

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

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

For the fiscal year ended December 31, 1998

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

For the period from Commission file number  
to 1-3229

NORTHROP GRUMMAN CORPORATION  
(Exact name of registrant as specified in its charter)

DELAWARE 95-1055798  
(State or other jurisdiction of (I.R.S. Employer  
incorporation or organization) Identification No.)

1840 Century Park East 90067  
Los Angeles, California (Zip Code)  
(Address of principal executive offices)

Registrant's telephone number, including area code (310) 553-6262  
Securities registered pursuant to Section 12(b) of the Act:

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

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

None  
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Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes x No  
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Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. [X]

As of March 10, 1999, 68,867,693 shares of Common Stock were outstanding, and the aggregate market value of the Common Stock (based upon the closing price of the stock on the New York Stock Exchange) of the Registrant held by nonaffiliates was approximately \$4,172 million.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Proxy Statement for the 1999 Annual Meeting of Stockholders.  
Part III

PART I

Item 1. Business

Northrop Corporation was incorporated in Delaware in 1985. Effective May 18, 1994, Northrop Corporation was renamed Northrop Grumman Corporation. Northrop Grumman is an advanced technology company operating in the Integrated Systems and Aerostructures (ISA), Electronic Sensors and Systems (ESS), and Information Technology (Logicon) segments of the broadly defined aerospace industry. The ISA segment includes the design, development and manufacturing of aircraft and aircraft subassemblies. The ESS segment includes the design, development, manufacturing and integration of electronic systems and components for military and commercial use. The Information Technology (Logicon) segment includes the design, development, operation and support of computer systems for scientific and management information.

Additional information required by this Item is contained in Part II, Item 7 of this Annual Report on Form 10-K.

Item 2. Properties

The major locations, general status of the company's interest in the property and identity of the industry segments that use the property described, are indicated in the following table.

Location -----	Property Interest -----
Albuquerque, New Mexico (3) (a).....	Leased
Annapolis, Maryland (2) (b) (e).....	Owned
Arlington, Virginia (2) (3) (4) (a) (c).....	Leased
Auburn, Washington (1) (c).....	Leased
Baltimore, Maryland (2) (a) (c).....	Leased
Benton, Pennsylvania (2) (b).....	Leased
*Bethpage, New York (1) (2) (3) (4) (a)(b) (c) (d) (e).	Owned, Leased
Bohemia, New York (3) (a).....	Owned
Bremerton, Washington (2) (d).....	Leased
Bridgeport, West Virginia (2) (a) (b).....	Owned, Leased
Burlington, Canada (2) (a) (b) (d).....	Owned
Calverton, New York (1) (a) (d) (e).....	Owned
Carson, California (1) (c).....	Leased
Chandler, Arizona (1) (b).....	Owned
Chesapeake, Virginia (1) (3) (a).....	Leased
Cincinnati, Ohio (2) (b).....	Leased
Clearfield, Utah (1) (c).....	Leased
Cleveland, Ohio (2) (a) (b).....	Owned
College Station, Texas (2) (b).....	Owned
Colorado Springs, Colorado (3) (a).....	Leased
Compton, California (1) (b) (c) (e).....	Owned, Leased
Dahlgren, Virginia (3) (a).....	Leased
El Segundo, California (1) (a) (b) (c) (d) (e).....	Owned
Elk Grove Village, Illinois (2) (c).....	Leased
Elkridge, Maryland (2) (c) (d).....	Leased
Fairfax, Virginia (3) (a).....	Leased
Falls Church, Virginia (3) (a).....	Leased
Fort Tejon, California (1) (d).....	Owned, Leased
Glen Burnie, Maryland (2) (a).....	Owned
Grand Prairie, Texas (1) (a) (b) (c) (d) (e).....	Owned, Leased
Hawthorne, California (1) (2) (4) (a) (b) (c) (d) (e)..	Owned, Leased
Herndon, Virginia (3) (a) (c).....	Leased
*Hicksville, New York (2) (a) (d) (e).....	Owned, Leased
Hunt Valley, Maryland (2) (a) (b) (e).....	Owned, Leased
Huntsville, Alabama (2) (3) (a) (b) (c) (e).....	Leased
Jacksonville, Florida (2) (a) (c) (d) (e).....	Leased
Knoxville, Tennessee (2) (3) (a).....	Leased
Lake Charles, Louisiana (1) (a) (b) (e).....	Leased
Lexington, South Carolina (2) (c).....	Owned
Linthicum, Maryland (2) (a) (b) (c) (e).....	Owned, Leased
Los Angeles, California (2) (3) (4) (a).....	Leased

Melbourne, Florida (1) (a) (b) (c) (e).....	Owned, Leased
Melville, New York (2) (d).....	Leased
Middleton, Rhode Island (3) (a).....	Owned, Leased
Milledgeville, Georgia (1) (a) (b) (c) (d) (e).....	Owned, Leased
New Town, North Dakota (1) (b) (c).....	Owned, Leased
Newport News, Virginia (3) (a).....	Leased
Northfields, United Kingdom (2) (a).....	Leased
Norwalk, Connecticut (2) (b).....	Leased
Palmdale, California (1) (a) (b) (c) (d) (e).....	Owned, Leased
Perry, Georgia (1) (a) (b) (c) (e).....	Leased
Pico Rivera, California (1) (a) (b) (c) (d) (e).....	Owned, Leased
Pittsburgh, Pennsylvania (2) (d).....	Leased
Point Mugu, California (1) (a) (b) (c).....	Owned, Leased
Portsmouth, Rhode Island (4) (b).....	Owned, Leased
Reston, Virginia (3) (a).....	Leased
Rolling Meadows, Illinois (2) (3) (a) (b) (c).....	Owned, Leased
San Diego, California (1) (3) (a) (b) (c).....	Owned, Leased
San Pedro, California (3) (a) (c).....	Owned, Leased
Santa Isabel, Puerto Rico (2) (b) (d).....	Leased
St. Augustine, Florida (1) (a) (b) (c) (d).....	Owned, Leased
Stuart, Florida (1) (a) (b) (c).....	Leased
Sunnyvale, California (2) (3) (a) (b).....	Owned, Leased
Sykesville, Maryland (2) (b).....	Owned
Tacoma, Washington (3) (a).....	Leased
Torrance, California (1) (b) (c) (a).....	Owned, Leased
Warner Robins, Georgia (2) (a) (c).....	Owned, Leased

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\* Certain portions of the properties at each of these locations are leased or subleased to others. The company believes that in the aggregate the property covered by such leases or subleased to others is not material compared to the property actually utilized by the company in its business.

Following each described property are numbers indicating the reporting segments utilizing the property:

- (1) Integrated Systems and Aerostructures
- (2) Electronic Sensors and Systems
- (3) Information Technology
- (4) General Corporate Asset

Following each described property are letters indicating the types of facilities located at each location:

- (a) office
- (b) manufacturing
- (c) warehouse
- (d) research and testing
- (e) other

Government-owned facilities used or administered by the company consist of 8 million square feet at various locations across the United States.

The company believes its properties are well-maintained and in good operating condition. Under present business conditions and the company's volume of business, productive capacity is currently in excess of requirements.

Item 3. Legal Proceedings

Walsh, et al. v. Northrop Grumman Corporation  
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In November 1994, a class action complaint was filed against Northrop Grumman Corporation, Grumman Corporation, and four named individuals in the U.S. District Court of the Eastern District of New York, Case No. CV94-5105 (Platt C.J.). A first amended complaint was filed on November 29, 1994 alleging that Grumman Corporation's March 8 and April 4, 1994 Form 14D-9 filings with the Securities and Exchange Commission incorporated a statement concerning the Grumman Severance Plan which violated Sections 10(b) and 14(e) of the Securities and Exchange Act of 1934, as amended (the "Act") and Rule 10b-5 of the Rules and Regulations under the Act. The complaint also contains a cause of action for equitable estoppel based upon the same statement and plaintiffs' alleged reliance thereon. The complaint also alleges that the trustees of Grumman's Employee Investment Plan ("EIP") violated their fiduciary obligations by voting the EIP's shares in favor of the merger of Grumman Corporation and Northrop Corporation (the "Acquisition") without consulting the class members. The complaint seeks an order enjoining the defendants from amending or discontinuing the Grumman Severance Plan for a period of thirty (30) months from the date of the Acquisition and an order mandating that defendants permit class members who have accepted voluntary termination with severance pay to rescind their elections. On December 8, 1994, the court denied plaintiff's application for a preliminary injunction but declined to dismiss the action. On April 7, 1995, the court granted plaintiff's motion to amend their complaint to add a claim for damages based on post Acquisition changes to Grumman benefit plans. In July 1995, the court certified a class of plaintiffs consisting of all employees who, at the time of the tender offer, were Grumman employees, owned Grumman stock either directly or beneficially through the EIP, and were injured as a result of defendants' conduct. The liability trial of this matter began in late 1997 and concluded in 1998. The parties reached a tentative settlement whereby, Northrop Grumman will pay six million dollars into a settlement fund for distribution to class members. Following a Fairness Hearing on February 26, 1999 at which the District Court was asked to approve the settlement and to dismiss the case with prejudice, the court took the matter under submission.

U.S. ex rel Jordan v. Northrop Grumman Corporation  
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In January 1998, the company was served with an amended complaint that was filed by the government in the U.S. District Court for the Central District of California. The complaint alleges that the company violated the False Claims Act by knowingly supplying BQM-74C aerial target drones that contained various defective components between 1992 and 1995. The government seeks to recover unspecified damages under theories of fraud, payment by mistake, unjust enrichment, breach of warranty and breach of contract. The company intends to vigorously defend this matter.

Zabielski and related cases

In July and August 1998, three shareholder derivative lawsuits, respectively encaptioned Zabielski v. Kent Kresa, et al., Harbor Finance

Partners v. Kent Kresa et al., and Clarren v. Kent Kresa, et al., were filed in

the Superior Court of California for the County of Los Angeles. These lawsuits each contain similar allegations that the directors of the company and certain of its officers breached their fiduciary duties in connection with the shareholder vote approving the proposed acquisition of the company by Lockheed Martin Corporation, and that certain defendants engaged in stock trades in violation of federal and state securities laws. The lawsuits are purportedly brought on the company's behalf and do not seek relief against the company. The defendants deny the allegations made in these actions and intend to defend the actions vigorously.

Fanni and related cases

Five shareholder class action lawsuits, making similar allegations, were filed in the United States District Court for the Central District of California against the company, its directors, and certain of its officers. Three of these lawsuits, respectively encaptioned Fanni v. Northrop Grumman Corp., et al.,

Schnee v. Northrop Grumman Corp., et al., and Florida State Board of Admin. v.

Northrop Grumman Corp., et al. allege that defendants issued misleading proxy

materials in connection with the proposed acquisition of the company by Lockheed Martin Corporation, in violation of the federal securities laws. Two of these lawsuits, respectively encaptioned Burroughs v. Northrop Grumman Corp., et al.,

and Miller, et al. v. Northrop Grumman Corp., et al., allege that defendants

disseminated misleading information in connection with the proposed acquisition, in violation of the federal securities laws, thereby artificially inflating the market price of the company's common stock. The District Court consolidated Fanni, Schnee and Florida State Board of Admin. into one action, and Burroughs

and Miller into another action. Plaintiffs served Amended Consolidated

Complaints and defendants have moved to dismiss the actions for failing to state a claim upon which relief could be granted. A decision on the motions is expected in the second quarter of 1999. The company and the individual defendants deny the allegations made in these actions and intend to defend the actions vigorously.

U.S. ex rel. McMorrough v. Northrop Grumman Corporation

In October 1998, the United States, acting through the Department of Justice, intervened in a portion of this civil action filed in the U.S. District Court for the Western District of Louisiana. The government intervened in the portion of the complaint that alleges the company knowingly supplied improperly heat-treated parts for Joint STARS aircraft in 1994 and 1995, in violation of the False Claims Act. The government seeks unspecified damages in connection with the alleged violations. The company intends to vigorously defend this matter.

General

The company, as a government contractor, is from time to time subject to U.S. Government investigations relating to its operations. Government contractors that are found to have violated the False Claims Act, or are indicted or convicted for violations of other Federal laws, or are considered not to be responsible contractors may be suspended or debarred from government contracting for some period of time. Such convictions could also result in fines. Given the company's dependence on government contracting, suspension or debarment could have a material adverse effect on the company. The company is involved in certain other legal proceedings arising in the ordinary course of business, none of which the company's management believes will have a material adverse effect on the company's financial condition.

Executive Officers of the Registrant

The following individuals were the elected officers of the company as of March 1999:

Name	Age	Office Held	Since	Business Experience Last Five Years
Kent Kresa	61	Chairman, President & CEO	1990	
Herbert W. Anderson	59	Corporate Vice President, President and Chief Executive Officer, Logicon, Inc.	1998	Corporate Vice President and General Manager, Data Systems & Services Division; Prior to 1995, Vice President and Deputy General Manager, Data Systems and Services Division
Ralph D. Crosby, Jr.	51	Corporate Vice President and President, Integrated Systems and Aerostructures Sector	1998	Corporate Vice President and General Manager, Commercial Aircraft Division; Prior to September 1996, Corporate Vice President and Deputy General Manager, Commercial Aircraft Division; Prior to March 1996, Corporate Vice President and Deputy General Manager, Military Aircraft Systems Division; Prior to January 1996 Corporate Vice President and General Manager, B-2 Division
Marvin Elkin	62	Corporate Vice President and Chief Human Resources and Administrative Officer	1998	Corporate Vice President and Chief Human Resources, Communications and Administrative Officer; Prior to 1996 Corporate Vice President and Chief Human Resources and Administrative Officer
Nelson F. Gibbs	61	Corporate Vice President and Controller	1991	
Robert W. Helm	47	Corporate Vice President, Government Relations	1994	
Richard R. Molleur	66	Corporate Vice President and General Counsel	1991	
John A. Mullan	56	Corporate Vice President and Secretary	1999	Acting Secretary; Prior to May 1998 Senior Corporate Counsel; Prior to July 1995 East Coast Litigation Attorney
Albert F. Myers	53	Corporate Vice President and Treasurer	1994	
James G. Roche	59	Corporate Vice President and President, Electronic Sensors and Systems Sector	1998	Corporate Vice President and General Manager, Electronic Sensors and Systems Division; Prior to 1996, Corporate Vice President and Chief Advanced Development, Planning, and Public Affairs Officer
Richard B. Waugh, Jr.	55	Corporate Vice President and Chief Financial Officer	1993	

Item 4. Submission of Matters to a Vote of Security Holders

No information is required in response to this Item.

PART II

Item 5. Market for Registrant's Common Equity and Related Stockholder Matters

The information required by this Item is contained in Part II, Item 8 of this Annual Report on Form 10-K.

Item 6. Selected Financial Data

The information required by this Item is contained in Part II, Item 7 of this Annual Report on Form 10-K.



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

BUSINESS CONDITIONS

Northrop Grumman is one of the major companies that competes in both the defense and commercial segments of the aerospace business. While Northrop Grumman is subject to the usual vagaries of the marketplace, it is also affected by the unique characteristics of the aerospace industry and by certain elements peculiar to its own business mix. It is common in the aerospace industry for work on major programs to be shared between a number of companies. A company competing to be a prime contractor can turn out to be a subcontractor. It is not uncommon to compete with customers, and simultaneously to be both a supplier to and customer of a given competitor. The nature of major aerospace programs, conducted under binding contracts, allows companies that perform well to benefit from a level of program continuity unknown in many industries. While Northrop Grumman conducts most of its business with the U.S. Government, principally the Department of Defense, commercial sales still represent a significant portion of total revenue.

The collapse of communism and the subsequent reductions in the U.S. defense budget have fundamentally altered the landscape of the global aerospace and defense industry. Since the early 1990's the aerospace industry has been going through a consolidation process and, along with it, significant downsizing. These actions, in which Northrop Grumman has participated, have made competition even more intense than in the past. Lockheed Martin Corporation, The Boeing Company, and Raytheon Company are the largest companies in the aerospace industry at this time. Northrop Grumman competes against these and other companies for a number of large and smaller programs. Intense competition and long operating cycles are both characteristics of the industry's -- and Northrop Grumman's -- business.

The current composition of Northrop Grumman resulted from a series of strategic acquisitions by the former Northrop Corporation beginning in 1992, when the company acquired a 49 percent interest in the Vought Aircraft Company, a designer and builder of commercial and military aerostructures. The remaining 51 percent interest in Vought Aircraft was purchased in August 1994. In the second quarter of 1994, the company purchased the outstanding common stock of Grumman Corporation and the company was renamed Northrop Grumman Corporation. In the first quarter of 1996, Northrop Grumman acquired the defense electronic systems group (ESG) of Westinghouse Electric Corporation. Effective August 1, 1997, the company consummated its merger with Logicon, Inc. (Logicon), a leading defense information technology company.

On July 3, 1997, the company announced that it had entered into a definitive agreement with Lockheed Martin Corporation to combine the companies. On February 26, 1998, shareholders of Northrop Grumman approved the merger. On March 23, 1998, the U.S. Government filed suit to block the merger. On July 16, 1998, Lockheed Martin notified the company that it was terminating its merger agreement with the company pursuant to the terms of the agreement.

The company recorded charges totaling \$186 million in 1998 for costs related to the terminated merger. The charges cover vesting of restricted stock which became issuable following shareholder approval of the merger and other costs associated with the terminated merger, including investment banking fees, legal and accounting fees, and costs related to responding to the Government's request for information.

Northrop Grumman's three reportable segments are its three operating units: Integrated Systems and Aerostructures (ISA), Electronic Sensors and Systems (ESS), and Information Technology (Logicon).

#### Integrated Systems and Aerostructures Segment

Air Combat Systems (ACS), Aerostructures, Airborne Early Warning and Electronics Warfare (AEW/EW), and Airborne Ground Surveillance and Battle Management (AGS/BM) are the four major business areas within the ISA segment.

The B-2 bomber, for which the company is the prime contractor, is Northrop Grumman's largest program and is reported in the ACS business area. The company continues to perform modifications to Block 20 aircraft to bring them to the fully operational Block 30 configuration. The U.S. Air Force currently plans to operate two B-2 bomber squadrons of eight aircraft each with an additional five aircraft available to fill in for those in depot for periodic maintenance. The B-2 work is performed at the ISA segment's California facilities in Palmdale and Pico Rivera.

The company is the principal subcontractor to The Boeing Company on the F/A-18 program, which is also reported in the ACS business area. The F/A-18 is a fighter/ground-attack aircraft with configurations equipped for either one or two crew members. Principally deployed by the U.S. Navy on aircraft carriers, it also has been purchased by several other nations as a land-based combat aircraft. The company builds approximately 40 percent of the aircraft including the center and aft fuselage, vertical tails, and associated subsystems. Of the versions of the F/A-18 currently in production, the C is a single-seat combat aircraft that was first delivered to the U.S. Navy in 1987 and the D is a two-seat version principally used for training. The F/A-18 single-seat E and two-seat F are enhanced versions currently in the initial production phase and will serve as the U.S. Navy's next-generation multimission aircraft. F/A-18 work is performed at the company's facility in El Segundo, California.

The company entered into a contract in January 1997 to produce composite structures for the Kistler Aerospace K-1 reusable space transport vehicle, which is designed to place commercial satellites into low-earth orbit. The Kistler K-1 program is included in ACS.

The company manufactures portions of the Boeing 737, 747, 757, 767 and 777 jetliners, the Gulfstream IV and V business jets, and the Boeing C-17 military transport, which are included in the aerostructures business area. Northrop Grumman has been a principal airframe subcontractor for the Boeing 747 jetliner since the program began in 1966, producing the fuselage and aft body section for the 747 as well as cargo and passenger doors, the

vertical and horizontal body stabilizers, floor beams and other structural components. The majority of the Boeing jetliner work is performed at the ISA segment's production sites in Hawthorne, California and Grand Prairie, Texas.

Northrop Grumman manufactures engine nacelles for the Gulfstream IV and other business jets and produces the integrated wings for Gulfstream's newest business jet, the Gulfstream V. The company also produces the empennage, engine nacelles, and control surfaces for the C-17, the U.S. Air Force's most advanced airlifter.

Northrop Grumman is a major producer of airborne early warning and control systems, including the all-weather E-2C Hawkeye aircraft. The E-2C, reported in the AEW/EW business area, has been in active service with the U.S. Navy since 1973 and is employed by the air forces of five other nations.

The company serves as prime contractor for the E-8 Joint Surveillance Target Attack Radar System (Joint STARS), which is included in the AGS/BM business area. Joint STARS detects, locates, classifies, tracks and targets potentially hostile ground movement in all weather conditions. It is designed to operate around the clock in constant communication through secure data links with Air Force command posts, Army mobile ground stations or centers of military analysis far from the point of conflict. The Joint STARS platform is a remanufactured Boeing 707-300 airframe. The 707 is remanufactured at Northrop Grumman's Lake Charles, Louisiana site. Final installation of electronics and testing are performed at the company's test facility in Melbourne, Florida.

#### Electronic Sensors and Systems Segment

The ESS segment comprises four business areas: Aerospace Electronic Systems; Command, Control, Communications, Intelligence and Naval Systems (C3I&N); Defensive Electronic Systems; and several smaller business elements referred to as "other". The segment's primary expertise is the ability to conceive, design, produce and support high performance sensors and intelligence systems operating in all environments from underseas to outer space.

Aerospace Electronic Systems is composed of two business elements: combat electronics systems and surveillance sensors. Combat electronics is focused on providing radar, electro-optic, and infrared-based avionics systems to meet the needs for surveillance and strike missions for armed forces worldwide. The AN/APG-66/68 airborne fire control radar aboard F-16 fighters throughout the world has set a new standard for performance and reliability over the last two decades. More than six thousand AN/APG-66/68 radars have been produced since 1976. The basic radar, with multiple variants, is currently on 16 airborne platforms deployed in 20 countries. Northrop Grumman currently is leading a team developing the next-generation air-superiority radar (AN/APG-77) featuring a low observable, active aperture, electronically scanned array with multiple target, all-weather capability for the F-22 aircraft. Advanced radar concepts for the next generation joint strike fighter have been developed and flown aboard Northrop Grumman flight test aircraft. These combat electronics systems are produced at the company's Linthicum, Maryland facility.

Northrop Grumman, teamed with Lockheed Martin, has designed and is producing the Longbow fire control radar and the Longbow missile for the AH-64 Apache attack helicopter. There is extensive international interest in the Apache Longbow battlefield tactical weapon system. Longbow fire control radar work is performed at the ESS segment's Linthicum facility and the Longbow missile work is performed in Huntsville, Alabama. Additionally, Northrop Grumman, as prime contractor to the U.S. Army, is developing a "brilliant" anti-armor submunition (BAT). BAT, a wide-area precision attack submunition presently dispensed from manned aircraft or a missile, is designed to disable and destroy armored vehicles, and is produced at the ESS facility in Hawthorne, California.

Surveillance sensors is focused on providing radio frequency and electro-optical sensors for airborne and spaceborne surveillance and related ground-based processing systems. The Airborne Warning and Control System (AWACS) radar (AN/APY-1, APY-2), integrated in the highly reliable Boeing 707 and 767 aircraft is the surveillance system of choice for U.S. and allied forces worldwide. The E-8 Joint STARS is equipped with the Northrop Grumman AN/APY-3, which is the premier air-to-ground surveillance system providing long-range, standoff, real-time surveillance of the battlefield. An advanced Radar Technology Insertion Program (RTIP) is currently under development. With advanced, active aperture, the RTIP will provide significant performance upgrades on Joint STARS for its current mission and opens the way for incorporation of new missions. The surveillance sensors business element encompasses space, with subsegments of military and civil/commercial space; and intelligence, surveillance, reconnaissance ground-based processing systems. Most of the surveillance sensor work is performed at the facilities in Linthicum, Maryland, and Norwalk, Connecticut.

The Defensive Electronic Systems business area includes electronic countermeasures equipment. The company's Rolling Meadows, Illinois site produces the AN/ALQ-135, an internally mounted radar jammer deployed on F-15 fighter aircraft as part of that aircraft's tactical electronic warfare system. The AN/ALQ-162 Shadowbox, a jammer built specifically to counter continuous wave radars, has been installed on the AV-8B and certain foreign owned F/A-18 aircraft. It also is being deployed on U.S. Army helicopters and special mission aircraft and has been sold to the air forces of three other nations. The company is also under contract to develop and produce a directional infrared countermeasures (DIRCM) system for the United Kingdom and the U.S. Special Operations Command. It is slated for use on British helicopters, transports, and U.S. Special Operations Command C-130 transports to reduce vulnerability to heat-seeking missiles. DIRCM is designed to provide high-powered jamming to counter more advanced seekers expected in the twenty-first century. The company's Linthicum, Maryland site produces the ALQ-165 airborne self-protection jammer in a joint venture with ITT-Avionics. The ALQ-165 is an internally mounted system that protects tactical aircraft against numerous radar-guided threats. It currently is installed on selected F/A-18 and F-14 aircraft.

The C3I&N business area produces air defense and air traffic control radar systems for domestic and international customers. The three-dimensional AN/TPS-70/75 radars and predecessor AN/TPS-43 are among the products in this business area. They have been the U.S. Air Force air defense system standard since 1968. These systems currently operate in more than 30 countries, supporting air defense, air sovereignty, air traffic control and counter-narcotics needs. The ASR-12, a solid-state, new generation derivative of the company's ASR-9 terminal radar, is designed to detect and display aircraft and weather simultaneously, helping air traffic controllers guide aircraft through the crowded skies surrounding airports.

C3I&N is also a leader in producing marine machinery and advanced propulsion systems, missile launchers, shipboard instrumentation and control systems, mine countermeasures and undersea vehicles. Every Nimitz-class aircraft carrier is fitted with eight turbine generator sets. Each shipset of these powerful generators develops enough power to supply a city of 75,000 people. The company produces these generators as well as the main propulsion system for the U.S. Navy's Seawolf-class attack submarines at its Sunnyvale site.

#### Information Technology (Logicon) Segment

The three major business areas reported in the Information Technology (Logicon) segment are: Government Information Technology, Technology Services, and Commercial Information Technology.

Logicon designs, develops, operates and supports computer systems for scientific and management information. Services provided include systems integration, professional information technology services, information conversion, and training for federal, state and local governments and private industry. Advanced technology systems and services to support national security, civil and industrial needs are provided in the following areas: command, control, communications and intelligence; information systems development and support; mission planning and battle management; training and simulation; and science and technology. The segment also provides military base support functions and aircraft maintenance at a number of U.S. Government facilities. Contracts with the U.S. Government account for most of the segment's revenues.

In the following table of segment and major customer data, revenue from the United States Government includes revenue from contracts on which Northrop Grumman is the prime contractor as well as those on which the company is a subcontractor and the ultimate customer is the U.S. Government.

## RESULTS OF OPERATIONS BY SEGMENT AND MAJOR CUSTOMER

Year ended December 31, \$ in millions	1998	1997	1996
-----			
Net Sales			
Integrated Systems & Aerostructures			
United States Government	\$3,755	\$3,932	\$4,231
The Boeing Company	1,075	883	569
Other customers	263	452	290
Intersegment sales	5	13	17
	-----	-----	-----
	5,098	5,280	5,107
	-----	-----	-----
Electronic Sensors & Systems			
United States Government	2,014	2,394	2,165
Other customers	708	490	447
Intersegment sales	177	180	169
	-----	-----	-----
	2,899	3,064	2,781
	-----	-----	-----
Information Technology (Logicon)			
United States Government	948	884	828
Other customers	139	118	77
Intersegment sales	20	20	5
	-----	-----	-----
	1,107	1,022	910
	-----	-----	-----
Intersegment eliminations	(202)	(213)	(191)
	-----	-----	-----
Total net sales	\$8,902	\$9,153	\$8,607
	=====	=====	=====
Operating Margin			
Integrated Systems & Aerostructures	\$ 280	\$ 493	\$ 441
Electronic Sensors & Systems	218	248	230
Information Technology (Logicon)	60	67	31
	-----	-----	-----
	558	808	702
Adjustments to reconcile to total operating margin:			
Corporate expenses	(58)	(30)	(18)
Deferred state tax (provision)benefit	(10)	8	(7)
Mark-to-market restricted stock rights		(39)	(13)
Pension income	266	133	39
	-----	-----	-----
Total operating margin	\$ 756	\$ 880	\$ 703
	=====	=====	=====

Year ended December 31, \$ in millions	1998	1997	1996
-----			
Contract Acquisitions			
Integrated Systems & Aerostructures	\$ 3,896	\$ 4,427	\$ 5,357
Electronic Sensors & Systems	2,388	2,983	4,761
Information Technology (Logicon)	1,205	938	977
-----			
Total acquisitions	\$ 7,489	\$ 8,348	\$11,095
=====			
Funded Order Backlog			
Integrated Systems & Aerostructures	\$ 6,933	\$ 8,130	\$ 8,970
Electronic Sensors & Systems	2,951	3,285	3,186
Information Technology (Logicon)	565	447	511
-----			
Total backlog	\$10,449	\$11,862	\$12,667
=====			
Assets			
Integrated Systems & Aerostructures	\$ 3,797	\$ 3,847	\$ 3,869
Electronic Sensors & Systems	3,913	3,990	4,071
Information Technology (Logicon)	618	559	640
-----			
Segment assets	8,328	8,396	8,580
General corporate	1,208	1,281	1,065
-----			
Total assets	\$ 9,536	\$ 9,677	\$ 9,645
=====			
Capital Expenditures			
Integrated Systems & Aerostructures	\$ 110	\$ 125	\$ 104
Electronic Sensors & Systems	82	94	71
Information Technology (Logicon)	19	17	22
General corporate		2	1
-----			
Total expenditures	\$ 211	\$ 238	\$ 198
=====			
Depreciation and Amortization			
Integrated Systems & Aerostructures	\$ 142	\$ 173	\$ 160
Electronic Sensors & Systems	211	208	187
Information Technology (Logicon)	38	35	26
General corporate	2	2	2
-----			
Total depreciation and amortization	\$ 393	\$ 418	\$ 375
=====			

Individual companies prosper in the competitive aerospace/defense environment according to their ability to develop and market their products. They also must have the ability to provide the people, facilities, equipment and financial capacity needed to deliver those products with maximum efficiency. It is necessary to maintain, as the company has, sources for raw materials, fabricated parts, electronic components and major subassemblies. In this manufacturing and systems integration environment, effective oversight of subcontractors and suppliers is as vital to success as managing internal operations. Northrop Grumman's operating policies are designed to enhance these capabilities. The company also believes that it maintains good relations with its employees, approximately 13 percent of whom are covered by collective bargaining agreements.

U.S. Government programs in which Northrop Grumman either participates, or strives to participate, must compete with other programs for consideration during our nation's budget formulation and appropriation processes. Budget decisions made in this environment will have long-term consequences for the size and structure of Northrop Grumman and the entire defense industry. An important factor in determining Northrop Grumman's ability to compete successfully for future contracts will be its cost structure vis-a-vis other bidders.

Although the ultimate size of future defense budgets remains uncertain, the defense needs of the nation are expected to provide substantial research and development (R&D) funding and other business for the company to pursue well into the future.

