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EPP  
- up + down

**digital**

June 5, 1992

Mr. Russ Gullotti  
DIGITAL EQUIPMENT CORPORATION  
Continental Boulevard  
M/S MK02-2/C12  
Merrimack, NH 03054-0430

Dear Russ,

Please accept our thanks and appreciation for your participation in the Boeing/Digital Corporate Customer Visit scheduled for June 16-17, 1992

We developed the enclosed Briefing Book to help you prepare for your role in this important Customer Meeting. The attachment will provide you with an Overview of the Visit Objectives, Biographies of the visiting Boeing Executives, the planned Agenda and a Boeing Annual Report.

The Boeing Business Group Management Team will be calling your Secretary to see if you would require a tutorial prior to your participating, if we do not have one currently scheduled.

Thank you for your willingness to support us in our efforts in the Boeing Account. We look forward to an outstanding Corporate Visit.

Regards,

  
Bob Tassone  
Boeing Account Group Manager

Enclosure

BT:dmk

SECTION I

**THE BOEING COMPANY**  
**CORPORATE VISIT**

**RUSS GULLOTTI**  
**BRIEFING PACKAGE**

*Sponsored by:*

Digital Equipment Corporation  
Boeing Business Group  
500 NE 108th  
Bellevue, WA 98004

June 15-17, 1992

# **BOEING CORPORATE VISIT**

## **RUSS GULLOTTI BRIEFING PACKAGE**

### **TABLE OF CONTENTS**

- I. OVERVIEW OF VISIT**
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COMPUTING ISSUES**
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- VIII. BOEING ANNUAL REPORT**

**OVERVIEW**  
**BOEING COMMERCIAL AIRPLANES**  
**BOEING COMPUTER SERVICES**  
**CORPORATE VISIT**  
**June 15-17, 1992**

Digital Equipment Corporation is delighted to have Boeing Commercial Airplanes and Boeing Computer Services join us in a visit to our Corporate Headquarters in Maynard, Massachusetts. Digital goals for this corporate visit are to:

- Provide an environment of exchange and rapport between key Boeing and Digital Executives on Digital's Corporate directions in the Computer Products and Services Industry
- Focus discussion on how Boeing and Digital can better partner to achieve mutual goals, especially in the area of applying technology to manufacturing processes (simulation, modeling, etc.)
- Share information on Digital's current and future technologies, computer products and services, and Corporate Strategy for the 90's, specifically in the area of Open Systems Computing.
- Further confirm of Digital's strength and credibility as a total Systems Provider and Systems Integrator
- Reaffirm Digital's commitment to Boeing's success via the Boeing Business Group
- Provide an additional level of understanding and appreciation of Digital by increased awareness of our Corporate resources and direction

We look forward to an exceptional Customer Visit, and we appreciate your participation.

SECTION II

Date +  
Times  
for I +  
II

# **BOEING CORPORATE CUSTOMER VISIT RUSS GULLOTTI ROLE**

Your role will consist of 2 primary areas:

## **I. INTRODUCTION**

Welcome Boeing to visit and introduction;  
Executive Host for this Corporate Visit

## **II. DIGITAL CORPORATE DIRECTIONS**

Respond to Boeing's Statement of Objective - at a high level position Digital's directions and relate to Boeing's vision; discuss state of the company and how industry trends and activities are affecting decisions at Digital; position Digital Services' ability to help Boeing achieve their business and computing goals.

For each of these two areas, the following pages outline some recommended topics and issues to address as part of your session.



# SPEAKER BRIEFING

## INTRODUCTION SESSION - GULLOTTI

### TOPICS TO BE DISCUSSED:

Gullotti Introduction/Digital Services Overview  
Digital commitment to Boeing; importance of Boeing business  
Digital's Commitment to Open Systems and standards  
BBG Organization  
Executive Partner Overview

### KEY ISSUES AT BOEING:

Supportability of systems  
Cost of Computing  
Implementing Distributed Open Systems with control  
Migration to standards  
Improving Manufacturing processes

### KEY POINTS TO MAKE:

Commitment to standards; importance of open, international standards participation  
Commitment to Unix; our development and products for Open Systems  
How Digital Services can provide integration services to lower computing costs - through implementing technological innovation, outsourcing, through process improvement consulting, etc. *While consulting services, per se, are not of specific interest for this visit, we can position our services as adding value by providing ways to reduce computing support costs.*  
Our ability to provide complimentary solutions to IBM; our ability to integrate with IBM systems  
Standards support for even "proprietary" systems (e.g., VMS support for POSIX)

### KEY THINGS TO NOT SAY/EMPHASIZE:

Do not position Digital products to replace IBM products  
Do not be a VAX/VMS Bigot; this customer is specifying Unix

### ANTICIPATED QUESTIONS:

Can Digital help me get computing costs under control? How?  
How does Digital control computing costs? (5?)  
What are our biggest cost factors in implementing computing solutions?

# **SPEAKER BRIEFING**

## **CORPORATE DIRECTIONS SESSION - GULLOTTI**

### **TOPICS TO BE DISCUSSED:**

Discuss current Digital corporate condition and future directions. Respond to Boeing's statement of objective - BCS President Art Hitsman will discuss one of his most important issues - the use of manufacturing as a strategic weapon.

State of the Company

Effects/Reasons for recent reorganizations

Digital's use of manufacturing as a strategic weapon

Our interest in listening to Boeing/customers on where they are going

Re-emphasize our commitment to Boeing as a major account; the BBG; Executive Partner and Gullotti's role

### **KEY ISSUES AT BOEING:**

Manufacturing as a strategic business weapon

Technology/support for manufacturing (process simulation, modeling tools)

Implementing Distributed/Open Systems

Migration to standards

### **KEY POINTS TO MAKE:**

We have heard and understand where Boeing is going with their computing vision

Digital and Boeing have a lot to share and there is a potential to work together on the application of technology to enable manufacturing as a strategic weapon

We believe that what they will see over the next 2 days will show them ways that Digital can help reduce computing costs and the cost of support at Boeing

### **KEY THINGS TO NOT SAY/EMPHASIZE:**

Do not emphasize VAX/VMS

Do not position Digital products to replace IBM products:

### **ANTICIPATED QUESTIONS:**

How does Digital control computing costs?

What are our biggest cost factors in implementing computing solutions?

How are we using technology to enable Digital to gain a competitive edge in manufacturing?

How do we see the computing industry changing over the next 5 years?

SECTION III

# THE BOEING COMPANY



## CORPORATE VISIT

*Sponsored by:*

Digital Equipment Corporation  
Boeing Business Group  
500 NE 108th  
Bellevue, WA 98004

June 15-17, 1992

## **BOEING CORPORATE VISIT**

### **BOEING ATTENDEES**

Art Hitsman*	President Boeing Computer Services
Norm Collins	Executive Vice-President Boeing Computer Services
John Warner	Vice-President - Computing Boeing Commercial Airplane Group
Walt Braithwaite	Vice-President - Computing Architecture Boeing Commercial Airplane Group
Jack McGuire*	Vice-President - Computing Boeing Defense and Space
Ron Smith	Director of Computing Boeing Defense and Space
Leo Fisher	Vice-President - Operations Boeing Computer Services
Doug Frederick	Director of Materiel Boeing Computer Services
Phil Lemoine	Vice-President - Research and Technology Boeing Computer Services

\*  
Will be arriving 6/14 at Boston from Paris, France

## BOEING CORPORATE VISIT DIGITAL EXECUTIVE PARTICIPANTS

Ken Olsen  
*(Tentative)*

President  
Chief Executive Officer

Jack Smith

Senior Vice-President  
Operations

Russ Gullotti

Corporate Vice-President  
Digital Services

Bill Demmer

Vice-President  
Servers and Systems

Dick Fishburn

Corporate Vice-President  
Investments and Business Development

Jack MacKeen

Vice-President  
Aerospace, Defense, Electronics and  
Government Portfolio

Bob Palmer

Corporate Vice-President  
World-Wide Manufacturing

Diane Albano

Director  
Aerospace Business Unit

Bob Tassone

Account Group Manager  
Boeing Business Group

**BOEING CORPORATE VISIT  
DIGITAL BOEING BUSINESS GROUP  
MANAGEMENT ATTENDEES**

Bob Tassone	BBG Account Manager
Ron Butterfield	Sales Account Manager
Sam McCandlish	Sales Account Manager
Dick Nehr	Digital Services Account Manager
Mike Lischke	Integration Services Manager
Toby Arnold	RCAS Program Director
Dave Laurence	Manufacturing Solution Center Manager

# BOEING CORPORATE VISIT

## GENERAL LOGISTICS

**Date:** June 15-17, 1992

**Location:** Maynard, MA  
The Mill Facility  
Sheridan/Hinchcliffe Conference Room

**Travel:** Arrive Logan Airport (Boston)  
June 15

Helicopter Shuttle Service scheduled for departure day  
June 17

**Lodging:** Stonehedge Inn  
160 Pawtucket Boulevard  
Tyngsboro, MA 01879  
(508) 649-4400

**Theme:** Manufacturing as a Strategic Weapon

**Events:** 6/15 - no planned event/informal reception at Hotel  
6/16 - Dinner at Stonehedge Inn

**Key Issue:** Focus on ways Digital and Boeing can leverage off our  
manufacturing experience.  
Emphasis on how technology can be used to simulate,  
model and improve manufacturing processes.

**Audience:** Senior Executives from Boeing Computer Services,  
Boeing Commercial Airplane Group, and Boeing  
Defense and Space Group.



**BOEING CORPORATE VISIT**  
**TRAVEL DAY**  
**(June 15)**

**TRAVEL ARRANGEMENTS**

**BOEING ATTENDEES:**

6/14/92	Continental #358	Arrives 4:38PM	A. Hitsman J. McGuire
6/15/92	Delta #4344 Northwest #180	Arrives 4:15PM Arrives 4:15PM	N. Collins L. Fisher R. Smith W. Braithwaite D. Frederick P. Lemoine
6/15/92	United #92	Arrives 4:26PM	J. Warner

**DIGITAL WILL PICKUP BOEING  
ATTENDEES AT AIRPORT AND  
TRANSPORT TO HOTEL**

**Evening: Informal Reception  
at Stonehedge Hotel  
7:30PM**

## BOEING CORPORATE VISIT DAY 1 AGENDA (JUNE 16)

6:30 AM	BREAKFAST	
7:15 AM	DEPART FROM HOTEL FOR DIGITAL LOCATION	
7:45 AM	ARRIVAL AT FACILITY	
8:00 AM	INTRODUCTION/WELCOME	R. Gullotti, B. Tassone
8:15 AM	RCAS UPDATE	B. Tassone
8:45 AM	BOEING "DIRECTIONS"	A. Hitsman
9:15 AM	DIGITAL CORPORATE UPDATE - State of the Company - Computing Directions	R. Gullotti
10:15 AM	BREAK	
10:30 AM	BOEING MANUFACTURING UPDATE - "Manufacturing as a Strategic Weapon in Boeing"	A. Hitsman
11:45 PM	LUNCH WITH EXECUTIVES	R. Gullotti, J. Smith, D. Fishburn, B. Palmer, J. MacKeen
1:00 PM	SYSTEMS AND SERVERS DIRECTIONS - Systems and Servers Strategy - ALPHA Program	B. Demmer
2:30 PM	BREAK	
2:45 PM	NAS/OPEN SYSTEMS STRATEGY - NAS Architecture - Open Systems Software Strategy - UNIX/OSF Directions	B. Lynch, T. Prindle
4:45 PM	WRAP-UP/DISCUSSION	
5:00 PM	DEPART DIGITAL FACILITY	
5:00 PM	RETURN TO HOTEL	
6:30 PM	DINNER AT STONEHEDGE	Library Room

## **BOEING CORPORATE VISIT DAY 2 AGENDA (June 17)**

- 6:30 AM    BREAKFAST
- 7:15 AM    DEPART FROM HOTEL FOR DIGITAL LOCATION
- 7:45 AM    ARRIVAL AT FACILITY
- 8:15 AM    INTRODUCTION/AGENDA REVIEW                    B. Tassone
- 8:30 AM    DIGITAL FRAMEWORK FOR  
MFG SYSTEMS ARCHITECTURE                    J. McCluney  
- Digital insight and experiences in:  
    - People  
    - Process  
    - Technology
- 10:00 AM    BREAK
- 10:30 AM    MANUFACTURING PROCESS WORKSHOP            D. Laurence  
- Round Table Discussion                    All Attendees  
- Application of Technology  
- Simulation and Modeling Tools  
- Approaches for Continuous Process Improvement
- 12:00 PM    LUNCH
- 1:00 PM    SUMMARY OF VISIT                                B. Tassone  
- Action Item Discussion                    All Attendees  
- Plan for post-visit activities in Seattle
- 2:00 PM    DEPART FOR HELICOPTER PAD
- 2:30 PM    HELICOPTER SHUTTLE TO LOGAN AIRPORT

SECTION IV

## Art Hitsman

Art Hitsman serves as President of Boeing Computer Services, a post he has held since April 1990. This Boeing Division provides integrated information management services and computing resources to all Boeing operating divisions, and to government and commercial customers worldwide. Under Mr. Hitsman's direction, the division employs more than 13,000 people, and manages more than \$1.4 billion worth of company-owned computing and telecommunications equipment.

Before coming to Boeing Computer Services, Mr. Hitsman, a 40-year Boeing employee, was Executive Vice-President of Boeing Aerospace and Electronics, following the consolidation of the two divisions in May 1989. In that role, he directed all of the Boeing strategic and tactical missile, space and airborne information systems, as well as electronic devices and other products and services.

Before his appointment at Boeing Aerospace and Electronics, Mr. Hitsman was President of Boeing Electronics, which provided electronics design and manufacturing support to other Boeing divisions.

From March 1986 to May 1989, Mr. Hitsman served as Vice-President of Operations for Boeing Aerospace, where he managed the division's Manufacturing, Materiel, Quality Assurance and Facilities organizations.

His responsibilities also included all developmental and production support for Boeing Aerospace projects and major programs, such as the Air Launched Cruise Missile (ALCM); C-3A Airborne Warning and Control Systems (AWACS) surveillance and command and control platform; E-6 survivable airborne communications system; Roland, Minuteman and Peacekeeper missile systems; Inertial Upper Stage (IUS), an unmanned spacecraft designed to carry satellites and other payloads from the space shuttle to high-Earth orbit; and various other spacecraft.

Prior to 1986, Mr. Hitsman was Vice-President and Manager of the Ballistic

Systems Division at Boeing Aerospace. There he directed all of the company's intercontinental ballistic missile programs, including the basing for the Small ICBM and studies relating to future missiles and their basing options.

Mr. Hitsman also managed the Boeing automated transportation systems by applying the company's aerospace technology to development of advanced ground transportation equipment. Between 1971 and 1979, he headed up all of the company's surface transportation work, including the Boeing Aerospace Morgantown Personal Rapid Transit System and Boeing Vertol Company's surface transportation systems.

Like many engineering managers at Boeing, Mr. Hitsman began his career in aircraft design. He joined Boeing in 1950 and served for eight years as a design engineer and senior design engineer on aircraft systems for the B-47 and B-52 bombers, and the 707 airliner.

