equivalents related thereto) may not be sold, transferred, pledged, exchanged, hypothecated or disposed of by you and shall not be subject to execution, attachment or similar process.

E. Taxes. Taxes may be assessed and/or withheld, if, as and to the extent required by law at applicable United States federal, state and/or other tax rates (under the laws of the jurisdictions in which you reside or that may otherwise be applicable to you) with respect to Units, issuance of Shares and payment of cash in lieu of dividends.

F. Plan. All terms and conditions of the Plan are incorporated herein by reference and constitute an integral part hereof. Any capitalized terms used but not defined herein shall have the meanings ascribed to them in the Plan.

G. Notices. Notices required or permitted hereunder shall be in writing and shall be delivered personally or by mail, postage prepaid, addressed to Raytheon Company, 870 Winter Street, Waltham, Massachusetts 02451, Attention: General Counsel, and to you at your address as shown on the Company's records. Your acceptance of this Award constitutes your agreement to the terms of this Agreement.

RAYTHEON COMPANY

By: ________________________
Name:
Title:

Exhibit 21

SUBSIDIARIES OF RAYTHEON COMPANY

Name of Subsidiary	Jurisdiction
Forcepoint LLC	Delaware

In accordance with Item 601(b)(21) of Regulation S-K, the Company has omitted from this Exhibit the names of its subsidiaries which, considered in the aggregate or as a single subsidiary, do not constitute a significant subsidiary as defined in Rule 1-02(w) of Regulation S-X.

The following entity is excluded from the above table because it is deemed to be in the same line of business as Forcepoint LLC: Raytheon Oakley Systems, LLC, which, together with its wholly-owned subsidiaries, wholly owns Forcepoint LLC.

Exhibit 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (File Nos. 333-230497; 333-71974; 333-58474; 333-82529 and 333-44321) and Form S-8 (File Nos. 333-231814; 333-168415; 333-124690; 333-64168; 333-52536; 333-56117 and 333-45629) of Raytheon Company of our report dated February 12, 2020, relating to the consolidated financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP
Boston, Massachusetts
February 12, 2020

Exhibit 31.1

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Thomas A. Kennedy, certify that:

1. I have reviewed this annual report on Form 10-K of Raytheon Company;

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

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

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

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

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

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

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

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

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

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

Date: February 12, 2020

/s/ Thomas A. Kennedy

Thomas A. Kennedy
Chairman and Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Anthony F. O'Brien, certify that:

1. I have reviewed this annual report on Form 10-K of Raytheon Company;

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

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

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

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

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

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

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

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

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

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

Date: February 12, 2020

/s/ Anthony F. O'Brien

Anthony F. O'Brien
Vice President and Chief Financial Officer

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 Raytheon Company (the “Company”) on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Thomas A. Kennedy, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

/s/ Thomas A. Kennedy

Thomas A. Kennedy
Chairman and Chief Executive Officer

February 12, 2020

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

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 Raytheon Company (the "Company") on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Anthony F. O'Brien, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

/s/ Anthony F. O'Brien

Anthony F. O'Brien
Vice President and Chief Financial Officer

February 12, 2020

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.