Northrop Grumman has historically concentrated its efforts in such high technology areas as stealth, airborne surveillance, battle management, precision weapons and systems integration. Even though a high priority has been assigned by the Department of Defense to the company's major programs, there remains the possibility that one or more of them may be reduced, extended or terminated.

Northrop Grumman pursues new business opportunities when justified by acceptable financial returns and technological risks. The company examines opportunities to acquire or invest in new businesses and technologies to strengthen its traditional business areas. Northrop Grumman continues to capitalize on its technologies and skills by entering into joint ventures, partnerships or associations with other companies.

In the event of termination for the government's convenience, contractors are normally protected by provisions covering reimbursement for costs incurred subsequent to termination. The company received a termination for convenience notice on the Tri-Service Standoff Attack Missile (TSSAM) program in February 1995. In December 1996, the company filed a lawsuit against the U.S. Government in the U.S. Court of Federal Claims seeking the recovery of approximately \$750 million for uncompensated performance costs, investments, and a reasonable profit on the program. In prior years, the company had charged to operations in excess of \$600 million related to this program. Northrop Grumman is unable to predict whether it will realize some or all of its claims, none of which are recorded on the balance sheet, from the U.S. Government on the TSSAM contract.



Prime contracts with various agencies of the U.S. Government and subcontracts with other prime contractors are subject to a profusion of procurement regulations, including the International Traffic in Arms Regulations promulgated under the Arms Export Control Act, with noncompliance found by any one agency possibly resulting in fines, penalties, debarment or suspension from receiving additional contracts with all agencies. Given the company's dependence on U.S. Government business, suspension or debarment could have a material adverse effect on the company's future. Moreover, these contracts may be terminated at the U.S. Government's convenience as was done with the TSSAM program.

Federal, state and local laws relating to the protection of the environment affect the company's manufacturing operations. The company has provided for the estimated cost to complete remediation where it is probable that the company will incur such costs in the future, including those for which it has been named a Potentially Responsible Party (PRP) by the Environmental Protection Agency or similarly designated by other environmental agencies. The company has been designated a PRP under federal Superfund laws at 14 hazardous waste sites and under state Superfund laws at five sites. It is difficult to estimate the timing and ultimate amount of environmental cleanup costs to be incurred in the future due to the uncertainties regarding the extent of the required cleanup and the status of the law, regulations and their interpretations. Nonetheless, to assess the potential impact on the company's financial statements, management estimates the total reasonably possible remediation costs that could be incurred by the company. Such estimates take into consideration the professional judgment of the company's environmental engineers and, when necessary, consultation with outside environmental specialists. In most instances, only a range of reasonably possible costs can be estimated. However, in the determination of accruals, the most probable amount is used when determinable and the minimum is used when no single amount is more probable. The company records accruals for environmental cleanup costs in the accounting period in which the company's responsibility is established and the costs can be reasonably estimated. Management estimates that at December 31, 1998, the range of reasonably possible future costs for environmental remediation, including Superfund sites, is \$44 million to \$79 million, of which \$57 million has been accrued. The amount accrued has not been offset by potential recoveries from insurance carriers or other PRPs. Should other PRPs not pay their allocable share of remediation costs, the company may have to incur costs in addition to those already estimated and accrued. The company is making the necessary investments to comply with environmental laws; the amounts, while not insignificant, are not considered material to the company's financial position, results of operations, or cash flows.

## Year 2000 Issues

The company continues to implement its program to address the Year 2000 issue. The program, which began in 1996, consists of the following four phases: assessing, planning, remediating, and testing-validating. The project encompasses the entire company and all aspects of Year 2000 compliance including software applications, mainframe environment, desktop equipment, networks, telecommunications, department supported systems, facilities systems, and embedded systems in product deliverables. The company also is working with its customers and suppliers to assess their Year 2000 readiness, reviewing contracts for any potential Year 2000 liabilities, and developing remediation and contingency plans where appropriate.

All four phases were substantially completed by the end of 1998. Activities scheduled to be completed in 1999 include low risk upgrades which will be addressed by normal maintenance activities, equipment upgrades, and various vendor supplied software upgrades that became available in late 1998 or will become available in early 1999.

The company has a formal planning, measurement and reporting process for the Year 2000 project. This process includes regular progress briefings to senior management and to the audit committee of the Board of Directors.

The company separately identifies the costs of Year 2000 remedial efforts only for internal information services personnel, principally as a planning and control tool. The total costs of these efforts incurred during the years 1996 through 1999 are expected to be approximately \$42 million, of which approximately \$35 million was expended through December 31, 1998. Year 2000 costs are allowable costs under applicable government contracting regulations. Accordingly, the portion of Year 2000 costs allocable to contracts is being so charged as part of normal overhead pursuant to approved methods established for this purpose. Based on information available to date, management does not anticipate that future expenditures for required modifications and conversions will have a material adverse effect on the company's financial position, results of operations, or cash flows.

Northrop Grumman cannot predict the eventual outcome associated with the innumerable possible situations that could result from whatever computer failures might occur, internally or among its customers and suppliers, and the impact that such failures might have on Northrop Grumman's ability to perform its day to day operations. If required modifications and conversions are not made as planned, serious adverse impact to the operations of the company could result. In addition, Year 2000 problems could adversely affect the ability of customers and critical suppliers to meet their contractual commitments to the company. Some of these developments, should they occur, could have a material adverse impact on the financial position, results of operations, or cash flows of Northrop Grumman.

As stated above, most of the assessing, planning, remediating and testing-validating phases were completed in 1998, with a minor number of activities remaining to be addressed in 1999. Contingency and resumption planning will be required to address potential computer failures that either are 1) of greatest risk for potential failure or 2) might impact mission critical systems. Assessment of Year 2000 progress is a critical input to the development of contingency plans. The formulation of such plans commenced in the fourth quarter of 1998 and will continue into 1999.

MEASURES OF VOLUME

Contract acquisitions tend to fluctuate from year to year and are determined by the size and timing of new and add-on orders. The effects of multiyear orders and/or funding can be seen in the highs and lows shown in the following table. The funded order backlog of ESG on the date the business was acquired is reflected as acquisitions in the ESS segment in 1996.

Contract Acquisitions

\$ in millions	1998	1997	1996
-----			
Integrated Systems & Aerostructures			
ACS	\$1,430	\$1,607	\$ 2,611
Aerostructures	1,453	1,425	1,243
AEW/EW	679	728	718
AGS/BM	434	761	882
Intrasegment eliminations	(95)	(81)	(80)
	-----	-----	-----
	3,901	4,440	5,374
-----			
Electronic Sensors & Systems			
Aerospace Electronic Systems	1,047	1,496	2,587
C3I&N	907	964	1,530
Defensive Electronic Systems	311	508	515
Other	225	176	458
	-----	-----	-----
	2,490	3,144	5,090
-----			
Information Technology (Logicon)			
Government Information Technology	813	711	766
Technology Services	300	150	161
Commercial Information Technology	113	97	55
	-----	-----	-----
	1,226	958	982
-----			
Intersegment eliminations	(128)	(194)	(351)
-----			
Total acquisitions	\$7,489	\$8,348	\$11,095
=====			

The ACS business area includes B-2 acquisitions in 1996 of \$453 million for the upgrade of test vehicle AV-1 to operational status, increasing the program to 21 operational aircraft. Incremental B-2 funding for ongoing development work, spares and other customer support for the operational aircraft program was received in each of the last three years. The company still stands to gain future post production business, such as airframe depot maintenance, repair of components, operational software changes, and product improvement modifications. In 1998 and 1997, the company received orders for 20 and 12 F/A-18E/F shipsets, respectively. Acquisitions in 1998 included orders for 6 F/A-18C/D shipsets. In 1996 the company received orders for 62 F/A-18C/D shipsets and also received long-lead funding for the first phase of the Low Rate Initial Production (LRIP) of the F/A-18E/F along with continued funding of the engineering and manufacturing development (EMD) phase of the program. The company received final authorization to produce fifty 747 jetliner shipsets in each of the years 1998, 1997, and 1996.

The company recorded orders for 27, 6 and 18 wing shipsets for the Gulfstream V business jet in 1998, 1997 and 1996, respectively. Northrop Grumman is producing the Gulfstream V wings under a revenue-sharing agreement with Gulfstream Aerospace (Gulfstream). Northrop Grumman will recognize revenue for its proportionate share of the revenue of each business jet when they are delivered to the ultimate customer by Gulfstream. Northrop Grumman has received 103 orders for the Gulfstream V through December 1998. The Gulfstream V received aircraft certification in April 1997. The company is using program accounting for the Gulfstream V with an estimated 300 shipsets to be delivered over a fourteen-year period. Inventoried costs at December 31, 1998, include \$114 million of costs representing the excess of the production cost of delivered units over the estimated average unit cost. All costs for the development of the wings have been expensed as incurred.

ESS acquisitions in 1998 were 21 percent lower than in 1997. In the Aerospace Electronic Systems business area, less funding was received in 1998 for the Longbow missile and for various AWACS radar contracts. The decrease in the Defensive Electronic Systems business area was primarily due to lower international awards for electronic countermeasures equipment.

Information Technology (Logicon) segment acquisitions increased by 28 percent in 1998 over 1997, reflecting higher volume in the Government Information Technology and Commercial Information Technology business areas, as well as the award of the Joint Base Operations Support Contract (J-BOSC) in the Technology Services business area. Under this contract, which has a five-year basic performance period, the segment provides base operations support for NASA's Kennedy Space Center and the U.S. Air Force's 45th Space Wing, which includes Cape Canaveral Air Station and Patrick Air Force Base.

Year-to-year sales vary less than contract acquisitions and reflect performance under new and ongoing contracts. The 1996 results of operations include ESG since acquisition in March 1996.

Net Sales

\$ in millions	1998	1997	1996
-----			
Integrated Systems & Aerostructures			
ACS	\$2,114	\$2,446	\$2,665
Aerostructures	1,583	1,545	1,094
AEW/EW	780	739	807
AGS/BM	716	631	621
Intrasegment Eliminations	(95)	(81)	(80)
	-----	-----	-----
	5,098	5,280	5,107
-----			
Electronic Sensors & Systems			
Aerospace Electronic Systems	1,265	1,240	1,134
C3I&N	904	887	719
Defensive Electronic Systems	544	656	656
Other	186	281	272
	-----	-----	-----
	2,899	3,064	2,781
-----			
Information Technology (Logicon)			
Government Information Technology	787	770	696
Technology Services	213	156	156
Commercial Information Technology	107	96	58
	-----	-----	-----
	1,107	1,022	910
-----			
Intersegment eliminations	(202)	(213)	(191)
-----			
Total sales	\$8,902	\$9,153	\$8,607
=====			

The decreasing trend in ACS revenues is primarily attributable to the B-2 program, which decreased by \$291 million in 1998 as compared to 1997, following a \$110 million decrease in 1997 as compared to 1996. Current planning data indicate that the level of overall B-2 revenue will decline slightly in 1999 as compared to 1998, but will decline by approximately 50 percent in 2000, as compared to 1998, when production is expected to be substantially completed. Sales on the F/A-18 program were essentially unchanged in 1998 as compared to 1997. Deliveries of the C/D version of the F/A-18 were 34 in 1998, 35 in 1997, and 68 in 1996. The company currently plans to deliver 17 F/A-18C/D shipsets in 1999. In 1998 the company delivered the first seven shipsets under the F/A-18E/F LRIP contract, which began in late 1996. This contract is accounted for under the cost-to-cost type of percentage-of-completion method, which results in revenue being recorded as costs are incurred. In 1999 the company plans to deliver the last five shipsets under this contract and to deliver the first 12 shipsets under the production contract. The production contract is accounted for under the units-of-delivery method, which results in revenue being recorded as deliveries are made. Sales on the Kistler K-1 program are recorded on a cost recovery basis as cash is received. Such sales declined \$10 million in 1998 from the \$63 million recorded in 1997. Work on this program was discontinued in December 1998 due to difficulties encountered by Kistler Aerospace Corporation in obtaining financing. No operating margin is recorded on this program.

The small increase in Aerostructures sales in 1998 over 1997 reflects a \$192 million increase in Boeing jetliner sales partially offset by a reduction in other aerostructures revenue due to the sale in late 1997 of the company's Grumman Allied Industries subsidiary. Deliveries of 747 shipsets were 56 in 1998, 46 in 1997, and 28 in 1996. Increased deliveries of all Boeing jetliner shipsets in 1997 resulted in a 51 percent increase in revenue from these programs over 1996. The company currently expects to deliver 32 747 shipsets in 1999.

ESS segment sales declined 5 percent in 1998 as compared to 1997 due to lower Defensive Electronic Systems volume as well as lower revenues on a number of programs included in the "other" business area. Within the C3I&N business area, increased airspace management sales more than offset lower marine sales. In 1997, the ESS segment benefitted from inclusion of ESG for the full year as compared to 10 months in 1996.

Information Technology (Logicon) segment sales increased 8 percent in 1998 over 1997. Most of the additional sales was generated in the Technology Services business area, attributable in part to the commencement of work in the fourth quarter of 1998 on the J-BOSC contract, which was won earlier in the year.

The year-end funded order backlog is the sum of the previous year-end backlog plus the year's contract acquisitions minus the year's sales. Backlog is converted into the following years' sales as costs are incurred or deliveries are made. It is expected that approximately 56 percent of the 1998 year-end backlog will be converted into sales in 1999.

Funded Order Backlog

\$ in millions	1998	1997	1996
-----			
Integrated Systems & Aerostructures			
ACS	\$ 2,998	\$ 3,682	\$ 4,521
Aerostructures	2,034	2,164	2,284
AEW/EW	991	1,092	1,103
AGS/BM	910	1,192	1,062
	-----	-----	-----
	6,933	8,130	8,970
-----			
Electronic Sensors & Systems			
Aerospace Electronic Systems	1,491	1,709	1,453
C3I&N	891	888	811
Defensive Electronic Systems	617	850	998
Other	120	81	186
	-----	-----	-----
	3,119	3,528	3,448
-----			
Information Technology (Logicon)			
Government Information Technology	368	342	401
Technology Services	148	61	67
Commercial Information Technology	50	44	43
	-----	-----	-----
	566	447	511
-----			
Intersegment Eliminations	(169)	(243)	(262)
-----			
Total backlog	\$10,449	\$11,862	\$12,667
=====			

Total U.S. Government orders, including those made on behalf of foreign governments (FMS), comprised 73 percent of the backlog at the end of 1998 compared with 72 percent at the end of 1997 and 76 percent at the end of 1996. Total foreign customer orders, including FMS, accounted for 15 percent of the backlog at the end of 1998 compared with 17 percent in 1997 and 17 percent in 1996. Domestic commercial business in backlog at the end of 1998 was 17 percent compared with 17 percent at the end of 1997 and 16 percent at the end of 1996.



## MEASURES OF PERFORMANCE

Operating margin in the ISA segment in 1998 was reduced by \$104 million in charges on the Boeing 747 fuselage program. A charge of \$47 million resulted from an increase in the estimated cost to complete work on the current production block due to reduced deliveries on the current contract; and a charge of \$57 million was recorded for certain nonrecurring costs of the Accurate Fuselage Assembly (AFA) precision manufacturing system, which are no longer considered recoverable from sales of future deliveries. The company committed to the AFA program in 1996 as a condition of its current fuselage contract with Boeing, which completes in 2006. The AFA program involves the conversion to a digital manufacturing design and the implementation of advanced precision manufacturing techniques. The company's investment in this program was intended to be amortized over the life of the current production contract. The decline in production rates to two per month on the 747 program for an indefinite period has significantly reduced the recoverability of this investment through future profits, thus causing the company to take the \$57 million charge. The company is in discussions with Boeing regarding the company's claims for recovery of incurred and estimated future out-of-scope work and related delay and disruption costs associated with the AFA program. The company expects to recover these costs, which are not included in the charge. To date, \$29 million of such costs, expected to be recovered, have been incurred and are recorded as a claim receivable.

In 1998, five B-2's were delivered under the production contract as compared to four in each of the years 1997 and 1996. In 1997, ISA segment benefited from a \$55 million cumulative margin rate adjustment on the B-2 production contract, and higher levels of Boeing jetliner sales. The improvements were partially offset by lower F/A-18 operating margin on reduced sales. ISA segment operating profit in 1996 included the favorable settlement of a claim involving productivity improvements on the F/A-18, partially offset by a \$25 million charge related to the company's work for Fokker Aircraft N.V., which declared bankruptcy in March 1996, and \$22 million in charges related to plant closures.

Following the award of the last increment of production funding for the B-2, the company began recording future operating margin increases on all production aircraft as these units were delivered and accepted by the customer. At the time each unit is delivered, an assessment is made of the status of the production contract so as to estimate the amount of any probable additional margin available beyond that previously recognized. That unit's proportionate share of any such unrecognized remaining balance is then recorded. In this fashion it is believed that margin improvements will be recognized on a more demonstrable basis. All 15 production units have been initially delivered. Eight units remain to be retrofitted with five scheduled for delivery in 1999 and the remaining three in 2000.

Since the beginning of the Joint STARS program, the company (and prior to 1994, the Grumman Corporation) has incurred over \$100 million of costs in excess of revenues in the performance of the development and production phases of the program. Including support and other work, the company recorded on the Joint STARS program operating losses of \$25 million and \$29 million in 1998 and 1997, respectively, and operating margin of \$18 million in 1996. The company may incur additional losses in the future under existing production contracts as they are currently structured. Substantially all of the future costs in excess of revenues are attributable to the refurbishing of used Boeing 707 aircraft by the company. In June of 1998, the company took steps with its customer, the U.S. Air Force, to remedy this situation.

First, the company and the U.S. Air Force modified the fixed price production contracts to redefine the refurbishment requirement for the Boeing 707. These modifications define refurbishment actions as essential repairs, as opposed to a complete remanufacture of the aircraft, which previously also included the repair of cosmetic defects. These revisions to the refurbishment requirement have now been incorporated in all active production contracts.

Additionally, the company has submitted Requests for Equitable Adjustment (REAs) to the U.S. Air Force. The REAs seek adjustment to production contracts for cost increases incurred during the refurbishment and conversion of aircraft to Joint STARS platforms. The company and the U.S. Air Force executed an Alternate Dispute Resolution Agreement to attempt to resolve these REAs. Beginning in October 1998, as part of this process, the parties initiated fact-finding. Based on the current schedule, the company expects negotiations to begin in the second quarter of 1999. If negotiations are not successful or become substantially delayed, the company intends to pursue resolution in accordance with the Contract Disputes Act.

ESS segment 1998 operating margin was reduced by a \$21 million fourth quarter charge for estimated future costs not considered recoverable from future revenues on the DIRCM program. The charge resulted from increased costs associated with solving technical design issues as well as difficulties in achieving timely completion of the second series of live-fire tests on the large turret version. In 1997, increases in the cost estimate to complete the company's work on DIRCM resulted in cumulative margin rate adjustments of \$13 million in the first quarter and \$20 million in the fourth quarter. Partially offsetting these downward adjustments was the settlement of a claim involving work performed in the 1980's on the MX missile Interface Test Adapter (ITA), which resulted in an \$8 million increase in operating margin and \$12 million in interest income. In 1996, a \$29 million charge was recorded as a result of the write-down of a claim related to avionics work performed by the former Grumman Corporation prior to its acquisition by Northrop in 1994.

Information Technology (Logicon) operating margin was reduced in 1998 by \$8 million in consolidation and reorganization charges. Excluding these charges, operating margin was approximately the same in 1998 as in 1997. Operating margin improved in 1997 over 1996 as a result of the return to profitability of the company's data systems activities and increased margin rates on higher sales.

Operating margin in 1998 included \$266 million of pension income compared with \$133 million in 1997 and \$39 million in 1996. The increases are primarily attributable to the historically high market returns on investments experienced over the last several years.

Included in the 1998 results are pretax costs totaling \$58 million related to activities to realign operating units, consolidate facilities and laboratories and exit certain business areas, which reduced operating margin by \$43 million and other income by \$15 million. The operating margin amount is reflected in segment results as follows: ISA, \$6 million; ESS, \$13 million; and Information Technology (Logicon), \$8 million. The remaining \$16 million is included in Corporate expenses. The charge includes \$20 million for employee termination costs, \$12 million for write-down to estimated fair value of assets available for sale, \$3 million for losses on disposals of assets, \$9 million for write-off of purchased intangible assets no longer considered recoverable from future revenues, \$9 million for loss on sale of a business, and \$5 million for excess capacity lease costs, net of estimated sublease income through 2008. The employee termination costs represents cash severance payments made to employees.

Capital assets are transferred to assets available for sale when a decision is made to sell the facility and selling efforts are actively underway. In some cases, operations continue and depreciation expense is recorded until the facility is vacated or sold. In 1998, \$37 million was transferred to assets available for sale, \$2 million in depreciation expense on these assets was recorded, and assets with a carrying value of \$46 million were sold. Assets available for sale are evaluated at least annually for recoverability and written down to estimated fair value as necessary. In 1998, a write down adjustment of \$12 million was recorded. The assets available for sale at the end of 1998 are expected to be sold in 1999.

In 1996, the company recorded a \$90 million pretax charge related to the closure of four plants. The charge included \$30 million for costs related to the reduction of personnel and other closure activities, which lowered operating profit in the ISA and ESS industry segments by \$22 million and \$8 million, respectively, and \$60 million for the write-down of facilities included in Other Income(Deductions) in the Consolidated Statements of Income. These charges were a result of the company's continuing efforts to reduce operating costs while disposing of assets inconsistent with changes to the company's business strategy. In 1997, recovery of \$24 million of the 1996 write-down, related to the sale of the company's Perry, Georgia, facility, was included in Other Income(Deductions).

Included in the 1998 results is a \$30 million write off of an investment related to Kistler Aerospace Corporation's K-1 program. The investment consisted of advances on behalf of Kistler Aerospace that were made in 1998 to continue the company's efforts in support of the K-1. The write off resulted from the company's assessment that the near-term likelihood of Kistler obtaining additional financing made recovery of the investment uncertain. In 1996, the sale of shares owned by the company in ETEC Systems, Inc. generated pretax gains of \$28 million. Both of these items are included in Investment Gains(Losses) in the Consolidated Statements of Income.

Interest expense decreased \$24 million in 1998, following a decrease of \$13 million in 1997. Total debt stood at \$2.8 billion at the end of both 1998 and 1997, compared to \$3.4 billion at the end of 1996.

The company's effective federal income tax rate was 37.8 percent in 1998, 37.5 percent in 1997 and 38.9 percent in 1996.

#### MEASURES OF LIQUIDITY AND CAPITAL RESOURCES

The trend and relationship of sales volume with net accounts receivable and inventoried costs is a useful measure in assessing the company's liquidity. In 1998, the company's year-end net investment in these balances represented 32 percent of sales, compared with 30 percent in 1997 and 29 percent in 1996.

The \$244 million of cash provided by operations in 1998 was considerably less than the \$730 million generated in 1997 and the \$743 million generated in 1996. The decline in cash generated from operating activities is primarily due to the increase in working capital for commercial aerostructures to support increased production levels and the build up of inventory for the F/A-18E/F production contract. Deliveries under this F/A-18 contract will begin in 1999. Additional borrowings under the revolving credit facility along with the cash generated by operating activities provided sufficient cash flows to service debt, finance capital expenditures, and pay dividends to shareholders. In 1997 and 1996, cash flows from operating activities were sufficient to service debt, finance capital expansion projects, and pay dividends to shareholders.

The following table is a condensed summary of the detailed cash flow information contained in the Consolidated Statements of Cash Flows.

Year ended December 31	1998	1997	1996
-----			
Cash came from			
Customers	95%	94%	66%
Lenders	3	4	29
Shareholders			4
Buyers of assets/other	2	2	1
-----			
	100%	100%	100%
=====			
Cash went to			
Employees and suppliers of services and materials	90%	83%	58%
Sellers of assets	3	2	24
Lenders	5	10	13
Suppliers of facilities/other	1	4	4
Shareholders	1	1	1
-----			
	100%	100%	100%
=====			

The cash received from lenders in 1996 resulted from borrowing for the acquisition of ESG. The cash received from shareholders in 1996 was from a public stock offering in which the company issued approximately 8 million shares of common stock. The net proceeds of \$493 million were used to pay down outstanding debt under the company's Credit Agreement.

During the first quarter of 1996, the company sold to institutional investors \$400 million of 7 percent notes due in 2006, \$300 million of 7 3/4 percent debentures due in 2016 and \$300 million of 7 7/8 percent debentures due in 2026. The proceeds from these issuances were used to finance a portion of the purchase price of ESG. The debt indenture contains restrictions relating to limitations on liens, sale and leaseback arrangements, and funded debt of subsidiaries.

The company has a credit agreement with a group of domestic and foreign banks to provide for two credit facilities: \$1.8 billion available on a revolving credit basis through March 2002; and a variable interest rate \$650 million term loan payable in quarterly installments of \$50 million plus interest through March 2002.

To provide for long-term liquidity the company believes it can obtain additional capital from such sources as: the public or private capital markets; the further sale of assets; sale and leaseback of operating assets; and leasing rather than purchasing new assets.

Cash generated from operations is expected to be sufficient in 1999 to service debt, finance capital expansion projects, and continue paying dividends to the shareholders. With the completion of the B-2 EMD contract, federal and state income taxes that have been deferred since the inception of the contract in 1981, will become payable. The contract is expected to be completed in 2000 with taxes of approximately \$1 billion due, to be paid that year in quarterly installments. The company plans to use cash generated from operations supplemented by additional borrowings under the credit agreement and/or additional borrowings from public or private capital markets to pay these taxes.

Capital expenditure commitments at December 31, 1998, were approximately \$135 million including \$15 million for environmental control and compliance purposes.

The company will continue to provide the productive capacity to perform its existing contracts, prepare for future contracts, and conduct R&D in the pursuit of developing opportunities. While these expenditures tend to limit short-term liquidity, they are made with the intention of improving the long-term growth and profitability of the company.

## FORWARD-LOOKING INFORMATION

Certain statements and assumptions in Management's Discussion and Analysis contain or are based on "forward-looking" information (as defined in the Private Securities Litigation and Reform Act of 1995) that involves risk and uncertainties, including statements and assumptions with respect to future revenues, program performance and cash flows, the outcome of contingencies including litigation and environmental remediation, and anticipated costs of capital investments and planned dispositions. The company's operations are necessarily subject to various risks and uncertainties; actual outcomes are dependent upon many factors, including, without limitation, the company's successful performance of internal plans; government customers' budgetary restraints; customer changes in short-range and long-range plans; domestic and international competition in both the defense and commercial areas; product performance; continued development and acceptance of new products; performance issues with key suppliers and subcontractors; government import and export policies; termination of government contracts; the outcome of political and legal processes; legal, financial, and governmental risks related to international transactions and global needs for military and commercial aircraft and electronic systems and support; as well as other economic, political and technological risks and uncertainties.

### Item 7A. Quantitative and Qualitative Disclosures about Market Risk

The company has fixed-rate long-term debt obligations, most of which are not callable. The company also has financial instruments that are subject to interest rate risk, principally variable-rate short-term debt outstanding under the Credit Agreement. The company may enter into interest rate swap agreements to offset the variable-rate characteristics of these loans. At December 31, 1998, no interest rate swap agreements were in effect.

Only a small portion of the company's transactions are contracted in foreign currencies. The company does not consider the market risk exposure relating to foreign currency exchange to be material.