In 1958, Mr. Hitsman was assigned to the Minuteman ICBM program, with primary responsibility for designing ground-system equipment. He later was promoted to ground-system design manager for the Minuteman program.

Hitsman earned both Bachelor's and Master's Degrees In Mechanical Engineering from Oregon State University in 1949 and 1950, respectively. In 1969, Mr. Hitsman graduated from the Army Command and General Staff College, and completed an advanced management course sponsored by the University of Hawaii and Harvard Business School.

Mr. Hitsman was born in 1928 in Portland, Oregon. He and his wife, Ellen, reside in Kent, WA. They have two daughters and a son.

## **Norman D. Collins**

As Vice-President-General Manager of the Boeing Support Group of Boeing Computer Services, Norm Collins leads more than 8,000 employees who provide comprehensive computing and telecommunications support to The Boeing Company at locations around the world.

Collins' organization also manages computer and telecommunications equipment valued at more than \$1.4 billion at the time of acquisition.

Organizations reporting to Collins include: Commercial Airplanes Support, Systems Integration, Network Services, and Defense & Space Group Support. The latter organization supports Aerospace & Electronics, Military Airplanes, Helicopters, Boeing Support Services and Corporate.

The Systems Integration Organization is responsible for advanced computing technology programs, technology deployment, computing standards and strategic planning for applications architectures.

Collins joined The Boeing Company in 1960 as a computer programmer in Wichita. In 1963, he was promoted to manager of a scientific programming organization.

Significant positions in his 30 year career have included General Manager of Boeing Commercial Airplanes Support from 1977 to 1982; Assistant General Manager of the Boeing Computer Services Western District from 1975 to 1977; Director of Operations at Boeing Computer Services headquarters, then located at Dover, New Jersey, for part of 1975; and General Manager of the Central District of Boeing Computer Services at Wichita from 1971 to 1975. Collins was named to his current position in 1983.

An alumnus of Kansas State University, Collins received a Bachelor of Science degree in Physics in 1959, and went on to earn his master's in the same subject the next year.

Collins serves on the Board of Trustees of the Northwest Kidney Center and the Honorary Board of the Bellevue Philharmonic Orchestra. He is Chairman of the Information Technology Committee of the Aerospace Industries Association (AIA). The primary role of the AIA Information Technology Committee is to represent U.S. aerospace companies on computing standards and government regulation issues.

He and his wife reside in Bellevue, WA. They have five children.



## **John D. Warner**

John Warner was appointed Vice-President - Computing for Boeing Commercial Airplane Group in July, 1991.

The position was created to provide senior management leadership to the development of Information Systems Strategy within this major division of The Boeing Company.

Warner most recently was Vice-President of Engineering for Boeing Commercial Airplane Group, a post he assumed in May, 1989. There he was responsible for all engineering activities and government technical liaison for BCAG.

Warner has been with Boeing since 1968. He joined as an engineer on the SST, working on research and development for advanced controls and displays. Following that, he led the development of the Electronic Map Display which is now standard on all new airplane models. In 1974, he entered management, leading Boeing's support of the NASA Terminal Configured Vehicle flight test activity at NASA-Langley.

In 1976, after a year as a Boeing Sloan Fellow at the Stanford University Graduate School of Business, he became Chief of Technology for New Product Development and sales support on the 747 program. Then in 1978, he became Chief of Technology for New Commercial Airplanes Product Development, concentrating on the 767 and 757 and future derivatives. From 1980 to 1982, he directed the development of a new digital autopilot and navigation system for the 737.

In 1982, he joined Boeing Advanced Systems as manager of airplane systems design for the B-2 program. He became chief engineer in 1985 and advanced to program manager in 1987 where he remained until joining Boeing Commercial Airplane Group as Vice-President.

Warner attended the University of Michigan where he earned under-

graduate and graduate degrees, including his Doctorate, In Aeronautical Engineering. He is a Fellow in the Royal Aeronautical Society and is a member of the American Institute of Aeronautics and Astronautics and the Society of Automotive Engineers. He is a member of Tau Beta Pi Honor Society, Sigma XI Research Honor Society and Sigma Gama Tau Aerospace Honor Society.

Warner, born in Glendale, CA., in January 1940, grew up in Springfield, Mo. He, his wife, Marilyn, and two children live in Seattle, where, as an active sportsman, he participates in wind surfing, backpacking, bicycling, boating and fly fishing.

## **Walt W. Braithwaite**

Since joining Boeing in 1966, Walt Braithwaite has played a leading role in the incorporation of computer technology in the design and manufacturing process.

Born in Jamaica on January 19, 1945, Braithwaite graduated from the American Institute of Engineering and Technology in 1965 with a Bachelor of Science degree in Engineering. His exposure to the Pacific Northwest occurred during his post graduate studies in computer science at the University of Washington in Seattle. That was followed by a 1980 Sloan Fellowship in Business Management at the Massachusetts Institute of Technology.

His first Boeing assignment was as a manufacturing engineer in the Fabrication Division. Career highlights include his work as Everett Division lead engineer in computer aided design, Engineering Division lead engineer in computer assisted design development, and chief engineer responsible for the integration of computer assisted design/computer assisted manufacturing.

In 1985, Braithwaite was named Director of Computing Systems in the Everett Division where the 747 and 767 aircraft are assembled and from 1986 to 1991, he was Director of Program Management in Renton where Boeing's 737's and 757's are produced. He assumed his present position as Vice-President, Information Systems and Architecture in July, 1991.

Braithwaite has been honored by the American Institute of Manufacturing Technology for outstanding technical contributions to the science of computer integrated technology. His list of honors also includes awards by the National Institute of Standards and Technology and most recently, for his leadership and contributions to the devel-

opment of the Initial Graphics Exchange Specification and Product Data Exchange Specification.

Braithwaite and his wife, Rita, have three children and live in the Seattle suburb of Issaquah. His spare time is divided between boating, flying as a private pilot and his work with the YMCA Black Achievers program as well as volunteer work as a tutor for middle and high school students.

## John J. McGuire

John J. (Jack) McGuire was named Vice-President, Computing Systems, for the Boeing Defense & Space Group in February 1991.

McGuire previously was Boeing Computer Services Vice-President for Defense & Space Group Support. Prior to that, he was Boeing Computer Services General Manager for support to Boeing Aerospace & Electronics, a division of the Defense & Space Group.

His career at Boeing Computer Services included Business Systems, Operations and Production Control, and Human Resources management positions.

McGuire was a computer programmer for both the aerospace and commercial airplane organizations prior to the formation of Boeing Computer Services in 1972.

He joined the company in 1959, and holds a Bachelor of Arts Degree in Economics from Duke University, and a Masters Degree in Mathematics from the University of Montana.

## **Ronald G. Smith**

Ronald G. Smith was assigned the responsibility for Architecture and Data Management for Boeing Defense and Space Group Computing Systems in December 1991, reporting to J.J. McGuire, Vice-President of D&SG Computing Systems.

Smith previously was D&SG Computing Systems Business Manager. Prior to that, in March 1973, he was BA&E Computing Manager. Smith has held various positions within the Computing Management organization since returning to Boeing Aerospace and Electronics in 1986, following nine years of service with Boeing Computer Services.

In his last assignment with BCS, Smith supported the Commercial Airplane Group and was responsible for all CAG Finance and Industrial Engineering Systems.

Smith joined the company in 1961, resigned in March 1962, and hired again in August 1966.

## Leo C. Fisher

Leo C. Fisher, Vice-President of Operations, is responsible for all Operations activities for Boeing Computer Services, including: Materiel; Facilities; Safety, Health and Environmental Affairs; Quality Assurance; and Continuous Quality Improvement organizations. In addition, he provides function direction to the computing organizations throughout Boeing Computer Services.

Fisher started his 33-year Boeing career as a production worker, in 1958. He has been on both the hourly and salaried payrolls.

As a production worker, he held positions as an assembler-mechanic and a fabrication, mock-up and final assembly inspector.

In 1962, he was assigned to the Pre-production Planning program for the Boeing 727, as a salaried quality specialist. In this role, he was responsible for developing inspection techniques, tools and training to meet the new 727 design requirements. He was assigned to a similar program for the company's 737 in 1964, serving in the same capacity.

Fisher was promoted to management in 1966, as a quality control supervisor in charge of the 727 and 737 Pre-production Planning group, and the following year, was assigned as assistant superintendent. Two years later, he became the superintendent of quality assurance for the 707, 727 and 737 airplane programs.

In 1977, he was named quality control manager for all factory operations and was promoted to director of quality control for the 707/727/737 Division in August of 1981.

Fisher left the Boeing Commercial Airplane Group, in July of 1982, to become director of quality assurance and special projects for the Boeing Military Airplanes, a division of Defense & Space Group.

He became director of quality assurance for Boeing Aerospace and Electronics in August of 1986, holding that position until June of 1989, when he was appointed Corporate Vice-President Of Continuous Quality Improvement.

Fisher studied business administration at Seattle Pacific University and the University of Washington, and has attended the Advanced Management Program for Executives at the University of Southern California.

He and his wife, Carol, live in Enumclaw, Washington.



## **Douglas L. Frederick**

Mr. Frederick is the Director of Materiel for Boeing Computer Services. As such, he is the senior executive responsible for over \$1 Billion worth of computing hardware, software and services procurement that support The Boeing Company, its subsidiaries and its government contracts.

Mr. Frederick has been with The Boeing Company for over 13 years during which time he has had a variety of senior assignments. These have included responsibilities for Software Engineering design, development and support, Database Disciplines, Total Quality Commitment (TQC) support and Distributed Technology Management.

Prior to his experience with Boeing, Mr. Frederick has held positions in the teaching and investment fields. Mr. Frederick has received advanced degrees in Management Science from MIT, Software Engineering from Seattle University, and Business from the University of Washington. His undergraduate degree is from Washington State in Chemistry/Math.

Mr. Frederick is a transplanted native of 35 years of the Seattle area where he lives with his wife and two children, and enjoys skiing, and is an avid boater and fisherman.

## Phil Lemoine

As Vice-President of Research and Technology for Boeing Computer Services, Philip Lemoine directs the activities of the organization, a unit he formed upon his assignment to Computer Services in March, 1991.

Research and Technology provides centralized engineering technology support to internal and external customers. Other activities include definition, control and improvement of key technical processes and technical standards within Boeing Computer Services, oversight of Computer Services developmental programs and improved technical resource management.

Prior to his appointment at Boeing Computer Services, Lemoine was Peace Shield program manager for Boeing Aerospace & Electronics. From 1987 until the program was terminated in 1991, he was responsible for design, development, testing and installation of the ground-based air defense system that was being developed for Saudi Arabia.

Lemoine came to Peace Shield from Boeing's Ballistic Systems Division. There his career included key assignments on the Peacekeeper (MX) strategic missile program. He started on that program in 1980 as Systems Engineering Manager, worked as Chief Engineer from 1981 to 1983, and served as Program Manager from 1983 to 1986.

He was named Chief Engineer for the Ballistic Systems Division in 1986.

Prior to his work on Peacekeeper, Lemoine held a variety of assignments in product development and on the Minuteman program, including the role of Chief Engineer.

A native of South Gate, California, Lemoine graduated from the University of Washington in 1958 with a Bachelor of Science degree in Electrical Engineering. He was a 1984-85 Fellow in the Massachusetts Institute of Technology Sloan Senior Executive Program. He resides in Seattle, Washington.

## ATTENDEE PROFILES

### Art Hitsman - President, Boeing Computer Services

Background: Over 30 years within Boeing, mostly within divisional management positions. he is the first president of BCS that has not been a former IBM Vice-President. He is also the first BCS president not to come from a BCS computing/support background. Former Boeing Electronics division president (see Bio). Strong program management background (Government/DOD Programs).

Bias:       IBM:       Neutral to positive  
              Digital:   Neutral to negative (influenced by RCAS Program performance and recent UNIX Server benchmark - faulty benchmark resulted in Digital ranked **last** of 6 major vendors)  
              HP:        Positive - high support/bias within BCS for HP, especially as a UNIX vendor  
              Other:

Hot Buttons:       Cost of computing support  
                      Manufacturing as a Strategic Weapon  
                      Computing Costs (especially BCS burden rates)

### Norm Collins - Executive Vice-President, Boeing Computer Services

Background: Over 25 years at Boeing, mostly in managing computing organization.

Bias:       IBM:       Knows they can get the job done  
              Digital:   Neutral to positive view of Digital;  
                      Supported BCS Office Solution implementation for Digital  
              HP:        Positive - high support/bias within BCS for HP, especially as a UNIX vendor  
              Other:

Hot Buttons:       Cost of Computing

## ATTENDEE PROFILES

### John Warner - Vice-President, BCAG Computing

Background: Over 25 years with Boeing, mostly in implementing IBM mainframe based applications and systems.

Bias:       IBM:       Neutral to Positive  
              Digital:   Neutral (new relationship with Digital)  
  
              HP:        Neutral to Positive  
              Other:

Hot Buttons:

### Walt Braithwaite - Vice-President, BCAG Info Systems & Architecture

Background: Over 25 years with Boeing, mostly in implementing IBM mainframe based applications and systems.

Bias:       IBM:       Neutral  
              Digital:   Neutral to Positive  
                          Open mind - recent CLF attendee  
  
              HP:        Neutral  
              Other:

Hot Buttons:            Vendor neutrality  
  
                          Wants what is "best for Boeing, regardless of vendor"

## ATTENDEE PROFILES

### Jack McGuire - Vice-President, DSG Computing Systems

Background: Over 30 years with Boeing, mostly in implementing computing applications and systems across all divisions and computing environment in Boeing. Responsible for 75% of Digital installed base at Boeing.

Bias:       IBM:       Neutral  
              Digital:   Positive  
                          FY92 (May) DECworld Attendee  
              HP:        Positive  
              Other:

Hot Buttons:       Rehosting Legacy Systems  
                          Corporate Data Management  
                          Open Systems  
                          Cost of software development (especially embedded avionics)

### Ron Smith - Director, DSG Architecture, PLanning, & Data Mgmt

Background: Over 25 years with Boeing, mostly in implementing mainframe based computing systems and applications. Responsible for 75% of Digital installed base at Boeing.

Bias:       IBM:       Neutral  
              Digital:   Neutral to Positive  
                          FY92 (May) DECworld Attendee  
              HP:        Neutral to Positive  
              Other:

Hot Buttons:       Rehosting Legacy Systems  
                          Corporate Data Management  
                          Open Systems  
                          Cost of software development (especially embedded avionics)

## ATTENDEE PROFILES

### Leo Fisher - Vice-President, BCS Operations

Background:

Bias:      IBM      - Neutral

            Digital      - Neutral  
                            Impact of SMARTS still affecting Digital

            HP      - Neutral to Positive

            Other      -

Hot Buttons:

### Doug Frederick - Director of BCS Materiel

Background: New in present position as Director of Materiel. He is establishing his personal style and relationships with the major vendors and computing suppliers.