Selected Financial Data

Year ended December 31, \$ in millions, except per share	1998	1997	1996	1995	1994
-----					
Net sales to					
United States Government	\$ 6,717	\$ 7,210	\$ 7,224	\$ 6,148	\$ 5,980
The Boeing Company	1,075	883	569	569	483
Other customers	1,110	1,060	814	555	562
-----					
Total net sales	\$ 8,902	\$ 9,153	\$ 8,607	\$ 7,272	\$ 7,025
-----					
Operating margin	\$ 756	\$ 880	\$ 703	\$ 572	\$ 224
Net income	194	407	264	277	53
Basic earnings per share	2.83	6.10	4.22	4.79	.92
Diluted earnings per share	2.79	5.98	4.15	4.71	.91
Cash dividends per share	1.60	1.60	1.60	1.60	1.60
Net working capital	666	221	106	435	533
Current ratio	1.28 to 1	1.08 to 1	1.04 to 1	1.25 to 1	1.27 to 1
Total assets	\$ 9,536	\$ 9,677	\$ 9,645	\$ 5,642	\$ 6,192
Long-term debt	2,562	2,500	2,950	1,163	1,633
Total long-term obligations	4,319	4,339	4,694	2,281	2,793
Long-term debt as a percentage of shareholders' equity	89.9%	95.3%	129.3%	73.3%	116.8%
Operating margin as a percentage of					
Net sales	8.5	9.6	8.2	7.9	3.2
Average segment assets	9.0	10.4	10.3	10.8	5.5
Net income as a percentage of					
Net sales	2.2	4.5	3.1	3.8	.8
Average assets	2.0	4.2	3.5	4.7	1.1
Average shareholders' equity	7.1	16.6	13.6	18.5	3.8
Research and development expenses					
Contract	\$ 1,489	\$ 1,670	\$ 1,632	\$ 1,179	\$ 1,480
Noncontract	203	256	255	164	121
Payroll and employee benefits	3,476	3,504	3,378	2,883	2,827
Number of employees at year-end	49,600	52,000	51,600	42,300	46,900
Number of shareholders at year-end	11,774	11,400	11,773	12,471	12,878
Depreciation	\$ 207	\$ 232	\$ 210	\$ 231	\$ 231
Amortization of					
Goodwill	94	94	83	38	28
Other purchased intangibles	92	92	82	21	15
Maintenance and repairs	92	107	93	80	105
Rent expense	106	108	110	106	99
Floor area (millions of square feet)					
Owned	19.2	20.5	22.5	20.1	21.3
Commercially leased	10.6	10.0	9.9	8.2	8.5
Leased from United States Government	7.6	8.8	9.0	10.2	9.4
-----					

## Item 8. Financial Statements and Supplementary Data

## CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

December 31, \$ in millions	1998	1997
-----		
Assets:		
Current assets		
Cash and cash equivalents	\$ 44	\$ 63
Accounts receivable	1,507	1,441
Inventoried costs	1,373	1,283
Deferred income taxes	24	82
Prepaid expenses	85	67
-----		
Total current assets	3,033	2,936
-----		
Property, plant and equipment at cost		
Land and land improvements	170	201
Buildings	785	769
Machinery and other equipment	2,014	2,063
Leasehold improvements	89	76
-----		
	3,058	3,109
Accumulated depreciation	(1,784)	(1,763)
-----		
	1,274	1,346
-----		
Other assets		
Goodwill, net of accumulated amortization of \$338 in 1998 and \$244 in 1997	3,381	3,421
Other purchased intangibles, net of accumulated amortization of \$295 in 1998 and \$208 in 1997	795	896
Prepaid pension cost, intangible pension asset and benefit trust fund	787	452
Deferred income taxes	166	485
Assets available for sale	37	60
Investments in and advances to affiliates and sundry assets	63	81
-----		
	5,229	5,395
-----		
	\$ 9,536	\$ 9,677
=====		



December 31, \$ in millions	1998	1997
-----		
Liabilities and Shareholders' Equity:		
Current liabilities		
Notes payable to banks	\$ 69	\$ 91
Current portion of long-term debt	200	200
Trade accounts payable	416	463
Accrued employees' compensation	337	366
Advances on contracts	354	410
Deferred income taxes	527	717
Other current liabilities	464	468
-----		
Total current liabilities	2,367	2,715
-----		
Long-term debt	2,562	2,500
Accrued retiree benefits	1,704	1,716
Other long-term liabilities	53	48
Deferred income taxes		75
Shareholders' equity		
Paid-in capital		
Preferred stock, 10,000,000 shares authorized; none issued		
Common stock, 200,000,000 shares authorized; issued and outstanding:		
1998 - 68,836,810		
1997 - 67,278,876	989	838
Retained earnings	1,892	1,807
Accumulated other comprehensive income(loss)	(31)	(22)
-----		
	2,850	2,623
-----		
	\$9,536	\$9,677
=====		

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

CONSOLIDATED STATEMENTS OF INCOME

Year ended December 31, \$ in millions, except per share	1998	1997	1996
Net sales	\$8,902	\$9,153	\$8,607
Cost of sales			
Operating costs	6,930	7,040	6,658
Administrative and general expenses	1,216	1,233	1,246
Operating margin	756	880	703
Other income(deductions)			
Interest income	11	17	12
Merger costs	(186)	(18)	
Interest expense	(233)	(257)	(270)
Investment gains(losses)	(30)		28
Other, net	(6)	29	(41)
Income before income taxes	312	651	432
Federal and foreign income taxes	118	244	168
Net income	\$ 194	\$ 407	\$ 264
Weighted average common shares outstanding, in millions	68.5	66.7	62.6
Basic earnings per share	\$ 2.83	\$ 6.10	\$ 4.22
Diluted earnings per share	2.79	5.98	4.15

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Year ended December 31, \$ in millions	1998	1997	1996
Net income	\$ 194	\$ 407	\$ 264
Other comprehensive income			
Minimum pension liability adjustments, before tax	(13)	(28)	12
Income tax expense(benefit)	(4)	(10)	4
Other comprehensive income(loss), net of tax	(9)	(18)	8
Comprehensive income	\$ 185	\$ 389	\$ 272

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

CONSOLIDATED STATEMENTS OF CHANGES  
IN SHAREHOLDERS' EQUITY

Year ended December 31, \$ in millions, except per share	1998	1997	1996
<hr/>			
Paid-in Capital			
At beginning of year	\$ 838	\$ 784	\$ 273
Stock issuance			493
Employee stock awards and options exercised, net of forfeitures	151	60	23
Treasury stock transactions		(6)	(5)
<hr/>			
At end of year	989	838	784
<hr/>			
Retained Earnings			
At beginning of year	1,807	1,502	1,325
Net income	194	407	264
Cash dividends	(109)	(102)	(87)
<hr/>			
At end of year	1,892	1,807	1,502
<hr/>			
Accumulated Other Comprehensive Income(Loss)			
At beginning of year	(22)	(4)	(12)
Change in excess of additional minimum liability over unrecognized prior service costs, net of tax	(9)	(18)	8
<hr/>			
At end of year	(31)	(22)	(4)
<hr/>			
Total shareholders' equity	\$2,850	\$2,623	\$2,282
<hr/>			
Book value per share	\$41.39	\$38.99	\$34.30
<hr/>			
Cash dividends per share	\$1.60	\$1.60	\$1.60
<hr/>			

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

CONSOLIDATED STATEMENTS OF CASH FLOWS

Year ended December 31, \$ in millions	1998	1997	1996
<b>Operating Activities</b>			
Sources of Cash			
Cash received from customers			
Progress payments	\$1,844	\$2,264	\$ 2,226
Other collections	6,929	7,050	6,372
Interest received	11	17	13
Income tax refunds received	26	13	12
Other cash receipts	6	7	8
Cash provided by operating activities	8,816	9,351	8,631
Uses of Cash			
Cash paid to suppliers and employees	8,273	8,280	7,528
Interest paid	219	251	219
Income taxes paid	46	64	141
Other cash payments	34	26	
Cash used in operating activities	8,572	8,621	7,888
Net cash provided by operating activities	244	730	743
<b>Investing Activities</b>			
Payment for businesses purchased, net of cash acquired	(50)		(2,886)
Additions to property, plant and equipment	(211)	(238)	(198)
Proceeds from sale of property, plant and equipment	63	106	58
Proceeds from sale of affiliates/operations		19	45
Advances to affiliate	(30)		
Proceeds from sale of marketable securities, net of purchases			9
Funding of retiree benefit trust	(2)		(25)
Other investing activities	(5)		4
Net cash used in investing activities	(235)	(113)	(2,993)
<b>Financing Activities</b>			
Borrowings under lines of credit	295	422	2,734
Repayment of borrowings under lines of credit	(55)	(808)	(635)
Proceeds from issuance of long-term debt			1,000
Principal payments of long-term debt/capital leases	(200)	(200)	(1,090)
Proceeds from issuance of stock	36	17	502
Dividends paid	(109)	(102)	(87)
Other financing activities	5	(6)	(107)
Net cash provided by (used in) financing activities	(28)	(677)	2,317
Increase(decrease) in cash and cash equivalents	(19)	(60)	67
Cash and cash equivalents balance at beginning of year	63	123	56
Cash and cash equivalents balance at end of year	\$ 44	\$ 63	\$ 123

Year ended December 31, \$ in millions	1998	1997	1996
Reconciliation of Net Income to Net Cash Provided by Operating Activities:			
Net income	\$ 194	\$ 407	\$ 264
Adjustments to reconcile net income to net cash provided			
Depreciation	207	232	210
Amortization of intangible assets	186	186	165
Common stock issued to employees	88	23	10
Loss on disposals of property, plant and equipment	30	18	23
Loss(gain) on assets available for sale	15	(8)	59
Loss(gain) on investment	30		(28)
Retiree benefits (income)cost	(194)	(44)	52
Decrease(increase) in			
Accounts receivable	1,212	(81)	(111)
Inventoried costs	(111)	(147)	7
Prepaid expenses	(18)	2	13
Increase(decrease) in			
Progress payments	(1,280)	66	84
Accounts payable and accruals	(115)	91	36
Provisions for contract losses	54	(30)	2
Deferred income taxes	112	188	126
Income taxes payable	(16)	(9)	(33)
Retiree benefits	(178)	(180)	(170)
Other noncash transactions	28	16	34
Net cash provided by operating activities	\$ 244	\$ 730	\$ 743
Noncash Investing and Financing Activities:			
Purchase of businesses			
Fair value of assets acquired			\$ 4,003
Cash paid			(2,888)
Liabilities assumed			\$ 1,115

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

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

### SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

#### Principles of Consolidation

The consolidated financial statements include the accounts of the corporation and its subsidiaries. All material intercompany accounts, transactions and profits are eliminated in consolidation.

The company's financial statements are in conformity with generally accepted accounting principles. The preparation thereof requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingencies at the date of the financial statements as well as the reported amounts of revenues and expenses during the reporting period. Estimates have been prepared on the basis of the most current and best available information and actual results could differ from those estimates.

#### Nature of Operations

Northrop Grumman is a major producer of military and commercial aircraft subassemblies and defense electronics and is the prime contractor on the U.S. Air Force B-2 Stealth Bomber. The company operates within the broadly defined aerospace industry. The majority of the company's products and services are ultimately sold to the U.S. Government and the company is therefore affected by, among other things, the federal budget process.

The company's three reportable segments are its three operating units: Integrated Systems and Aerostructures (ISA), Electronic Sensors and Systems (ESS), and Information Technology (Logicon). Included in the Management's Discussion and Analysis section of this report are general descriptions of the company's principal products and services under the titles Integrated Systems and Aerostructures (ISA), Electronic Sensors and Systems (ESS), and Information Technology (Logicon) (see pages 10 through 13) and segment data in the table titled Results of Operations by Segment and Major Customer (see pages 14 and 15), which are considered to be an integral part of these financial statements. Only these portions of Management's Discussion and Analysis are incorporated by reference into these financial statements.

Sales to the U.S. Government (including foreign military sales) are reported within each segment and in total in the Selected Financial Data. The company does not conduct a significant volume of activity through foreign operations or in foreign currencies. Intersegment sales are transacted at cost incurred with no profit added. Management principally uses operating margin as the measure to evaluate segment profitability. The company does not allocate federal income tax expense, pension income, the deferred portion of state income tax expense, interest income, or interest expense to segments. General corporate assets include cash and cash equivalents, corporate office furnishings and equipment, other unallocable property, investments in affiliates, prepaid pension cost, intangible pension asset, benefit trust fund assets, deferred tax assets and certain assets available for sale.

## Sales

Sales under cost-reimbursement, service, research and development, and construction-type contracts are recorded as costs are incurred and include estimated earned fees or profits calculated on the basis of the relationship between costs incurred and total estimated costs (cost-to-cost type of percentage-of-completion method of accounting). Construction-type contracts embrace those fixed-price type contracts that provide for the delivery at a low volume per year or a small number of units after a lengthy period of time over which a significant amount of costs have been incurred. Sales under other types of contracts are recorded as deliveries are made and are computed on the basis of the estimated final average unit cost plus profit (units-of-delivery type of percentage-of-completion method of accounting).

Certain contracts contain provisions for price redetermination or for cost and/or performance incentives. Such redetermined amounts or incentives are included in sales when the amounts can reasonably be determined. In the case of the B-2 bomber production contract, future changes in operating margin will be recognized on a units-of-delivery basis and recorded as each equivalent production unit is delivered. Amounts representing contract change orders, claims or limitations in funding are included in sales only when they can be reliably estimated and realization is probable. In the period in which it is determined that a loss will result from the performance of a contract, the entire amount of the estimated ultimate loss is charged against income. Loss provisions are first offset against costs that are included in assets, with any remaining amount reflected in Other Current Liabilities. Other changes in estimates of sales, costs and profits are recognized using the cumulative catch-up method of accounting. This method recognizes in the current period the cumulative effect of the changes on current and prior periods. Hence, the effect of the changes on future periods of contract performance is recognized as if the revised estimates had been the original estimates.

### Contract Research and Development

Customer-sponsored research and development costs (direct and indirect costs incurred pursuant to contractual arrangements) are accounted for like other contracts.

### Noncontract Research and Development

This category includes independent research and development costs and company-sponsored research and development costs (direct and indirect costs not recoverable under contractual arrangements). Independent research and development (IR&D) costs are included in administrative and general expenses (indirect costs allocable to U.S. Government contracts) whereas company-sponsored research and development costs are charged against income as incurred.

#### Environmental Costs

Environmental liabilities are accrued when the company determines it is responsible for remediation costs and such amounts are reasonably estimable. When only a range of amounts is established and no amount within the range is better than another, the minimum amount in the range is recorded. The company does not anticipate and record insurance recoveries before collection is probable.

#### Interest Rate Swap Agreements

The company may enter into interest rate swap agreements to offset the variable-rate characteristic of certain variable-rate term loans outstanding under the company's Credit Agreement. Interest on these interest rate swap agreements is recognized as an adjustment to interest expense in the period incurred.

#### Income Taxes

Provisions for federal, state and local income taxes are calculated on reported financial statement pretax income based on current tax law and also include, in the current period, the cumulative effect of any changes in tax rates from those used previously in determining deferred tax assets and liabilities. Such provisions differ from the amounts currently payable because certain items of income and expense are recognized in different time periods for financial reporting purposes than for income tax purposes.

The company accounts for certain contracts in process using different methods of accounting for financial statements and tax reporting and thus provides deferred taxes on the difference between the financial and taxable income reported during the performance of such contracts.

In accordance with industry practice, state and local income and franchise tax provisions are included in administrative and general expenses.



## Earnings per Share

Basic earnings per share is calculated using the weighted average number of shares of common stock outstanding during each period, after giving recognition to stock splits and stock dividends. Diluted earnings per share reflect the dilutive effect of stock options and other stock awards granted to employees under stock-based compensation plans.

Basic and diluted earnings per share are calculated as follows:

	Net Income ----- (millions)	Shares ----- (millions)	Earnings per share -----
<b>1998</b>			
Basic earnings per share	\$194	68.5	\$2.83
	=====		=====
Dilutive effect of stock options and awards		1.0	
		-----	
Diluted earnings per share	\$194	69.5	\$2.79
	=====	=====	=====
<b>1997</b>			
Basic earnings per share	\$407	66.7	\$6.10
	=====	=====	=====
Dilutive effect of stock options and awards		1.4	
		-----	
Diluted earnings per share	\$407	68.1	\$5.98
	=====	=====	=====
<b>1996</b>			
Basic earnings per share	\$264	62.6	\$4.22
	=====		=====
Dilutive effect of stock options and awards		1.0	
		-----	
Diluted earnings per share	\$264	63.6	\$4.15
	=====	=====	=====

## Cash and Cash Equivalents

Cash and cash equivalents include interest-earning debt instruments that mature in three months or less from the date purchased.

## Accounts Receivable

Accounts receivable include amounts billed and currently due from customers, amounts currently due but unbilled (primarily related to contracts accounted for under the cost-to-cost type of percentage-of-completion method of accounting), certain estimated contract changes, claims in negotiation that are probable of recovery, and amounts retained by the customer pending contract completion.

#### Inventoried Costs

Inventoried costs primarily relate to work in process under fixed-price type contracts (excluding those included in unbilled accounts receivable as previously described). They represent accumulated contract costs less the portion of such costs allocated to delivered items. Accumulated contract costs include direct production costs, factory and engineering overhead, production tooling costs, and allowable administrative and general expenses (except for general corporate expenses and IR&D allocable to commercial contracts, which are charged against income as incurred).

In accordance with industry practice, inventoried costs are classified as a current asset and include amounts related to contracts having production cycles longer than one year.

#### Depreciable Properties

Property, plant and equipment owned by the company are depreciated over the estimated useful lives of individual assets. Capital leases providing for the transfer of ownership upon their expiration or containing bargain purchase options are amortized over the estimated useful lives of individual assets. Most of these assets are depreciated using declining-balance methods, with the remainder using the straight-line method, with the following lives:

	Years
Land improvements	5-20
Buildings	5-45
Machinery and other equipment	3-33
Leasehold improvements	Length of lease

#### Goodwill and Other Purchased Intangible Assets

Goodwill and other purchased intangible assets are amortized on a straight-line basis over weighted average periods of 39 years and 15 years, respectively. Goodwill and other purchased intangibles balances are included in the identifiable assets of the industry segment to which they have been assigned and amortization is charged against the respective industry segment operating margin. The recoverability of goodwill and other purchased intangibles is evaluated at least annually considering the projected future profitability and cash flow at the operations to which they relate. When it is determined that an impairment has occurred, an appropriate charge to operations is recorded. Charges of \$9 million and \$10 million were recorded in 1998 and 1996, respectively, for purchased intangible assets no longer considered recoverable from future revenues.

#### Assets Available for Sale

Capital assets are transferred to assets available for sale when a decision is made to sell a facility and selling efforts are actively underway. In some cases, operations continue and depreciation expense is recorded until the facility is vacated or sold. Assets available for sale are evaluated at least annually for recoverability and written down to estimated fair value as necessary. When an asset is written down to estimated fair value, depreciation ceases.

## Financial Statement Reclassification

To conform to the presentation in 1998, certain amounts for 1997 and 1996 have been reclassified in the Consolidated Financial Statements. The reclassifications had no effect on net income or earnings per share for any period presented.

## BUSINESS COMBINATIONS

Effective August 1, 1997, the company consummated the merger of its wholly owned acquisition subsidiary with and into Logicon, Inc., a leading defense information technology and services company. Each share of Logicon's common stock was converted to .6161 of a share of the company's common stock. Approximately 8.6 million shares of the company's common stock were issued for Logicon's common stock. The merger was accounted for as a pooling of interests.

## ACQUISITIONS

On March 1, 1996, the company purchased substantially all of the defense and electronics systems business (ESG) of Westinghouse Electric Corporation at a cost of \$2.9 billion and financed the transaction with new borrowings and new equity. The operations of ESG have been consolidated with Northrop Grumman effective March 1, 1996 and are included in the ESS industry segment.

The purchase method of accounting was used to record the acquisition with estimated fair values being assigned to assets and liabilities. The excess of the purchase price over the net tangible assets acquired was assigned to identifiable intangible assets and the remaining balance to goodwill.

The following unaudited pro forma financial information combines Northrop Grumman's and ESG's results of operations, as if the acquisition had taken place on January 1, 1996, and is not necessarily indicative of future operating results of Northrop Grumman.

Year ended December 31, \$ in millions except per share	1996
-----	-----
Sales	\$8,907
Net income	244
Basic earnings per share	3.90
Diluted earnings per share	3.82
-----	-----

#### TERMINATED MERGER AGREEMENT

On July 3, 1997, the company announced that it had entered into a definitive agreement with Lockheed Martin Corporation to combine the companies. On February 26, 1998, shareholders of Northrop Grumman approved the merger. On March 23, 1998, the U.S. Government filed suit to block the merger. On July 16, 1998, Lockheed Martin notified the company that it was terminating its merger agreement with the company pursuant to the terms of the agreement.

The company recorded charges totaling \$186 million in 1998 for costs related to the terminated merger. The charges cover vesting of restricted stock which became issuable following shareholder approval of the merger and other costs associated with the terminated merger, including investment banking fees, legal and accounting fees, and costs related to responding to the Government's request for information.

#### NEW ACCOUNTING STANDARDS

In 1998, the company adopted Statement of Financial Accounting Standards (SFAS) No. 131 - Disclosures about Segments of an Enterprise and Related Information, which changes operating segment disclosures requirements. Information for 1997 and 1996 has been restated from the prior year presentation to conform to the 1998 presentation. The adoption of this standard had no effect on the company's results of operations, financial position, or cash flows.

In 1998, the company adopted SFAS No. 130 - Reporting Comprehensive Income, which establishes new standards for the presentation and disclosure of comprehensive income. Comprehensive income consists of net income and minimum pension liability adjustments. Adoption of this standard had no impact on net income or shareholders' equity.

In 1998, the company also adopted SFAS No. 132 - Employer's Disclosure about Pensions and Other Postretirement Benefits, which changes disclosure requirements. Accordingly, 1997 and 1996 data in the Retirement Benefits footnote have been restated. This new standard did not change the accounting for pensions or other postretirement benefits and adoption of the standard had no effect on the company's results of operations, financial position, or cash flows.

In March 1998, the American Institute of Certified Public Accountants (AICPA) issued Statement of Position (SOP) 98-1 - Accounting for the Costs of Computer Software Developed or Obtained for Internal Use, which becomes effective for fiscal years beginning after December 15, 1998. The SOP requires capitalization of certain costs incurred after the date of adoption to develop or obtain software for internal use. The company will adopt this standard effective January 1, 1999. Adoption of the standard is not expected to have a material effect on the company's results of operations, financial position, or cash flows.

In April 1998, the AICPA issued SOP 98-5 - Reporting on the Costs of Start-Up Activities, which becomes effective for fiscal years beginning after December 15, 1998. The SOP requires certain costs, which previously were capitalized, be expensed and reported as a cumulative effect of a change in accounting principle, and requires that such costs incurred after adoption be expensed as incurred. The company will adopt this standard effective January 1, 1999. Adoption of the standard is not expected to have a material effect on the company's results of operations, financial position, or cash flows.

In June 1998, the Financial Accounting Standards Board issued SFAS No. 133- Accounting for Derivative Instruments and Hedging Activities, which becomes effective for fiscal years beginning after June 15, 1999. Earlier adoption is permitted. This standard provides authoritative guidance on accounting and financial reporting for derivative instruments. Management is currently evaluating the effect that adoption of this standard will have on the company's results of operations, financial position, and cash flows.

ACCOUNTS RECEIVABLE

Unbilled amounts represent sales for which billings have not been presented to customers at year end, including differences between actual and estimated overhead and margin rates. These amounts are usually billed and collected within one year. Progress payments are, however, received on a number of fixed-price contracts accounted for using the cost-to-cost type percentage-of-completion method.

The claim receivable represents costs incurred to date on the Accurate Fuselage Assembly (AFA) program that the company expects to recover from The Boeing Company for out-of-scope work and related delay and disruption costs incurred on the program.

Accounts receivable at December 31, 1998, are expected to be collected in 1999 except for approximately \$35 million due in 2000 and \$124 million due in 2001 and later. These amounts principally relate to long-term contracts with the U.S. Government.

Allowances for doubtful amounts represent mainly estimates of overhead type costs which may not be successfully negotiated and collected.

Accounts receivable were comprised of the following:

\$ in millions	1998	1997
-----		
Due from U.S. Government, long-term contracts		
Current accounts		
Billed	\$ 362	\$ 408
Unbilled	2,145	3,481
Progress payments received	(1,388)	(2,772)
	-----	-----
	1,119	1,117
-----		
Due from other customers, long-term contracts		
Current accounts		
Billed	141	87
Unbilled	137	133
Claim	29	
	-----	-----
	307	220
-----		
Total due, long-term contracts	1,426	1,337
-----		
Trade and other accounts receivable		
Due from U.S. Government	63	87
Due from other customers	65	72
	-----	-----
Total due, trade and other	128	159
-----		
Allowances for doubtful amounts	1,554	1,496
	(47)	(55)
	-----	-----
	\$ 1,507	\$ 1,441
=====		

INVENTORIED COSTS

Inventoried costs were comprised of the following:

\$ in millions	1998	1997
Production costs of contracts in process	\$1,487	\$1,415
Excess of production cost of delivered items over the estimated average unit cost	162	141
Administrative and general expenses	245	222
	1,894	1,778
Progress payments received	(521)	(495)
	<b>\$1,373</b>	<b>\$1,283</b>

Inventoried costs relate to long-term contracts in process and include expenditures for raw materials and work in process beyond what is required for recorded orders. These expenditures are incurred to help maintain stable and efficient production schedules. The excess of production costs of delivered and in process items over the estimated average costs is carried in inventory under the learning curve concept. Under this concept, production costs per unit are expected to decrease over time due to efficiencies arising from continuous improvement in the performance of repetitive tasks

The ratio of inventoried administrative and general expenses to total inventoried costs is estimated to be the same as the ratio of total administrative and general expenses incurred to total contract costs incurred.

According to the provisions of U.S. Government contracts, the customer has title to, or a security interest in, substantially all inventories related to such contracts.

INCOME TAXES

Income tax expense, both federal and foreign, was comprised of the following:

\$ in millions	1998	1997	1996
-----			
Currently payable			
Federal income taxes	\$ 6	\$ 26	\$ 60
Foreign income taxes	5	3	2
-----			
Change in deferred federal income taxes	11	29	62
	107	215	106
-----			
	\$ 118	\$ 244	\$ 168
=====			

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

\$ in millions	1998	1997	1996
-----			
Income tax expense at statutory rate	\$ 109	\$ 228	\$ 151
Goodwill amortization	16	17	16
Benefit from ESOP dividends	(3)	(3)	(3)
Other, net	(4)	2	4
-----			
	\$ 118	\$ 244	\$ 168
=====			

Deferred income taxes arise because of differences in the treatment of income and expense items for financial reporting and income tax purposes. The principal type of temporary difference stems from the recognition of income on contracts being reported under different methods for tax purposes than for financial reporting.

The tax effects of significant temporary differences and carryforwards that gave rise to year-end deferred federal and state tax balances, as categorized in the Consolidated Statements of Financial Position, were as follows:



\$ in millions	1998	1997
-----		
Deferred tax assets		
Deductible temporary differences		
Retiree benefit plan expense	\$ 364	\$ 558
Provision for estimated expenses	41	60
Income on contracts		41
Other	12	37
	417	696
-----		
Taxable temporary differences		
Purchased intangibles	(89)	(152)
Excess tax over book depreciation	(69)	(53)
Income on contracts	(12)	
Other	(57)	
	(227)	(205)
	\$ 190	\$ 491
=====		
Deferred tax liabilities		
Taxable temporary differences		
Income on contracts	\$ 865	\$ 771
Administrative and general expenses period costed for tax purposes	18	8
Retiree benefit plan income		28
Excess tax over book depreciation		14
Other		22
	883	843
-----		
Deductible temporary differences		
Provision for estimated expenses	(174)	(3)
Retiree benefit plan expense	(16)	(12)
Other	(30)	
	(220)	(15)
-----		
Tax carryforwards		
Tax credits	(82)	(22)
Alternative minimum tax credit	(54)	(90)
	(136)	(112)
	\$ 527	\$ 716
=====		
Net deferred tax liability		
Total deferred tax liabilities (taxable temporary differences above)	\$1,110	\$1,048
Less total deferred tax assets (deductible temporary differences and tax carryforwards above)	773	823
	\$ 337	\$ 225
=====		

The tax carryforward benefits are expected to be used in the periods in which net deferred tax liabilities mature. These tax credit carryforwards are in various amounts and expire over the years 1999 through 2007. The alternative minimum tax credit can be carried forward indefinitely.

## NOTES PAYABLE TO BANKS AND LONG-TERM DEBT

The company has available short-term credit lines in the form of money market facilities with several banks. The amount and conditions for borrowing under these credit lines depend on the availability and terms prevailing in the marketplace. No fees or compensating balances are required for these credit facilities. At December 31, 1998, \$67 million was outstanding at a weighted average interest rate of 5.60 percent. At December 31, 1997, \$87 million was outstanding at a weighted average interest rate of 6.51 percent.

Additionally, the company has a credit agreement with a group of domestic and foreign banks to provide for two credit facilities: \$1.8 billion available on a revolving credit basis through March 2002; and a term loan payable in 13 quarterly installments of \$50 million plus interest through March 1, 2002. The company pays, at least quarterly, interest on the outstanding debt under the Credit Agreement at rates that vary based in part on the company's credit rating and leverage ratio. At December 31, 1998, the \$650 million term loan had a weighted average interest rate of 5.68 percent. At December 31, 1997, \$850 million was outstanding at a weighted average interest rate of 6.24 percent. Principal payments permanently reduce the amount available under this agreement as well as the debt outstanding.

At December 31, 1998, \$512 million at a weighted average interest rate of 5.66 percent was outstanding under the company's revolving credit facility. At December 31, 1997, \$250 million at a weighted average interest rate of 6.17 percent was outstanding. Under these agreements, in the event of a "change in control," the banks are relieved of their commitments. Compensating balances are not required under these agreements.

The company's credit agreements contain restrictions relating to the payment of dividends, acquisition of the company's stock, aggregate indebtedness for borrowed money and interest coverage. At December 31, 1998, \$633 million of retained earnings were unrestricted as to the payment of dividends.

Long-term debt consisted of the following:

\$ in millions	1998	1997
Notes due 2004, 8.625%	\$ 350	\$ 350
Notes due 2006, 7%	400	400
Debentures due 2016, 7.75%	300	300
Debentures due 2024, 9.375%	250	250
Debentures due 2026, 7.875%	300	300
Revolving credit facility	512	250
Term loans payable to banks	650	850
	2,762	2,700
Less current portion	200	200
	\$2,562	\$2,500

The debt indenture contains restrictions relating to limitations on liens, sale and leaseback arrangements and funded debt of subsidiaries.

The principal amount of long-term debt outstanding at December 31, 1998, due in each of the years 1999 through 2001 is \$200 million with \$50 million due in 2002 and \$2,112 million due thereafter.

#### FAIR VALUE OF FINANCIAL INSTRUMENTS

The following methods and assumptions were used by the company in estimating its fair value disclosures for financial instruments:

Due to the short-term nature of these items, the carrying amount reported in the Consolidated Statements of Financial Position for Cash and Cash Equivalents, Accounts Receivable and amounts borrowed under the company's short-term credit lines are estimated to approximate fair value.

The fair value of the long-term debt at the respective yearends was calculated based on interest rates available for debt with terms and due dates similar to the company's existing debt arrangements.

The company has limited involvement with derivative financial instruments and does not use them for trading purposes. To mitigate the variable rate characteristic of its term loans, the company has from time to time entered into interest rate swap agreements. No interest rate swap agreements were in effect at December 31, 1998, or December 31, 1997. If any interest rate swap agreements had existed, unrealized gains(losses) would be calculated based upon the amounts at which they could have been settled at then current interest rates.

Carrying amounts and the related estimated fair values of the company's financial instruments at December 31 of each year are as follows:

\$ in millions	1998	1997
Long-term debt		
Carrying amount	\$2,762	\$2,700
Fair value	2,914	2,856

#### RETIREMENT BENEFITS

The company sponsors several defined-benefit pension plans covering over 70 percent of employees. Pension benefits for most employees are based on the employee's years of service and compensation during the last ten years before retirement. It is the policy of the company to fund at least the minimum amount required for all qualified plans, using actuarial cost methods and assumptions acceptable under U.S. Government regulations, by making payments into a trust separate from the company. Five of the company's fifteen qualified plans, which cover more than 59 percent of all employees, were in a legally defined full-funding limitation status at December 31, 1998.

The company and subsidiaries also sponsor defined-contribution plans in which most employees are eligible to participate. Company contributions for most plans are based on a matching of employee contributions up to 4 percent of compensation.

In addition, the company and its subsidiaries provide certain health care and life insurance benefits for retired employees. Employees achieve eligibility to participate in these contributory plans upon retirement from active service and if they meet specified age and years of service requirements. Election to participate must be made at the date of retirement. Qualifying dependents are also eligible for medical coverage. Approximately 70 percent of the company's current retirees participate in the medical plans. Plan documents reserve the company's right to amend or terminate the plans at any time. Premiums charged retirees for medical coverage are based on years of service and are adjusted annually for changes in the cost of the plans as determined by an independent actuary. In addition to this medical inflation cost-sharing feature, the plans also have provisions for deductibles, copayments, coinsurance percentages, out-of-pocket limits, schedule of reasonable fees, managed care providers, maintenance of benefits with other plans, Medicare carve-out and a maximum lifetime benefit of from \$250,000 to \$1,000,000 per covered individual. It is the policy of the company to fund the maximum amount deductible for income taxes into the VEBA trust established for the Northrop Retiree Health Care Plan for Retired Employees for payment of benefits.

The cost to the company of these plans in each of the last three years is shown in the following table.

\$ in millions	Pension Benefits			Medical and Life Benefits		
	1998	1997	1996	1998	1997	1996
-----						
Components of net periodic benefit cost(income)						
Service cost	\$ 187	\$ 162	\$ 174	\$ 27	\$ 27	\$ 27
Interest cost	642	618	570	95	98	91
Expected return on plan assets	(1,008)	(834)	(761)	(34)	(26)	(22)
Amortization of						
Prior service costs	35	34	41			
Transition assets, net	(42)	(42)	(42)			
Net gain from previous years	(80)	(71)	(21)	(16)	(10)	(5)
-----						
Net periodic benefit cost(income)	\$ (266)	\$ (133)	\$ (39)	\$ 72	\$ 89	\$ 91
=====						
Defined contribution plans cost	\$ 89	\$ 84	\$ 84			
=====						

Major assumptions as of each year-end used in the accounting for the defined-benefit plans are shown in the following table. Pension cost is determined using all three factors as of the end of the preceding year, whereas the funded status of the plans, shown later, uses only the first two factors as of the end of each year.

	1998	1997	1996
-----			
Discount rate for obligations	6.50%	7.00%	7.50%
Rate of increase for compensation	4.00	4.50	4.50
Expected long-term rate of return on plan assets	9.50	9.50	9.00
-----			

These assumptions also were used in retiree health care and life insurance benefit calculations with one modification. Since, unlike the pension trust, the earnings of the VEBA trust are taxable, the above 9.5 percent expected rate of return on plan assets was reduced accordingly to 6 percent after taxes. A significant factor used in estimating future per capita cost of covered health care benefits for the company and its retirees is the health care cost trend rate assumption. The rate used was 7 percent for 1998 and is assumed to decrease gradually to 6 percent for 2006 and remain at that level thereafter. A one-percentage-point change in that rate would have the following effects:

\$ in millions	1-Percentage-Point Increase	1-Percentage-Point Decrease
-----		
Effect on total of service and interest cost components	\$ 14	\$ (12)
Effect on postretirement benefit obligation	144	(132)

The following tables set forth the funded status and amounts recognized in the Consolidated Statements of Financial Position at each year-end for the company's defined-benefit pension and retiree health care and life insurance benefit plans. Pension benefits data includes the qualified plans as well as thirteen unfunded non-qualified plans for benefits provided to directors, officers and employees either beyond those provided by, or payable under, the company's main plans.

\$ in millions	Pension Benefits		Medical and Life Benefits	
	1998	1997	1998	1997
-----				
Change in benefit obligation				
Benefit obligation at beginning of year	\$ 9,056	\$ 7,991	\$ 1,443	\$ 1,321
Service cost	187	162	27	27
Interest cost	642	618	95	98
Plan participants' contributions	7	10	25	28
Amendments	3			
Actuarial loss	851	851	67	60
Benefits paid	(582)	(576)	(98)	(91)
-----				
Benefit obligation at end of year	10,164	9,056	1,559	1,443
-----				
Change in plan assets				
Fair value of plan assets at beginning of year	10,832	9,454	538	468
Actual return on plan assets	1,651	1,795	61	90
Employer contributions	125	149	44	43
Plan participants' contributions	7	10	25	28
Benefits paid	(582)	(576)	(98)	(91)
-----				
Fair value of plan assets at end of year	12,033	10,832	570	538
-----				
Funded status	1,869	1,776	(989)	(905)
Unrecognized prior service cost	200	231	2	2
Unrecognized net transition asset	(162)	(204)		
Unrecognized net gain	(1,723)	(2,010)	(125)	(181)
-----				
Net asset(liability) recognized	\$ 184	\$ (207)	\$(1,112)	\$(1,084)
=====				
Amounts recognized in the statement of financial position				
Prepaid benefit cost	\$ 712	\$ 371	\$	\$
Accrued benefit liability	(528)	(578)	(1,112)	(1,084)
Additional minimum liability	(64)	(54)		
Intangible asset	16	19		
Accumulated other comprehensive income	48	35		
-----				
Net asset(liability) recognized	\$ 184	\$ (207)	\$(1,112)	\$(1,084)
=====				

For pensions plans with benefit obligations in excess of assets as of December 31, 1998, the projected benefit obligation was \$1,451 million, the accumulated benefit obligation was \$1,285 million, and the fair value of assets was \$784 million. As of December 31, 1997, the projected benefit obligation was \$1,284 million, the accumulated benefit obligation was \$1,122 million, and the fair value of assets was \$586 million.

Pension plan assets at December 31, 1998, comprised 51 percent domestic equity investments in listed companies (including 5 percent in Northrop Grumman common stock); 12 percent equity investments listed on international exchanges; 26 percent in fixed income investments, principally U.S. Government securities; 3 percent in venture capital and real estate investments; and 8 percent in cash. The investment in Northrop Grumman represents 4,111,669 shares, or 6 percent of the company's total shares outstanding.

Retiree health care and life insurance plan assets at December 31, 1998, comprised 78 percent domestic equity investments in listed companies; 12 percent equity investments on international exchanges; and 10 percent in cash and equivalents.

#### COMMITMENTS AND CONTINGENCIES

The corporation and its subsidiaries have been named as defendants in various legal actions. Based upon available information, it is the company's expectation that those actions are either without merit or will have no material adverse effect on the company's results of operations or financial position.

The company has incurred costs in excess of revenues on the development and production phases of the Joint STARS program. The company may incur additional losses in the future under existing production contracts as they are currently structured. The company has submitted Requests for Equitable Adjustment (REAs) to the U.S. Air Force seeking additional revenue on these production contracts. The company and the U.S. Air Force executed an Alternate Dispute Resolution Agreement to attempt to resolve these REAs. The parties have been engaged in fact-finding and currently expect negotiations to begin in the second quarter of 1999. If negotiations are not successful or become substantially delayed, the company intends to pursue resolution in accordance with the Contract Disputes Act.

In accordance with company policy on environmental remediation, the estimated cost to complete remediation has been accrued where it is probable that the company will incur such costs in the future, including those for which it has been named a Potentially Responsible Party by the Environmental Protection Agency or similarly designated by other environmental agencies. To assess the potential impact on the company's financial statements, management estimates the total reasonably possible remediation costs that could be incurred by the company, taking into account currently available facts on each site as well as the current state of technology and prior experience in remediating contaminated sites. These estimates are reviewed periodically and adjusted to reflect changes in facts and technical and legal circumstances. Management estimates that at December 31, 1998, the range of reasonably possible future costs for environmental remediation is \$44 million to \$79 million, of which \$57 million has been accrued. Although management cannot predict whether new information gained as projects

progress will materially affect the estimated liability accrued, management does not anticipate that future remediation expenditures will have a material adverse effect on the company's results of operations, financial position, or cash flows.

The company has entered into standby letter of credit agreements and other arrangements with financial institutions primarily relating to the guarantee of future performance on certain contracts. Contingent liabilities on these agreements aggregated approximately \$800 million at December 31, 1998.

The company has agreed to invest an additional \$30 million in Kistler Aerospace Corporation preferred stock. This investment will only be made when Kistler Aerospace Corporation has obtained additional funding from other sources and will represent the last increment of funding required to complete and test the first K-1 vehicle, and is subject to the company's then determination that the K-1 is a viable launch system.

Minimum rental commitments under long-term noncancellable operating leases total \$315 million which is payable as follows: 1999 - \$77 million, 2000 - \$62 million, 2001 - \$49 million, 2002 - \$37 million, and 2003 - \$27 million, 2004 and thereafter - \$63 million.



## STOCK RIGHTS

The company has a Common Stock Purchase Rights plan with one right issued in tandem with each share of common stock. The rights will become exercisable on the tenth business day after a person or group has acquired 15 percent or more of the general voting power of the company, or announces an intention to make a tender offer for 30 percent or more of such voting power, without the prior consent of the Board of Directors. If the rights become exercisable, a holder will be entitled to purchase one share of common stock from the company at an initial exercise price of \$250.

If a person acquires more than 15 percent of the then outstanding voting power of the company or if the company is combined with an acquiror, each right will entitle its holder to receive, upon exercise, shares of the company's or the acquiror's (depending upon which is the surviving company) common stock having a value equal to two times the exercise price of the right.

The company will be entitled to redeem the rights at \$.01 per right at any time prior to the earlier of the date that a person has acquired or obtained the right to acquire 15 percent of the general voting power of the company or the expiration of the rights in October 2008. The rights are not exercisable until after the date on which the company's prerogative to redeem the rights has expired. The rights do not have voting or dividend privilege and cannot be traded independently from the company's common stock until such time as they become exercisable.

## STOCK COMPENSATION PLANS

At December 31, 1998, Northrop Grumman had two stock-based compensation plans -- the 1993 Long-Term Incentive Stock Plan (LTISP) applicable to employees and the 1995 Stock Option Plan for Non-Employee Directors (SOPND). The LTISP contains change in control provisions which were activated in February 1998 upon approval by the shareholders of the proposed merger of the company with Lockheed Martin Corporation. As a result, all unvested stock awards were immediately vested.

The LTISP permits grants to key employees of three general types of stock incentive awards: stock options, stock appreciation rights (SARs) and stock awards. Under the LTISP, each stock option grant is made with an exercise price either at the closing price of the stock on the date of grant (market options) or at a premium over the closing price of the stock on the date of grant (premium options). Options generally vest in 25 percent increments two, three, four and five years from the grant date and expire ten years after the grant date. No SARs have been granted under the LTISP. Stock awards, in the form of restricted performance stock rights, are granted to key employees without payment to the company. Recipients of the rights earn shares of stock based on a total-shareholder-return measure of performance over a five-year period with interim distributions three and four years after grant. If at the end of the five-year period the performance objectives have not been met, unearned rights, up to 70 percent of the original grant for most recipients, will be forfeited. Termination of employment can result in forfeiture of some or all of the benefits extended under the plan. Each year 1.5% of the company's total issued and outstanding common stock at the end of the preceding fiscal year become available for issuance pursuant to incentive awards. During 1998, a number of awards granted under the LTISP contained terms, including limitations and conditions on exercisability and vesting, that took into account and were predicated upon future annual share availability.

The SOPND permits grants of stock options to nonemployee directors. Each grant of a stock option is made at the closing market price on the date of the grant, is immediately exercisable, and expires ten years after the grant date. At December 31, 1998, 259,500 shares were available for future grants under the SOPND.

The company applies Accounting Principles Board Opinion 25 - Accounting for Stock Issued to Employees and related Interpretations in accounting for awards made under the plans. When stock options are exercised, the amount of the cash proceeds to the company is recorded as an increase to paid-in capital. No compensation expense is recognized in connection with stock options. Compensation expense for restricted performance stock rights is estimated and accrued over the vesting period. The fixed 30 percent minimum distribution portion is recorded at grant value and the variable portion is recorded at market value. Compensation expense recognized for stock awards was \$163 million in 1998, \$57 million in 1997, and \$25 million in 1996.

Stock option activity for the last three years is summarized below:

	Shares Under Option	Weighted- Average Exercise Prices	Shares Exercisable
-----			
Outstanding at December 31, 1995	3,429,681	\$35	1,212,290
Granted, market options	1,048,640	76	
Cancelled	(190,041)	31	
Exercised	(261,008)	28	
-----			
Outstanding at December 31, 1996	4,027,272	47	1,384,026
Granted, market options	15,000	85	
Cancelled	(100,932)	58	
Exercised	(570,182)	34	
-----			
Outstanding at December 31, 1997	3,371,158	49	1,556,475
Granted, market options	992,000	74	
Granted, premium options	1,986,450	95	
Cancelled	(5,700)	65	
Exercised	(766,182)	48	
-----			
Outstanding at December 31, 1998	5,577,726	70	2,624,276
=====			

Had compensation expense been determined based on the fair value at the grant dates for stock option awards granted in 1998, 1997 and 1996, consistent with the method of Financial Accounting Standards Board Statement 123 - Accounting for Stock Based Compensation, net income, basic earnings per share, and diluted earnings per share in 1998 would have been lower by \$5 million, seven cents and seven cents, respectively. For 1997 net income, basic earnings per share and diluted earnings per share would have been lower by \$5 million, eight cents and eight cents, respectively. For 1996 net income, basic earnings per share and diluted earnings per share would have been lower by \$2 million, three cents, and four cents, respectively. These amounts were determined using weighted-average per share fair values for premium options granted in 1998 of \$15 and for market options granted in 1998, 1997 and 1996 of \$20, \$25 and \$24, respectively. The fair value of each option grant was estimated on the date of grant using the Black-Scholes option-pricing model based on an expected life of six years and for 1998, 1997 and 1996, respectively, the following additional assumptions: dividend yield -1.9 percent, 1.9 percent and 2.1 percent; expected volatility -27 percent, 22 percent and 28 percent; and risk-free interest rate -4.4 percent, 6.7 percent and 6.2 percent.

At December 31, 1998, the following stock options were outstanding:

Range of Exercise Prices	Options Outstanding			Options Exercisable	
	Number Outstanding at 12/31/98	Weighted-Average Remaining Contractual Life	Weighted-Average Exercise Prices	Number Exercisable at 12/31/98	Weighted-Average Exercise Prices
\$16 to 35	730,500	1.9 years	\$ 20	730,500	\$ 20
36 to 55	625,529	5.7 years	41	625,529	41
56 to 75	1,517,247	8.9 years	68	540,247	58
76 to 95	1,647,892	9.1 years	85	703,000	81
96 to 118	1,056,558	10.0 years	101	25,000	104
	5,577,726			2,624,276	
	=====			=====	

Restricted performance stock rights were granted with weighted-average grant-date fair values per share as follows: 1998 - 794,050 at \$73; 1997 - 7,700 at \$80; and 1996 - 802,800 at \$81.

## UNAUDITED SELECTED QUARTERLY DATA

Quarterly financial results are set forth in the following tables together with dividend and common stock price data.

1998 Quarters	4	3	2	1
\$ in millions, except per share				
Net sales	\$ 2,536	\$ 2,213	\$ 2,139	\$ 2,014
Operating margin	103	238	208	207
Net income(loss)	(3)	116	93	(12)
Basic earnings(loss) per share	(.04)	1.68	1.36	(.18)
Diluted earnings(loss) per share	(.04)	1.67	1.34	(.18)
Dividend per share	.40	.40	.40	.40
Stock price:				
High	84	108 5/8	110 3/4	139
Low	68 7/16	59 5/16	97 3/16	102 3/4

Operating margin in the fourth quarter of 1998 includes charges of \$104 million related to the 747 fuselage program and \$21 million due to an increase in the cost estimate to complete work on the test phase of development for the Directional Infrared Countermeasures (DIRCM) program. The Boeing 747 charge resulted from a reduction in future fuselage deliveries that caused an increase in the estimated cost to complete work on the current production block and a charge to operations of certain nonrecurring costs for the Accurate Fuselage Assembly (AFA) precision manufacturing system, which are no longer considered recoverable from sales of future deliveries. Pretax costs of \$16 million and \$42 million are included in the third and fourth quarter, respectively, related to activities to realign operating units, consolidate facilities and exit certain business areas. Cumulative margin rate adjustments on the Joint STARS and E-2C programs reduced operating margin in the second quarter by \$25 million. Charges related to the company's terminated merger with Lockheed Martin Corporation of \$180 million and \$6 million were recorded in the first and second quarter, respectively. Included in the 1998 fourth quarter results is the write off of the company's \$30 million investment comprised of advances on behalf of the Kistler Aerospace Corporation. The write off resulted from the company's assessment that the near-term likelihood of Kistler obtaining additional financing made recovery of the investment uncertain.

1997 Quarters

\$ in millions, except per share	4	3	2	1
Net sales	\$ 2,510	\$ 2,297	\$ 2,228	\$ 2,118
Operating margin	246	205	233	196
Net income	117	98	108	84
Basic earnings per share	1.75	1.46	1.62	1.27
Diluted earnings per share	1.71	1.44	1.59	1.25
Dividend per share	.40	.40	.40	.40
Stock price:				
High	123 13/16	127 7/8	89 3/4	82 5/8
Low	100 7/8	87 1/2	71 7/8	71 3/8

Operating margin in the fourth quarter of 1997 includes a \$55 million positive cumulative margin rate adjustment on the B-2 production contract and a \$27 million mark-to-market charge for restricted performance stock rights. Charges of \$20 million and \$13 million were recorded in the fourth and first quarters, respectively, related to increases in the cost estimate to complete the company's work on the DIRCM program. In the third quarter, operating margin was reduced by a \$53 million cumulative margin rate adjustment on the Joint STARS program.

The corporation's common stock is traded on the New York and Pacific Stock Exchanges (trading symbol NOC). The approximate number of holders of record of the corporation's common stock at March 1, 1999, was 11,779.

INDEPENDENT AUDITORS' REPORT

Board of Directors and Shareholders  
Northrop Grumman Corporation  
Los Angeles, California

We have audited the accompanying consolidated statements of financial position of Northrop Grumman Corporation and Subsidiaries as of December 31, 1998 and 1997, and the related consolidated statements of income, comprehensive income, changes in shareholders' equity, and cash flows for each of the three years in the period ended December 31, 1998. Our audit also included the financial statement schedule listed in the Index at Item 14. These financial statements and financial statement schedule are the responsibility of the company's management. Our responsibility is to express an opinion on these financial statements and financial statement schedule based on our audits.

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

In our opinion, such consolidated financial statements present fairly, in all material respects, the financial position of Northrop Grumman Corporation and Subsidiaries at December 31, 1998 and 1997, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1998 in conformity with generally accepted accounting principles. Also, in our opinion, such financial statement schedule, when considered in relation to the basic consolidated financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

Deloitte & Touche LLP  
Los Angeles, California  
March 17, 1999

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

No information is required in response to this Item.

PART III

Item 10. Directors and Executive Officers of the Registrant

The information as to Directors will be incorporated herein by reference to the Proxy Statement for the 1999 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 11. Executive Compensation

The information as to Executive Compensation will be incorporated herein by reference to the Proxy Statement for the 1999 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 12. Security Ownership of Certain Beneficial Owners and Management

The information as to Security Ownership of Certain Beneficial Owners and Management will be incorporated herein by reference to the Proxy Statement for the 1999 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 13. Certain Relationships and Related Transactions

The information as to Certain Relationships and Related Transactions will be incorporated herein by reference to the Proxy Statement for the 1999 Annual Meeting of Stockholders to be filed within 120 days after the end of the company's fiscal year.

Item 14. Exhibits, Financial Statement Schedules and Reports on Form 8-K

- (a) 1. Financial Statements  
Consolidated Statements of Financial Position  
Consolidated Statements of Income  
Consolidated Statements of Changes in Shareholders' Equity  
Consolidated Statements of Cash Flows  
Notes to Consolidated Financial Statements  
Independent Auditors' Report
2. Financial Statement Schedule  
Schedule II -Valuation and Qualifying Accounts

All other schedules are omitted either because they are not applicable or not required or because the required information is included in the financial statements or notes thereto.

Separate financial statements of the parent company are omitted since it is primarily an operating company and minority equity interests in and/or nonguaranteed long-term debt of subsidiaries held by others than the company are in amounts which together do not exceed 5 percent of the total consolidated assets at December 31, 1998.

- (b) No reports on Form 8-K were filed during the last quarter of the period covered by this report.

## Exhibits

- 3(a) Certificate of Incorporation, as amended (incorporated by reference to Form S-3 Registration Statement, filed August 18, 1994)
- 3(b) Northrop Grumman Corporation Bylaws, as amended and restated December 16, 1998.
- 4(a) Common Stock Purchase Rights Agreement (incorporated by reference to Form 8-A filed November 13, 1998)
- 4(b) Indenture Agreement dated as of October 15, 1994 (incorporated by reference to Form 8-K filed October 25, 1994)
- 4(c) Form of Officer's Certificate (without exhibits) establishing the terms of Northrop Grumman Corporation's 7% Notes Due 2006, 7 3/4% Debentures Due 2016 and 7 7/8% Debentures Due 2026 (incorporated by reference to Form S-4 Registration Statement, filed April 19, 1996)
- 4(d) Form of Northrop Grumman Corporation's 7% Notes Due 2006 (incorporated by reference to Form S-4 Registration Statement, filed April 19, 1996)
- 4(e) Form of Northrop Grumman Corporation's 7 3/4% Debentures Due 2016 (incorporated by reference to Form S-4 Registration Statement, filed April 19, 1996)
- 4(f) Form of Northrop Grumman Corporation's 7 7/8% Debentures Due 2026 (incorporated by reference to Form S-4 Registration Statement, filed April 19, 1996)
- 10(a) Second Amended and Restated Credit Agreement dated as of April 15, 1994, Amended and Restated as of March 1, 1996 among Northrop Grumman Corporation, Bank of America National Trust and Savings Association, as Documentation Agent, Chemical Securities, Inc., as Syndication Agent, The Chase Manhattan Bank (National Association), as Administrative Agent, and the Banks Signatories thereto (incorporated by reference to Form 8-K, filed March 18, 1996), and amended as of November 1, 1996 (incorporated by reference to Form 10-K filed February 25, 1997)
- 10(b) Uncommitted Credit Facility dated October 10, 1994, between Northrop Grumman Corporation and Wachovia Bank of Georgia, N.A., which is substantially identical to facilities between Northrop Grumman Corporation and certain banks some of which are parties to the Credit Agreement filed as Exhibit 10(a) hereto (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(c) 1973 Incentive Compensation Plan as amended December 16, 1998.
- 10(d) 1973 Performance Achievement Plan (incorporated by reference to Form 8-B filed June 21, 1985)
- 10(e) Northrop Supplemental Plan 2 (incorporated by reference to Form 10-K filed February 22, 1996) and amended as of June 19, 1996. (incorporated by reference to Form 10-K filed March 30, 1998)
- 10(f) Northrop Grumman Corporation ERISA Supplemental Plan I (incorporated by reference to Form 10-K filed February 28, 1994)
- 10(g) Retirement Plan for Independent Outside Directors as amended April 24, 1998.
- 10(h) 1987 Long-Term Incentive Plan, as amended (incorporated by reference to Form SE filed March 30, 1989)
- 10(i) Executive Life Insurance Policy (incorporated by reference to Form 10-K filed February 22, 1996)



- 10(j) Executive Accidental Death, Dismemberment and Plegia Insurance Policy (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(k) Executive Long-Term Disability Insurance Policy (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(l) Key Executive Medical Plan Benefit Matrix (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(m) Executive Dental Insurance Policy Group Numbers 5134 and 5135 (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(n) Group Excess Liability Policy (incorporated by reference to Form 10-K filed February 22, 1996)
- 10(o) Northrop Grumman 1993 Long-Term Incentive Stock Plan, as amended and restated (incorporated by reference to Northrop Grumman Corporation Form S- 8 Registration Statement filed November 25, 1998.)
- 10(p) Northrop Corporation 1993 Stock Plan for Non-Employee Directors (incorporated by reference to Northrop Corporation 1993 Proxy Statement filed March 30, 1993), amended as of September 21, 1994 (incorporated by reference to Form 10-K filed March 21, 1995)
- 10(q) Northrop Grumman Corporation 1995 Stock Option Plan for Non-Employee Directors (incorporated by reference to 1995 Proxy Statement filed March 30, 1995)
- 10(r) Form of Northrop Grumman Corporation Special Agreement (incorporated by reference to Form 10-K filed February 25, 1997), as amended August 1997, December 1997 (with respect to Richard B. Waugh, Jr.) and February 1998 (incorporated by reference to Form 10-K filed March 30, 1998)
- 10(s) Executive Deferred Compensation Plan (effective December 29, 1994)(incorporated by reference to Form 10-K filed February 25, 1997)
- 10(t) Northrop Grumman Corporation Non-Employee Directors Equity Participation Plan, as amended December 16, 1998.
- 10(u) CPC Supplemental Executive Retirement Program (incorporated by reference to Form 10-K filed March 30, 1998)
- 10(v) Form of Ownership Retention Agreement and Amendment No.1 by letter dated April 18, 1998 (incorporated by reference to 10-Q filed April 24, 1998)
- 10(w) Master Escrow Agreement and Master Escrow Agreement Clarification dated April 8, 1998 (incorporated by reference to 10-Q filed April 24, 1998)
- 10(x) Northrop Grumman 1998 Restricted Stock Rights Plan (incorporated by reference to Form S-8 Registration Statement filed November 25, 1998)
- 10(y) Northrop Grumman Corporation Change-In-Control Severance Plan, as amended November 18, 1998.
- 21 Subsidiaries
- 23 Independent Auditors' Consent
- 24 Power of Attorney
- 27 Financial Data Schedule

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on the 22nd day of March 1999.

Northrop Grumman Corporation

By: Nelson F. Gibbs  
-----  
Nelson F. Gibbs  
Corporate Vice President and Controller  
(Principal Accounting Officer)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed on behalf of the registrant this the 22nd day of March 1999, by the following persons and in the capacities indicated.

Signature -----	Title -----
Kent Kresa*	Chairman of the Board, President and Chief Executive Officer and Director (Principal Executive Officer)
Jack R. Borsting*	Director
John T. Chain, Jr.*	Director
Jack Edwards*	Director
Phillip Frost*	Director
Robert A. Lutz*	Director
Aulana L. Peters*	Director
John E. Robson*	Director
Richard R. Rosenberg*	Director
John Brooks Slaughter*	Director
Richard J. Stegemeier*	Director
Richard B. Waugh, Jr.*	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)

\*By John H. Mullan  
-----  
John H. Mullan  
Attorney-in-Fact  
pursuant to a power of attorney

SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS  
(Dollars in Thousands)

COL. A -----	COL. B -----	COL. C -----	COL. D -----	COL. E -----
Classification	Balance at Beginning of Period	Additions At Cost(2)	Other Changes-- Add (Deduct)(1)	Balance at End of Period
Description:				
Year ended December 31, 1996				
Reserves and allowances deducted from asset accounts:				
Allowances for doubtful amounts..	\$74,574	\$21,929	\$ (41,058)	\$55,445
Year ended December 31, 1997				
Reserves and allowances deducted from asset accounts:				
Allowances for doubtful amounts..	\$55,445	\$17,279	\$ (17,746)	\$54,978
Year ended December 31, 1998				
Reserves and allowances deducted from asset accounts:				
Allowances for doubtful amounts..	\$54,978	\$ 8,076	\$ (16,013)	\$47,041

(1) Uncollectible amounts written off, net of recoveries.

(2) Additions include allowances for bad debts from acquired companies of  
\$5,951 in 1996.

INDEPENDENT AUDITORS' CONSENT

We consent to the incorporation by reference in Registration Statements Nos. 333-68029 and 333-68003 of Northrop Grumman Corporation on Form S-8 of our report dated March 17, 1999 appearing in this Annual Report on Form 10-K of Northrop Grumman Corporation for the year ended December 31, 1998.

DELOITTE & TOUCHE LLP  
Los Angeles, California  
March 22, 1999

BYLAWS  
OF  
NORTHROP GRUMMAN CORPORATION  
(A Delaware Corporation)

ARTICLE I

OFFICES

Section 1.01. REGISTERED OFFICE. The registered office of Northrop Grumman Corporation (the "Corporation") in the State of Delaware shall be at Corporation Trust Center, 1209 Orange Street, City of Wilmington, County of New Castle, and the name of the registered agent at that address shall be The Corporation Trust Company.

Section 1.02. PRINCIPAL EXECUTIVE OFFICE. The principal executive office of the Corporation shall be located at 1840 Century Park East, Los Angeles, California 90067. The Board of Directors of the Corporation (the "Board of Directors") may change the location of said principal executive office .

Section 1.03. OTHER OFFICES. The Corporation may also have an office or offices at such other place or places, either within or without the State of Delaware, as the Board of Directors may from time to time determine or as the business of the Corporation may require.

ARTICLE II

MEETINGS OF STOCKHOLDERS

Section 2.01. ANNUAL MEETINGS. The annual meeting of stockholders of the Corporation shall be held between May 1 and July 1 of each year on such date and at such time as the Board of Directors shall determine. At each annual meeting of stockholders, directors shall be elected in accordance with the provisions of Section 3.04 hereof and any other proper business may be transacted.

Section 2.02. SPECIAL MEETINGS. Special meetings of stockholders for any purpose or purposes may be called at any time by a majority of the Board of Directors, the Chairman of the Board, or by the President and Chief Executive Officer. Special meetings may not be called by any other person or persons. Each special meeting shall be held at such date and time as is requested by the person or persons calling the meeting, within the limits fixed by law.

Section 2.03. PLACE OF MEETINGS. Each annual or special meeting of stockholders shall be held at such location as may be determined by the Board of Directors or, if no such determination is made, at such place as may be determined by the Chairman of the Board. If no location is so determined, any annual or special meeting shall be held at the principal executive office of the Corporation.

Section 2.04. NOTICE OF MEETINGS. Written notice of each annual or special meeting of stockholders stating the date and time when, and the place where, it is to be held shall be delivered either personally or by mail to stockholders entitled to vote at such meeting not less than ten (10) nor more than sixty (60) days before the date of the meeting. The purpose or purposes for which the meeting is called may, in the case of an annual meeting, and shall, in the case of a special meeting, also be stated. If mailed, such notice shall be directed to a stockholder at his address as it shall appear on the stock books of the Corporation, unless he shall have filed with the Secretary of the Corporation a written request that notices intended for him be mailed to some other address, in which case such notice shall be mailed to the address designated in such request.

Section 2.05. CONDUCT OF MEETINGS. All annual and special meetings of stockholders shall be conducted in accordance with such rules and procedures as the Board of Directors may determine subject to the requirements of applicable law and, as to matters not governed by such rules and procedures, as the chairman of such meeting shall determine. The chairman of any annual or special meeting of stockholders shall be the Chairman of the Board. The Secretary, or in the absence of the Secretary, a person designated by the Chairman of the Board, shall act as secretary of the meeting.

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Section 2.06 NOTICE OF STOCKHOLDER BUSINESS AND NOMINATIONS. Nominations of persons for election to the Board and the proposal of business to be transacted by the stockholders may be made at an annual meeting of stockholders (a) pursuant to the Corporation's notice with respect to such meeting, (b) by or at the direction of the Board or (c) by any stockholder of record of the Corporation who was a stockholder of record at the time of the giving of the notice provided for in the following paragraph, who is entitled to vote at the meeting and who has complied with the notice procedures set forth in this section.