Bias:      IBM      - Neutral

            Digital      - Neutral  
                            Impact of SMARTS still affecting Digital

            HP      - Neutral to Positive

            Other      -

Hot Buttons:      Reducing computing costs  
                            Reducing the number of key vendors

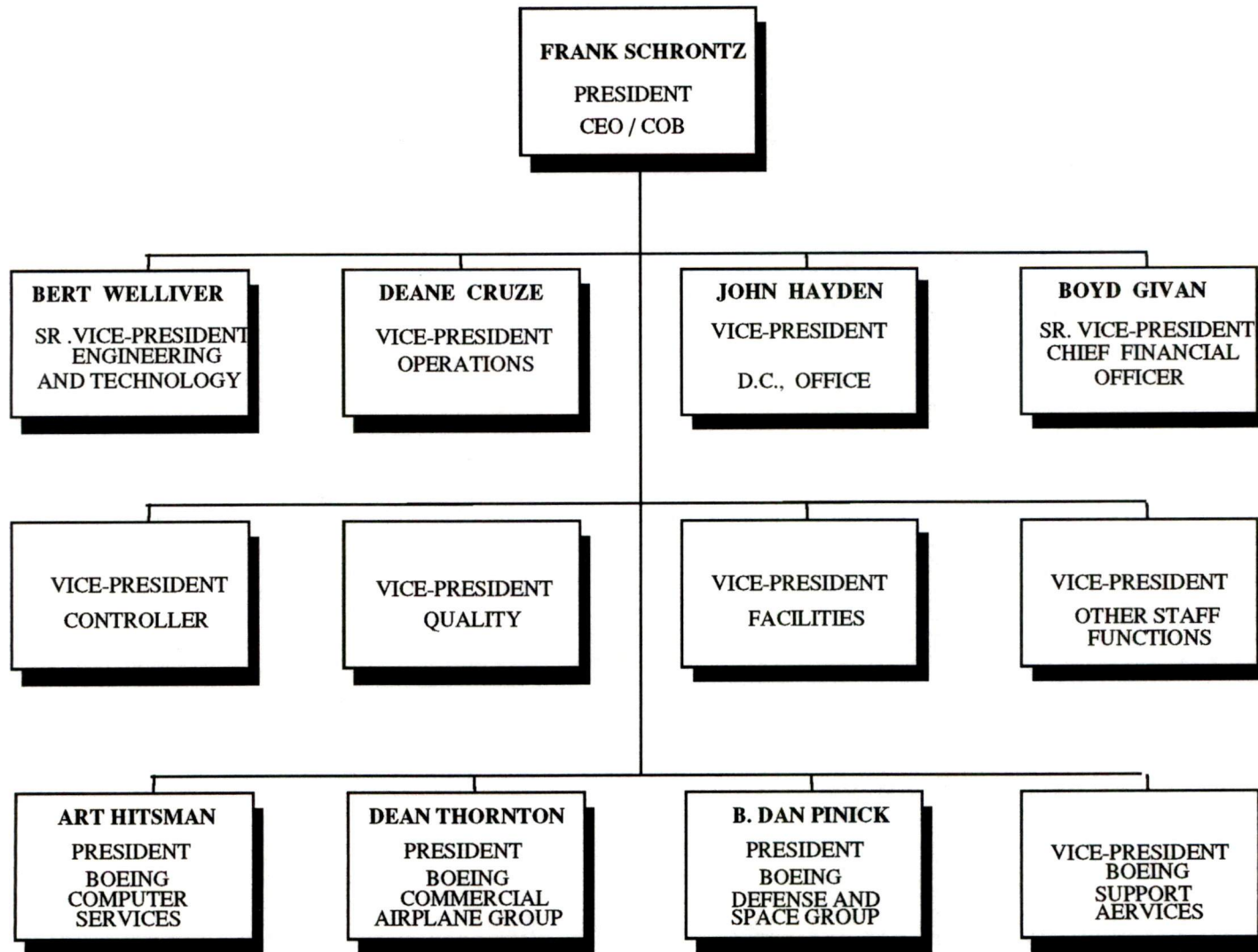
SECTION V

# **BOEING COMPANY ORGANIZATION CHARTS**

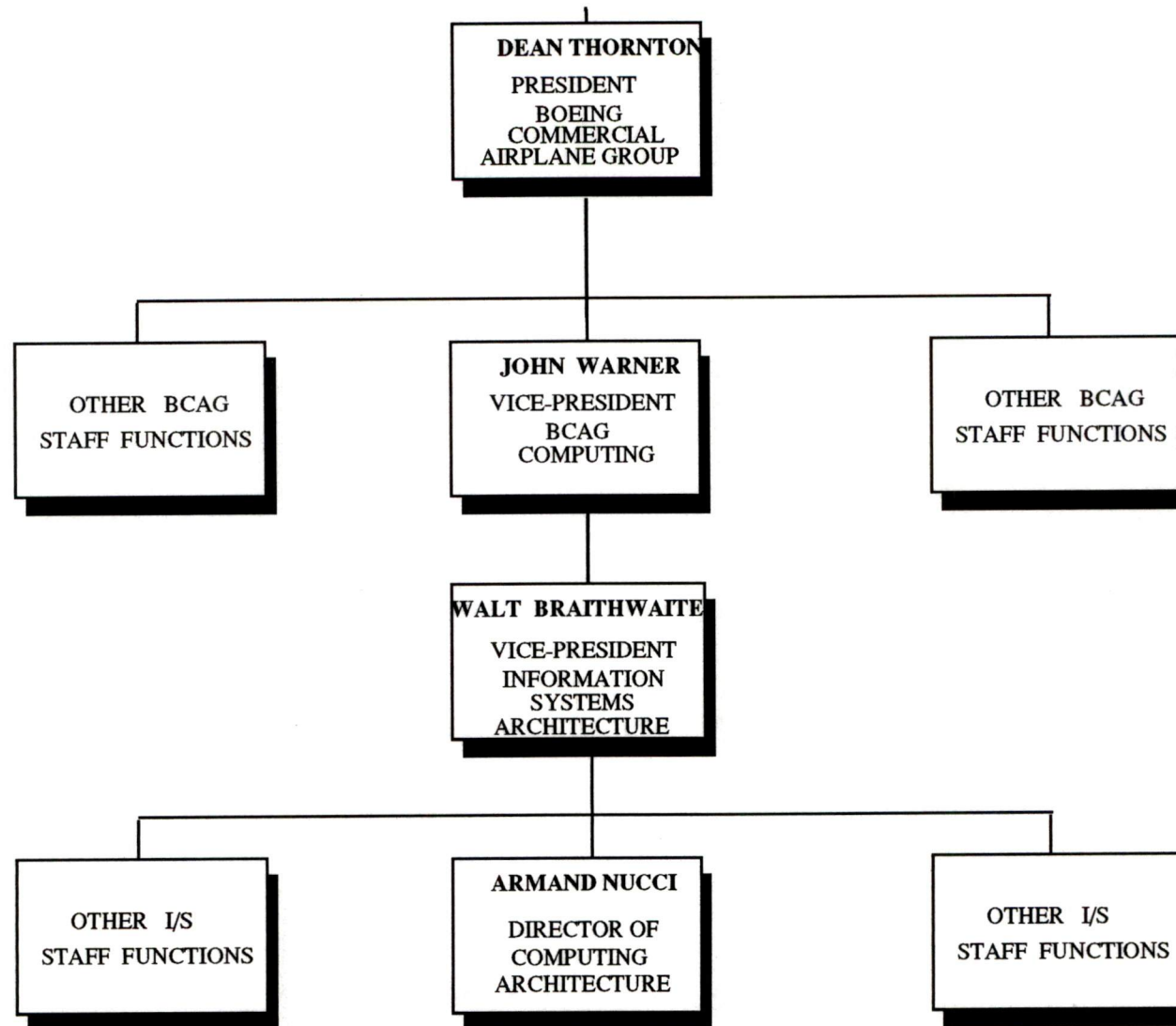
The following section includes a summary of key Boeing organization charts. These charts have been simplified to show top-level organizations only, focusing on the Boeing individuals involved in this corporate visit and their roles within Boeing.



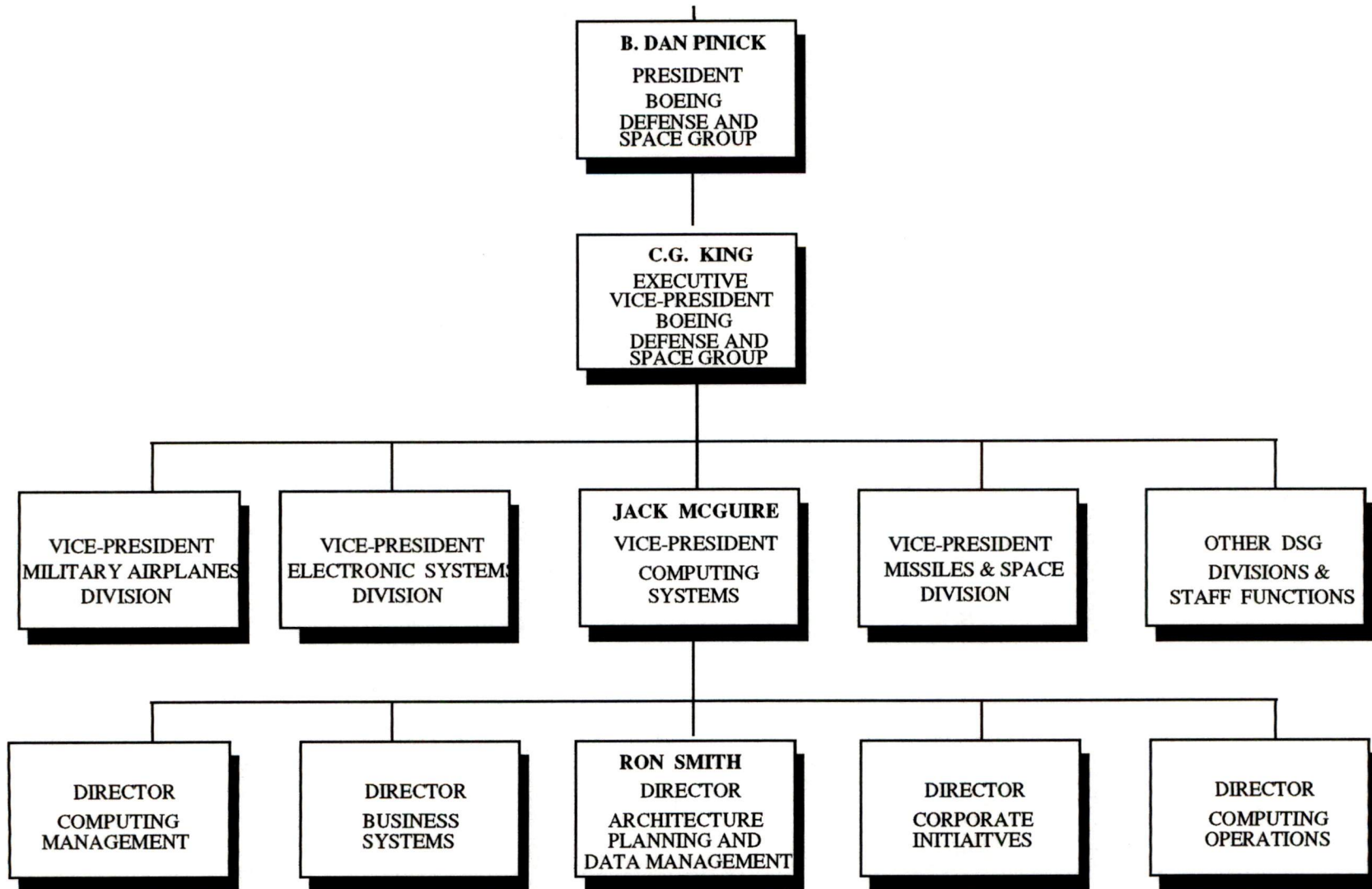
# THE BOEING COMPANY



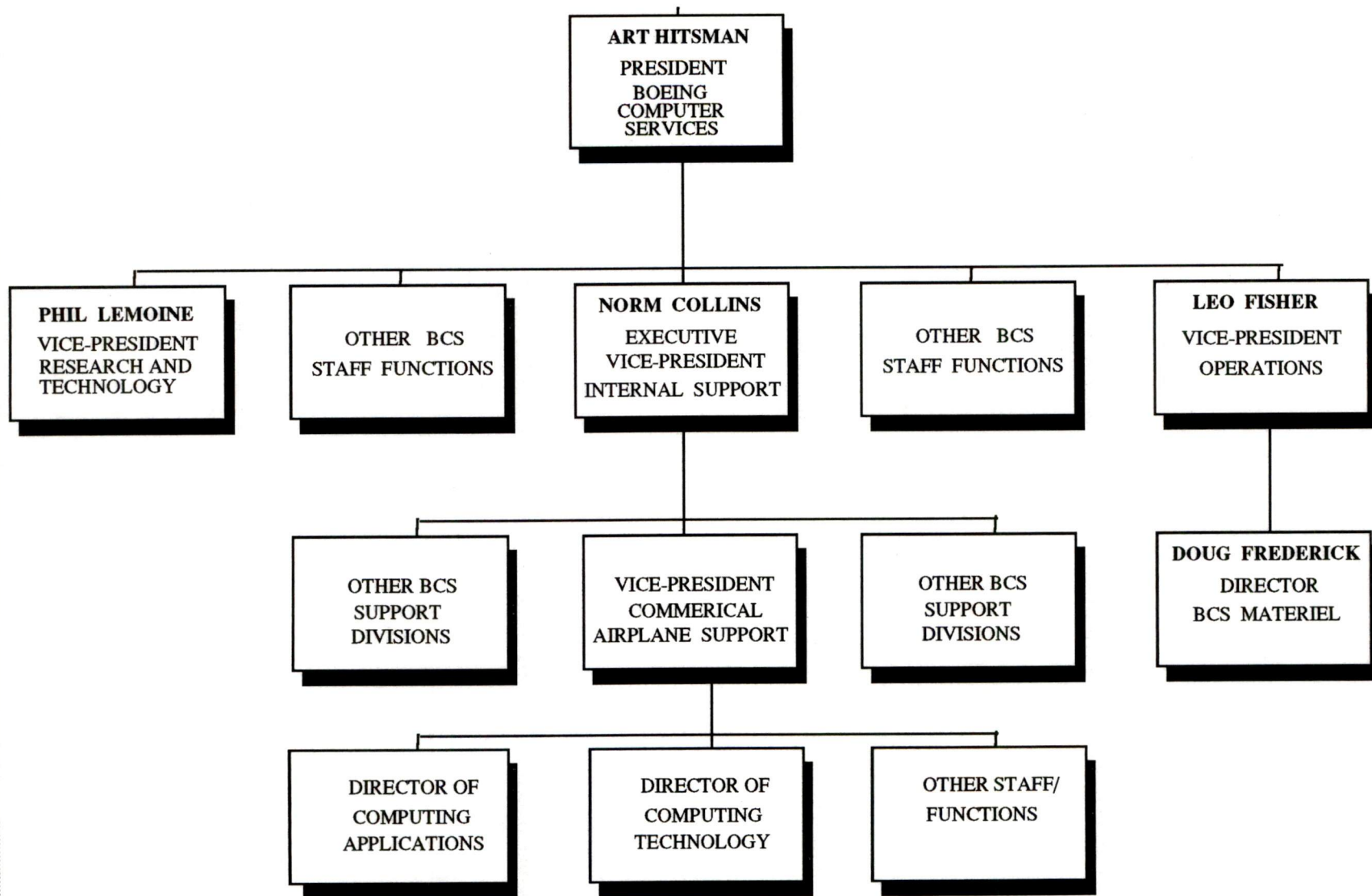
# BOEING COMMERCIAL AIRPLANES DIVISION



# BOEING DEFENSE AND SPACE DIVISION



# BOEING COMPUTER SERVICES



SECTION VI

# BOEING CORPORATE VISIT

## THE BOEING COMPANY BACKGROUND

### HISTORY

The Boeing Airplane Company was started by William Boeing 75 years ago in 1866. William Boeing was originally a furniture manufacturer, who realized that his manufacturing processes and facility could be adapted to the production of airplanes. At that time, aircraft production was a manual intensive production effort, building state-of-the-art wood and wire biplanes.