For nominations or other business to be properly brought before an annual meeting by a stockholder pursuant to clause (c) of the foregoing paragraph, (1) the stockholder must have given timely notice thereof in writing to the Secretary of the Corporation, (2) such business must be a proper matter for stockholder action under the General Corporation Law of the State of Delaware, (3) if the stockholder, or the beneficial owner on whose behalf any such proposal or nomination is made, has provided the Corporation with a Solicitation Notice, as that term is defined in subclause (c)(iii) of this paragraph, such stockholder or beneficial owner must, in the case of a proposal, have delivered

a proxy statement and form of proxy to holders of at least the percentage of the Corporation's voting shares required under applicable law to carry any such proposal, or, in the case of a nomination or nominations, have delivered a proxy statement and form of proxy to holders of a percentage of the Corporation's voting shares reasonably believed by such stockholder or beneficial holder to be sufficient to elect the nominee or nominees proposed to be nominated by such stockholder, and must, in either case, have included in such materials the Solicitation Notice and (4) if no Solicitation Notice relating thereto has been timely provided pursuant to this section, the stockholder or beneficial owner proposing such business or nomination must not have solicited a number of proxies sufficient to have required the delivery of such a Solicitation Notice under this section. To be timely, a stockholder's notice shall be delivered to the Secretary at the principal executive offices of the Corporation not less than 45 or more than 75 days prior to the first anniversary (the "Anniversary") of the date on which the Corporation first mailed its proxy materials for the preceding year's annual meeting of stockholders; provided, however, that if the date of the annual meeting is advanced more than 30 days prior to or delayed by more than 30 days after the anniversary of the preceding year's annual meeting, notice by the stockholder to be more timely must be so delivered not later than the close of business on the later of (i) the 90<sup>th</sup>/ day prior to such annual meeting or (ii) the 10<sup>th</sup>/ day following the day on which public announcement of the date of such meeting is first made. In no event shall the public announcement of an adjournment of an annual meeting commence a new time period for the filing of a stockholder's notice as described herein. Such stockholder's notice shall set forth (a) as to each person whom the stockholder proposes to nominate for election or reelection as a director all information relating to such person as would be required to be disclosed in solicitations of proxies for the election of such nominees as directors pursuant to Regulation 14A under the Securities Exchange Act of 1934, as amended (the "Exchange Act") and Rule 14a-11 thereunder (including such person's written consent to serve as a director if elected); (b) as to any other business that the stockholder proposes to bring before the meeting, a brief description of such business, the reasons for conducting such business at the meeting and any material interest in such business of such stockholder and the beneficial owner, if any, on whose behalf the proposal is made; (c) as to the stockholder giving the notice and the beneficial owner, if any, on whose behalf the nomination or proposal is made (i) the name and address of such stockholder, as they appear on the Corporation's books, and of such beneficial owner, (ii) the class and number of shares of the Corporation that are owned beneficially and of record by such stockholder and such beneficial owner, and (iii) whether either such stockholder or beneficial owner intends to deliver a proxy statement and form of proxy to holders of, in the case of a proposal, at least the percentage of the Corporation's voting shares required under applicable law to carry the proposal or, in the case of a nomination or nominations, a sufficient number of holders of the Corporation's voting shares to elect such nominee or nominees (an affirmative statement of such intent, a "Solicitation Notice").

Notwithstanding anything in the second sentence of the second paragraph of this Section 2.06 to the contrary, in the event that the number of directors to be elected to the Board is increased and there is no public announcement naming all of the nominees for director or specifying the size of the increased Board made by the Corporation at least 55 days prior to the Anniversary, a stockholder's notice required by this Bylaw shall also be considered timely, but only with respect to nominees for any new positions created by such increase, if it shall be delivered to the Secretary at the principal executive offices of the Corporation not later than the close of business on the 10<sup>th</sup>/ day following the day on which such public announcement is first made by the Corporation.

Only persons nominated in accordance with the procedures set forth in this Section 2.06 shall be eligible to serve as directors and only such business shall be conducted at an annual meeting of stockholders as shall have been brought before the meeting in accordance with the procedures set forth in this section. The chair of the meeting shall have the power and the duty to determine whether a nomination or any business proposed to be brought before the meeting has been made in accordance with the procedures set forth in these Bylaws and, if any proposed nomination or business is not in compliance with these Bylaws, to declare that such defective proposed business or nomination shall not be presented for stockholder action at the meeting and shall be disregarded.

Only such business shall be conducted at a special meeting of stockholders as shall have been brought before the meeting pursuant to the Corporation's notice of meeting. Nominations of persons for election to the Board may be made at a special meeting of stockholders at which directors are to be elected pursuant to the Corporation's notice of meeting (a) by or at the direction of the Board or (b) by any stockholder of record of the Corporation who is a stockholder of record at the time of giving of notice provided for in this paragraph, who shall be entitled to vote at the meeting and who complies with the notice procedures set forth in this Section 2.06. Nominations by stockholders of persons for election to the Board may be made at such a special meeting of stockholders if the stockholder's notice required by the second paragraph of this Section 2.06 shall be delivered to the Secretary at the principal executive offices of the Corporation not later than the close of business on the later of the 90<sup>th</sup>/ day prior to such special meeting or the 10<sup>th</sup>/ day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by the Board to be elected at such meeting.

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

Notwithstanding the foregoing provisions of this Section 2.06, a stockholder shall also comply with all applicable requirements of the Exchange Act and the rules and regulations thereunder with respect to matters set forth in this Section 2.06. Nothing in this Section 2.06 shall be deemed to affect any rights of stockholders to request inclusion of proposals in the Corporation's proxy statement pursuant to Rule 14a-8 under the Exchange Act.

Section 2.07. QUORUM. At any meeting of stockholders, the presence, in person or by proxy, of the holders of record of a majority of shares then issued and outstanding and entitled to vote at the meeting shall constitute a quorum for the transaction of business; provided, however, that this Section 2.07 shall not affect any different requirement which may exist under statute, pursuant to the rights of any authorized class or series of stock, or under the Certificate of Incorporation of the Corporation (the "Certificate") for the vote necessary for the adoption of any measure governed thereby. In the absence of a quorum, the stockholders present in person or by proxy, by majority vote and without further notice, may adjourn the meeting from time to time until a quorum is attained. At any reconvened meeting following such an adjournment at which a quorum shall be present, any business may be transacted which might have been transacted at the meeting as originally notified.

Section 2.08. VOTES REQUIRED. A majority of the votes cast at a duly called meeting of stockholders, at which a quorum is present, shall be sufficient to take or authorize action upon any matter which may properly come before the meeting, unless the vote of a greater or different number thereof is required by statute, by the rights of any authorized class of stock or by the Certificate. Unless the Certificate or a resolution of the Board of Directors adopted in connection with the issuance of shares of any class or series of stock provides for a greater or lesser number of votes per share, or limits or denies voting rights, each outstanding share of stock, regardless of class, shall be entitled to one vote on each matter submitted to a vote at a meeting of stockholders.

Section 2.09. PROXIES. A stockholder may vote the shares owned of record by him either in person or by proxy executed in writing (which shall include writings sent by telex, telegraph, cable or facsimile transmission) by the stockholder himself or by his duly authorized attorney-in-fact. No proxy shall be valid after three (3) years from its date, unless the proxy provides for a longer period. Each proxy shall be in writing, subscribed by the stockholder or his duly authorized attorney-in-fact, and dated, but it need not be sealed, witnessed or acknowledged.

Section 2.10. STOCKHOLDER ACTION. Any action required or permitted to be taken by the stockholders of the Corporation must be effected at a duly called annual meeting or special meeting of stockholders of the Corporation, unless such action requiring or permitting shareholder approval is approved by a majority of the Continuing Directors (as defined in the Certificate), in which case such action may be authorized or taken by the written consent of the holders of outstanding shares of stock having not less than the minimum voting power that would be necessary to authorize or take such action at a meeting of stockholders at which all shares entitled to vote thereon were present and voted, provided all other requirements of applicable law and the Certificate have been satisfied.

Section 2.11. LIST OF STOCKHOLDERS. The Secretary of the Corporation shall prepare and make (or cause to be prepared and made), at least ten (10) days before every meeting of stockholders, a complete list of the stockholders entitled to vote at the meeting, arranged in alphabetical order and showing the address of, and the number of shares registered in the name of, each stockholder. Such list shall be open to the examination of any stockholder, for any purpose germane to the meeting, during ordinary business hours, for a period of at least ten (10) days prior to the meeting, either at a place within the city where the meeting is to be held, which place shall be specified in the notice of the meeting, or, if not so specified, at the place where the meeting is to be held. The list shall also be produced and kept at the time and place of the meeting during the duration thereof, and may be inspected by any stockholder who is present.

Section 2.12. INSPECTORS OF ELECTION. In advance of any meeting of stockholders, the Board of Directors may appoint Inspectors of Election to act at such meeting or at any adjournment or adjournments thereof. If such Inspectors are not so appointed or fail or refuse to act, the chairman of any such meeting may (and, upon the demand of any stockholder or stockholder's proxy, shall) make such an appointment.

The number of Inspectors of Election shall be one (1) or three (3). If there are three (3) Inspectors of Election, the decision, act or certificate of a majority shall be effective and shall represent the decision, act or certificate of all. No such Inspector need be a stockholder of the Corporation.

The Inspectors of Election shall determine the number of shares outstanding, the voting power of each, the shares represented at the meeting, the existence of a quorum and the authenticity, validity and effect of proxies; they shall receive votes, ballots or consents, hear and determine all challenges and questions in any way arising in connection with the right to vote, count and tabulate all votes or consents, determine when the polls shall close and determine the result; and finally, they shall do such acts as may be proper to conduct the election or vote with fairness to all stockholders. On request, the Inspectors shall make a report in writing to the secretary of the meeting concerning any challenge, question or other matter as may have been determined by them and shall execute and deliver to such secretary a certificate of any fact found by them.

### ARTICLE III

#### DIRECTORS

Section 3.01. POWERS. The business and affairs of the Corporation shall be managed by and be under the direction of the Board of Directors. The Board of Directors shall exercise all the powers of the Corporation, except those that are conferred upon or reserved to the stockholders by statute, the Certificate or these Bylaws.

Section 3.02. NUMBER. Except as otherwise fixed pursuant to the provisions of Section 2 of Article Fourth of the Certificate in connection with rights to elect additional directors under specified circumstances which may be granted to the holders of any class or series of Preferred Stock, par value One Dollar (\$1.00) per share of the Corporation ("Preferred Stock"), the number of directors shall be fixed from time to time by resolution of the Board of Directors but shall not be less than three (3). The Board of Directors, as of May 17, 1989, and thereafter, shall consist of fourteen (14) directors until changed as herein provided.

Section 3.03. INDEPENDENT OUTSIDE DIRECTORS. At least sixty percent (60%) of the members of the Board of Directors of the Corporation shall at all times be "Independent Outside Directors", which term is hereby defined to mean any director who:



1. has not in the last five (5) years been an officer or employee of the Corporation or any of its subsidiaries or affiliates; and
2. is not related to an officer of the Corporation (or an officer of any of the Corporation's parents, subsidiaries or affiliates) by blood, marriage or adoption (except relationships more remote than first cousin); and
3. is not, and has not within the last two (2) years been, an officer, director or employee of, and does not own, and has not within the last two (2) years owned, directly or indirectly, in excess of one percent (1%) of any firm, corporation or other business or professional entity which has made or proposes to make during either the Corporation's or such entity's last or next fiscal year payments for property or services in excess of one percent (1%) of the gross revenues either of the Corporation for its last fiscal year or of such entity for its last fiscal year, but excluding payments determined by competitive bids, public utility services at rates set by law or government authority, or payments arising solely from the ownership of securities, or to which the Corporation was indebted at any time during the Corporation's last fiscal year in an aggregate amount in excess of one percent (1%) of the Corporation's total assets at the end of such fiscal year or Five Million Dollars (\$5,000,000), whichever is less, but excluding debt securities which have been publicly offered or which are publicly traded; and
4. is not a director, partner, officer or employee of an investment banking firm which has performed services for the Corporation in the last two (2) years or which the Corporation proposes to have perform services in the next year other than as a participating underwriter in a syndicate; and
5. is not a control person of the Corporation (other than as a director of the Corporation) as defined by the regulations of the Securities and Exchange Commission.

Section 3.04. ELECTION AND TERM OF OFFICE. Except as provided in Section 3.07 hereof and subject to the right to elect additional directors under specified circumstances which may be granted, pursuant to the provisions of Section 2 of Article Fourth of the Certificate, to the holders of any class or series of Preferred Stock, directors shall be elected by the stockholders of the Corporation. The Board of Directors shall be and is divided into three classes: Class I, Class II and Class III. The number of directors in each class shall be the whole number contained in the quotient obtained by dividing the authorized number of directors (fixed pursuant to Section 3.02 hereof) by three. If a fraction is also contained in such quotient, then additional directors shall be apportioned as follows: if such fraction is one-third, the additional director shall be a member of Class I; and if such fraction is two-thirds, one of the additional directors shall be a member of Class I and the other shall be a member of Class II. Each director shall serve for a term ending on the date of the third annual meeting of stockholders of the Corporation following the annual meeting at which such director was elected; provided, however, that the directors first elected to Class I shall serve for a term ending on the date of the annual meeting next following the end of the calendar year 1985, the directors first elected to Class II shall serve for a term ending on the date of the second annual meeting next following the end of the calendar year 1985 and the directors first elected to Class III shall serve for a term ending on the date of the third annual meeting next following the end of the calendar year 1985.

Notwithstanding the foregoing provisions of this Section 3.04: each director shall serve until his successor is elected and qualified or until his death, resignation or removal; no decrease in the authorized number of directors shall shorten the term of any incumbent director; and additional directors, elected pursuant to Section 2 of Article Fourth of the Certificate in connection with rights to elect such additional directors under specified circumstances which may be granted to the holders of any class or series of Preferred Stock, shall not be included in any class, but shall serve for such term or terms and pursuant to such other provisions as are specified in the resolution of the Board of Directors establishing such class or series.

Nominations for the election of directors may be made by the Board or a committee thereof or by any stockholder entitled to vote in the election of directors; provided, however, that a stockholder may nominate a person for election as a director at a meeting only if written notice of such stockholder's intent to make such nomination has been given by such stockholder to, and received by, the Secretary of the Corporation at the principal executive offices of the Corporation not less than sixty (60) days nor more than ninety (90) days prior to the meeting; provided, however, that (a) in the event that less than seventy (70) days' notice or prior public disclosure of the date of the

meeting is given or made to stockholders, notice by the stockholder to be timely must be so received not later than the close of business on the 10th day following the date on which such notice of the date of the meeting was mailed or such public disclosure was made, whichever first occurs; and (b) in the event that less than seventy (70) days shall remain from the date of public disclosure of the adoption of this bylaw provision to the date of any meeting, notice by the stockholder to be timely with respect to such meeting must be so received not later than the close of business on the 10th day following the date on which such public disclosure was made. Each such notice shall set forth: (a) the name and address of the stockholder who intends to make the nomination and of the person or persons to be nominated; (b) the name and address as they appear on the Corporation's books of the stockholder intending to make such nomination; (c) the class and number of shares of capital stock of the Corporation which are beneficially owned by such stockholder (d) a description of all arrangements or understandings between the stockholder and each nominee and any other person or persons (naming such person or persons) pursuant to which the nomination or nominations are to be made by the stockholder; (e) the occupations and business history for the previous five years, other directorships, names of business entities of which the proposed nominee owns a 10 percent or more equity interest, a list of any criminal convictions, including federal and state securities violations and such other information regarding each proposed nominee as may be required by the federal proxy rules in effect at the time the notice is submitted and (f) the consent of each nominee to serve as a director of the Corporation if so elected. No person shall be eligible for election as a director of the Corporation unless nominated in accordance with the procedures set forth in this Section 3.04. The Chairman of any meeting of stockholders shall direct that any nomination not made in accordance with these procedures be disregarded.

Section 3.05. ELECTION OF CHAIRMAN OF THE BOARD. At the organizational meeting immediately following the annual meeting of stockholders, the directors shall elect a Chairman of the Board from among the directors who shall hold office until the corresponding meeting of the Board of Directors in the next year and until his successor shall have been elected or until his earlier resignation or removal. Any vacancy in such office may be filled for the unexpired portion of the term in the same manner by the Board of Directors at any regular or special meeting.

Section 3.06. REMOVAL. Subject to the right to elect directors under specified circumstances which may be granted pursuant to Section 2 of Article Fourth of the Certificate to the holders of any class or series of Preferred Stock, any director may be removed from office only as provided in Article Tenth of the Certificate.

Section 3.07. VACANCIES AND ADDITIONAL DIRECTORSHIPS. Except as otherwise provided pursuant to Section 2 of Article Fourth of the Certificate in connection with rights to elect additional directors under specified circumstances which may be granted to the holders of any class or series of Preferred Stock, newly created directorships resulting from any increase in the number of directors and any vacancies on the Board of Directors resulting from death, resignation, disqualification, removal or other cause shall be filled solely by the affirmative vote of a majority of the remaining directors then in office, even though less than a quorum of the Board of Directors. Any director elected in accordance with the preceding sentence shall hold office for the remainder of the full term of the class of directors in which the new directorship was created or the vacancy occurred and until such director's successor shall have been elected and qualified. No decrease in the number of directors constituting the Board of Directors shall shorten the term of any incumbent director.

Section 3.08. REGULAR AND SPECIAL MEETINGS. Promptly after, and on the same day as, each annual election of directors by the shareholders, the Board shall, if a quorum be present, meet in an organizational meeting to elect a chairman, appoint members of the standing committees of the Board, elect officers of the Corporation and conduct other business as appropriate. Additional notice of such meeting need not be given if such meeting is conducted promptly after the annual meeting to elect directors and if the meeting is held in the same location where the election of directors was conducted. Regular meetings of the Board shall be held at such times and places as the Board shall determine. Notice of regular meetings shall be mailed to each director at least five days before the meeting, addressed to the director's usual place of business or to his or her residence address or to an address specifically designated by the director.

Section 3.09. QUORUM. At all meetings of the Board of Directors, a majority of the fixed number of directors shall constitute a quorum for the transaction of business, except that when the Board of Directors consists of one director, then the one director shall constitute a quorum. In the absence of a quorum, the directors present, by majority vote and without notice other than by announcement, may adjourn the meeting from time to time until a quorum shall be present. At any reconvened meeting following such an adjournment at which a quorum shall be present, any business may be transacted which might have been transacted at the meeting as originally notified.

Section 3.10. VOTES REQUIRED. Except as otherwise provided by applicable law or by the Certificate, the vote of a majority of the directors present at a meeting duly held at which a quorum is present shall be sufficient to pass any measure.

Section 3.11. PLACE AND CONDUCT OF MEETINGS. Each regular meeting and special meeting of the Board of Directors shall be held at a location determined as follows: The Board of Directors may designate any place, within or without the State of Delaware, for the holding of any meeting. If no such designation is made: (i) any meeting called by a majority of the directors shall be held at such location, within the county of the Corporation's principal executive office, as the directors calling the meeting shall designate; and (ii) any other meeting shall be held at such location, within the county of the Corporation's principal executive office, as the Chairman of the Board may designate or, in the absence of such designation, at the Corporation's principal executive office. Subject to the requirements of applicable law, all regular and special meetings of the Board of Directors shall be conducted in accordance with such rules and procedures as the Board of Directors may approve and, as to matters not governed by such rules and procedures, as the chairman of such meeting shall determine. The chairman of any regular or special meeting shall be the Chairman of the Board, or in his absence a person designated by the Board of Directors. The Secretary, or in the absence of the Secretary a person designated by the chairman of the meeting, shall act as secretary of the meeting.

Section 3.12. FEES AND COMPENSATION. Directors shall be paid such compensation as may be fixed from time to time by resolutions of the Board of Directors (a) for their usual and contemplated services as directors, (b) for their services as members of committees appointed by the Board of Directors, including attendance at committee meetings as well as services which may be required when committee members must consult with management staff, and (c) for extraordinary services as directors or as members of committees appointed by the Board of Directors, over and above those services for which compensation is fixed pursuant to items (a) and (b) in this Section 3.12. Compensation may be in the form of an annual retainer fee or a fee for attendance at meetings, or both, or in such other form or on such basis as the resolutions of the Board of Directors shall fix. Directors shall be reimbursed for all reasonable expenses incurred by them in attending meetings of the Board of Directors and committees appointed by the Board of Directors and in performing compensable extraordinary services. Nothing contained herein shall be construed to preclude any director from serving the Corporation in any other capacity, such as an officer, agent, employee, consultant or otherwise, and receiving compensation therefor.

Section 3.13. COMMITTEES OF THE BOARD OF DIRECTORS. Subject to the requirements of applicable law, the Board of Directors may from time to time establish committees, including standing or special committees, which shall have such duties and powers as are authorized by these Bylaws or by the Board of Directors. Committee members, and the chairman of each committee, shall be appointed by the Board of Directors. The Chairman of the Board, in conjunction with the several committee chairmen, shall make recommendations to the Board of Directors for its final action concerning members to be appointed to the several committees of the Board of Directors. Any member of any committee may be removed at any time with or without cause by the Board of Directors. Vacancies which occur in any committee shall be filled by a resolution of the Board of Directors. If any vacancy shall occur in any committee by reason of death, resignation, disqualification, removal or otherwise, the remaining members of such committee, so long as a quorum is present, may continue to act until such vacancy is filled by the Board of Directors. The Board of Directors may, by resolution, at any time deemed desirable, discontinue any standing or special committee. Members of standing committees, and their chairmen, shall be elected yearly at the organizational meeting of the Board of Directors which is held immediately following the annual meeting of stockholders.

Section 3.14. AUDIT COMMITTEE. There shall be an Audit Committee of the Board of Directors which shall serve at the pleasure of the Board of Directors and be subject to its control. The Committee shall have the following membership and powers:

1. The Committee shall have at least three (3) members. All members of the Committee shall be Independent Outside Directors.

2. The Committee shall recommend to the Board of Directors for its action the appointment or discharge of the Corporation's independent auditors, based upon the Committee's judgment of the independence of the auditors (taking into account the fees charged both for audit and non-audit services) and the quality of its audit work. Ratification by the stockholders of the Board of Directors' appointment of the Corporation's independent auditors may be sought in conjunction with management's solicitation of proxies for the annual meeting of stockholders, if so determined by the Board of Directors. If the auditors must be replaced, the Committee shall recommend to the Board of Directors for its action the appointment of new auditors until the next annual meeting of stockholders.

3. The Committee shall review and approve the scope and plan of the audit.

4. The Committee shall meet with the independent auditors at appropriate times to review, among other things, the results of the audit and any certification, report or opinion which the auditors propose to render in connection with the Corporation's financial statements.

5. The Committee shall review and approve each professional service of a non-audit nature to be provided by the auditors.

6. The Committee shall meet with the Corporation's chief internal auditor at least once a year to review his comments concerning the adequacy of the Corporation's system of internal accounting controls and such other matters as the Committee may deem appropriate.

7. The Committee shall have the power to direct the auditors and the internal audit staff to inquire into and report to it with respect to any of the Corporation's contracts, transactions or procedures, or the conduct of the Corporate Office, or any division, profit center, subsidiary or other unit, or any other matter having to do with the Corporation's business and affairs. If authorized by the Board of Directors, the Committee may initiate special investigations in these regards.

8. The Committee shall have such other duties as may be lawfully delegated to it from time to time by the Board of Directors.

#### Section 3.15. COMPENSATION AND MANAGEMENT DEVELOPMENT COMMITTEE.

There shall be a Compensation and Management Development Committee of the Board of Directors which shall serve at the pleasure of the Board of Directors and be subject to its control. The Committee shall have the following membership and powers:

1. The Committee shall be composed of at least three (3) members. All members of the Committee shall be Independent Outside Directors. The principal Human Resources officer of the Corporation shall be a non-voting member of the Committee.

2. The Committee shall recommend to the Board of Directors for its action the amount to be appropriated for awards to be made each year to elected officers under the Corporation's incentive compensation plan.

3. The Committee shall establish the Corporation's annual performance objectives under the Corporation's incentive compensation plans.

4. The Committee shall make recommendations to the Board of Directors with respect to the base salary and incentive compensation of the elected officers. The Committee shall take final action with respect to the base salary and incentive compensation of the ten (10) employees, who are not elected officers, receiving the highest base salaries immediately preceding the date of any such action.

5. The Committee shall review management's recommendations and take final action with respect to all awards to be made under the Corporation's long-term incentive plans or other similar benefit plans which may be adopted by the Board of Directors or the stockholders and in which corporate officers or directors are eligible to participate, provided however that all such awards relative to the five (5) most highly compensated officers must be reported to the Board of Directors.

6. The Committee shall review on a continuing basis the Corporation's general compensation policies and practices, fringe benefits and the Corporation's compliance with its various affirmative action plans and programs. The committee shall also review and recommend to the Board of Directors for its final action all compensation plans in which elected officers or directors are eligible to participate.

7. The Committee shall review from time to time and report to the Board of Directors actions taken by management concerning the Corporation's overall executive structure and the steps being taken to assure the succession of qualified management.

8. The Committee shall have such other duties as may be lawfully delegated to it from time to time by the Board of Directors.

Section 3.16. EXECUTIVE AND PUBLIC POLICY COMMITTEE. There shall be an Executive and Public Policy Committee of the Board of Directors which shall serve at the pleasure of the Board of Directors and be subject to its control. The Committee shall have the following membership and powers:

1. The Committee shall have at least five (5) members. At least sixty percent (60%) of the members shall be Independent Outside Directors.

2. The Committee shall review, approve and monitor the policy, organization, charter and implementation of the Northrop Grumman Employees Political Action Committee.

3. The Committee shall review and approve the policy of the Corporation for engaging the services of Consultants and Commission Agents.

4. The Committee shall review and report to the Board of Directors from time to time concerning the Corporation's compliance with the Corporation's policies, practices and procedures with respect to consultants and commission agents.

5. The Committee shall review and make policy and budget recommendations to the Board of Directors for its actions concerning proposed charitable contributions and aid to higher education to be given by the Corporation each year.

6. The Committee shall have such other duties as lawfully may be delegated to it from time to time by the Board of Directors.

Section 3.17. FINANCE COMMITTEE. There shall be a Finance Committee of the Board of Directors which shall serve at the pleasure of the Board of Directors and be subject to its control. The Committee shall have the following membership and powers:

1. The Committee shall have at least five (5) members. At least fifty percent (50%) of the members of the Committee shall be Independent Outside Directors. The chief financial officer of the Corporation shall be a non-voting member of the Committee.

2. The Committee shall review and give consideration to management requests for required specific new financing of a long-term nature, whether debt or equity, and make recommendations to the Board of Directors for its final action.

3. The Committee shall review the current financial condition of the Company and planned financial requirements.

4. The Committee shall review periodically the Corporation's dividend policy in connection with dividend declarations and make recommendations to the Board of Directors for its final action.

5. The Committee shall consider management's recommendations concerning acquisitions, mergers or divestments which management has determined to be of an unusual or material nature and shall make recommendations to the Board of Directors for its final action.

6. The Committee shall consider management's recommendations concerning contracts or programs which management has determined to be of an unusual or material nature and shall make recommendations to the Board of Directors for its final action.

7. The Committee shall periodically review the investment performance of the employee benefit plans, capital asset requirements and short-term investment policy when appropriate.

8. The Committee shall have such other duties as lawfully may be delegated to it from time to time by the Board of Directors.

Section 3.18. NOMINATING AND CORPORATE GOVERNANCE COMMITTEE. There shall be a Nominating and Corporate Governance Committee of the Board of Directors which shall serve at the pleasure of the Board of Directors and be subject to its control. The Committee shall have the following membership and powers:

1. The Committee shall have at least three (3) members. All members of the Committee shall be Independent Outside Directors.

2. The Committee shall review candidates to serve as directors and shall recommend nominees to the Board of Directors for election at each annual meeting of stockholders or other special meetings where directors are to be elected and shall recommend persons to serve as proxies to vote proxies solicited by management in connection with such meetings.

3. The Committee shall cause the names of all director candidates that are approved by the Board of Directors to be listed in the Corporation's proxy materials and shall support the election of all candidates so nominated by the Board of Directors to the extent permitted by law.

4. The Committee shall review and make recommendations to the Board of Directors for its final action concerning the composition and size of the Board of Directors, its evaluation of the performance of incumbent directors, its recommendations concerning the compensation of the directors, its recommendations concerning directors to fill vacancies, its evaluation and recommendations concerning potential candidates to serve in the future on the Board of Directors to assure the Board's continuity and succession and its evaluation and recommendations on matters of corporate governance as appropriate.

5. The Committee shall have such other duties as lawfully may be delegated to it from time to time by the Board of Directors.

Section 3.19. MEETINGS OF COMMITTEES. Each committee of the Board of Directors shall fix its own rules of procedure consistent with the provisions of applicable law and of any resolutions of the Board of Directors governing such committee. Each committee shall meet as provided by such rules or such resolution of the Board of Directors, and shall also meet at the call of its chairman or any two (2) members of such committee. Unless otherwise provided by such rules or by such resolution, the provisions of these Bylaws under Article III entitled "Directors" relating to the place of holding meetings and the notice required for meetings of the Board of Directors shall govern the place of meetings and notice of meetings for committees of the Board of Directors. A majority of the members of each committee shall constitute a quorum thereof, except that when a committee consists of one (1) member, then the one (1) member shall constitute a quorum. In the absence of a quorum, a majority of the members present at the time and place of any meeting may adjourn the meeting from time to time until a quorum shall be present and the meeting may be held as adjourned without further notice or waiver. Except in cases where it is otherwise provided by the rules of such committee or by a resolution of the Board of Directors, the vote of a majority of the members present at a duly constituted meeting at which a quorum is present shall be sufficient to pass any measure by the committee.

## ARTICLE IV

### OFFICERS

Section 4.01. DESIGNATION, ELECTION AND TERM OF OFFICE. The Corporation shall have a Chairman of the Board and/or a President either of whom may be designated Chief Executive Officer by the Board of Directors, such Vice Presidents (each of whom may be assigned by the Board of Directors or the Chief Executive Officer an additional title descriptive of the functions assigned to him and one or more of whom may be designated Executive, Group or Senior Vice President) as the Board of Directors deems appropriate, a Secretary and a Treasurer. These officers shall be elected annually by the Board of Directors at the organizational meeting immediately following the annual meeting of stockholders, and each such officer shall hold office until the corresponding meeting of the Board of Directors in the next year or until his earlier resignation, death or removal. Any vacancy in any of the above offices may be filled for an unexpired portion of the term by the Board of Directors at any regular special meeting. The Chief Executive Officer may, by a writing filed with the Secretary, designate titles for employees and agents, as, from time to time, may appear necessary or advisable in the conduct of the affairs of the Corporation and, in the same manner, terminate or change such titles.

Section 4.02. CHAIRMAN OF THE BOARD. The Board of Directors shall designate the Chairman of the Board from among its members. The Chairman of the Board of Directors shall preside at all meetings of the Board and the Shareholders, and shall perform such other duties as shall be delegated to him by the Board or the officer designated as chief executive.

Section 4.03. PRESIDENT. The President shall perform such duties and have such responsibilities as may from time to time be delegated or assigned to him by the Board of Directors or the officer designated as chief executive.

Section 4.04. CHIEF EXECUTIVE. The Board of Directors shall designate either the Chairman of the Board or the President to be the chief executive of the Corporation. The officer so designated shall be responsible for the general supervision, direction and control of the business and affairs of the Corporation.

Section 4.05. CHIEF FINANCIAL OFFICER. The Chief Financial Officer of the Corporation shall be responsible to the Chief Executive Officer for the management and supervision of all financial matters and to provide for the financial growth and stability of the Corporation. He shall attend all regular meetings of the Board of Directors and keep the Directors currently informed concerning all significant financial matters that could impact upon the business or affairs of the Corporation. He shall also perform such additional duties as may be assigned to him from time to time by the Board of Directors or the Chief Executive Officer.

Section 4.06. EXECUTIVE VICE PRESIDENTS, SENIOR VICE PRESIDENTS AND VICE PRESIDENTS. Executive vice presidents, senior vice presidents and vice presidents of the Corporation that are elected by the Board of Directors shall perform such duties as may be assigned to them from time to time by the Chief Executive Officer.

Section 4.07. CHIEF LEGAL OFFICER. The chief legal officer of the Corporation shall be the General Counsel who shall be responsible to the Chief Executive Officer for the management and supervision of all legal matters. The General Counsel shall attend all regular meetings of the Board of Directors and shall keep the Directors currently informed concerning all significant legal matters, particularly those involving important business, legal, moral or ethical issues that could impact upon the business or affairs of the Corporation.

Section 4.08. SECRETARY. The Secretary shall keep the minutes of the meetings of the stockholders, the Board of Directors and all committee meetings. The Secretary shall be the custodian of the corporate seal and shall affix it to all documents which he is authorized by law or the Board of Directors to sign and seal. The Secretary also shall perform such other duties as may be assigned from time to time by the Chief Executive Officer.

Section 4.09. TREASURER. The Treasurer shall be accountable to the Senior Vice President, Finance, and shall perform such duties as may be assigned to the Treasurer from time to time by the Senior Vice President, Finance.

Section 4.10. APPOINTED OFFICERS. The Chief Executive Officer may appoint one or more Corporate Staff Vice Presidents, officers of groups or divisions or assistant secretaries, assistant treasurers and such other assistant officers as the business of the Corporation may require, each of whom shall hold office for such period, have such authority and perform such duties as may be specified from time to time by the Chief Executive Officer.

Section 4.11. ABSENCE OR DISABILITY OF AN OFFICER. In the case of the absence or disability of an officer of the Corporation the Board of Directors, or any officer designated by it, or the Chief Executive Officer may, for the time of the absence or disability, delegate such officer's duties and powers to any other officer of the Corporation.

Section 4.12. OFFICERS HOLDING TWO OR MORE OFFICES. The same person may hold any two or more of the above-mentioned offices. However, no officer shall execute, acknowledge or verify any instrument in more than one capacity, if such instrument is required by law, by the Certificate or by these Bylaws, to be executed, acknowledged or verified by any two or more officers.

Section 4.13. COMPENSATION. The Board of Directors shall have the power to fix the compensation of all officers and employees of the Corporation.

Section 4.14. RESIGNATIONS. Any officer may resign at any time by giving written notice to the Board of Directors, to the Chief Executive Officer, or to the Secretary of the Corporation. Any such resignation shall take effect at the time specified therein unless otherwise determined by the Board of Directors. The acceptance of a resignation by the Corporation shall not be necessary to make it effective.

Section 4.15. REMOVAL. Any officer of the Corporation may be removed, with or without cause, by the affirmative vote of a majority of the entire Board of Directors. Any assistant officer of the Corporation may be removed, with or without cause, by the Chief Executive Officer, or by the Board of Directors.

## ARTICLE V

### INDEMNIFICATION OF DIRECTORS, OFFICERS, EMPLOYEES AND AGENTS

Section 5.01. RIGHT TO INDEMNIFICATION. Each person who was or is made a party, or is threatened to be made a party, to any actual or threatened action, suit, or proceeding, whether civil, criminal, administrative, or investigative (hereinafter a "proceeding"), by reason of the fact that he or she is or was a director, officer, employee, or agent of the Corporation (hereinafter an "indemnitee") shall be indemnified and held harmless by the Corporation to the fullest extent authorized by the Delaware General Corporation Law, as the same exists or may hereafter be amended, or by other applicable law as then in effect, against all expense, liability, and loss (including attorneys' fees, judgments, fines, ERISA excise taxes or penalties, and amounts paid in settlement) actually and reasonably incurred or suffered by such indemnitee in connection therewith. Any person who was or is made a party, or is threatened to be made a party, to any proceeding by reason of the fact that he or she is or was serving at the request of an executive officer of the Corporation as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust or other enterprise, including service with respect to an employee benefit plan, shall also be considered an indemnitee for the purposes of this Article. The right to indemnification provided by this Article shall apply whether or not the basis of such proceeding is alleged action in an official capacity as such director, officer, employee or agent or in any other capacity while serving as such director, officer, employee or agent. Notwithstanding anything in this Section 5.01 to the contrary, except as provided in Section 5.03 of this Article with respect to proceedings to enforce rights to indemnification, the Corporation shall indemnify any such indemnitee in connection with a proceeding (or part thereof) initiated by such indemnitee only if such proceeding (or part thereof) was authorized by the Corporation.

Section 5.02. ADVANCEMENT OF EXPENSES. (a) The right to indemnification conferred in Section 5.01 shall include the right to have the expenses incurred in defending or preparing for any such proceeding in advance of its final disposition (hereinafter an "advancement of expenses") paid by the Corporation; provided, however, that an advancement of expenses incurred by an indemnitee in his or her capacity as a director or officer (and not in any other capacity in which service was or is to be rendered by such indemnitee, including, without limitation, service to an employee benefit plan) shall be made only upon delivery to the Corporation of an undertaking containing such terms



and conditions, including the requirement of security, as the Board of Directors deems appropriate (hereinafter an "undertaking"), by or on behalf of such indemnitee, to repay all amounts so advanced if it shall ultimately be determined by final judicial decision from which there is no further right to appeal that such indemnitee is not entitled to be indemnified for such expenses under this Article or otherwise; and provided, further, that an advancement of expenses shall not be made if the Corporation's Board of Directors makes a good faith determination that such payment would violate any applicable law. The Corporation shall not be obligated to advance fees and expenses to a director, officer, employee or agent in connection with a proceeding instituted by the Corporation against such person. (b) Notwithstanding anything in Section 5.02(a) to the contrary, the right of employees or agents to advancement of expenses shall be at the discretion of the Board of Directors and on such terms and conditions, including the requirement of security, as the Board of Directors deems appropriate. The Corporation may, by action of its Board of Directors, authorize one or more executive officers to grant rights for the advancement of expenses to employees and agents of the Corporation on such terms and conditions as such officers deem appropriate.

Section 5.03. RIGHT OF INDEMNITEE TO BRING SUIT. If a claim under Section 5.01 is not paid in full by the Corporation within sixty (60) calendar days after a written claim has been received by the Corporation, except in the case of a claim for an advancement of expenses under Section 5.02 in which case the applicable period shall be thirty (30) calendar days, the indemnitee may at any time thereafter bring suit against the Corporation to recover the unpaid amount of the claim. If the indemnitee is successful in whole or in part in any such suit, the indemnitee shall also be entitled to be paid the expense of prosecuting or defending such suit.

Section 5.04. NONEXCLUSIVITY OF RIGHTS. (a) The rights to indemnification and to the advancement of expenses conferred in this Article shall not be exclusive of any other right which any person may have or hereafter acquire under any statute, provisions of the Certificate of Incorporation, Bylaw, agreement, vote of stockholders or disinterested directors, or otherwise. Notwithstanding any amendment to or repeal of this Article, any indemnitee shall be entitled to indemnification in accordance with the provisions hereof with respect to any acts or omissions of such indemnitee occurring prior to such amendment or repeal. (b) The Corporation may maintain insurance, at its expense, to protect itself and any past or present director, officer, employee, or agent of the Corporation or another corporation, partnership, joint venture, trust, or other enterprise against any expense, liability, or loss, whether or not the Corporation would have the power to indemnify such person against such expense, liability, or loss under the Delaware General Corporation Law. The Corporation may enter into contracts with any indemnitee in furtherance of the provisions of this Article and may create a trust fund, grant a security interest or use other means (including, without limitation, a letter of credit) to ensure the payment of such amounts as may be necessary to effect indemnification as provided in this Article. (c) The Corporation may without reference to Sections 5.01 through 5.04 (a) and (b) hereof, pay the expenses, including attorneys fees, incurred by any director, officer, employee or agent of the Corporation who is subpoenaed, interviewed or deposed as a witness or otherwise incurs expenses in connection with any civil, arbitration, criminal, or administrative proceeding or governmental or internal investigation to which the Corporation is a party, target, or potentially a party or target, or of any such individual who appears as a witness at any trial, proceeding or hearing to which the Corporation is a party, if the Corporation determines that such payments will benefit the Corporation and if, at the time such expenses are incurred by such individual and paid by the Corporation, such individual is not a party, and is not threatened to be made a party, to such proceeding or investigation.

## ARTICLE VI

### STOCK

Section 6.01. CERTIFICATES. Except as otherwise provided by law, each stockholder shall be entitled to a certificate or certificates which shall represent and certify the number and class (and series, if appropriate) of shares of stock owned by him in the Corporation. Each certificate shall be signed in the name of the Corporation by the Chairman of the Board, or the President, or a Vice President, together with the Secretary, or an Assistant Secretary, or the Treasurer or Assistant Treasurer. Any or all of the signatures on any certificate may be facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate shall have ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if such person were an officer, transfer agent or registrar at the date of issue.

Section 6.02. TRANSFER OF SHARES. Shares of stock shall be transferable on the books of the Corporation only by the holder thereof, in person or by his duly authorized attorney, upon the surrender of the certificate representing the shares to be transferred, properly endorsed, to the Corporation's registrar if the Corporation has a registrar. The Board of Directors shall have power and authority to make such other rules and regulations concerning the issue, transfer and registration of certificates of the Corporation's stock as it may deem expedient.

Section 6.03. TRANSFER AGENTS AND REGISTRARS. The Corporation may have one or more transfer agents and one or more registrars of its stock whose respective duties the Board of Directors or the Secretary may, from time to time, define. No certificate of stock shall be valid until countersigned by a transfer agent, if the Corporation has a transfer agent, or until registered by a registrar, if the Corporation has a registrar. The duties of transfer agent and registrar may be combined.

Section 6.04. STOCK LEDGERS. Original or duplicate stock ledgers, containing the names and addresses of the stockholders of the Corporation and the number of shares of each class of stock held by them, shall be kept at the principal executive office of the Corporation or at the office of its transfer agent or registrar.

Section 6.05. RECORD DATES. The Board of Directors shall fix, in advance, a date as the record date for the purpose of determining stockholders entitled to notice of, or to vote at, any meeting of stockholders or any adjournment thereof, or stockholders entitled to receive payment of any dividend or other distribution or allotment of any rights, or entitled to exercise any rights in respect of any change, conversion or exchange of stock, or in order to make a determination of stockholders for any other proper purpose. Such date in any case shall be not more than sixty (60) days, and in case of a meeting of stockholders, not less than ten (10) days, prior to the date on which the particular action, requiring such determination of stockholders is to be taken. Only those stockholders of record on the date so fixed shall be entitled to any of the foregoing rights, notwithstanding the transfer of any such stock on the books of the Corporation after any such record date fixed by the Board of Directors.

Section 6.06. NEW CERTIFICATES. In case any certificate of stock is lost, stolen, mutilated or destroyed, the Board of Directors may authorize the issuance of a new certificate in place thereof upon such terms and conditions as it may deem advisable; or the Board of Directors may delegate such power to any officer or officers or agents of the Corporation; but the Board of Directors or such officer or officers or agents, in their discretion, may refuse to issue such a new certificate unless the Corporation is ordered to do so by a court of competent jurisdiction.

## ARTICLE VII

### RESTRICTIONS ON SECURITIES REPURCHASES

#### Section 7.01. RESTRICTIONS ON SECURITIES REPURCHASES.

1. Vote required for certain acquisition of securities. Except as set forth in Subsection 2 of this Section 7.01, in addition to any affirmative vote of stockholders required by any provision of law, the Certificate of Incorporation or Bylaws of this Corporation, or any policy adopted by the Board of Directors, neither the Corporation nor any Subsidiary shall knowingly effect any direct or indirect purchase or other acquisition of any equity security of a class of securities which is registered pursuant to Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), issued by the Corporation at a price which is in excess of the highest Market Price of such equity security on the largest principal national securities exchange in the United States on which such security is listed for trading on the date that the understanding to effect such transaction is entered into by the Corporation (whether or not such transaction is concluded or a written agreement relating to such transaction is executed on such date, and such date to be conclusively established by determination of the Board of Directors), from any Interested Person, without the affirmative vote of the holders of the Voting Shares representing at least a majority of the aggregate voting power of all outstanding voting shares, excluding Voting Shares beneficially owned by such Interested Person, voting together as a single class. Such affirmative vote shall be required notwithstanding the fact that no vote may be required, or that a lesser percentage may be specified, by law or any agreement with any national securities exchange, or otherwise.

2. When A Vote Is Not Required. The provisions of Subsection 1 of this Section 7.01 shall not be applicable with respect to:

a. any purchase, acquisition, redemption or exchange of such equity securities, the purchase, acquisition, redemption or exchange of which is provided for in the Corporation's Certificate of Incorporation;

b. any purchase or other acquisition of equity securities made as part of a tender or exchange offer by the Corporation to purchase securities of the same class made on the same terms to all holders of such securities and complying with the applicable requirements of the Exchange Act of 1934, as amended and the rules and regulations thereunder (or any successor provisions to such Act, rules or regulations);

c. any purchase or acquisition of equity securities made pursuant to an open market purchase program which has been approved by the Board of Directors.

3. Certain definitions. For the purpose of this Section:

a. "Affiliate" and "Associate" shall have their respective meanings ascribed to such terms in Rule 12b-2 of the General Rules and Regulations under the Exchange Act, as in effect on January 1, 1991.

b. "Beneficial Owner" and "Beneficial Ownership" shall have the meanings ascribed to such terms in Rule 13d-3 and Rule 13d-5 of the General Rules and Regulations under the Exchange Act, as in effect on January 1, 1991.

c. "Interested person" shall mean any person (other than the Corporation or any subsidiary) that is the direct or indirect Beneficial Owner of five percent (5%) or more of the aggregate voting power of the Voting Shares, and any Affiliate or Associate of any such person. For the purpose of determining whether a person is an Interested Person, the outstanding Voting Shares include unissued shares of voting stock of the Corporation of which the Interested Person is the Beneficial Owner, but shall not include any other shares of voting stock of the Corporation which may be issuable pursuant to any agreement, arrangement or understanding, or upon exercise or conversion of rights, warrants or options, or otherwise to any person who is not the Interested Person.

d. "Market Price" of shares of the class of equity security of the Corporation on any day shall mean the highest sale price (regular way) of shares of such class of such equity security on such day, or, if that day is not a trading day, on the trading day immediately preceding such day, on the largest principal national securities exchange on which such class of stock is then listed or admitted to trading, or if not listed or admitted to trading on any national securities exchange, then the highest reported sale price for such shares in the over-the-counter market as reported on the NASDAQ National Market System, or if such sale price shall not be reported thereon, the highest bid price so reported, or, of such price shall not be reported thereon, as the same shall be reported by the National Quotation Bureau, Incorporated, or if the price is not determinable as set forth above, as determined in good faith by the Board of Directors.

e. "Person" shall mean any individual, partnership, firm, corporation, association, trust, unincorporated organization or other entity, as well as any syndicate or group deemed to be a person pursuant to Section 13(d)(3) of the Exchange Act, as in effect on January 1, 1991.

f. "Subsidiary" shall mean any company or entity of which the Corporation owns, directly or indirectly, (i) a majority of the outstanding shares of equity securities, or (ii) shares having a majority of the voting power represented by all of the outstanding Voting Stock of such company entitled to vote generally in the election of directors. For the purpose of determining whether a company is a Subsidiary, the outstanding voting stock and shares of equity securities thereof shall include unissued shares of which The Corporation is the beneficial owner but, except for the purpose of determining whether a company is a Subsidiary for the purpose of Subsection 3(c) hereof shall not include any shares which may be issuable pursuant to any agreement, arrangement, or understanding, or upon the exercise of conversion rights, warrants or options, or otherwise to any Person who is not the Corporation.

g. "Voting shares" shall mean the outstanding shares of capital stock of the Corporation entitled to vote generally in the election of directors.

ARTICLE VIII

SUNDRY PROVISIONS

Section 8.01. FISCAL YEAR. The fiscal year of the Corporation shall end on the 31st day of December of each year.

Section 8.02. SEAL. The seal of the Corporation shall bear the name of the Corporation and the words "Delaware" and "Incorporated March 12, 1985."

Section 8.03. VOTING OF STOCK IN OTHER CORPORATIONS. Any shares of stock in other corporations or associations, which may from time to time be held by the Corporation, may be represented and voted at any of the stockholders' meetings thereof by the Chief Executive Officer or his designee. The Board of Directors, however, may by resolution appoint some other person or persons to vote such shares, in which case such person or persons shall be entitled to vote such shares upon the production of a certified copy of such resolution.

Section 8.04. AMENDMENTS. These Bylaws may be adopted, repealed, rescinded, altered or amended only as provided in Articles Fifth and Sixth of the Certificate.

December 16, 1998

## THE INCENTIVE COMPENSATION PLAN

OF

NORTHROP GRUMMAN CORPORATION

(AS AMENDED AND RESTATED)

## SECTION 1

## PURPOSE

The purpose of this Plan is to promote the success of the Company and render its operations profitable to the maximum extent by providing for the Senior Executives of the Company incentives that continue to be dependent upon the return on total Shareholders' Equity and the overall successful performance of the Company. The Senior Executives, for this purpose, are only those elected corporate officers who participate in making the basic and strategic decisions which affect the corporate-wide performance of the Company, together with those Senior Executives who are in charge of significant operating subsidiaries. The Plan is designed to comply with the performance-based compensation exception under Section 162(m) of the Internal Revenue Code of 1986, as amended.

## SECTION II

## DEFINITIONS

1. PLAN - This Incentive Compensation Plan.

2. COMPANY - Northrop Grumman Corporation and such of its subsidiaries as are consolidated in its consolidated financial statements.

3. YEAR - The fiscal year of Northrop Grumman Corporation.

4. CODE - The Internal Revenue Code of 1986, as amended from time to time.

5. COMMITTEE - The Compensation and Management Development Committee of the Board of Directors of the Company. It shall be composed of not less than three members of the Board of Directors, no one of whom shall be an officer or

employee of the Company and it shall be constituted so as to permit this Plan to comply with the "outside director" requirement of Code section 162(m).

6. INCOME BEFORE INCOME TAXES - The Performance Year's net income as reported on the Company's consolidated financial statement included in its annual report on Form 10-K for such Year, adjusted to eliminate the following:

(a) Federal and foreign income taxes;

(b) Incentive Compensation awards under the Plan;

(c) The effect of changes in accounting principles;

(d) Unless otherwise determined by the Committee by no later than the 90th day of such Performance Year, extraordinary items determined under generally accepted accounting principles; and

(e) Unless otherwise determined by the Committee by no later than the 90th day of such Performance Year, restructuring or similar charges to the extent they are separately disclosed in such annual report.

7. INCENTIVE COMPENSATION Awards payable under this Plan.

8. PERFORMANCE CRITERIA Return on Shareholder's Equity and Income Before Income Taxes.

9. PERFORMANCE YEAR The Year with respect to which an award of Incentive Compensation is calculated and paid.

10. SECTION 162(m) OFFICER A Participant who is a "covered employee" as defined in Section 162(m) of the Code with respect to an award of Incentive Compensation under the Plan for a Performance Year.

11. SHAREHOLDERS' EQUITY - The sum of the following consolidated accounts at the close of business on the last day of each Performance Year, as shown by the consolidated financial statements of the Company:

(a) Preferred stock

(b) Common stock

(c) Additional capital paid-in

(d) Retained earnings

12. RETURN ON SHAREHOLDERS' EQUITY - The Return on Shareholders' Equity for a Performance Year shall be determined by dividing the Income Before Income Taxes for such Performance Year by the "Three Year Moving Average Equity Base" for such Year. The "Three Year Moving Average Equity Base" applicable to such Performance Year shall be the sum of the dollar amounts of the Shareholders' Equity at the close of business on the last day of each of the last two prior Years and the Performance Year divided by three.

### SECTION III

#### PARTICIPATION

1. The persons eligible to receive Incentive Compensation awards under this Plan are all elected Corporate Officers of the rank of Vice President and above and the Presidents of those consolidated subsidiaries that the Committee determines to be significant in the overall Corporate operations.

2. A "Participant" is a person granted or eligible to receive an Incentive Compensation award under this Plan.

3. Directors as such shall not participate in this Plan, but the fact that an elected Corporate Officer or subsidiary President is also a Director shall not prevent his participation.

4. The death of a Participant shall not disqualify him for an Incentive Compensation award for the Performance Year in which he dies or the preceding Performance Year. In the case of a deceased Participant, the Incentive Compensation, if any, determined for him for the Performance Year by the Committee shall be paid to his spouse, children, or legal representatives as directed by the Committee.

### SECTION IV

#### INCENTIVE COMPENSATION APPROPRIATIONS AND AWARDS

1. Subject to the limitations set forth in this Section IV, the Committee shall, with respect to each Performance Year, establish the amount of the appropriation, if any, to be made to the Plan for distribution with respect to that Performance Year.

2. In the event the Company achieves a 10 percent (10%) Return on Shareholders' Equity, an amount shall be appropriated to the Plan equaling 3% of the Company's Income Before Income Taxes, with the following exceptions:

(a) No appropriation to the Plan shall be made with respect to any Performance Year which would reduce the Return on Shareholders equity below such 10%, and

(b) No appropriation to the Plan shall be made with respect to any Performance Year during which no dividends in either cash or property have been declared on the preferred and common stock of the Company.

The amount appropriated to the Plan for a Performance Year based on the Performance Criteria set forth in this Paragraph 2, SECTION IV shall be referred to as the "Tentative Appropriated Incentive Compensation" for such Year.

3. The amount of the Tentative Appropriated Incentive Compensation for a Performance year may be reduced (but not increased) by the Committee, in its sole discretion, after taking into account an appraisal of the overall performance of the Company in the attainment of such predetermined financial and nonfinancial objectives as are selected by the Committee. The amount appropriated to the Plan for a Performance Year by the Committee under this Paragraph 3, SECTION IV shall be referred to herein as the "Appropriated Incentive Compensation" for such Year. In no event shall Incentive Compensation payable to Participants for a Performance Year exceed the Appropriated Incentive Compensation under the Plan for such Year. Any Tentative Appropriated Incentive Compensation for a Performance Year, which is not actually appropriated to the Plan for such Year, shall be forfeited.

4. Incentive Compensation Awards to Section 162(m) Officer:

(a) Notwithstanding any other provisions of this Plan, any Incentive Compensation award for a Performance Year under this Plan payable to a Section 162(m) Officer must satisfy the requirements of this Paragraph 4, SECTION IV. The purpose of this Paragraph 4 is to ensure compliance by the Plan with the requirements of Section 162(m) of the Code relating to performance-based compensation. Incentive Compensation awards to Section 162(m) Officers under this Plan are subject to:

(i) Approval of this Plan and the criteria stated in Paragraph 4(b) of this SECTION IV by the shareholders of the Company;

(ii) The maximum amount that may be awarded to any Section 162 (m) Officer under the Plan for any Performance Year as stated in Paragraph 4(b) of this SECTION IV; and

(iii) Approval by the Committee.

(b) The maximum potential amount of Appropriated Incentive Compensation (as defined in Paragraph 3 of this SECTION IV) payable to a Section 162(m) Officer as an Incentive Compensation award for a Performance Year shall be limited to \$3,000,000.

(c) The Performance Criteria established in Paragraph 4(b) of this SECTION IV on which Incentive Compensation awards under the Plan are based shall first apply in the Performance Year 1999, but such Performance Criteria and any Incentive Compensation awards based thereon shall be conditional upon a vote of the shareholders of the Company approving the Plan and the Performance Criteria and performance goals stated herein.

(d) Prior to the payment of any Incentive Compensation awards for a Performance year, the Committee shall make a determination and certification in writing as to whether the Section 162(m) Officers have meet the Performance Criteria, performance goals, and any other material terms of the Plan for each Performance Year. The Committee may, in its sole discretion, exercise negative discretion by reducing amounts of Incentive Compensation awards to all or any of the Section 162(m) Officers from the maximum potential awards payable by application of Paragraph 4(b) of this SECTION IV. No such reduction shall increase the amount of the maximum award payable to any other Section 162(m) Officer. The Committee shall determine the amount of any reduction in a Section 162(m) Officer's Incentive Compensation award on the basis of such factors as it deems relevant, and it shall not be required to establish any allocation or weighting component with respect to the factors it considers. The Committee shall have no discretion to increase any Incentive Compensation award for a Performance Year above the amount determined by application of Paragraph 4(b) of this SECTION IV.

5. After the end of a Performance Year, in determining each Participant's Incentive Compensation award for such Year, the Committee may make a downward adjustment after considering such factors as it deems relevant, which shall include but not be limited to the following factors:

(a) The evaluation of the Participant's performance during that Performance Year in relation to the Participant's predetermined objectives and the Participant's contribution during such Year to the success or profit of the Company.

(b) The classification of the Participant's position, relative to the position of all Participants.



The Committee shall make the final determination of each Participant's Incentive Compensation award for a Performance Year.

#### SECTION V

##### ADMINISTRATION OF THE PLAN

The Committee shall be responsible for the administration of the Plan. The Committee shall:

1. Interpret the Plan, make any rules and regulations relating to the Plan, determine which consolidated subsidiaries are significant for the purpose of the first paragraph of SECTION III, and determine factual questions arising in connection with the Plan, after such investigation or hearing as the Committee may deem appropriate.

2. As soon as practicable after the close of each Performance Year and prior to the payment of any Incentive Compensation for such Year, review the performance of each Participant and determine the amount of each Participant's individual Incentive Compensation award, if any, with respect to that Year.

3. Have sole discretion in determining Incentive Compensation awards under the Plan, except that, in making awards the Committee may, in its discretion, request and consider the recommendations of the Chief Executive Officer of the Company and others whom it may designate.

Any decisions made by the Committee under the provisions of this SECTION V shall be conclusive and binding on all parties concerned. Except as otherwise specifically provided in this Plan, the provisions of this Plan shall be interpreted and administered by the Committee in a manner consistent with the requirements for exemption of Incentive Compensation awards granted to Participants who are Section 162(m) Officers as "performance-based compensation" under Code Section 162(m) and regulations and other interpretations issued by the Internal Revenue Service thereunder.

#### SECTION VI

##### METHOD OF PAYMENT OF INCENTIVE COMPENSATION TO INDIVIDUALS

1. The amount of Incentive Compensation award determined for each Participant with respect to a given Performance Year shall be paid in cash or in Common Stock of the Company ("Northrop Grumman Common Stock") or partly in cash and partly in Northrop Grumman Common Stock, as the Committee may determine.

2. Payments in cash may be made in a lump sum with respect to an Incentive Compensation award for a Performance Year, or in installments, as the Committee may determine. In either event, the Committee may impose such conditions, including forfeitures and restrictions as the Committee believes will best serve the interests of the Company and the purposes of the Plan.

3. Payments in Northrop Grumman Common Stock may be made in full with respect to an Incentive Compensation award for a Performance Year, or in installments, as the Committee may determine. In either event, the Committee may impose such conditions, including forfeitures and restrictions as the Committee believes will best serve the interests of the Company and the purposes of the Plan.

4. In making awards of Northrop Grumman Common Stock, the Committee shall first determine all Incentive Compensation awards in terms of dollars. The total dollar amount of all Incentive Compensation awards for a particular Performance Year shall not exceed the Appropriated Incentive Compensation for that Year under this Plan. In the case of Section 162(m) Officers, the total dollar amount of an Incentive Compensation award for a particular Performance Year shall be no greater than the maximum potential awards payable by application of Paragraph 4(b) of SECTION IV. After fixing the total amount of each Participant's Incentive Compensation award in terms of dollars, then if some or all of the award is to be paid in Northrop Grumman Common Stock, the dollar amount of the Incentive Compensation award so to be paid shall be converted into shares of Northrop Grumman Common Stock by using the fair market value of such stock on the date of the award. "Fair market value" shall be closing price of such stock on the New York Stock Exchange on the date of the award, or, if no sales of such stock occurred on that date, then on the last preceding date on which such sales occurred. No fractional share shall be issued.

5. If an Incentive Compensation award is paid in Northrop Grumman Common Stock, the number of shares shall be appropriately adjusted for any stock splits, stock dividends, recapitalizations or other relevant changes in capitalization effective after the date of award and prior to the date as of which the Participant becomes the record owner of the shares received in payment of the award. All such adjustments thereafter shall accrue to the Participant as the record owner of the shares.

Northrop Grumman Common Stock issued in payment of Incentive Compensation awards may, at the option of the Board of Directors, be either originally issued shares or treasury shares.

7. Distribution of awards shall be governed by the terms and conditions applicable to such awards, as determined by the Committee or its delegate. An award, the payment of which is to be deferred pursuant to the terms of an employment agreement, shall be paid as provided by the terms of such agreement. Awards or portions thereof

deferred pursuant to any other deferred compensation plan or deferral arrangement shall be paid as provided in such plan or arrangement. Any other awards the payment of which has been deferred, in whole or in part, shall be paid as determined by the Committee.

8. The Committee shall have the exclusive right to interpret the provisions of this SECTION VI to determine all questions arising under it or in connection with its administration, and to issue regulations and take actions implementing its provisions.

#### SECTION VII

##### AMENDMENT OR TERMINATION OF PLAN

The Board of Directors of the Company shall have the right to terminate or amend this Plan at any time and to discontinue further appropriations thereto, except that no amendment to the Plan shall be made without the approval of the Shareholders, which would (i) increase the amount authorized for appropriation pursuant to Section IV of this Plan, (ii) permit a member of the Committee to participate in the Plan, or (iii) modify the right of the Committee to make the appropriations or allocations set forth in this Plan.

#### SECTION VIII

##### EFFECTIVE DATE

This Plan shall be effective for Performance Years commencing with 1999. No appropriations will be made, and no Incentive Compensation shall be paid, under the Plan for Years after 1998 if the Plan as amended herein is not approved by the Shareholders.



NORTHROP GRUMMAN CORPORATION  
BOARD OF DIRECTORS RETIREMENT PLAN

SECTION 1  
DEFINITIONS

- 1.01 "Annual Benefit Amount" means the amount as defined in Section 4.01 of this Plan.
- 1.02 "Annual Retainer Fee" means that fixed amount being paid to Directors exclusive of travel expenses, meeting fees, committee fees, or any other similar remuneration.
- 1.03 "Board of Directors" means the formally elected Board of Directors of Northrop Grumman Corporation.
- 1.04 "Debilitating Illness" means any physical or mental condition which renders an individual unable to carry on the normal duties of his active business career.
- 1.05 "Director" means a member of the Board of Directors.
- 1.06 "Effective Date" means February 20, 1985.
- 1.07 "Outside Director" means a member of the Board of Directors who is not an employee on the regular payroll of the Company, as defined in the Retirement Plan of Northrop Grumman Corporation.
- 1.08 "Participant" means an individual who meets the eligibility requirements set forth in Section 2 of this Plan.
- 1.09 "Plan" means the Northrop Grumman Corporation Board of Directors Retirement Plan.
- 1.10 "Total Disability" means total disability as defined in the Northrop Corporation Long-Term Disability Plan.
- 1.11 "Surviving Spouse" means a person to whom the Participant was married and who meets the requirements set forth in Section 3.02 of this Plan.
- 1.12 "Change in Control" shall have the meaning set forth in Section 4.04.

SECTION 2  
POLICY STATEMENT

2.01 Effective January 1, 1991, it shall be the policy of the Company that members of the Board of Directors shall be ineligible to stand for election to the Board of Directors if they will have attained age 70 by the date of the Company's Annual Meeting of Shareholders.