### MAJOR LOCATIONS

Through expansion to military and government business, and through recent acquisitions, Boeing has grown to a large corporation distributed across the United States. Major locations and their functions include:

#### Puget Sound

<b>Seattle</b>	BCAG (flight test, engineering), DSG (Military Airplanes, Missile Systems)
<b>Everett</b>	BCAG (747 Production, 777 Engineering)
<b>Renton</b>	BCAG (737, 757 Production)
<b>Auburn</b>	BCAG (Fabrication Division)
<b>Kent</b>	DSG (Space Systems, DSG Hqtrs, BCS Data center)
<b>Bellevue</b>	BCS (Corp Hqtrs, BCS Data Center, R&T, CAS Support)

#### Remotes

<b>Wichita</b>	BCAG (New Process Facility, Subc/Support) DSG (Military Airplanes)
<b>Philadelphia</b>	DSG (Boeing Helicopters - LAH, V-22) BCAG (Subcontract 757/767, Fabrication Support)
<b>Huntsville</b>	DSG, BCS, MSFC
<b>Washington, DC</b>	BCS, DSG
<b>Portland</b>	BCAG (Manufacturing Plant)
<b>Dallas</b>	DSG (Manufacturing Plant)
<b>Houston</b>	BCS, DSG, JSFC
<b>Oakridge</b>	DSG (Manufacturing Plant)
<b>Arnprior (CAN)</b>	BCAG (Manufacturing Plant)
<b>Winnipeg (CAN)</b>	BCAG (Manufacturing Plant)

## **BOEING CORPORATE VISIT COMMON BOEING ABBREVIATIONS**

**BOEING COMMERCIAL AIRPLANES (BCA)** - The division that builds commercial airliners. This is the END-USER organization for computing solutions; where the capital expenditures originate

**BOEING COMPUTER SERVICES (BCS)** - The MIS division of Boeing - over 13,000 people

**COMMERCIAL AIRPLANE SUPPORT (CAS)** - The portion of BCS dedicated to supporting the BCA division

**COMPUTING MANAGEMENT ORGANIZATION (CMO)** - This is the interface organization between BCS CAS and the actual end users within BCA. CMO makes decisions around computing architecture to be implemented and also has significant control on how and where capital computing expenditures are made.

**BCA COMPUTING ARCHITECTURE TEAM (BCAT)**- This is a cross-functional team that has develop a Tactical Computing Automation Plan (TCAP). BCAT is often used to refer to the actual document they produced (TCAP).

**TACTICAL COMPUTING AUTOMATION PLAN (TCAP)**- This is the architectural specification that BCA has created to define application and delivery systems architectures and standards. This plan is often referred to as the BCAT Document.

**BOEING BUSINESS GROUP (BBG)**- This is the dedicated DIGITAL organization that is dedicated to supporting the Boeing account worldwide. This is approximately 200 professional, all reporting to a single general manager (Bob Tassone).

# BOEING CORPORATE VISIT THE BOEING COMPANY BACKGROUND

## BOEING AT-A-GLANCE

### FINANCIAL SUMMARY

<u>Revenue</u>	<u>1991</u>	<u>1990</u>	<u>1989</u>
Commercial <i>% of Revenue</i>	\$23.4B 78%	\$21.7B 77%	\$14.9B 71%
Defense and Space <i>% of Revenue</i>	\$5.9B 22%	\$5.9B 23%	\$5.4B 29%
<hr/>			
<b>Total Revenue</b> <i>Growth</i>	<b>\$29.3B</b> 6%	<b>\$27.6B</b> 36%	<b>\$20.3B</b> 19%
<b>Net Earnings</b>	<b>\$1.6B</b>	<b>\$1.4B</b>	<b>\$675M</b>

(Notice growth of profitability)

### BALANCE SHEET HIGHLIGHTS

	<u>1991</u>	<u>1990</u>
LT Debt	\$1.3B <sup>1</sup>	\$300M
Cash	\$2.9B	\$2.2B
Current Assets	\$8.8B	\$8.8B

<sup>1</sup> Additional Long-term debt resulted from startup of 777 Program



# BOEING CORPORATE VISIT THE BOEING COMPANY BACKGROUND

## COMMERCIAL AIRCRAFT BACKLOG

### BACKLOG

<u>Commercial Aircraft</u>	<u>1991</u>	<u>1990</u>	<u>1989</u>
Backlog	\$98B	\$97B	\$80B
plus recent orders and gov't contracts	+\$20-25B		

**1991 Orders represent 65% Market Share**

**56% of backlog is scheduled for delivery beyond 1993**

## EMPLOYMENT SUMMARY

### EMPLOYEES

	1991
BCAG	85,000
DSG	43,000 (-7000 FROM 1990)
<u>BCS</u>	<u>14,000</u>
<b>TOTAL</b>	<b>142,000</b>

# BOEING CORPORATE VISIT

## BOEING COMMERCIAL AIRPLANES BACKGROUND

### PRODUCT FAMILY:

#### Current Products   Aircraft delivered '91

Boeing 707	14	
Boeing 727	--	(Production finished in 1990)
Boeing 737*	215	
Boeing 747	64	
Boeing 757	80	
<u>Boeing 767</u>	<u>62</u>	
<b>TOTAL for 1991</b>	<b>435</b>	
<b>1992 (Projected)</b>	<b>449</b>	

\* With over 2,000 aircraft delivered, the 737 is now the most successful aircraft in commercial aviation history

#### In Development

<b>Boeing 777</b>	<p>Engineering Design          First delivery - 1995          To be built in Wichita</p> <p>Orders through 1991 - 86 plus 20 during 1991          &gt;100 firm orders, plus approx 90 options</p>
<b>Boeing 747-x (787)</b>	<p>Customer requested; requirements definition          Requested aircraft with double 747 capacity          3 options: <i>Double-decker 747</i>                            <i>Double-wide 767</i>                            <i>All-new aircraft</i></p>
<b>HSCT/X-30</b>	<p>Research and Development          High-Speed Civilian Transport</p>

# BOEING CORPORATE VISIT

## BOEING COMMERCIAL AIRPLANES BACKGROUND

### RECENT ISSUES:

#### COMPETITION

Domestic -           Most are in decline  
Recent announcements w/McD and Japan partnering

Foreign -            AIRBUS remains biggest foreign completion  
Recent changes limiting govt subsidy  
Concern about Japan entering marketplace

#### AIRLINE CHANGES

- Declining market in 1991 (first time in history) - down 3%
- Airlines are re-scheduling deliveries, representing hesitancy and conservation approach to world economy/recession   737 production rates reduced from 21 to 14 757 production rates increased

#### MANUFACTURING SPACE

- Many manufacturing facilities not up to needed production rates
- 5.6 Million square feet of space will be added in 1992 for 777 Program
- Wichita New Process Facility completed last year adding an additional 1 Million square feet of space

## **BOEING CORPORATE VISIT BOEING DEFENSE AND SPACE BACKGROUND**

### **DIVISION BACKGROUND:**

The Defense and Space Division was created in 1990, combining 6 separate divisions into a single profit/loss center. The six divisions are:

**Boeing Aerospace Division**

**Boeing Helicopters Division**

**Boeing Electronics Systems Division**

**Boeing Military Airplanes Division**

**Boeing Missiles and Space Division**

**Boeing Product Support Division**

# BOEING CORPORATE VISIT

## BOEING DEFENSE AND SPACE BACKGROUND

### PRODUCT FAMILY

#### Military Aircraft:

F-22	Advanced Tactical Fighter
B-2	Stealth Bomber
Navy AX	Navy Advanced Fighter (recent concept award)
B-52	Strategic Bomber
KC-135	Air Tanker (707 derivative)
E-3A	AWACS Airborne Radar
E-4A	Airborne Command Post
E-5A	Airborne Optical Adjunct
E-6A	Airborne Submarine Communications
P-3	ASW Avionics Upgrade
A-6	Attack Bomber Re-wing (Composite wing)

#### Helicopters:

RAH-66	Light Attack Helicopter
V-22	Osprey Tilt-rotor Aircraft
CH-47	Chinook Helicopter upgrades

#### Missiles and Space:

Space Station	Habitat and Living Modules for SS Freedom
Stinger	US Army Missile Program
ALCM	Air Launched Cruise Missile
MM/PK	Minuteman/Peacekeeper Missile

#### Aerospace:

IUS	Interim Upper Stage (Booster for satellite)
Peace Shield	Air Defense System
AST	Anti-Satellite
Adv Projects	Research and Development

# **BOEING CORPORATE VISIT**

## **BOEING DEFENSE AND SPACE BACKGROUND**

### **ISSUES:**

#### **COMMITMENT TO DSG/GOVT PROGRAMS**

- Boeing continues to be committed to pursuing and winning key programs
- Selectivity is key - choosing select program to pursue and win (Boeing's approach is NOT a "Shotgun" Approach)
- New Programs being considered to pursue:  
    Navy AX  
    ICASE

#### **DECLINING GOVERNMENT CONTRACTS**

- Recent Budget battles - V-22, B-2, F-22/ATF, AH-66 all received budget approval
- Future cuts in existing/approved programs possible (e.g., reduction in B-2 contract to a limit of 20 aircraft)
- Also are issues with contract type - recent Fixed Price contracts have led to poor profitability in Government programs. Boeing believes they have addressed this and can now compete profitably. Some movement to drive Cost-Plus for initial design and competitive contracts with Fixed Price for production contracts.

#### **COMPETITION**

- Partnering with Bell on V-22, competing with Sikorsky
- Partnering with Sikorsky on AH-66, competing with Bell

# **BOEING CORPORATE VISIT**

## **BOEING COMPUTER SERVICES BACKGROUND**

### **1. BCS MISSION**

The primary mission of Boeing Computer Services (BCS) is to support the company's need for computing, and telecommunication services. A secondary mission of BCS is to provide information services to selected Government and commercial customers. Additionally, BCS is responsible for the procurement of \$2 billion dollars of computer hardware, software, maintenance and Systems Integration products and services annually for the Boeing Company.

### **2. BBG GOALS**

Since the inception of the Boeing Business Group in Q4, FY'90, Digital's position in the Boeing Account, Executive relationships and revenue has grown significantly. The key win of the SMARTS (Sheet Metal Automated Tracking and Recovery System) for \$60-80M lifetime and GENESYS (Computer Aided Process Planning) for \$20M lifetime; Systems Integration Programs has placed Digital in a stronger position to continue to capture revenue in all our product and service lines. Additionally, there have been significant inroads in exclusive partnering initiatives on two key Government Programs, RCAS and ATF.

### **3. COMPETITION**

IBM is the dominant vendor to the Boeing Company, with estimated annual revenues approaching \$300M. Boeing made a decision to design their new 777 Aircraft on a digital design and pre-assembly platform of IBM CATIA. With expenditures of \$4B dedicated to the launch of the new 777, IBM continues to be a dominant vendor in Boeing. However, Boeing has expressed growing dissatisfaction with IBM and the relationship is eroding appreciably.

## **BOEING CORPORATE VISIT BOEING COMPUTER SERVICES BACKGROUND**

### **4. COMPUTING DIRECTIONS**

Last spring, Frank Shrontz, Boeing Chairman, assigned Art Hitsman, BCS President to head a dedicated team to take a 120 day study of Boeing's computer direction and strategy to the year 2010. Digital has presented twice to this Information Systems Study Team and has acquitted itself very well. Other presentors to the Study Team included John Sculley (Apple), Bill Gates (Microsoft), Steve Chen, Dr. Jack Armstrong (IBM) and other industry visionaries.

### **5. DIGITAL POTENTIAL**

As a result of a myriad of activities, Digital is in a far better position to accelerate our growth and broaden our base in the Boeing Account.

### **6. JANUARY, 1992 CORPORATE VISIT ATTENDEES**

Early this year (January, 1991) three key Boeing Executive attended a Digital Corporate Visit. These three BCA/BCS Directors are responsible for most BCA Computing decisions:

Armand Nucci, Director of Computing Architecture for Boeing Commercial Airplanes (BCA); Terry Milholland, Director of Applications for Boeing Computer Services (BCS); and George Roberts, Director of Technology for Boeing Computer Services (BCS).

This corporate visit opened many doors and led to key NAS/Open Systems evaluations during 1991.



# **BOEING CORPORATE VISIT**

## **BOEING COMPUTER SERVICES BACKGROUND**

### **HISTORY of BCS -**

Boeing Computer Services (BCS) was initially created as a result of an unsolicited proposal from IBM for a way for Boeing to control computing costs by centralizing the support and operations of computing (e.g., create an organization based on centralized (i.e., mainframe) computing.

BCS continues to be IBM largest commercial customer (non-government), with over 100 3090-class systems!

As a result, every president of BCS (with the exception of the current president) has been a former IBM VP. Art Hitsman, the current BCS President is the first president to come from the end-user computing side of Boeing. For many this represents a fundamental change within BCS to bring the computing division back into the "fold" of Boeing. One of the key initiatives within BCS is the Synergy Initiative - to get better cooperation between the various BCS support factions and their end-user computing organizations.

### **SIZE -**

BCS is currently around 13,000 employees across world, with most in the US, and about 60-70% in the Seattle/Puget Sound area. As such a large MIS shop, it is extremely specialized in its internal support organization, and BCS is viewed by many Boeing insiders as a slow, giant, bureaucracy.

### **GOALS -**

Main charter is to provide computing support and solutions to their end-users

Major short-term goals include:

- Reducing the cost of computing
- Reducing support cost
- Consolidating computing support
- Reducing the number and variability of systems through standards

Long term goals revolve around moving to a vision of a new Boeing as a result of a recent Information Services Study, referred to as the Vision 2010 (see Computing Issues Section).

# **BOEING CORPORATE VISIT COMPUTING ISSUES**

## **COOPERATION BETWEEN DIFFERENT ORGANIZATIONS**

With a large MIS organization, there is a large degree of specialization within Boeing and BCS. As a result, there is a wide variety of computing systems installed at Boeing - virtually every type of computer ever made. This is a major part of why supportability and the cost of computing support is such a key issue for this group.

Groups within BCS tend to be organized around the hardware platforms supported and/or software supported (e.g., there is a HP/Unix support group and a separate Digital Unix support group, etc.). This is why standards present such an opportunity for reducing support costs. It also means a major reorganization to re-structure how BCS provides service and support.

## **STANDARDS**

Tier 2 (Mid-range systems and servers) and Tier 3 (Desktop devices) are perceived to be "out-of-control" within Boeing by many BCS managers, in the sense of the control and support issues. From a historical cultural basis, many view the only way to control computing is to centralize it. The concept of distributed computing with degrees of centralized control is foreign to many. They equate distributed computing with distributed (read: lack of) control.