SECTION 3  
ELIGIBILITY REQUIREMENTS

- 3.01 Any current Outside Director, and any former Outside Director living on the Effective Date, who
- (a) completed at least five consecutive years of service on the Board of Directors as an Outside Director,
  - (b) (i) is ineligible to stand for election to the Board of Directors by virtue of the fact that such person will have attained age 70 prior to the Annual Meeting of Shareholders; and (ii) has not completed at least five consecutive years of service on the Board of Directors as an Outside Director.
  - (c) prior to completing at least five consecutive years of service on the Board of Directors as an Outside Director, retires from the Board of Directors as a result of Total Disability or a Debilitating Illness,
- shall be eligible to receive a benefit under this Plan.

- 3.02 The Surviving Spouse of a Participant, shall upon the demise of the Participant, be eligible to receive the Annual Benefit Amount as set forth in Section 4, provided:
- (a) the Surviving Spouse was legally married to the Participant for at least one year prior to the date the Participant retires from the Board of Directors or dies while serving in that capacity;
  - (b) the Surviving Spouse outlived the deceased Participant by at least 30 calendar days;
  - (c) there is no court order or property settlement that prevents the payment of the Annual Benefit Amount.

SECTION 4  
BENEFIT

4.01 Amount of Benefit  
-----

A Participant shall receive an Annual Benefit Amount under this Plan equal to the Annual Retainer Fee, or such lesser amount as is provided for under this Plan, being paid to active Directors. The Participant may designate that payment of the Annual Benefit Amount be made to any trust in which such Participant has an interest or which is maintained by or on behalf of such Participant. Payments may be made to such trust as long as (i) the designation by the Participant remains in effect and (ii) the Participant or, in the event of the demise of the Participant, the Surviving Spouse meets the eligibility requirements set forth in Section 3. The Annual Benefit Amount shall be determined as follows:

- (i) A Participant who either has served as a member of the Board of Directors for five consecutive years, or retires from the Board of Directors as a result of Total Disability or Debilitating Illness, prior to completing five consecutive years as a member of the Board of Directors shall be entitled to an Annual Benefit Amount equal to the Annual Retainer Fee.
- (ii) A participant who (i) is ineligible to stand for election by virtue of the fact that such Participant will have attained age 70 prior to the Annual Meeting of Shareholders for the current year, and (ii) has not completed five consecutive years as a member of the Board of Directors shall receive an Annual Benefit Amount equal to the product of (A) the amount the Director would be entitled to had such Director completed five consecutive years of service as an Outside Director multiplied by (B) a fraction, the numerator of which is the number of completed years of service (and completed months of service of the final year expressed as a fraction of the final year to the nearest quarter), and the denominator of which is five.
- (iii) Notwithstanding anything herein to the contrary, individuals who (a) were Outside Directors on March 15, 1990; and (b) attain the age of 70 prior to completing five consecutive years of service as a member of the Board of Directors shall be entitled to an Annual Benefit Amount equal to the Annual Retainer Fee.



4.02 Payment of Benefit  
-----

One-fourth of the Annual Benefit Amount will be paid quarterly, commencing with the later of:

- (a) the first day of the first month of the calendar quarter coincident with or next following the date of the eligible Participant's retirement or death, or
- (b) the 20th day after the date of the eligible Participant's retirement or death.

4.03 Duration of Benefits  
-----

Annual Benefit Amount payments shall cease upon the payment made for the earlier of the following events, whichever is applicable.

- (a) For Participants who have completed as least five, but not more than nine, consecutive years of service, payments shall continue for a number of years equal to years of completed consecutive service and shall cease upon the payment for the last quarter preceding the anniversary of the Participant's date of retirement from the Board of Directors or demise.
- (b) For Participants who have completed ten or more consecutive years of service on the Board of Directors, payments shall continue until the last quarter preceding the tenth anniversary of the Participant's date of retirement from the Board of Directors or demise.
- (c) If the Participant dies and there is no Surviving Spouse, payments shall continue until the quarter following the quarter in which the death of the Participant occurs.
- (d) Payments to a Surviving Spouse shall cease in the quarter in which the death of the Surviving Spouse occurs.

In the event of a Change of Control, all Outside Directors serving on the Board of Directors at the time of the Change of Control shall be immediately vested and entitled to an Annual Benefit Amount for each year (or if less than one year, for each fraction of a year to the nearest quarter) of consecutive service. Actual payment of benefits will commence in accordance with Section 4.02 and continue in accordance with Section 4.03.

(a) Change of Control: For purposes of this Plan, except as provided  
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in (b) and (c), Change of Control herein shall be deemed to have occurred if any of the following events occur:

- (1) Any "person" as such term is used in Sections 13(d)(3) and 14(d)(2) of the Securities Exchange Act of 1934, as amended ("Exchange Act") or any successor provisions, other than a trustee or other fiduciary holding securities under any other employee benefit plan of the Company or an Affiliate, becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act or any successor provisions), directly or indirectly, of securities of the Company representing fifteen percent (15%) or more of the combined voting power of the Company's then outstanding securities (unless the event causing the fifteen percent (15%) threshold to be crossed is an acquisition of securities directly from the Company).
- (2) During any period of two consecutive years, "Continuing Directors," as described in (B), cease for any reason to constitute at least a majority of the Board.
  - (A) The period of two consecutive years does not include any period prior to the adoption of this Plan.
  - (B) The term "Continuing Directors," for purposes of this Section, means:
    - (i) individuals who at the beginning of the two-consecutive-year period constitute the Board, and

(ii) any new director whose nomination by the Board or election by the Company's shareholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the two-consecutive-year period or whose election or nomination for election was previously so approved. This clause (ii) does not include a director designated by a person who has entered into an agreement with the Company to effect a transaction described in (1) or (3) of this subsection (a).

(3) The shareholders of the Company approve a merger or consolidation of the Company with any other corporation, but only if the transaction closes or is otherwise effectuated. This paragraph (3) does not cover a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity) at least 80% of the combined voting power of the voting securities of the Company or such surviving entity outstanding immediately after such merger or consolidation.

(4) The shareholders of the Company approve a plan of complete liquidation of the Company or an agreement for the sale or disposition of the Company or all or substantially all of the Company's assets, but only if the transaction closes or is otherwise effectuated.

(b) Override by Board : Transactions described in the previous

-----  
Section do not constitute Changes in Control if, immediately prior to the change in ownership, merger, consolidation, sale or other disposition, liquidation or change in the Board, the Board shall pass a resolution approved by a vote of the majority of the Continuing Directors to the effect that it has determined that such transaction does not constitute a Change of Control within the intention of this definition. In addition, if a Change of Control has occurred, no subsequent event shall result in another Change of Control.

- (c) February 1998 Vote: No Change of Control will be deemed to have  
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occurred by virtue of the vote of shareholders on February 26,  
1998 to merge with Lockheed Martin Corporation unless and until  
that merger closes.
- (d) Limitation on Amendment Authority: The Plan may not be amended,  
-----  
terminated, or otherwise modified or interpreted to eliminate,  
reduce or defer Change of Control benefits with respect to the  
circumstances described in (a)(3) or (4), between the date of the  
shareholder vote and the closing or other effectuation of the  
transaction. This is not intended to reduce the Board's  
authority under (b).

SECTION 5  
MISCELLANEOUS

5.01 Plan Amendment or Termination  
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The Board may at any time, or from time, to time, amend or terminate the Plan.

- (a) No such amendment or termination may reduce Plan benefits which accrued prior to the amendment or termination without the prior written consent of each person entitled to receive benefits under the Plan who is adversely affected by such action.
- (b) The amendment and termination power of this Section is also subject to the provisions of Section 4.04(d).

5.02 Assignment of Benefits  
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A Participant in the Plan may not, either voluntarily or involuntarily, assign or encumber any benefits due under this Plan, nor may the same be subject to attachment or garnishment by any creditor's claim or to legal process.



NORTHROP GRUMMAN CORPORATION  
NON-EMPLOYEE DIRECTORS EQUITY PARTICIPATION PLAN  
Effective March 1, 1998  
As amended December 16, 1998

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ARTICLE 1

Introduction

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Section 1.01. Purpose. The purposes of the Plan are to enable the

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Company to attract and retain outstanding individuals to serve as non-employee directors of the Company, and to further align the interests of non-employee directors with the interests of the other shareholders of the Company by making the amount of the compensation of non-employee directors dependent in part on the value and appreciation over time of the Common Stock of the Company.

Section 1.02. Effective Date. This restatement of the Plan is

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effective as of March 1, 1998. The Plan was originally effective March 19, 1997.

ARTICLE 2

Definitions

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The following terms when used and capitalized in the Plan will have the following meanings:

Section 2.01. Accrual. Any dollar amounts credited to the Equity

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Participation Account, including any Special Accrual, Annual Accruals, and Dividend Equivalents.

Section 2.02. Annual Accrual. This is defined in Section 6.02.

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Section 2.03. Annual Retainer Fee. That fixed amount paid to Directors exclusive of travel expenses, meeting fees, committee fees, or any other similar remuneration.

Section 2.04. Board. The Board of Directors of the Company.

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Section 2.05. Change in Control. This is defined in Sections A.02-

A.04.

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Section 2.06. Common Stock. The Common Stock of the Company.

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Section 2.07. Company. Northrop Grumman Corporation.

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Section 2.08. Conversion Date. The date the Outside Director's service as a member of the Board terminates for any reason, including death.

Section 2.09. Debilitating Illness. Any physical or mental condition

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which renders an individual unable to carry on the normal duties of his or her active business career.

Section 2.10. Director. A member of the Board.

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Section 2.11. Dividend Equivalent. An amount equal to the cash

dividend per share which is payable on any dividend payment date for the Common Stock.

Section 2.12. Electing Outside Director. An Outside Director

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participating in the Retirement Plan who, at the inception of this Plan, elected to terminate participation in the Retirement Plan and to participate in this Plan instead.

Section 2.13. Equity Participation Account. An unfunded bookkeeping

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account maintained by the Company for a Participant to which amounts are credited under the Plan.

Section 2.14. Fair Market Value Of The Common Stock. This is

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determined as follows:

(a) for relevant Accruals and Conversion Dates that occur on or before February 18, 1998, the closing price of a share of Common Stock as reported on the composite tape for securities listed on the New York Stock Exchange (the "Exchange") for the date in question. If no sales of Common

Stock were made on the Exchange on that date, the closing price of a share of Common Stock as reported on said composite tape for the preceding day on which sales of Common Stock were made on the Exchange shall be substituted; and

(b) for relevant Accruals and Conversion Dates that occur after February 18, 1998, the average of the daily closing prices of a share of Common Stock as reported on the composite tape for securities listed on the Exchange for the 20 trading days (counting as trading days only days on which sales of Common Stock are reported) ending with the date in question.

Section 2.15. Outside Director. A Director who is not a common law  
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employee of the Company.

Section 2.16. Participant. Each current or former Outside Director  
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eligible for benefits under the Plan who has not yet received a complete distribution of his or her benefits under the Plan, other than a former Outside Director who terminated service with the Board without any entitlement to benefits under Sections 4.01-4.03.

Section 2.17. Plan. The Northrop Grumman Corporation Non-Employee  
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Directors Equity Participation Plan.

Section 2.18. Retired Outside Director. An Outside Director whose

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service as a member of the Board for any reason has terminated and who is entitled to receive a distribution.

Section 2.19. Retirement Plan. The Northrop Grumman Corporation

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Board of Directors Retirement Plan.

Section 2.20. Special Accrual. This is defined in Section 6.03.

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Section 2.21. Surviving Spouse. A person who:

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- (a) was legally married to the Participant for at least one year prior to the date the Participant ceases to serve on the Board (including death while serving on the Board), and
- (b) outlives the deceased Participant by at least 30 calendar days, to the extent he or she is not prevented from receiving benefits under the Plan by a court order or property settlement at the time payments would otherwise be due.

Section 2.22. Total Disability. Total disability as defined in the

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Northrop Grumman Long-Term Disability Insurance Plan.

Section 2.23. Unit. An equivalent to a share of Common Stock, which

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the denomination into which all dollar Accruals to any Equity Participation Account are to be converted.

Section 2.24. Year Of Service. A 12-consecutive-month period of

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service as an Outside Director.

ARTICLE 3

Participation  
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Section 3.01. In General. A Director is eligible to participate in  
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the Plan if he or she:

- (a) becomes an Outside Director after March 19, 1997, or
- (b) is an Electing Outside Director.



ARTICLE 4

Entitlement To Benefits  
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Section 4.01. Normal Benefit. Each Participant who terminates

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service on the Board will be entitled to receive a benefit under Section 5.01 if he or she satisfies (a) or (b):

(a) He or she completes at least three consecutive Years of Service.

(b) He or she retires from the Board as a result of Total Disability or a Debilitating Illness.

Section 4.02. Partial Benefit. A Participant will be entitled to

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receive a partial benefit under Section 5.02 if:

(a) he or she terminates service on the Board prior to completing three consecutive Years of Service, and

(b) his or her termination occurs because he or she will have attained age 70 prior to the Annual Meeting of Shareholders.

Section 4.03. Change in Control Benefit. A Participant who is not

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entitled to benefits under Section 4.01 will be entitled to receive a Change in Control benefit under Section 5.03 if the conditions described in Appendix A are met.

Section 4.04. Better-Of Benefit. A Participant entitled to a benefit

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under Sections 4.01-4.03 will be entitled to "better-of" benefits under Section 5.04 if he or she:

(a) was a Participant in the Plan and a current Outside Director as of March 1, 1998, and

(b) terminates service on account of death, Debilitating Illness or Total Disability.

Section 4.05. Surviving Spouse Benefit. Upon a Participant's death,

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his or her Surviving Spouse, if any, will be eligible to receive the remainder of the payments due the Participant. If there is no Surviving Spouse, all payments will cease.

Section 4.06. Other Participants. No benefits will be paid with

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respect to a Participant who terminates service with the Board unless the eligibility conditions of Section 4.01, 4.02 or 4.03 are satisfied.

ARTICLE 5

Amount Of Benefit  
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Section 5.01. Normal Benefit Amount. The normal benefit amount is the full balance of the Participant's Equity Participation Account.

Section 5.02. Partial Benefit Amount. The partial benefit amount is the Participant's Equity Participation Account multiplied by a fraction.

(a) The numerator of the fraction is the number of the Participant's completed consecutive Years of Service and the denominator is three.

(b) For purposes of (a), completed Years of Service include completed months of service (rounded up to the nearest month) expressed as a fraction of a year to the nearest quarter.

Section 5.03. Change in Control Benefit Amount. The Change in Control benefit is equal to the greater of (a) or (b):

(a) The full balance of the Participant's Equity Participation Account.

(b) In the case of any Electing Outside Director, the benefit the Participant would receive (if any) if he or she were a participant under the Retirement Plan, but only if it would be greater than the benefit under (a).

(1) The Retirement Plan benefit will be considered greater than the benefit in (a) for purposes of this

subsection if the present value of the projected Retirement Plan benefit is greater than the Participant's balance in his or her Equity Participation Account at the Conversion Date.

- (2) For purposes of determining the present value of the Retirement Plan benefit, the following assumptions will be used:
- (A) An interest rate assumption of 6.5% will be used.
  - (B) No mortality factor will be applied. The Participant will be assumed to get all payments before dying.
  - (C) The Annual Retainer Fee used by the Retirement Plan will be assumed to remain constant for all future years.

Section 5.04. Better-Of Benefit Amount. A Participant entitled to  
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"better-of" benefits will have his or her benefits determined under this Section if that would result in greater benefits than those provided under Sections 5.01-5.03, as applicable.

(a) The benefit under this Section equals the benefit the Participant would receive (if any) if he or she were a participant under the Retirement Plan.

(b) If a Participant would not be entitled to any benefit under the Retirement Plan (e.g., because he or she failed to meet the five years of service requirement), this Section will not provide any alternative benefits.

(c) The Retirement Plan benefit will be considered greater for purposes of this Section if the present value of the projected Retirement Plan benefit is greater than the Participant's balance in his or her Equity Participation Account at the Conversion Date.

(d) For purposes of determining the present value of the Retirement Plan benefit, the following assumptions will be used:

(1) An interest rate assumption of 6.5% will be used.

(2) No mortality factor will be applied. The Participant will be assumed to get all payments before dying.

(3) The Annual Retainer Fee used by the Retirement Plan will be assumed to remain constant for all future years.

ARTICLE 6

Accounts

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Section 6.01. Equity Participation Accounts. An Equity Participation

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Account will be maintained for each Participant having an amount to his or her credit under the Plan. The account will keep track of Accruals and payments for a Participant's benefit.

Section 6.02. Annual Accruals. On each March 19, the Company will

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credit an amount equal to 50% of the Annual Retainer Fee (an "Annual Accrual") to the Equity Participation Account of each Participant who provided a full Year of Service in the immediately preceding 12-month period.

(a) No accrual will be made for any Outside Director who has provided at least ten consecutive Years of Service.

(b) Participants who have provided less than a full Year of Service for the immediately preceding 12-month period will receive a pro rated portion of the normal Annual Accrual based on their months of service for the year (rounded up to the nearest month) divided by 12.

Section 6.03. Special Accruals. As of March 19, 1997, the Company

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credited to the Equity Participation Account of each Electing Outside Director a special, one-time credit (a "Special Accrual"). The dollar amount

of the Special Accrual was equal to the present value (calculated at a 6.5% discount rate) of the accrued benefits of an Electing Outside Director under the Retirement Plan.

Section 6.04. Conversion Of Accruals Into Units. Each Accrual will be

converted into Units by dividing the dollar amount of the Accrual by the Fair Market Value of the Common Stock on the day the Accrual is made. Units will be calculated and recorded in Equity Participation Accounts rounded to the third decimal place.

Section 6.05. Dividend Equivalents. On each date on which cash

dividends are paid on shares of the Common Stock, Equity Participation Accounts will be credited with one Dividend Equivalent for each Unit credited to such Account.

(a) Each fraction of a Unit will be credited with a like fraction of a Dividend Equivalent on such date.

(b) Dividend Equivalents credited to each Equity Participation Account will be converted into Units by dividing the dollar amount of the Dividend Equivalent by the Fair Market Value of the Common Stock on the date the Dividend Equivalent is accrued.

Section 6.06. Change in the Common Stock. In the event of any stock

dividend, stock split, recapitalization, distribution of property, merger, split-

up, spin-off, or other change affecting or distribution with respect to the Common Stock of the Company (other than cash dividends), the Units in each Account will be adjusted in the same manner and proportion as the change to the Common Stock.



ARTICLE 7  
Distributions  
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Section 7.01. In General.  
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(a) All distributions of Equity Participation Accounts to Participants will be made in cash.

(b) The Equity Participation Account of each Retired Outside Director will be paid in a number of annual installments equal to the number of full Years of Service for which benefits have been accrued (not to exceed ten), subject to (d).

(c) Payments will commence on the 20th business day following the Conversion Date for such Equity Participation Account, and then on each anniversary of the Conversion Date.

(d) All payments will cease no later than:

(1) upon the death of the Surviving Spouse, or

(2) if there is no Surviving Spouse, upon the death of the Participant.

Section 7.02. Amount of Installments. Each installment will be in an amount equal to the total dollar value of the Equity Participation Account as of the Conversion Date or the applicable anniversary date of the Conversion

Date to which the payment relates divided by the number of installments remaining to be paid.

Section 7.03. Conversion of Units into Dollars. The total dollar value

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of the Equity Participation Account will be determined by multiplying the number of Units then in the account by the Fair Market Value of the Common Stock on the Conversion Date or any applicable anniversary. The number of Units in the account will be reduced by the Unit equivalent of each payment.

Section 7.04. T-Bond Election: If a Participant makes an election

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under this section, the amount of each payment will be determined under this section rather than under Section 7.03. The timing and number of payments will still be determined under Section 7.01.

(a) Account Balance: If a Participant makes an election under this

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section, his or her Equity Participation Account will be converted to a deemed principal amount at the Conversion Date which will earn deemed interest on the remaining balance. The Account will be increased for deemed interest and reduced for payments made. The Account will no longer be based on the value of the Common Stock.

(b) Initial Principal Amount: The initial principal amount for any

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Participant will be determined on the Conversion Date by multiplying the

number of Units in the Participant's Equity Participation Account by the Fair Market Value of the Common Stock on the Conversion Date.

(c) Initial Payment: The initial payment will be equal to the Initial

Principal Amount divided by the total number of installments to be paid.

(d) Later Payments: Each annual installment after the Initial Payment

will be equal to the remaining Account balance at the applicable anniversary of the Conversion Date divided by the number of remaining installments.

(e) Interest Credits: Interest will be credited on the amount

remaining after the Initial Payment and future account balances at the rate specified in (f), compounded daily.

(f) T-Bond Rate: The interest rate will be equal to the average

interest rate on 10-year U.S. Treasury bonds for the 52 weeks ending immediately prior to the applicable anniversary of the Conversion Date.

(g) Elections: An election under this subsection may be made only by

delivering a written election of this T-Bond option to the Secretary of Northrop Grumman Corporation (or its successor), on a form specified by the Secretary:

(1) no later than March 1, 1998, in the case of Participants who were Outside Directors as of February 18, 1998, or

(2) no later than 30 days after becoming an Outside Director with respect to Participants who become Outside Directors after March 1, 1998. After the relevant date in (1) or (2), an election (or failure to make an election) under this Section will become irrevocable.

Section 7.05. Payment to a Trust. The Participant may elect that

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payments under this Article be made to a trust. Any payments due will be made to the trust as long as the election by the Participant remains in effect.

ARTICLE 8

Miscellaneous Provisions  
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Section 8.01. Amendment And Termination. The Board may at any time,  
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or from time to time, amend or terminate the Plan.

(a) No such amendment or termination may reduce Plan benefits which accrued prior to the amendment or termination without the prior written consent of each person entitled to receive benefits under the Plan who is adversely affected by such action.

(b) The amendment and termination power of this Section is also subject to the provisions of Section A.06.

Section 8.02. Plan Unfunded. The Plan is unfunded. Benefits under the  
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Plan represent only a general contractual conditional obligation of the Company to pay in accordance with the provisions of the Plan.

Section 8.03. No Assignments. All payments under the Plan will be made  
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only to the Participant, to his or her Surviving Spouse, or to any trust designated by the Participant under Section 7.05. The right to receive payments under the Plan may not otherwise be assigned or transferred by, and is not subject to the claims of creditors of, any Participant or his or her Surviving Spouse.

Section 8.04. No Double Payment. This Section applies if, despite the  
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prior Section, with respect to any Participant (or his or her Surviving Spouse),  
the Company is required to make payments under this Plan to a person or entity  
other than the proper payees described in the Plan. In such a case, any amounts  
due the Participant (or his or her Surviving Spouse) under this Plan will be  
reduced by the actuarial value of the payments required to be made to such other  
person or entity.

(a) Actuarial value will be determined using the following actuarial  
assumptions:  
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(b) In dividing a Participant's benefit between the Participant and  
another person or entity, consistent actuarial assumptions and methodologies  
will be used so that there is no increased cost to the Company on an actuarial  
basis.

Section 8.05. No Other Rights. Neither the establishment of the Plan,  
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nor any action taken under it, will in any way obligate the Company to nominate  
an Outside Director for re-election or continue to retain an Outside Director on  
the Board or confer upon any Outside Director any other rights with respect to  
the Company.

Section 8.06. Successors of the Company. The Plan will be binding upon  
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any successor to the Company, whether by merger, acquisition, consolidation or  
otherwise.

Section 8.07. Law Governing. The Plan will be governed by the laws  
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of the State of California.

Section 8.08. Actions By Company. Any powers exercisable by the  
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Company under the Plan will be utilized by written resolution adopted by the  
Board or its delegate. The Board may by written resolution delegate any of the  
Company's powers under the Plan and any such delegations may provide for  
subdelegations, also by written resolution.

Section 8.09. Plan Representatives. Those authorized to act as Plan  
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representatives will be designated in writing by the Board or its delegate.

APPENDIX A

Change In Control Benefits

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Section A.01. In General. This Appendix provides for accelerated vesting of benefits in the event of a Change of Control.

Section A.02. Change In Control. Except as provided in Sections A.03 and A.04, a Change in Control occurs under any of the following circumstances:

(a) Any "person" as such term is used in Sections 13(d)(3) and 14(d)(2) of the Securities Exchange Act of 1934, as amended ("Exchange Act") or any successor provisions, other than a trustee or other fiduciary holding securities under any other employee benefit plan of the Company or an Affiliate, becomes the "beneficial owner" (as defined in Rule 13d-3 under the Exchange Act or any successor provisions), directly or indirectly, of securities of the Company representing fifteen percent (15%) or more of the combined voting power of the Company's then outstanding securities (unless the event causing the fifteen percent (15%) threshold to be crossed is an acquisition of securities directly from the Company).

(b) During any period of two consecutive years, "Continuing Directors", as described in (2), cease for any reason to constitute at least a majority of the Board.



(1) The period of two consecutive years does not include any period prior to the adoption of this Plan on March 19, 1997.

(2) The term "Continuing Directors", for purposes of this Appendix, means:

(A) individuals who at the beginning of the two-consecutive-year period constitute the Board, and

(B) any new director whose nomination by the Board or election by the Company's shareholders was approved by a vote of at least two-thirds of the directors then still in office who either were directors at the beginning of the two-consecutive-year period or whose election or nomination for election was previously so approved. This clause (B) does not include a director designated by a person who has entered into an agreement with the Company to effect a transaction described in (a) or (c) of this Section.

(c) The shareholders of the Company approve a merger or consolidation of the Company with any other corporation, but only if the transaction closes or is otherwise effectuated. This subsection (c) does not cover a merger or consolidation which would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into

voting securities of the surviving entity) at least 80% of the combined voting power of the voting securities of the Company or such surviving entity outstanding immediately after such merger or consolidation.

(d) The shareholders of the Company approve a plan of complete liquidation of the Company or an agreement for the sale or disposition of the Company or all or substantially all of the Company's assets, but only if the transaction closes or is otherwise effectuated.

Section A.03. Override by Board. Transactions described in the  
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previous Section do not constitute Changes in Control if, immediately prior to the change in ownership, merger, consolidation, sale or other disposition, liquidation or change in the Board, the Board shall pass a resolution approved by a vote of the majority of the Continuing Directors to the effect that it has determined that such transaction does not constitute a Change in Control within the intention of this definition. In addition, if a Change in Control has occurred, no subsequent event shall result in another Change in Control.

Section A.04. February, 1998 Vote. No Change in Control will be deemed  
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to have occurred by virtue of the vote of shareholders on February 26, 1998 to merge with Lockheed Martin Corporation unless and until that merger closes.

Section A.05. Vesting at Change in Control. Any Participant serving as

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an Outside Director at the time of a Change in Control will immediately become entitled to Change in Control benefits under Section 5.03. Actual payment of benefits will not commence until termination of his or her service in accordance with Section 7.01.

Section A.06. Limitation on Amendment Authority. The Plan may not be

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amended, terminated, or otherwise modified or interpreted to eliminate, reduce or defer Change in Control benefits with respect to the circumstances described in Section A.02(c) or (d), between the date of the shareholder vote and the closing or other effectuation of the transaction. This Section is not intended to reduce the Board's authority under Section A.03.



NORTHROP GRUMMAN CORPORATION  
CHANGE-IN-CONTROL  
SEVERANCE PLAN

(Composite Plan document reflecting the First and Second Amendments to the Plan,  
and the amendments adopted by the Compensation and Management  
Development Committee on November 18, 1998)

NORTHROP GRUMMAN CORPORATION  
CHANGE-IN-CONTROL SEVERANCE PLAN

(Composite Plan document reflecting the First and Second Amendments to the Plan,  
and the amendments adopted by the Compensation and Management  
Development Committee on November 18, 1998)

Article 1. Establishment, Term, and Purpose

.1. Establishment of the Plan. Northrop Grumman Corporation (hereinafter referred to as the "Company") hereby establishes a change in control severance plan to be known as the "Northrop Grumman Corporation Change-in-Control Severance Plan" (the "Plan"). The Plan shall become effective August 1, 1996 (the "Effective Date").

.2. Term of the Plan. This Plan will commence on the Effective Date and shall continue in effect for three (3) full calendar years. However, at the end of such three (3) year period and, if extended, at the end of each additional year thereafter, the term of this Plan shall be extended automatically for one (1) additional year, unless the Committee delivers written notice six (6) months prior to the end of such term, or extended term, to each Participant, that the Plan will not be extended in such case, the Plan will terminate at the end of the term then in progress. [Notwithstanding the foregoing provisions of this paragraph, but subject to the following paragraph of this Article 1.2, the term of this Plan shall expire on February 29, 2000.]\*

However, in the event a Change in Control occurs during the original or any extended term, this Plan will remain in effect for the longer of: (i) twenty-four (24) months beyond the month in which such Change in Control occurred; or (ii) until all obligations of the Company hereunder have been fulfilled, and until all benefits required hereunder have been paid to Participants.

.3. Purpose of the Plan. The purpose of the Plan is to provide certain key employees of the Company employment protection and financial security in the event of a Change in Control of the Company.

Article 2. Definitions

Whenever used in this Plan, the following terms shall have the meanings set forth below and, when the meaning is intended, the initial letter of the word is capitalized:

- (a) "Base Salary" means the salary of record paid to a Participant as annual salary (whether or not deferred), but excludes amounts received under incentive or other bonus plans.
- (b) "Beneficial Owner" shall have the meaning ascribed to such term in Rule 13d-3 of the General Rules and Regulations under the Exchange Act.
- (c) "Beneficiary" means the persons or entities designated or deemed designated by a Participant pursuant to Section 10.2 herein.
- (d) "Board" means the Board of Directors of the Company.
- (e) "Cause" shall mean the occurrence of either or both of the following:

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\* This bracketed sentence applies only to persons who become Participants on or after November 18, 1998.