This is part of the driving force to establish standards, especially in Tier 2/3. Tier 1 (Mainframe Data Center) is nearly all IBM, all Blue, all new (only recently has any plug-compatibles been bought at BCS).

Thus, there is one huge defacto standard - IBM, and all others must be established through standards bodies and groups.

## **SYNERGY PROGRAM**

As a result of the large I/S bureaucracy, there is also a move to better integrate BCS support roles and functions with their end-user organizations. This effort, called the Synergy Program is started to make fundamental changes in how they provide solutions and services.

## BOEING CORPORATE VISIT COMPUTING ISSUES

Vision 2010 - Business Process Shifts

The following is a summary of the Business Process Shifts happening in Boeing:

<u>BUSINESS PROCESS</u>	<u>TODAY</u>	<u>2010</u>
Quality Approach	Inspect after mfg; Adjust process when defective	Design products/process for PPM quality-6-Sigma
Communications/Decision Making Responsibility	Chain of command	Widely diffused
Direction	Standard Operating Procedures	Procedures flexible and changeable
Producer/Supplier/Partner Relationships	Arms length/Adversarial Few Partnerships	Close cooperation and Mutual Benefit
Approach to Change	Avoid/resist/ infrequent	Embrace continuous change
Rate of Innovation	Infrequent	Continuous
Innovation Systems	Sequential Passing innovation from one team of specialists to another	Concurrent Multi-Discipline product
Enterprise Integration	Islands of Automation	All processes integrated
Enterprise Architecture	Proprietary Systems	Open Systems with Product Data Exchange standards

# BOEING CORPORATE VISIT STANDARDS AND BCA

## Governing Principles for Computing Architecture

1. **Strategically Driven:** Ensure stability by linking and scoping architecture to strategic business objectives (including processes, data, and their relationships.)
2. **Open Systems:** Reduce cost and support process integration by taking advantage of open systems standards and commonly available products.
3. **Distributed Functionality:** Cost effectively support changing business requirements by providing scaleable and flexible distributed functionality where appropriate.
4. **Information Utilization:** Support process-wide and cross-process business strategies by ensuring adequacy in data formats, accessibility, usability, reliability, and ownership of corporate information assets.
5. **Single Terminal Access:** reduce costs and improve service quality by providing multifunction and multisystem access from a single terminal selected from the set of standards to meet the user/function profile.
6. **Reusability:** Improve quality and reduce cost and flow time by acquiring or developing reusable hardware, software, data, and concepts.
7. **Reduce Variation:** Reduce costs by eliminating unnecessary variety in hardware, software, data, and concepts.
8. **Technology Pacing:** Reduce costs while improving process quality by utilizing computing technology only when production-ready and not beyond obsolescence.
9. **Supporting Infrastructure:** Reduce risk and cost by ensuring appropriate availability of expertise, resources, and processed to implement and sustain computing solutions.

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These principles must be used during analysis and definition of computing architecture designs, and when selecting from alternative computing solutions.

# BOEING CORPORATE VISIT STANDARDS AND BCA

## BCAT 11 ARCHITECTURAL RULES

**Rule 1: One Module Satisfies One and Only One Function** - All computing applications will be modular in nature, partitioned to uniquely service a single manufacturing process (i.e., scheduling, order tracking, etc.). This allows for aggregates of computing modules to be compiled and implemented as a single computing application.

**Rule 2: Consistent Design Language** - The use of a graphical design language for all system engineering activities allows the creation of a design library of functions (Figure 27). This is much easier to browse and understand by the system engineer than libraries of "C" code. The use of a consistent design language for CASE tools provides independence of vendor-specific CASE tools as well as portability and reusability of developed software modules.

**Rule 3: Consistent Programming Language** - By implementing a consistent programming language, training of programming personnel is minimized and their utilization is made more flexible. It is also necessary to create a common library of compatible software modules.

**Rule 4: Consistent Separation Of Data From Applications** - The separation of data from the application(s) reduces the duplication (promoting reusability of data entities).

**Rule 5: Consistent Database Access Language** - The requirement to decouple data from that of the application(s) necessitates a data access language. A consistent data access language will promote the portability of applications.

**Rule 6: Consistent Operating System Interface** - A consistent operating system interface is necessary to decouple application software from that of the delivery element, enabling computing applications to be hosted on (dissimilar) delivery platforms sized for performance or cost criteria.

**Rule 7: Consistent Communications Transport Protocol** - A consistent means of transporting information from one application or data store to another is essential to interoperability of autonomously developed computing applications.

**Rule 8: Consistent Communications Messaging Service** - A consistent means of conveying information from one application to another (module to module and module to device) is essential to interoperability and reusability of autonomously developed computing applications.

**Rule 9: Consistent Communications Media** - A consistent physical medium(s) is required to support equipment portability and growth in performance requirements.

**Rule 10: Consistent Distributed Presentation Service** - To promote application portability, a consistent distributed presentation service is required to support the consistent user interface.

**Rule 11: Consistent User Interface** - Driven by the requirement to promote user portability, a consistent user interface is required that will govern the definition and use of icons, keys, colors, etc.

# **BOEING CORPORATE VISIT COMPETITIVE OVERVIEW**

## **COMPETITION**

### **IBM INFRASTRUCTURE**

Our biggest competition in Boeing is the IBM infrastructure. The organizations and people who have 25 years of implementing mainframe IBM IMS and/or CICS applications. Many are explicitly biased, many are implicitly biased as a result of tremendous lack of knowledge (or interest to learn new technology and approaches to computing). For example, the RS/6000 was approved with little or no analysis.

The Boeing account team spend a tremendous amount of our time working the continuous issue of account education.

### **DIGITAL PERCEPTION - VMS BIAS PERSPECTIVE**

Digital is perceived as a provider of proprietary computer products. VMS is perceived as a closed/proprietary system. We have a good installed VAX/VMS base, but the movement is clearly towards Unix/Open Systems, regardless of the new Openness of VMS. BCS has had early experiences with our Unix products (Ultrix V1.0 on VAX 7xx platforms).

VMS is perceived to be strong in production support capabilities, and this is the only stalling issue with the movement to Open Systems at Boeing. They want to have the features and supportability of VMS with the Openness and portability they perceive they get with Unix.

### **HP/OPEN SYSTEMS PERCEPTION**

HP is trying to position themselves as only providing Unix solutions, and has a strong competitive attack against Digital - saying we still push VMS and are not committed to Unix. The internal BCS groups supporting most of the Unix activities are historical HP-bigots and supporters. For example, HP/Apollo Domain was approved easily and remains the preferred non-CATIA workstation. HP currently has a high level of support within BCS. This is due to their corporate and local marketing efforts supporting a strong UNIX commitment message.

### **ANDERSON CONSULTING**

With a major portion of the Boeing business being System Integration focused, Anderson Consulting is a major competitor on SI projects. A/C has bid and partnered with IBM on major projects, along with other specialized software or hardware vendors. Recent Anderson Consulting System Integration efforts have had significant performance and delivery issues within Boeing (e.g., PSDS, 8100 Replacement Program). This has resulted in A/C being removed from several key competitive situations (i.e., the recent PIP competition).



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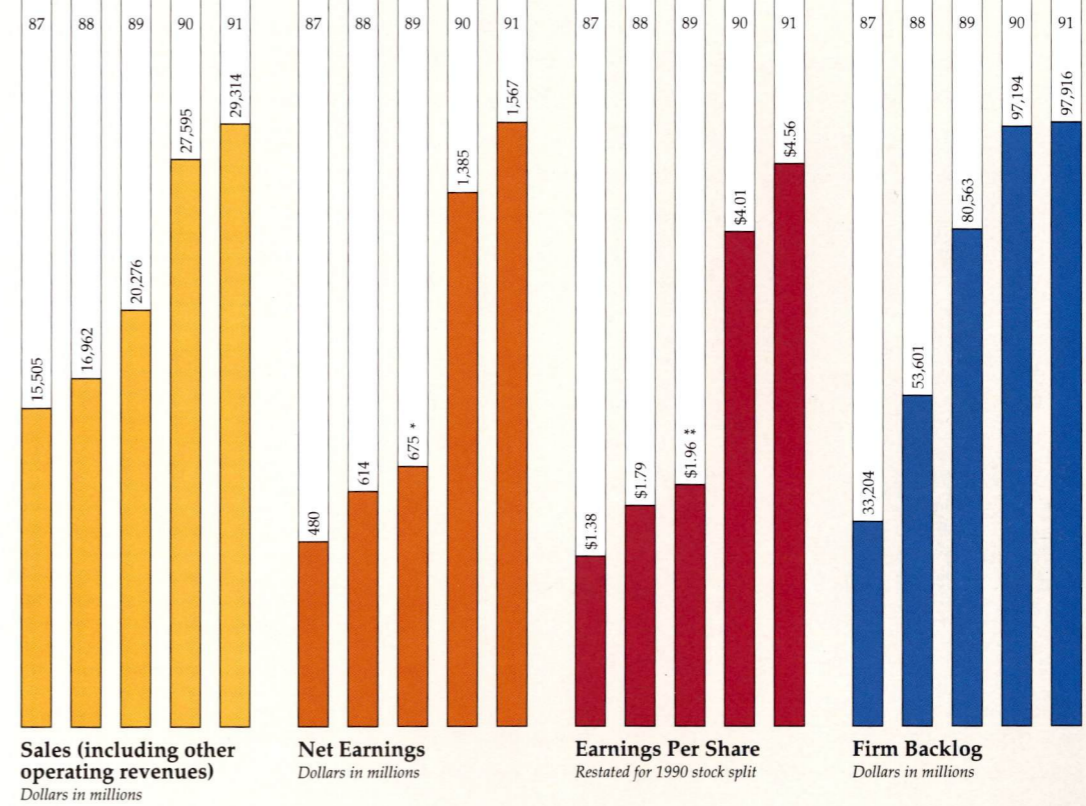
ANNUAL 1991 REPORT



**BOEING**



- 2 Message to Stockholders
- 4 Commercial Airplane Group
- 14 Defense & Space Group
- 22 Computer Services
- 24 Corporate Citizenship
- 26 Executive Council
- 27 Financial Section



**Sales (including other operating revenues)**  
Dollars in millions

**Net Earnings**  
Dollars in millions

**Earnings Per Share**  
Restated for 1990 stock split

**Firm Backlog**  
Dollars in millions

\*Exclusive of \$298 due to the adoption of Statement of Financial Accounting Standards No. 96.  
 \*\*Exclusive of \$.86 per share due to the adoption of Statement of Financial Accounting Standards No. 96.

In 1991, The Boeing Company achieved excellent overall results in a difficult business environment. We delivered more jet transports in a single year than ever before, expanded the customer base for our new 777 jetliner, won major participation in two of the largest defense contracts slated for this decade, and recorded the highest sales and earnings in Boeing history. The company's return on stockholders' equity in 1991 was 21 percent.

On the commercial side of our business, the recession in the U.S. and the general slowdown in economic



growth worldwide — combined with the Persian Gulf War — led to a slump in world air travel and contributed to the financial losses incurred by many air carriers. Although orders for new commercial aircraft were down in 1991, the company still announced orders for 257 jetliners valued at approximately \$20.6 billion. These orders represented about a 65 percent market share and were sufficient to maintain the company's substantial backlog.

Of particular importance, we obtained 27 orders from four additional customers in Europe and Asia for our widebody 777 twinjet — scheduled for first delivery in 1995. As of January 1992, we had recorded 86 orders for the 777, with options for 75 more.

The 777 program is proceeding on schedule. More than 200 design-build teams are currently at work on the project with the goal of producing a superior product by the most cost-effective process. When the first 777 rolls off the line, we are confident it will not only be the world's most technologically advanced jetliner — it will also be the most efficiently designed and manufactured aircraft ever built.

In January 1992, Boeing announced the sale of its de Havilland subsidiary in Canada to Bombardier, Inc. of Montreal and the Province of Ontario. With the sale of de Havilland, which produces turboprop commuter aircraft, Boeing commercial aircraft business will focus exclusively on the manufacture of jet transports.

Although Boeing is concerned about the current financial pressures on the airline industry, we remain optimistic about the long-term prospects for our commercial airplane business. Since the advent of commercial jet aviation, growth in air travel has been closely linked to prevailing economic conditions. Periodic slumps in air travel have occurred in times of recession — or as a result of unforeseen events, such as the Persian Gulf crisis — but the market has always rebounded and continued its upward trend.

With the company's current line of jetliners, the new 777, and the determination to meet the changing needs of airline customers, Boeing is in an excellent position to maintain its historically strong share of the market.

The outlook for our defense and space business is substantially improved, despite the overall downward trend in the market. Although Boeing incurred an operating loss on this business segment in 1991, a profit was realized in the fourth quarter — and we expect the company's defense and space business to be profitable in 1992.

Boeing has improved its performance on a number of military contracts and streamlined operations throughout the Defense & Space Group. We also won a share of two large defense contracts with good long-term potential: the F-22 fighter for the Air Force, and the Army's RAH-66 Comanche helicopter. The military market will remain sizable, though the cuts in U.S. defense spending are already substantial and could be greater than those currently planned. While Boeing has a number of Department of Defense and NASA programs that might be subject to further cutbacks or cancellation, our defense and space business is broadly diversified. This diversity of programs and expertise is a clear strength for Boeing as our national defense strategy evolves in response to the apparent end of Cold War tensions with the former Soviet Union.

The primary mission of Boeing Computer Services will remain that of providing computing and telecommunications support to the company's operating units. The division will also compete for selected federal government information services contracts. In 1991, Boeing Computer Services was

awarded a major government contract to implement systems that will enhance the readiness and mobilization capabilities of the Army National Guard and Army Reserve.

In 1992, our major goals include keeping 777 development on track, as well as expanding the aircraft's customer base; returning our defense and space business to profitability; and moving forward with companywide initiatives to make continuous improvements in the way we design, build, and support our products.

Our mission is to be the number one aerospace company in the world, and among the premier industrial firms, as measured by quality, profitability, and growth. We are committed to being a responsible corporate citizen, conducting our business with the highest standards of integrity, and making a positive contribution to the communities where we have a presence.

Boeing management fully recognizes the current and potential challenges ahead, and we are determined to keep the company competitive for the long-term. With the company's global business base, strong balance sheet, and the commitment of both management and employees to continually look for better ways to do our jobs and serve our customers, Boeing is well-positioned to maintain its aerospace leadership throughout this decade.

Sincerely,

Frank Shrontz  
Chairman and Chief Executive Officer  
February 24, 1992



A 747-400 NEARS COMPLETION AT EVERETT, WASH., FACILITY, SITE ALSO OF 767 ASSEMBLY AND FUTURE 777 PRODUCTION. THE 747-400 CAN FLY FARTHER AND CARRY MORE PASSENGERS THAN ANY OTHER COMMERCIAL JETLINER.

The Commercial Airplane Group, with more than 85,000 employees, is the company's largest operating unit and accounted for 78 percent of total operating revenues in 1991.

The Group performed well during the year, although the market for new aircraft was tighter as a result of a decline in world air travel and the adverse financial pressures on many air carriers.

Boeing delivered 435 jet transports in 1991, more than any other year in history. Included in the record number of deliveries were 215 737s, 64 747s, 80 757s, 62 767s, and 14 707 military derivatives. In 1992, the company expects to deliver a record 449 jet transports to its customers around the world.

Although orders for new aircraft were down in 1991, Boeing still announced orders for 257 jetliners, with an estimated value of \$20.6 billion. By type, the announced orders included 71 737s, 38 747s, 49 757s, 72 767s and 27 777s.

Since the company launched the 777 program in October 1990, the wide-bodied twinjet had accumulated 86 orders by early 1992 — with options for 75 more — from seven customers in Europe, Asia and the United States.

During this same period, announced orders for the 777 have exceeded the combined orders of its main competing models in class by a two-to-one margin.

The 375-400 passenger 777 is sized to fit the market niche between the current 767 and 747 jetliners. When it enters service in 1995, the 777 will be the world's largest twinjet and the most spacious airplane in its class. The 777 also will be the world's most technologically advanced airliner, offering many improvements in airfoil technology, flight deck design, passenger comfort, and interior flexibility.

The 777 is being digitally designed and pre-assembled with the aid of computers to cut the cost of errors and rework — and produce an airplane of superior quality and reliability. Besides ensuring that parts will fit correctly, digital product definition and pre-assembly also eliminates most of the engineering mock-ups that would normally be required. Development of the 777 is proceeding on schedule.

During the year, Boeing delivered the last 747-200, ending a production run that spanned 21 years. Production of the 747 has now focused on the -400 series which, with improved aerodynamics, digital avionic systems, and a two-crew flight deck, offers airlines lower operating costs, improved passenger appeal and many additional benefits. Certification and initial delivery of a freighter version of the 747-400 is scheduled for the second half of 1993.

The 757 and 767 are quiet, fuel-efficient twinjets that meet FAA requirements for extended range operations. A record number of both models were delivered in 1991 — and even higher numbers of deliveries of these models is projected for 1992. For airlines facing increasing passenger demand as well as increasingly congested airports and airways, the efficient, medium-capacity 757 is a preferred choice for domestic and transcontinental service. As a result, the 757 is rapidly replacing the 727 on many domestic routes in the United States. To accommodate customer demand for the airplane, the 757 production rate was increased from 7 to 8-1/2 planes per month in January 1992.

The 767, a larger twinjet carrying 220 – 300 passengers, has a range in some versions of over 6,000 nautical miles. The 767's combination of medium-capacity and long-range capability has enabled airlines to open new routes between secondary destinations that would not sustain frequent service with larger airplanes. More trans-Atlantic flights are now made with the 767 than any other type of airplane.

A record number of 737s, the smallest member of the Boeing family of jetliners, was also delivered in 1991. The 737, with models ranging in payload from 108 to 168 passengers, is the best selling jetliner in history. More than 2,000 737s have been delivered since 1967.

During the year, a number of airlines requested rescheduling deliveries of firm orders, or did not exercise options for future deliveries, and a nominal number of firm orders were removed from backlog as a result of customer insolvency. This change in demand primarily affected narrow-body jetliners for Boeing, as well as its competitors. As a result, the company announced plans to scale back 737 production from 21 to 14 airplanes per month in the fourth quarter of 1992.

In January 1992, Boeing announced the sale of its de Havilland subsidiary to Bombardier, Inc. of Montreal and the Province of Ontario. In the transaction, Bombardier will own 51 percent and the Province 49 percent of a newly formed entity, de Havilland, Inc. Boeing had announced its intention to sell the subsidiary in July 1990. With the sale of de Havilland, which produces turboprop commuter aircraft, Boeing commercial aircraft business is focused exclusively on the manufacture of jet transports.



FULL-SCALE MOCK-UP OF 777 INTERIOR CABIN IS USED TO ACQUAINT AIRLINE REPRESENTATIVES AND PROGRAM PERSONNEL WITH THE AIRCRAFT'S MANY ADVANCED FEATURES, SUCH AS LARGER OVERHEAD STORAGE BINS, EXTRA HEADROOM, AND FLEXIBLE SEATING OPTIONS.



IN 1991, BOEING BEGAN CONSTRUCTION ON PLANT EXPANSIONS AND NEW FACILITIES THAT TOTAL SOME SEVEN MILLION SQUARE FEET. SHOWN HERE, A WELDER AT WORK ON GIRDERS FOR THE INTEGRATED AIRCRAFT SYSTEMS LABORATORY IN SEATTLE.

During 1991, a number of major construction projects that are essential to the company's future got under way along the Everett-Seattle-Tacoma corridor. In Everett, site of 747 and 767 assembly, construction started to add 5.6 million square feet of manufacturing, warehouse and office space — most of it targeted for the needs of 777 production.

In Seattle, construction began in May on the 518,000-square-foot Integrated Aircraft Systems Laboratory. This is the largest facility of its kind in the aviation industry, and will provide for the integration and comprehensive testing of aircraft systems. The 777 program will make extensive use of the new facility, ensuring that the aircraft's systems work together reliably before first flight.

Boeing is recognized throughout the airline industry for the efficiency and scope of its customer support services. That capability will be strengthened by a new spare parts distribution center, adjacent to the Seattle-Tacoma airport, for which construction began in March. The facility will enable the consolidation of spare parts inventory in one area, and its airport location will ensure the parts are quickly on their way to

airline customers. Boeing receives an average of 2,600 orders for spare parts each day, and promises to get the parts moving to the customer within four hours.

During the year, plans also were announced to build a new customer services training center. The Boeing Customer Services Division trains pilots from more airlines than any other organization in the world.

The Fabrication Division of the Commercial Airplane Group, which manufactures major components for all Boeing commercial airplanes, made substantial improvements in both quality and cost on current programs while expanding to prepare for the production of the 777.

The division achieved a 24 percent reduction in the number of parts scrapped or requiring rework or repair. In addition, production flow times were reduced 28 percent and late deliveries of parts to the assembly lines in Renton and Everett were reduced by 67 percent. These dramatic improvements resulted in significant savings in materials, labor and inventory costs, as well as providing for a smoother production flow companywide.

Construction of a new facility for the production of major wing components and the advanced composite tailplanes for the 777 is well under way at a site in Pierce County, Wash. Additional new building required for capacity expansion has been completed at the division's Auburn, Wash., main site, as well as its Portland, Ore., site.



At the company's Wichita, Kan., operation, the one-million-square-foot Manufacturing Process Facility (MPF) was completed and became operational in 1991. Inside the two-story MPF, one of the largest and most technologically advanced facilities of its kind in the world, Wichita has consolidated its paint and process lines for chemically treating and coating aircraft parts with corrosion-resistant materials. In addition to helping Wichita increase its production capacity, the MPF incorporates a number of systems that contribute to enhanced environmental and worker safety.

During the year, a number of design-build teams for the 777 program transferred from Seattle to Wichita, bringing with them responsibilities for the aircraft sections that will be designed and built there.

The Commercial Airplane Group provided more than 3.4 million hours of training to its employees during 1991. The largest single training focus was the computer-aided design system used on the 777 and other development programs, with engineers receiving over 350,000 hours of training on this system.

Programs training employees in industrial manufacturing skills were expanded with the establishment of a Fabrication Division Education and Training Center, as well as a new Skills Process Center at the Renton Division, which is similar to an existing facility at the Everett Division.

To ensure the company's long-term leadership in commercial aviation, Boeing continues to study the potential need for new jetliner models or derivatives. In 1991, the company announced the formation of a Large Airplane Development organization to consolidate research efforts into the potential market and optimum configuration for an airplane larger than the current 747-400.

Boeing also is studying the technical feasibility and market need for the next generation supersonic transport, known as the High Speed Civil Transport (HSCT). The company is cooperating with key manufacturing firms in Asia, Europe and the U.S. to research the market and technical requirements for such an aircraft. Many hurdles remain to building the HSCT. The aircraft must be environmentally acceptable, meet tough noise standards, and also make good economic sense.

In addition to studying the potential need for new aircraft designs, the company is continually evaluating the need to upgrade and modify its current family of jetliners to meet the changing requirements of its airline customers.

In 1991, world airline traffic declined by an estimated two to three percent. Traffic fell sharply in the first quarter following the outbreak of war in the Persian Gulf and has been recovering very slowly, reflecting a recession in the U.S. and a slowing of the major European economies. The Asia-Pacific region continues to show healthy economic growth, but at somewhat lower rates than in the last decade.



SAFETY AND ENVIRONMENTAL PROTECTION ARE TOP PRIORITIES AT ALL BOEING FACILITIES. HERE, AT THE COMPANY'S EVERETT, WASH., PLANT, PAINTER CLINT HUSEBY READIES A SPECIAL SPRAY GUN THAT ELECTROSTATICALLY CHARGES THE PAINT SO THAT IT IS DRAWN TO THE AIRPLANE — RESULTING IN FEWER PAINT PARTICLES IN THE AIR.



AGAINST THE BACKDROP OF MT. RAINIER, BOEING JET TRANSPORTS STAND READY FOR DELIVERY IN SEATTLE. BOEING DELIVERED A RECORD 421 COMMERCIAL JETLINERS IN 1991—ABOUT TWO-THIRDS OF THEM TO INTERNATIONAL CUSTOMERS.

Air travel demand has traditionally grown in parallel with the world economy. Unforeseen events such as the Persian Gulf crisis may slow travel growth in the near term but have little effect on long-term trends. After disruption, the market usually bounces back and often exceeds the trend line.

The demand for new airplanes is tied to the growth in passenger traffic and the retirement of airplanes currently in the fleet. Boeing estimates that passenger traffic will grow at an average annual rate of about 5.2 percent between 1992 – 2010. Significant unpredictable variations can be expected from time to time during that period, but the company remains optimistic about the long-term outlook for its commercial transport business.

Boeing expects that the combined effects of traffic growth and aircraft retirements will result in a total open market for commercial transports of over \$660 billion (in 1992 dollars) in the period from 1992 – 2010. With the company's current line of commercial jet transports, and potential additions, Boeing is in an excellent position to capture a strong share of the market. □

In 1991, revenues for the Defense & Space Group were \$5.9 billion, equivalent to the year before. Although the Group recorded an operating loss of \$102 million in 1991, it sustained a profit in the fourth quarter and expects to be profitable in 1992.

Boeing won major new business during the year, most notably a one-third share of the Air Force contract to build the new F-22 fighter, and one-half of the Army contract to build prototypes of the RAH-66 Comanche Light Attack Helicopter.

During 1991, Boeing suffered the termination of several defense contracts, including most of the work on the Peace Shield air defense system for Saudi Arabia, and three missile programs: Short Range Attack Missile, Small ICBM Hard Mobile Launcher, and Peacekeeper Rail Garrison.

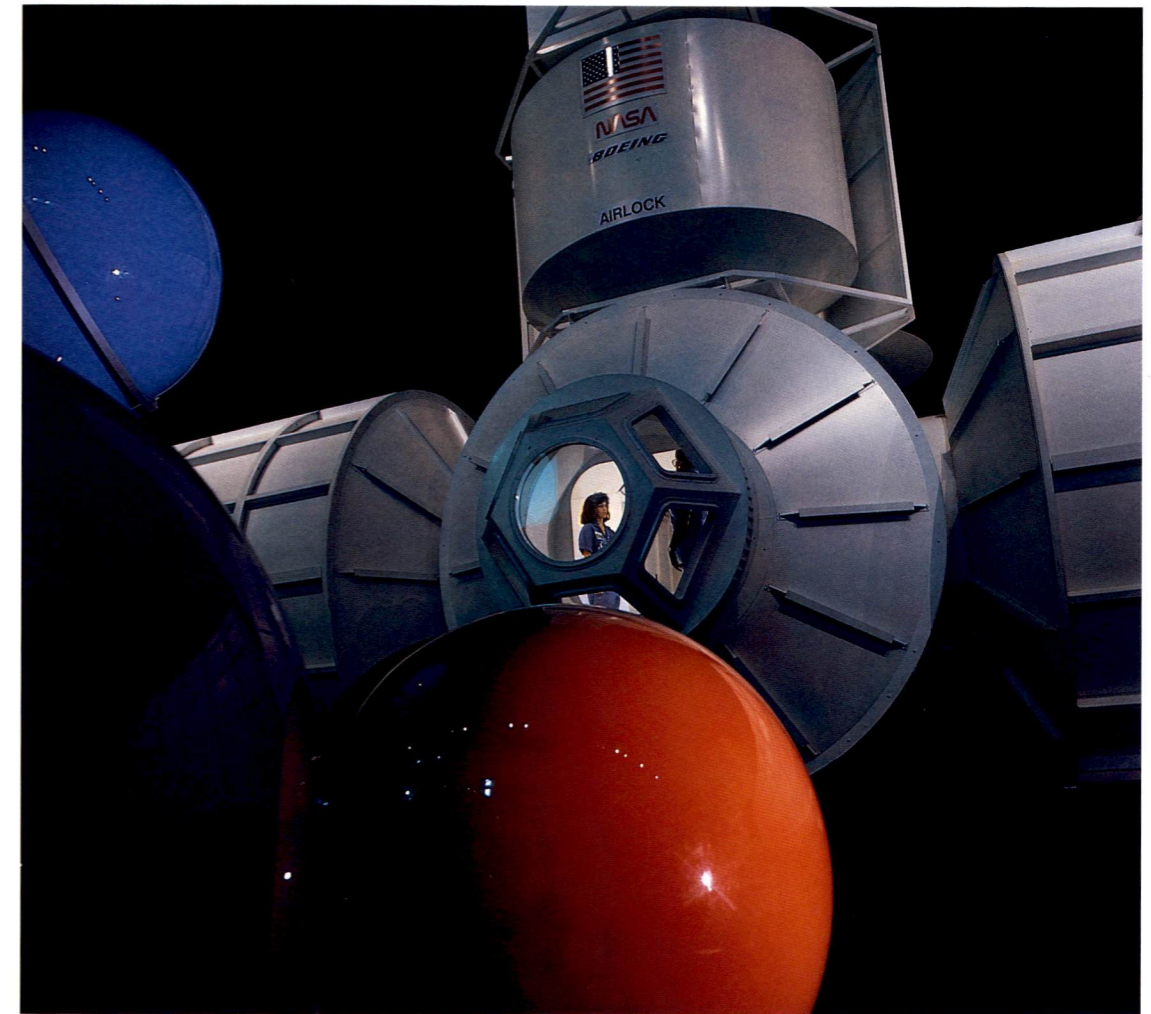
Defense & Space Group employment was reduced by approximately 7,000 during the year, to about 43,000. Since

formation of the Defense & Space Group at the beginning of 1990 — combining six divisions into a single profit and loss center — the workforce has declined by about 13,000. Current plans reflect a reasonably stable outlook for revenues and employment at about 1992 levels for the next few years.

The Defense & Space Group reorganized its existing divisions and added a new division during 1991 to better reflect its major product lines and future emphasis. The Group now comprises five divisions: Helicopters; Electronic Systems; Military Airplanes; Missiles & Space; and a new Product Support Division.

In addition to its defense and space work, the Group also provides support to the company's commercial airplane business through the manufacture of aluminum and composite parts, and the design and manufacture of electronics systems.