- (i) The Participant's conviction for committing an act of fraud, embezzlement, theft, or other act constituting a felony; or
  - (ii) The willful engaging by the Participant in gross misconduct materially and demonstrably injurious to the Company. However, no act or failure to act, on the Participant's part shall be considered "willful" unless done, or omitted to be done, by the Participant not in good faith and without reasonable belief that his action or omission was in the best interest of the Company.
- (f) "Change in Control" of the Company shall be deemed to have occurred as of the first day that any one or more of the following conditions shall have been satisfied:
- (i) Any Person (other than those Persons in control of the Company as of the Effective Date, or other than a trustee or other fiduciary holding securities under an employee benefit plan of the Company), becomes the Beneficial Owner, directly or indirectly, of securities of the Company representing fifteen percent (15%) or more of the combined voting power of the Company's then outstanding securities and for purposes of this subsection (i) "Person" or "group" shall not include underwriters acquiring newly issued voting securities (or securities convertible into voting securities) directly from the Company with a view towards distribution; or
  - (ii) During any period of two (2) consecutive years (not including any period prior to the execution of this Agreement), individuals who at the beginning of such period constitute the Board (and any new Director, whose election by the Company's stockholders was approved by a vote of at least two-thirds (2/3) of the Directors then still in office who either were Directors at the beginning of the period or whose election or nomination for election was so approved), cease for any reason to constitute a majority thereof; or
  - (iii) The stockholders of the Company approve: (A) a plan of complete liquidation of the Company; or (B) an agreement for the sale or disposition of all or substantially all the Company's assets in one or a series of related transactions; or (C) a merger, consolidation, or reorganization of the Company with or involving any other corporation, other than a merger, consolidation, or reorganization that would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity) more than seventy-five percent (75%) of the combined voting power of the voting securities of the Company (or such surviving entity) outstanding immediately after such merger, consolidation, or reorganization.
- [(iii) The Company is liquidated; all or substantially all of the Company's assets are sold in one or a series of related transactions; or the Company is merged, consolidated, or reorganized with or involving any other corporation, other than a merger, consolidation, or reorganization that results in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity) more than seventy-five percent (75%) of the combined voting power of the voting securities of the Company (or such

surviving entity) outstanding immediately after such merger, consolidation, or reorganization.]\*\*

- (g) "Code" means the United States Internal Revenue Code of 1986, as amended.
- (h) "Committee" means the Compensation and Management Development Committee of the Board, or any other committee appointed by the Board to perform the functions of the Compensation and Management Development Committee.
- (i) "Company" means Northrop Grumman Corporation, a Delaware corporation (including any subsidiaries specified by the Committee), or any successor thereto as provided in Article 10 herein.
- (j) "Disability" shall mean, for all purposes of this Plan, the incapacity of a Participant, due to injury, illness, disease, or bodily or mental infirmity, to engage in the performance of substantially all of the usual duties of employment with the Company, such Disability to be determined by the Committee upon receipt and in reliance on competent medical advice from one (1) or more individuals, selected by the Committee, who are qualified to give such professional medical advice.
- (k) "Effective Date" means the date of this Plan set forth above.
- (l) "Effective Date of Termination" means the date on which a Qualifying Termination occurs.
- (m) "Exchange Act" means the United States Securities Exchange Act of 1934, as amended.
- (n) "Good Reason" shall mean without the Participant's express written consent, the occurrence of any one or more of the following:
  - (i) The assignment of the Participant to duties materially inconsistent with the Participant's authorities, duties, responsibilities, and status (including titles and reporting requirements) as an employee of the Company, or a material reduction or alteration in the nature or status of the Participant's authorities, duties, or responsibilities from their highest level during the ninety (90) days prior to the Change in Control, other than an insubstantial and inadvertent act that is remedied by the Company promptly after receipt of notice thereof given by the Participant;
  - (ii) A reduction by the Company in the Participant's Base Salary as in effect on the Effective Date or as the same shall be increased from time to time;
  - (iii) A material reduction in the Participant's level of participation in any of the Company's short and/or long-term incentive compensation plans, employee benefit or retirement plans, or policies, practices, or arrangements in which the Participant participates as of the Effective Date; provided, however, that reductions in the levels of participation in any such plan, policy, practice or arrangement shall not be deemed to be "Good Reason" if the Participant's reduced level of participation in each such plan, policy, practice or arrangement remains

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\*\* The provisions of this bracketed clause (iii) apply (in lieu of the unbracketed text of clause (iii) under Article 2(f)) to persons who become Participants on or after November 18, 1998.

substantially consistent with the average level of participation of other employees who have positions commensurate with the Participant's position; or

(iv) The failure of the Company to obtain a satisfactory agreement from any successor to the Company to assume and agree to perform this Plan, as contemplated in Article 11 herein.

(o) "Participant" means an employee of the Company who fulfills the eligibility and participation requirements, as provided in Article 3 herein.

(p) "Person" shall have the meaning ascribed to such term in Section 3(a)(9) of the Exchange Act and used in Sections 13(d) and 14(d) thereof, including a "group" as defined in Section 13(d).

(q) "Plan" means this Change-in-Control Severance Plan.

(r) "Qualifying Termination" means any of the events described in Section 4.3 herein.

(s) "Severance Benefits" means the payment of severance compensation as provided in Section 4.4 herein.

### Article 3. Participation

.1. Eligible Employees. Individuals eligible to participate in the Plan shall include such employees of the Company as may be determined by the Committee in its sole discretion.

.2. Participation. Subject to the terms of the Plan, the Committee may, from time to time select from all eligible employees those who shall participate in the Plan.

### Article 4. Severance Benefits

.1. Right to Severance Benefits. A Participant shall be entitled to receive from the Company Severance Benefits, as described in Section 4.4 herein, if there has been a Change in Control of the Company and if, within the six (6) full calendar month period prior to the effective date of a Change in Control, or within twenty-four (24) calendar months following the effective date of a Change in Control, the Participant's employment with the Company shall end for any reason specified in Section 4.3 herein.

Participants shall not be entitled to receive Severance Benefits if they are terminated for Cause, or if their employment with the Company ends due to death or Disability, or due to a voluntary termination of employment by the Participant without Good Reason.

.2. Services During Certain Events. In the event a Person begins a tender or exchange offer, circulates a proxy to shareholders of the Company, or takes other steps seeking to effect a Change in Control, each Participant agrees that he or she will not voluntarily leave the employ of the Company and will render service until such Person has abandoned or terminated his or its efforts to effect a Change in Control, or until six (6) months after a Change in Control has occurred; provided, however, that the Company may terminate the Participant's employment for Cause at any time, and the Participant may terminate his or her employment any time after the Change in Control for Good Reason.

.3. Qualifying Termination. The occurrence of any one or more of the following events within the six (6) full calendar month period prior to the effective date of a Change in Control, or within



twenty-four (24) calendar months following the effective date of Change in Control of the Company shall trigger the payment of Severance Benefits to a Participant under this Plan:

- (a) An involuntary termination of the Participant's employment by the Company for reasons other than Cause, or a voluntary termination by the Participant for Good Reason;
- (b) A successor company fails or refuses to assume the Company's obligations under this Plan, as required by Article 11 herein; or
- (c) The Company or any successor company breaches any of the provisions of this Plan.

.4. Description of Severance Benefits. In the event that a Participant becomes entitled to receive Severance Benefits, as provided in Sections 4.1 and 4.3 herein, the Company shall pay to the Participant and provide him or her with the following:

- (a) An amount equal to two (2) times the highest rate of the Participant's annualized Base Salary rate in effect at any time up to and including the Effective Date of Termination;
- (b) An amount equal to two (2) times the greater of: (i) the Participant's average annual bonus earned over the three (3) full fiscal years prior to the Effective Date of Termination; or (ii) the Participant's target annual bonus established for the bonus plan year in which the Participant's Effective Date of Termination occurs;
- (c) An amount equal to the Participant's unpaid Base Salary and accrued vacation pay through the Effective Date of Termination;
- (d) An amount equal to the Participant's unpaid targeted annual bonus, established for the plan year in which the Participant's Effective Date of Termination occurs, multiplied by a fraction, the numerator of which is the number of days completed in the then-existing fiscal year through the Effective Date of Termination, and the denominator of which is three hundred sixty-five (365);
- (e) A continuation of the welfare benefits of medical insurance, dental insurance, group term life insurance and participation in any disability plan for two (2) full years after the Effective Date of Termination. These benefits shall be provided to Participants at the same premium cost, and at the same coverage level, as in effect as of the Participant's Effective Date of Termination. However, in the event the premium cost and/or level of coverage shall change for all employees of the Company, the cost and/or coverage level, likewise, shall change for each Participant in a corresponding manner.

The continuation of these welfare benefits shall be discontinued prior to the end of the two (2) year period in the event the Participant has available substantially similar benefits from a subsequent employer, as determined by the Committee;

- (f) Except as provided in Appendix A, a lump-sum cash payment of the actuarial present value equivalent of the aggregate benefits accrued by the Participant as of the Effective Date of Termination under the qualified defined benefit pension plan or plans in which the Participant participates (the "qualified plan"), and under any and all supplemental retirement plans in which the Participant participates. For this purpose, such benefits shall be calculated as if the Participant's employment continued for two full years

following the Effective Date of Termination (i.e., the Participant receives two additional years of vesting and benefit accruals, and his age is also increased two years from his age as of the Effective Date of Termination); provided, however, that for purposes of determining "Final Average Pay" under such plans, the Participant's actual pay history as of the Effective Date of Termination shall be used; and in addition, there shall be offset from the lump sum payment the actuarial present value equivalent of benefits payable to the Participant from the qualified plan as actually accrued by the Participant through the Effective Date of Termination (or such other date as determined under the terms of the qualified plan); the intent of this provision being that the qualified plan benefits will be paid in the normal course under the terms of the qualified plan, with additional benefits payable as a result of the imputation of age and service under this provision being paid from this Plan; and such additional two years of age and service to count towards eligibility under one or more of the Company retiree medical programs for which the Participant would have been eligible absent any such termination; and

- (g) A lump-sum cash payment of the entire balance of the Participant's compensation which has been deferred under the Company's nonqualified deferred compensation plan(s) together with all interest that has been credited with respect to such deferred compensation balance.

.5. Termination for Total and Permanent Disability. Following a Change in Control of the Company, if a Participant's employment is terminated due to Disability, the Participant shall receive his or her Base Salary through the Effective Date of Termination at which point in time the Participant's benefits shall be determined in accordance with the Company's disability, retirement, insurance, and other applicable plans and programs then in effect, provided, however, that if immediately prior to the condition or event leading to, or the commencement of, the Disability of the Participant, the Participant would have been entitled to invoke any of the subsections of Section 4.3 of this Plan if he had terminated at that time, then upon termination of his employment for Disability he shall be entitled to collect immediately his full Severance Benefits hereunder.

.6. Termination for Death. Following a Change in Control of the Company, if a Participant's employment is terminated by reason of his or her retirement or death, the Participant's benefits shall be determined in accordance with the Company's survivor's benefits, insurance, and other applicable programs of the Company then in effect.

.7. Termination for Cause or by a Participant Other Than for Good Reason or Retirement. Following a Change in Control of the Company, if a Participant's employment is terminated either: (i) by the Company for Cause; or (ii) by the Participant (other than for retirement) and other than for Good Reason, the Company shall pay the Participant his or her full Base Salary and accrued vacation through the Effective Date of Termination, at the rate then in effect, plus all other amounts to which the Participant is entitled under any compensation plans of the Company, at the time such payments are due, and the Company shall have no further obligations to the Participant under this Plan.

.8. Notice of Termination. Any termination by the Company for Cause or by a Participant for Good Reason shall be communicated by Notice of Termination. For purposes of this Plan, a "Notice of Termination" shall mean a written notice which shall indicate the specific termination provision in this Plan relied upon, and shall set forth in reasonable detail the facts and circumstances claimed to provide a basis for termination of the Participants employment under the provision so indicated.

#### Article 5. Form and Timing of Severance Benefits

.1. Form and Timing of Severance Benefits. The Severance Benefits described in Section 4.4(a), 4.4(b), 4.4(c), 4.4(d), 4.4(f), and 4.4(g) herein shall be paid in cash to the Participant in a single lump sum as soon as practicable following the Effective Date of Termination, but in no event beyond thirty (30) days from such date.

.2. Withholding of Taxes. The Company shall be entitled to withhold from any amounts payable under this Plan all taxes as legally shall be required (including, without limitation, any United States Federal taxes, and any other state, city, or local taxes).

#### Article 6. Excise Tax Limitation

.1. Determination of Termination Payment Limit.

(a) Notwithstanding anything contained in this Plan to the contrary, to the extent that any payment or distribution of any type to or for a Participant by the Company, any affiliate of the Company, any person who acquires ownership or effective control of the Company or ownership of a substantial portion of the Company's assets (within the meaning of Section 280G of Code and regulations thereunder), or any affiliate of such person, whether paid or payable or distributed or distributable pursuant to the terms of this Plan or otherwise (the "Total Payments") is or will be subject to the excise tax imposed under Section 4999 of the Code (the "Excise Tax"), then the Total Payments shall be reduced (but not below zero) if and to the extent that a reduction in the Total Payments would result in the Participant retaining a larger amount, on an after-tax basis (taking into account federal, state and local income taxes and the Excise Tax), than if the Participant received the entire amount of such Total Payments. Unless the Participant shall have given prior written notice specifying a different order to the Company to effectuate the foregoing, the Company shall reduce or eliminate the Total Payments, by first reducing or eliminating the portion of the Total Payments which are not payable in cash and then by reducing or eliminating cash payments, in each case in reverse order beginning with payments or benefits which are to be paid the farthest in time from the Determination (as hereinafter defined). Any notice given by the Participant pursuant to the preceding sentence shall take precedence over the provisions of any other plan, arrangement or agreement governing the Participant's rights and entitlements to any benefits or compensation.

(b) The determination of whether the Total Payments shall be reduced as provided in Section 6.1(a) and the amount of such reduction shall be made at the Company's expense by an accounting firm selected by the Company from among the six largest accounting firms in the United States (the "Accounting Firm"). The Accounting Firm shall provide its determination (the "Determination"), together with detailed supporting calculations and documentation to the Company and the Participant within ten (10) days of the Effective Date of Termination. If the Accounting Firm determines that no Excise Tax is payable by the Participant with respect to the Total Payments, it shall furnish the Participant with an opinion reasonably acceptable to the Participant that no Excise Tax will be imposed with respect to any such payments and, absent manifest error, such Determination shall be binding, final and conclusive upon the Company and the Participant. If the Accounting Firm determines that an Excise Tax would be payable, the Participant shall have the right to accept the Determination of the Accounting Firm as to the extent of the reduction, if any, pursuant to Section 6.1(a), or to have such Determination reviewed by an accounting firm selected by the Participant, at the expense of the Company, in which case the

determination of such second accounting firm shall be binding, final and conclusive upon the Company and the Participant.

.2. Procedure for Establishing Limitation on Termination Payment. Within sixty (60) days following delivery of the Notice of Termination (as described in Section 4.8 herein) or notice by the Company to the Participant of its belief that there is a payment or benefit due the Participant which will result in an "excess parachute payment" as defined in Section 280G of the Code, the Participant and the Company, at the Company's expense, shall obtain the opinion of such legal counsel, which need not be unqualified, as the Participant may choose, which sets forth: (i) the amount of the Participant's "annualized includible compensation for the base period" (as defined in Code Section 280G(d)(1)); (ii) the present value of the Total Payments; and (iii) the amount and present value of any "excess parachute payment." The opinion of such legal counsel shall be supported: by the opinion of a certified public accounting firm and, if necessary, a firm of recognized executive compensation consultants. Such opinion shall be binding upon the Company and the Participant.

In the event that such opinion determines that there would be an "excess parachute payment," the Severance Benefits hereunder or any other payment determined by such counsel to be includible in Total Payments shall be reduced or eliminated as specified by the Participant in writing delivered to the Company within thirty (30) days of his receipt of such opinion, or, if the Participant fails to so notify the Company, then as the Company shall reasonably determine, so that under the basis of calculations set forth in such opinion, there will be no "excess parachute payment."

The provisions of this Section 6.2, including the calculations, notices, and opinion provided for herein shall be based upon the conclusive presumption that: (i) the compensation and benefits provided for in Section 4.4 herein; and (ii) any other compensation earned prior to the Effective Date of Termination by the Participant pursuant to the Company's compensation programs (if such payments would have been made in the future in any event, even though the timing of such payment is triggered by the Change in Control), are reasonable.

.3. Subsequent Recalculation. In the event that the Internal Revenue Service adjusts the computation of the Company under Section 6.2 herein so that the Participant did not receive the greatest net benefit, the Company shall reimburse the Participant for the full amount necessary to make the Participant whole, plus a market rate of interest, as determined by the Committee.

#### Article 7. The Company's Payment Obligation

.1. Payment of Obligations Absolute. The Company's obligation to make the payments and the arrangements provided for herein shall be absolute and unconditional, and shall not be affected by any circumstances, including, without limitation, any offset, counterclaim, recoupment, defense, or other rights which the Company may have against the Participant or anyone else. All amounts payable by the Company hereunder shall be paid without notice or demand. Each and every payment made hereunder by the Company shall be final, and the Company shall not seek to recover all or any part of such payment from the Participant or from whomsoever may be entitled thereto, for any reasons whatsoever, except as provided in Article 8.

Participants shall not be obligated to seek other employment in mitigation of the amounts payable or arrangements made under any provision of the Plan, and the obtaining of any such other employment shall in no event effect any reduction of the Company's obligations to make the payments and arrangements required to be made under this Plan, except to the extent provided in Section 4.4(e) herein.

.2. Contractual Right to Benefits. This Plan establishes and vests in each Participant a contractual right to the benefits to which he or she is entitled hereunder. Company expressly waives any ability, if possible, to deny liability for any breach of its contractual commitment hereunder upon the grounds of lack of consideration, accord and satisfaction or any other defense. In any dispute arising after a Change in Control as to whether the Participant is entitled to benefits under this Agreement, there shall be a presumption that the Participant is entitled to such benefits and the burden of proving otherwise shall be on the Company. However, nothing herein contained shall require or be deemed to require, or prohibit or be deemed to prohibit, the Company to segregate, earmark, or otherwise set aside any funds or other assets, in trust or otherwise, to provide for any payments to be made or required hereunder.

#### Article 8. Resolution of Disputes

.1. Arbitration of Claims. The Company and the Participant hereby consent to the resolution by arbitration of all claims or controversies arising out of or in connection with this Plan, that the Company may have against the Participant, or that the Participant may have against the Company or against its officers, directors, employees or agents acting in their capacity as such. Each party's promise to resolve all such claims or controversies by arbitration rather than through the courts, is consideration for the other party's like promise. It is further agreed that the decision of an arbitrator on any issue, dispute, claim or controversy submitted for arbitration, shall be final and binding upon the Company and the Participant and that judgment may be entered on the award of the arbitrator in any court having proper jurisdiction.

All expenses of such arbitration, including the fees and expenses of the counsel for the Participant, shall be advanced and borne by the Company; provided, however, that if it is finally determined that the Participant did not commence the arbitration in good faith and had no reasonable basis therefore, the Participant shall repay all advanced fees and expenses and shall reimburse the Company for its reasonable legal fees and expenses in connection therewith.

Except as otherwise provided in this procedure or by mutual agreement of the parties, any arbitration shall be administered: (1) in accordance with the then-current Model Employment Arbitration Procedures of the American Arbitration Association ("AAA") before an arbitrator who is licensed to practice law in the state in which the arbitration is convened; or (2) if locally available, the Judicial Arbitration & Mediation Services, Inc. ("JAMS"), in accordance with the JAMS procedures then in effect. The party who did not initiate the claim can designate between JAMS or AAA (the "Tribunal"). The arbitration shall be held in the city in which the Participant is or was last employed by the Company in the nearest Tribunal office or at a mutually agreeable location. Pre-hearing and post-hearing procedures may be held by telephone or in person as the arbitrator deems necessary.

The arbitrator shall be selected as follows: if the parties cannot agree on an arbitrator, the Tribunal (JAMS or AAA) shall then provide the names of nine (9) available arbitrators experienced in business employment matters along with their resumes and fee schedules. Each party may strike all names on the list it deems unacceptable. If more than one common name remains on the list of all parties, the parties shall strike names alternately until only one remains. The party who did not initiate the claim shall strike first. If no common name remains on the lists of the parties, the Tribunal shall furnish an additional list or lists until an arbitrator is selected.

The arbitrator shall interpret the Plan, any applicable Company policy or rules and regulations, any applicable substantive law (and the law of remedies, if applicable) of the state in which the claim arose, or applicable federal law. In reaching his or her decision, the arbitrator shall have no authority to

change or modify any lawful Company policy, rule or regulation or Plan. The arbitrator, and not any federal, state or local court or agency, shall have exclusive and broad authority to resolve any dispute relating to the interpretation, applicability, enforceability or formation of this Plan, including but not limited to, any claim that all or any part of this Plan is avoidable

The arbitrator shall have authority to entertain a motion to dismiss and/or motion for summary judgment by any party and shall apply the standards governing such motions under the Federal Rules of Civil Procedure.

.2. Discovery. Each party shall have the right to take the deposition of one individual and any expert witness(es) designated by another party. Each party shall also have the opportunity to obtain documents from another party through one request for production of documents. Additional discovery may be had only when the arbitrator so orders upon a showing of substantial need. Any disputes regarding depositions, requests for production of documents or other discovery shall be submitted to the arbitrator for determination.

.3. Subpoenas. Each party shall have the right to subpoena witnesses and documents for the arbitration hearing by requesting a subpoena from the arbitrator. Any such request shall be served on all other parties, who shall advise the arbitrator in writing of any objections that the party may have to issuance of the subpoena within ten (10) calendar days of receipt of the request.

.4. Designation of Witnesses. At least thirty (30) calendar days before the arbitration, the parties must exchange lists of witnesses, including any expert(s), and copies of all exhibits intended to be used at the arbitration.

#### Article 9. Outplacement Assistance

Following a Qualifying Termination (as described in Section 4.3 herein) the Participant shall be reimbursed by the Company for the costs of all outplacement services obtained by the Participant within the two (2) year period after the Effective Date of Termination; provided, however, that the total reimbursement shall be limited to an amount equal to fifteen percent (15%) of the Participant's Base Salary as of the effective date of termination.

#### Article 10. Successors and Assignment

.1. Successors to the Company. The Company will require any successor (whether direct or indirect, by purchase, merger, consolidation, or otherwise) of all or substantially all of the business and/or assets of the Company or of any division or subsidiary thereof (the business and/or assets of such division or subsidiary which constitute at least fifty percent (50%) of the total business and/or assets of the Company) to expressly assume and agree to perform the Company's obligations under this Plan in the same manner and to the same extent that the Company would be required to perform them if such succession had not taken place. Failure of the Company to obtain such assumption and agreement prior to the effective date of any such succession shall be a breach of this Plan and shall entitle Participants to compensation from the Company in the same amount and on the same terms as they would be entitled to hereunder if they had terminated their employment with the Company voluntarily for Good Reason. Except for the purpose of implementing the foregoing, the date on which any such succession becomes effective shall be deemed the Effective Date of Termination.

.2. Assignment by the Participant. This Plan shall inure to the benefit of and be enforceable by each Participant's personal or legal representatives, executors, administrators, successors, heirs,

distributees, devisees, and legatees. If a Participant dies while any amount would still be payable to him or her hereunder had he or she continued to live, all such amounts, unless otherwise provided herein, shall be paid to the Participant's Beneficiary in accordance with the terms of this Plan. If the Participant has not named a Beneficiary, then such amounts shall be paid to the Participant's devisee, legatee, or other designee, or if there is no such designee, to the Participant's estate.

#### Article 11. Miscellaneous

.1. Employment Status. Except as may be provided under any other agreement between a Participant and the Company, the employment of the Participant by the Company is "at will," and, prior to the effective date of a Change in Control, may be terminated by either the Participant or the Company at any time, subject to applicable law.

.2. Beneficiaries. Each Participant may designate one or more persons or entities as the primary and/or contingent Beneficiaries of any Severance Benefits owing to the Participant under this Plan. Such designation must be in the form of a signed writing. Participants may make or change such designation at any time.

.3. Gender and Number. Except where otherwise indicated by the context, any masculine term used herein also shall include the feminine; the plural shall include the singular, and the singular shall include the plural.

.4. Severability. In the event any provision of this Plan shall be held illegal or invalid for any reason, the illegality or invalidity shall not affect the remaining parts of the Plan, and the Plan shall be construed and enforced as if the illegal or invalid provision had not been included. Further, the captions of this Plan are not part of the provisions hereof and shall have no force and effect.

.5. Modification. No provision of this Plan may be modified, waived, or discharged unless as to a Participant such modification, waiver, or discharge is agreed to in writing and signed by each affected Participant and by an authorized member of the Committee or its designee, or by the respective parties' legal representatives and successors.

.6. Notice. For purposes of this Plan, notices, including Notice of Termination for Good Reason and all other communications provided for in this Agreement shall be in writing and shall be deemed to have been duly given when delivered or on the date stamped as received by the U.S. Postal Service for delivery by certified or registered mail, postage prepaid and addressed: (i) if to Participant, to his latest address as reflected on the records of the Company, and (ii) if to the Company: Northrop Grumman Corporation, 1840 Century Park East, Los Angeles, California 90067, Attn: President, or to such other address as the Company may furnish to Participant in writing with specific reference to this Agreement and the importance of the notice, except that notice of change of address shall be effective only upon receipt.

.7. Applicable Law. To the extent not preempted by the laws of the United States, the laws of the state of California shall be the controlling law in all matters relating to this Plan.

APPENDIX A

Manner of Payment of Benefits

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1. Rescission of Lump Sum Payout: Section 4.4(f) of this Plan contains a

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provision for a lump sum cash payout of the actuarial present value equivalent of the aggregate benefits accrued by Participants under supplemental nonqualified retirement plans. For Participants listed in paragraph 4 below, that lump sum override of the form of payment provisions of other plans is rescinded. Accordingly, the form of payment of benefits under those plans will be determined in accordance with the provisions of those plans.

2. 2+2 Benefits: The rescission in paragraph 1 is not meant to have any

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effect on the lump sum payout provision in Section 4.4(f) with respect to the 2+2 benefits (i.e., the imputed two additional years of vesting and benefit accruals and two years of age).

3. Coordination of Benefits: If the payout provisions in other

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supplemental nonqualified retirement plans made operative by the rescission in paragraph 1 contain reduction in benefit provisions (such as forfeitures or penalties attached to a lump sum election), the reduced amounts will not be restored by this Plan.

4. Participants Affected:

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[List of names not made a part of this composite document.]





## NORTHROP GRUMMAN CORPORATION SUBSIDIARIES

Address for subsidiaries (unless otherwise noted) is:

c/o Northrop Grumman Corporation  
Office of the Corporate Secretary  
1840 Century Park East  
Los Angeles, CA 90067

- . Allied Holdings, Inc.
  - . Allied Transportation Products, Inc.
  - . Grumman Credit Corporation
- . DSSD International, Inc.
- . Grumman Sensor Systems, Inc.
- . Grumman Systems Support Corporation
- . Grumman International, Inc.
- . Grumman Ohio Corporation
- . Iran-Northrop Grumman Programs Service Company
- . Logicon, Inc.
  - . Inter-National Research, Inc.
    - . INRI, UK
  - . Logicon Eagle Technology, Inc.
  - . Logicon Ultrasystems, Inc.
  - . Logicon Technical Services, Inc.
  - . Logicon Geodynamics, Inc.
    - . Geodynamics Services Corp.
  - . Logicon Syscon, Inc.
    - . Logicon Syscon Services, Inc.
  - . Syscon B.V.I.\*
  - . Logicon Canada Limited\*
- . MOCIT, Inc.
- . Northrop Grumman Aviation, Inc.
- . Northrop Grumman Commercial Aircraft Company
- . Northrop Grumman Electronic Sensors and Systems International, Inc.
  - . WESCAN Europe Ltd. (Ireland)\*
    - 3 Burlington Road,
    - Dublin 4, Ireland
- . Northrop Grumman Electronic Systems International Company
- . Northrop Grumman Electronics Systems Integration International, Inc.
  - Senator House
  - 85 Queen Victoria Street
  - London EC4V 4IL
  - . Northrop Grumman Electronic Systems Integration Limited\*

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- . Northrop Grumman Field Support Services, Inc.
- . Northrop Grumman Foreign Sales Corporation (Barbados)\*
  - c/o Chase Trade, Inc.
  - Stevmar House, Suite 2
  - Rockley, Christ Church, Barbados
- . Northrop Grumman International, Inc.
  - . Northrop Grumman (Singapore) Private Limited (Singapore)\*
    - 250 North Bridge Road #15-04
    - Raffles City Tower
    - Singapore 179101
- . Northrop Grumman International Services Company, Inc.
- . Northrop Grumman Norden Systems, Inc.
- . Northrop Grumman Overseas Holdings, Inc.
  - . Northrop Grumman-Canada, LTD. (Canada)\*
    - c/o Gowling, Strathy & Henderson
    - 120 King Street West
    - Suite 600
    - Hamilton, Ontario
    - L8P 4V2
  - . Northrop Grumman Electronicos, Inc.
  - . Northrop Grumman Overseas Holdings (UK), Ltd.\*
    - c/o Baker & McKenzie
    - 100 New Bridge Street
    - London EC4V 6JA
    - United Kingdom
      - . Park Air Electronics Ltd. (UK)\*
        - Northfields
        - Market Deeping
        - Peterborough,
        - PE6 8LG, England
- . Northrop Grumman Overseas Service Corporation
- . Northrop Grumman Space Operations, LP
- . Northrop Grumman Tactical Systems LLC
- . Northrop Grumman Technical Services Corporation
- . Northrop Grumman Technical Services, Inc.
- . Northrop International Aircraft, Inc.
- . Perceptics Corporation

2 OF 3

- . Remotec, Inc. (96% owned)
- . VAC Industries, Inc.
- . Xetron Corporation

\* Foreign Subsidiaries

POWER OF ATTORNEY IN CONNECTION WITH THE

1998 ANNUAL REPORT ON FORM 10-K

KNOW ALL MEN BY THESE PRESENTS, that each of the undersigned directors and officers of NORTHROP GRUMMAN CORPORATION, a Delaware corporation, does hereby appoint RICHARD R. MOLLEUR and JOHN H. MULLAN, and each of them as his agents and attorneys-in-fact (the "Agents"), in his or her respective name and in the capacity or capacities indicated below to execute and/or file the Annual Report on Form 10-K for the fiscal year ended December 31, 1998 (the "Report") under the Securities Exchange Act of 1934, as amended (the "Act"), and any one or more amendments to any part of the Report that may be required to be filed under the Act (including the financial statements, schedules and all exhibits and other documents filed therewith or constituting a part thereof) and to any part or all of any amendment(s) to the Report, whether executed and filed by the undersigned or by any of the Agents. Further, each of the undersigned does hereby authorize and direct the Agents to take any and all actions and execute and file any and all documents with the Securities and Exchange Commission (the "Commission"), which they deem necessary or advisable to comply with the Act and the rules and regulations or orders of the Commission adopted or issued pursuant thereto, to the end that the Report shall be properly filed under the Act. Finally, each of the undersigned does hereby ratify each and every act and documents which the Agents may take, execute or file pursuant thereto with the same force and effect as though such action had been taken or such document had been executed or filed by the undersigned, respectively.

This Power of Attorney shall remain in full force and effect until revoked or superseded by written notice filed with the Commission.

IN WITNESS THEREOF, each of the undersigned has subscribed these presents this  
17th day of March, 1999.

_____	Chairman of the Board, President and Chief Executive Officer and Director (Principal Executive Officer)
Kent Kresa	
_____	Director
Jack R. Borsting	
_____	Director
John T. Chain, Jr.	
_____	Director
Jack Edwards	
_____	Director
Phillip Frost	
_____	Director
Robert A. Lutz	
_____	Director
Aulana L. Peters	
_____	Director
John E. Robson	
_____	Director
Richard M. Rosenberg	
_____	Director
John Brooks Slaughter	
_____	Director
Richard J. Stegemeier	
_____	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)
Richard B. Waugh, Jr.	
_____	Corporate Vice President and Controller (Principal Accounting Officer)
Nelson F. Gibbs	

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	3,033	
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		8,146
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		118
194		0
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		0
		194
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