Although the levels of future Department of Defense (DoD) and NASA budgets are uncertain, the company's defense and space business is broadly diversified — and includes a number of programs subject to system upgrade or modification as the focus of national defense strategy changes.



FULL-SCALE MOCK-UP OF SPACE STATION FREEDOM. BOEING HAS A NASA CONTRACT TO BUILD THE LIVING, LABORATORY, AND SUPPLY MODULES FOR THE SPACE STATION.



PROTOTYPE OF F-22 FIGHTER.  
BOEING IS TEAMED WITH LOCKHEED  
AND GENERAL DYNAMICS TO DEVELOP  
THIS NEXT-GENERATION FIGHTER  
FOR THE U.S. AIR FORCE.

#### **Military Airplanes**

The company's long effort to win a key role in the U.S. Air Force's F-22 Advanced Tactical Fighter program was rewarded in April 1991 with the contract award going to a Lockheed/Boeing/General Dynamics team.

The F-22 is a long-term program with a potential value to the team of \$60 billion, and positions Boeing and its partners as developers of the world's premier fighter aircraft.

Following the F-22 success, the company entered the competition for a contract to build the Navy AX attack/strike jet. Boeing is teamed with Grumman and Lockheed on a proposal to develop an all-new plane, and also teamed with Lockheed and General Dynamics to offer a derivative of the F-22. The Navy has awarded both teams "Concept Exploration" contracts.

Boeing is the major subcontractor on the B-2, and produces primary structural components — namely, the aft center and outboard wing sections, using the latest in advanced composite materials and automated production techniques.

Despite improved efficiency and the impressive flight-testing performance of the B-2, the program's future remains in doubt. In his January 1992 State of the Union message, President Bush called for capping B-2 production at 20.

#### **Missiles & Space**

Boeing is under NASA contract to build the living, laboratory and support modules that are the heart of Space Station Freedom, now scheduled for deployment in space as a national laboratory in the late 1990s. President Bush has signed a joint Senate and House appropriations bill which provides about \$2 billion for Space Station Freedom in fiscal 1992.

In January 1991, the 100th Avenger missile fire unit rolled off the Boeing production line in Huntsville, Ala. By September, Avenger achieved its 12-per-month production rate on schedule. In November, Boeing and Short Brothers of Belfast, Northern Ireland, conducted a series of tests proving Avenger could successfully fire missiles other than the American-made Stinger with which it is armed for U.S. service, thus making it attractive for foreign markets.

In February 1992, Boeing announced a \$436 million contract award from the U.S. Army Missile Command to produce 679 pedestal-mounted Stinger/Avenger fire units, bringing to 1,004 the total number of Avenger units purchased by the Army since 1987.

Boeing delivered its 23rd Inertial Upper Stage (IUS) booster rocket to the U.S. Air Force in May 1991. The IUS has been the workhorse booster for the Air Force and NASA for the past 20 years, placing satellites in orbit and sending probes to other planets. The company has a long-lead contract to build three more IUS boosters, with full production scheduled to begin in 1995.

Missile programs suffered a major setback during 1991. In September, President Bush ordered cuts in nuclear arms, resulting in the termination, for the convenience of the government, of three full-scale development missile contracts with Boeing: Short Range Attack Missile; Peacekeeper Rail Garrison; and Small ICBM basing programs, including Hard Mobile Launcher and Weapon Control System. The company announced the potential reduction of 2,500 employees as a result of the terminations.

#### **Electronic Systems**

Deliveries of Airborne Warning and Control System (AWACS) aircraft to the United Kingdom and France began in 1991, with final deliveries to both nations scheduled for spring 1992.

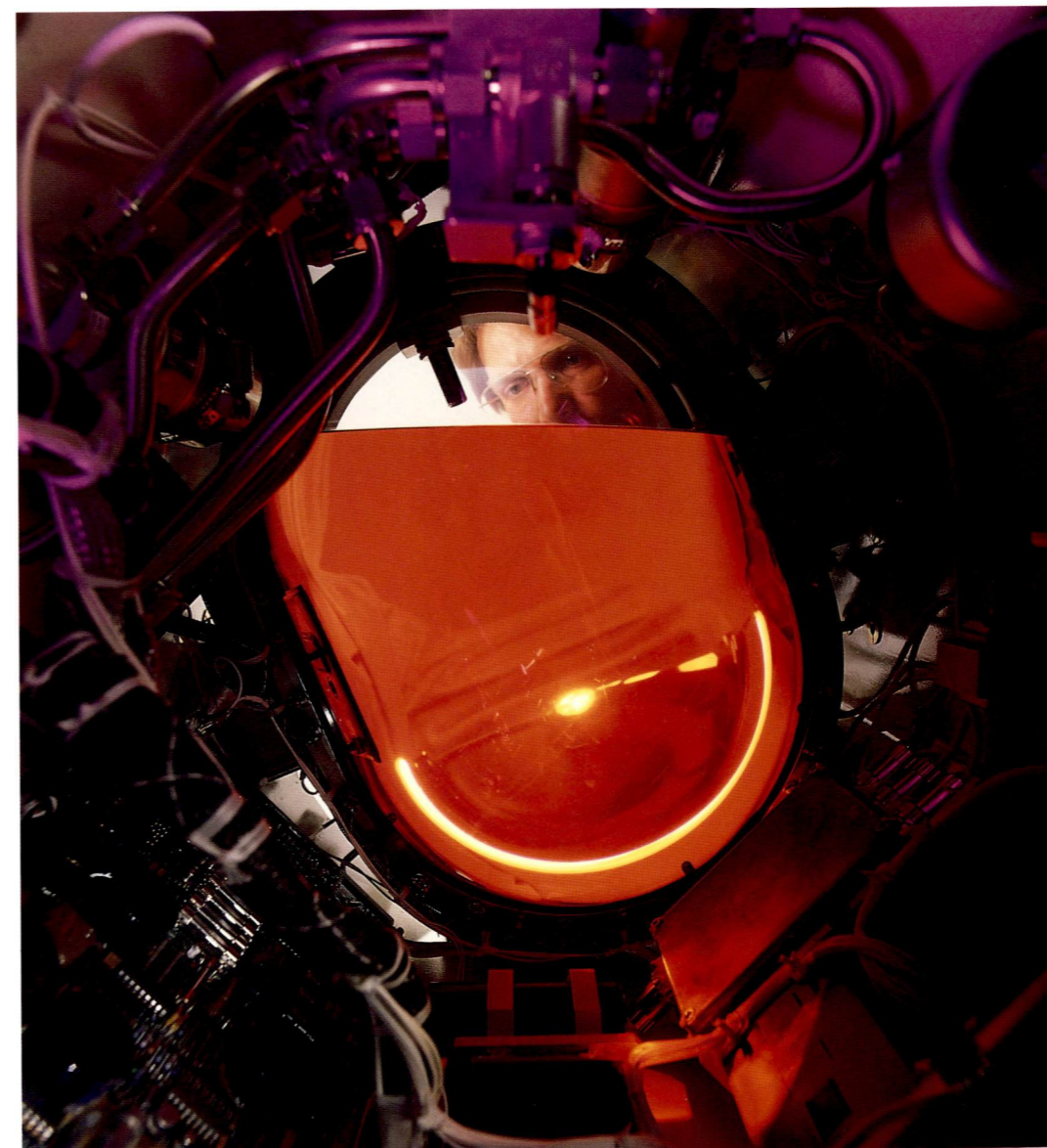
Boeing halted further efforts to obtain sufficient new orders to enable restart of the 707 production line (a military version of the 707 airframe had been used for AWACS). Boeing announced late in 1991 its intention to offer future customers an AWACS system utilizing a modified version of the 767 commercial aircraft.

An extensive program to upgrade the existing AWACS fleet is an important source of business throughout the 1990s.

During 1991, the U.S. Air Force terminated for alleged default most of the company's work on the Peace Shield air defense system for Saudi Arabia. Boeing believes it is not in default and has begun litigation. The company has continued the remaining portion of the Peace Shield contract, and at year-end had delivered seven of the 15 radar sites for which it is responsible.

Six of the U.S. Navy's new E-6 submarine communications aircraft were delivered during the year. Boeing will deliver the last of 16 E-6 aircraft in May 1992.

Flight-testing began during 1991 and will continue in 1992 on the Update IV, a Navy program to develop advanced avionics carried by P-3 aircraft to detect and track submarines.



RESEARCHER MIKE BENTZ EXAMINES THE TANK PRESSURE CONTROL EXPERIMENT, WHICH FLEW ON SPACE SHUTTLE ATLANTIS IN AUGUST. THE EXPERIMENT, WHICH STUDIES THE BEHAVIOR OF FLUIDS IN ZERO-GRAVITY, WILL HELP ENGINEERS DEVELOP TECHNOLOGY FOR THE STORAGE AND TRANSFER OF CRYOGENIC ROCKET FUELS IN SPACE.



FULL-SCALE MOCK-UP OF RAH-66 COMANCHE RECONNAISSANCE/ATTACK HELICOPTER. A BOEING/SIKORSKY TEAM WAS AWARDED A U.S. ARMY CONTRACT IN 1991 TO BUILD PROTOTYPES OF THE RAH-66.

### **Helicopters**

The Defense & Space Group's helicopter programs are based in Philadelphia. In the spring of 1991, an extended competitive effort was completed with the U.S. Army selecting a Boeing/Sikorsky team to develop its new RAH-66 Comanche reconnaissance/attack helicopter. In January 1992, the Pentagon announced plans to restructure the development program and defer a decision on production from 1997 to an undetermined future date.

The V-22 Osprey tiltrotor transport, which is being developed for the U.S. Marine Corps by the team of Boeing and Bell Helicopter Textron, has been authorized by Congress to receive \$790 million in fiscal 1992 for fabrication and testing of three new production-representative aircraft. Four V-22 prototypes have accumulated more than 600 flight-test hours. The DoD considers the V-22 program "unaffordable" and its future development is questionable.

During 1991, 57 new and rebuilt CH-47D Chinook transport helicopters were delivered. Nine new CH-47Ds went to customers in the Far East. The U.S. Army accepted 47 modernized CH-47Ds, including one MH-47E special-operations aircraft, and the Spanish Army one CH-47D.

Boeing expects to deliver an additional 139 modernized Chinooks through the mid-1990s. The U.S. Army

will receive 89 upgraded Chinooks, with a significant number expected to be completed as highly sophisticated MH-47Es. Three European military customers are scheduled to receive 50 Chinooks rebuilt to CH-47D standards.

The Helicopters division also builds fixed-leading-edge assemblies for the 757 and 767 jet transports, and will produce leading-edge slats for the new Boeing 777.

### **Product Support**

This new unit was formed in July 1991 with headquarters in Wichita, Kan., to consolidate customer service, logistics support and modification efforts in the Defense & Space Group.

One-fourth of Group business involves supporting Boeing defense and space products already delivered to customers. The centralization of efforts in that area positions the group to become more competitive in the business of modernizing and upgrading products at a time when customers will be seeking more such efforts as defense budgets become leaner. □

The primary mission of Boeing Computer Services (BCS) is to support the company's need for advanced computing and telecommunications systems. The division also competes for federal government information services contracts. BCS is headquartered in Bellevue, Wash., and has approximately 14,000 employees working throughout the United States on Boeing, NASA and DoD programs.

BCS plays a key role in developing the company's automated manufacturing and business systems. During the year, support for the company's commercial airplane business was focused on achieving 100 percent digital product definition, digital preassembly and digital data exchange for the 777 program. This effort involves interconnection of all Boeing facilities involved in the 777, as well as key suppliers and partners worldwide, and is expected to improve the cost-efficiency of 777 development and production.

In the external business area, BCS has withdrawn from the commercial marketplace and fulfilled existing obligations to customers, partners, and suppliers. The external focus is now exclusively on government systems integration and support business.

BCS continues to pursue selected federal government contracts, and in October was named by the U.S. Army Reserve Component to implement the Reserve Component Automation System (RCAS) contract. RCAS has a

total contract value of \$1.6 billion over 12 years and is aimed at enhancing the readiness and mobilization capabilities of Army National Guard and Army Reserve Units.

During the year, BCS took steps to better align its organization structure with that of its Boeing customers. An operations organization was established that combines all BCS operations activities. This organization will define the processes and resources necessary to ensure consistent operations activities throughout the division.

BCS also formed a new research and technology organization, a counterpart to the engineering organizations that exist in other operating divisions, that will help ensure consistency of technical processes and improve performance.

The primary long-term objective of BCS is to provide the company with effective computing and telecommunications support in a fast-changing environment that has growing information processing requirements. Continuous improvement in the way these resources are utilized and managed has been and will continue to be an important goal for the division. □



RESEARCH MANAGER KATHRYN CHALFAN DEMONSTRATES OPERATION OF THE FIRST OPTICAL ADAPTIVE RESONANCE NEURAL NETWORK. BOEING EXPERIMENTS WITH THIS DEVICE COULD LEAD TO SPECIAL-PURPOSE OPTICAL SUPERCOMPUTERS.



TEACHER LEE BOWEN HELPS STUDENTS WITH A DINOSAUR STUDY PROJECT AT PHANTOM LAKE ELEMENTARY SCHOOL IN BELLEVUE, WASH., ONE OF MANY SCHOOLS THAT BOEING ASSISTS THROUGH GRANTS, TECHNOLOGICAL SUPPORT, AND VOLUNTEER TUTORING/MENTORING.

During the company's 75 year history, Boeing and its employees have built a strong tradition of corporate citizenship. That commitment to the community was given special recognition during the year with the receipt of the "Spirit of America" award from United Way. The award is United Way of America's highest national corporate honor for philanthropy and volunteerism, encompassing both the corporate contributions of The Boeing Company and the support and involvement of its employees.

**Community Involvement**

In 1991, Boeing and its employees contributed more than \$52 million to support a wide range of community projects. Corporate gifts totaled \$27.3 million, of which \$22.1 million was donated in cash, and \$5.2 million was given as in-kind donations, such as printing and computing services and gifts of equipment and supplies.

Boeing employees and retirees donated about \$25 million in 1991 through the Boeing Employees Good Neighbor Fund and the company's gift-matching program. Employees also made substantial contributions on an individual basis, and volunteered several million hours of their own time during the year to support worthwhile community projects.

For the sixth consecutive year, the largest portion of the company's corporate contributions went to support education. In 1991, Boeing donated about \$10.5 million to educational programs — which included support for colleges and universities, K-12 education and vocational programs.

**Safety, Health and Environment**

Boeing is committed to providing a safe and healthful workplace for its employees and protecting the natural environment. An active chemical reduction program has been initiated by the company in order to reduce the use of, and emissions from, a broad list of chemicals. The company continues to stress recycling and the reduction of waste throughout its operations, as well as improved control and disposition of waste materials.

Through its participation in the joint IAM-Boeing Health and Safety Institute, the company embarked on developing and implementing a number of training programs and projects.

**Equal Opportunity Employment**

Boeing is an equal opportunity employer and seeks to attract and retain the best qualified people, regardless of race, age, sex, religion, national origin, disability, or veteran status. Our affirmative action plan includes programs which promote the active recruitment of individuals from a diversity of ethnic and cultural backgrounds.

**Small Business Programs**

In 1991, Boeing celebrated the 40th anniversary of its Small Business Program — a program designed to provide small and minority-owned firms with an equitable opportunity to compete for Boeing contracts. Subcontract awards to small and minority-owned businesses totaled \$2.9 billion in 1991. □



**Executive Council**



(Front row, seated left to right) **ARTHUR E. HITSMAN**, President - Boeing Computer Services; **DEAN D. THORNTON**, Executive Vice President, President - Boeing Commercial Airplane Group; **FRANK SHRONTZ**, Chairman and Chief Executive Officer, The Boeing Company.  
 (Back row, left to right) **LAWRENCE W. CLARKSON**, Vice President - Planning & International Development; **DOUGLAS P. BEIGHLE**, Senior Vice President; **DEANE D. CRUZE**, Senior Vice President - Operations; **BOYD E. GIVAN**, Senior Vice President and Chief Financial Officer; **LARRY G. MCKEAN**, Vice President - Human Resources; **B. DAN PINICK**, Executive Vice President, President - Boeing Defense & Space Group; **A. D. (BERT) WELLIVER**, Senior Vice President, Engineering & Technology.

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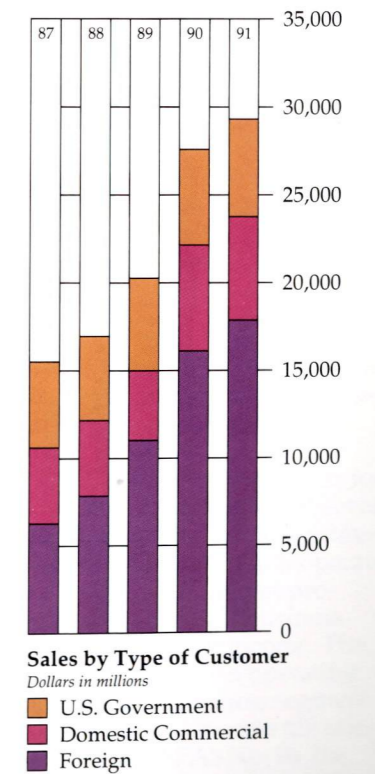
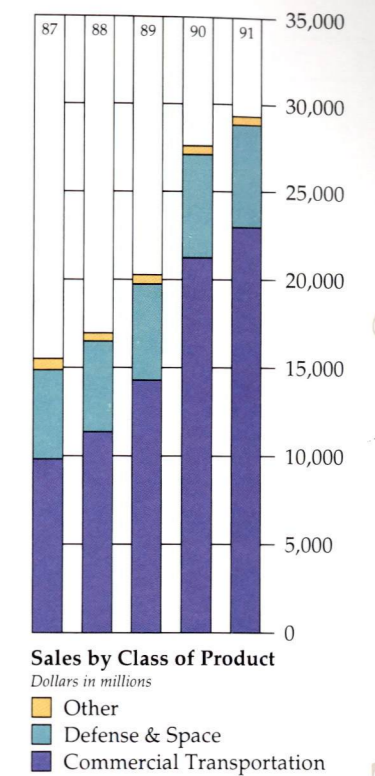
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**Financial Highlights**

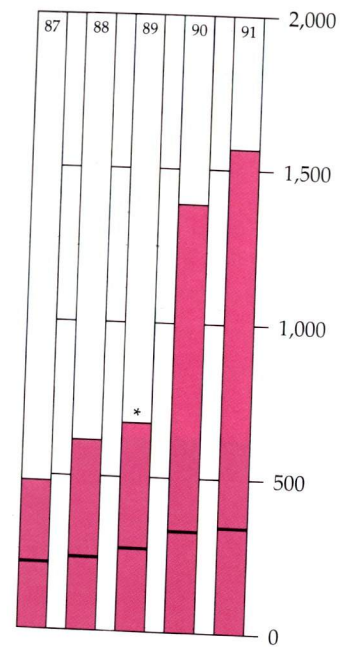
(Dollars in millions except per share data)

	1991	1990	1989
Sales	\$29,314	\$27,595	\$20,276
Net Earnings	1,567	1,385	675*
Earnings Per Share	4.56	4.01	1.96*
Return on Average Equity	21%	21%	12%*
Backlog	\$97,916	\$97,194	\$80,563
Research and Development	1,417	827	754
Capital Expenditures, net	1,850	1,586	1,362
Cash and Short-term Investments	3,453	3,326	1,863
Long-term Debt	1,313	311	275

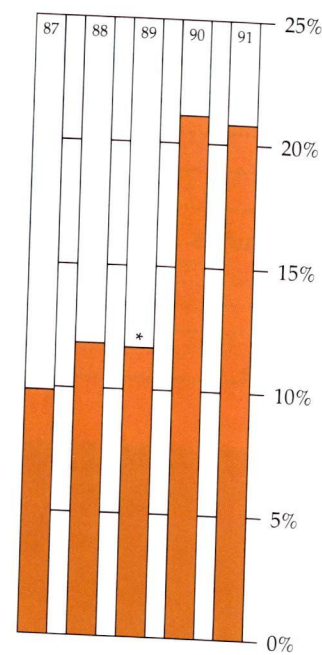
\*Exclusive of \$298 or \$.86 per share due to the adoption of Statement of Financial Accounting Standards No. 96.



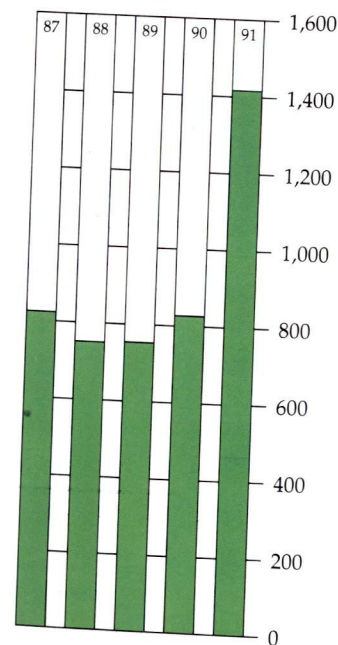
FINANCIAL SECTION



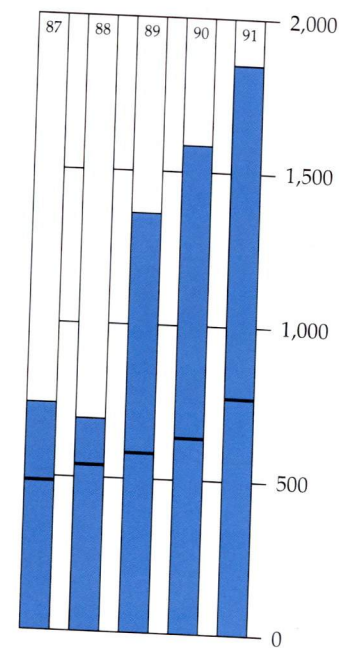
**Net Earnings and Cash Dividends**  
Dollars in millions  
— Cash Dividends



**Percentage Return on Stockholders' Equity**  
Net Earnings/Average Stockholder Equity



**Research and Development**  
Dollars in millions



**Property, Plant and Equipment; Net Additions\*\***  
Dollars in millions  
— Depreciation

\*Exclusive of \$298 due to the adoption of Statement of Financial Accounting Standards No. 96.  
\*\*Exclusive of acquisitions — UTL in 1990, ARGOSystems in 1987.

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

**Results of Operations**

**Revenues**

Sales, including other operating revenues, for 1991 were \$29.3 billion, compared to \$27.6 billion and \$20.3 billion for 1990 and 1989, respectively. This represents an increase of 6% for 1991, following a 36% and 19% increase for 1990 and 1989, respectively. Revenues from commercial transportation products and services were 78%, 77% and 71% of total operating revenues for the years 1991, 1990 and 1989, respectively. The number of jet transports delivered in 1991 increased 13% relative to 1990. The 48-day strike by the International Association of Machinists (IAM) in the fourth quarter of 1989 resulted in some airplanes scheduled for delivery in 1989 being delivered in 1990, which partially accounted for the large percentage sales increase in 1990 over 1989.

**Airplane Deliveries by Model**

	1991	1990	1989
<b>Jet Transports:</b>			
707*	14	4	5
737	215	174	146
747**	64	70	45
757	80	77	51
767	62	60	37
	<b>435</b>	<b>385</b>	<b>284</b>
<b>Commuter:</b>	<b>59</b>	<b>64</b>	<b>58</b>
<b>Total</b>	<b>494</b>	<b>449</b>	<b>342</b>

\*Military derivatives

\*\*Includes two Air Force One units in 1990

Current schedules provide for the delivery of 5 707 military derivatives, 223 737s, 60 747s, 97 757s and 64 767s during 1992, for a total of 449 jet airplanes.

**Earnings**

Net earnings for 1991 of \$1,567 million compare to 1990 earnings of \$1,385 million and 1989 earnings of \$675 million excluding the effect of the 1989 adoption of Statement of Financial Accounting Standards No. 96, Accounting for Income Taxes (SFAS No. 96). The adoption of the standard increased 1989 earnings by \$298 million or \$.86 per share. Net earnings for the three years reflect a 13% increase in 1991 following 105% and 10% increases in 1990 and 1989, respectively, excluding the tax accounting change. Net earnings for 1989 were unfavorably influenced by the IAM strike.

The \$182 million increase in net earnings for 1991 compared to 1990 is primarily due to increased commercial aircraft sales, a lower defense and space business operating loss and a lower effective federal income tax rate.

**Defense and Space Revenues\***

	1991	1990	1989
Military Trans. Products	\$4,188	\$4,123	\$3,962
Missiles and Space	1,658	1,739	1,467
<b>Total</b>	<b>\$5,846</b>	<b>\$5,862</b>	<b>\$5,429</b>

\* (Millions of dollars)

There are many programs in the Company's defense and space business segments, and specific program revenues vary from year to year depending upon deliveries or completion of scheduled performance milestones. No single program accounts for more than 11% of total 1989-1991 defense and space business revenues.

Revenues from military transportation products and related systems increased 2% in 1991, following increases of 4% in 1990 and 8% in 1989. The principal programs in this segment include the B-2 bomber subcontract work, CH-47 helicopter, E-3 Airborne Warning and Control System (AWACS), V-22 Osprey, E-6 submarine communications aircraft, A-6 re-wiring, electronics update for P-3C aircraft, and B-52 and KC-135 modification programs.

Missiles and space revenues decreased 5% in 1991 following increases of 19% in 1990 and 1% in 1989. The principal programs in this segment include the Space Station Freedom, SRAM II (which has been terminated), Inertial Upper Stage rocket booster, Minuteman and Peacekeeper support and the Avenger air defense system.

Additionally, U.S. Government classified projects continue to contribute to total Company revenues in the military transportation and missiles and space business segments.

The aforementioned items were partially offset by higher research and development expense, principally for the 777 program, and lower other income.

The \$710 million increase in net earnings for 1990 compared to 1989 (excluding the effect of the 1989 adoption of SFAS No. 96) was primarily due to increased sales volume and operating margins on commercial transport programs, a lower defense and space business operating loss, and higher other income. The increase was partially offset by an operating loss in the Other Industries business segment and a higher effective federal income tax rate.

Excluding the impact of SFAS No. 96, the \$61 million increase in net earnings for 1989 compared to 1988 was primarily due to increased sales volume and lower levels of research, development and other new business

## Results of Operations

### Earnings (continued)

expenses relating to commercial aircraft and computing. The increase was largely offset by substantial losses on certain U.S. Government developmental and production programs; the adverse impact of the 48-day machinists' strike; increased research, development and other new business expenses (particularly cost-share) relating to defense programs; lower other income; and a higher effective federal income tax rate.

The Company's defense and space business was profitable in the fourth quarter of 1991 but incurred an operating loss of \$102 million for the year. This compares to losses of \$418 million and \$474 million in 1990 and 1989, respectively. The reduction in the 1991 operating loss is principally due to improved

### Other 1991 Operating Results and 1992 Objectives

Significant accomplishments in 1991 for the commercial airplane business include increasing production rates on the 737 and 757 jet transport programs and setting a new commercial jet transport annual delivery record. Additionally, the 777 twinjet program customer base was increased from two to six airlines, the basic aircraft configuration was finalized, the range of the initial model was increased by 700 nautical miles with no reduction in the number of seats or cargo capacity, and contracts were signed with all major outside production suppliers.

Defense and space new business awards in 1991 include the engineering and manufacturing development contract for the F-22 air superiority fighter program to the Lockheed/Boeing/General Dynamics team, and the development and prototype contract for the RAH-66 Comanche light attack/armed reconnaissance helicopter to the Boeing/Sikorsky team. The Company's Computer Services organization was also awarded an Army contract to develop a computer network to link National Guard and Reserve units.

In January 1991, the Government partially terminated for alleged default the Company's Prime Mission Equipment contract to develop a new air defense system for Saudi Arabia called the Peace Shield program. Additionally, the Government partially terminated for alleged default a contract which provided equipment maintenance and personnel services in Saudi Arabia and terminated for alleged default a related contract for training services. (See Note 12 to the Consolidated Financial Statements on pages 49 and 50 for additional discussion on the Peace Shield termination.)

In September 1991, the President's direction to reduce the nuclear arsenal of the United

States resulted in the termination, for the convenience of the Government, of the Short Range Attack Missile (SRAM II); Small ICBM Hard Mobile Launcher and Weapon Control System; and the Peacekeeper Rail Garrison Basing, Test and Systems Support contracts. These cancellations are expected to result in a reduction of approximately 1% in the Company's anticipated consolidated revenues for the next several years.

On January 22, 1992, the Company announced the sale of Boeing of Canada's de Havilland commuter aircraft division to Bombardier, Inc. and the Province of Ontario, Canada. The purchase will be effective on closing, which is anticipated to occur in the first quarter of 1992, and it is expected that the sale will result in a nominal book gain. During 1990, the Company sold its 15% interest in Peabody Holding Company, Inc., the parent of Peabody Coal Company, to a subsidiary of Hanson PLC for approximately \$168 million.

Key objectives in 1992 include negotiating labor contracts with the Company's hourly, engineering and technical bargaining units; continuing to improve quality and cost performance on all programs; expanding the 777 customer base; finalizing the twinjet's structural and system design and completing other program milestones to support the start of production in early 1993; completing key milestones in the facilities expansion program that is underway principally in support of the 777 program; and increasing profitability in the defense and space business segments while competing effectively for defense and space business at a time when appropriations are being reduced.

Based on current programs and schedules, the Company's 1992 sales are projected to be in

### Other 1991 Operating Results and 1992 Objectives

the \$29.5 billion range, with increased 737 and 757 jet transport sales offsetting nominal reductions in defense and space sales.

Essentially all of the Company's business is performed under binding long-term contracts for products built to customer specifications.

## Market Environment

### Commercial Aircraft

#### Airline Traffic, Profitability and Trends

World airline passenger traffic declined for the first time since the start of the jet era with scheduled revenue passenger miles estimated to be about 2% to 3% lower than in 1990. Traffic was weakest in Europe due to the effects of the Persian Gulf War and the economic slowdown. Traffic was down by over 9% within Europe, over 7% between Europe and the United States, and about 8% between Europe and the Asia/Pacific market. The U.S. domestic market also experienced declining traffic volume in 1991 with revenue passenger miles falling nearly 2% compared to 1990.

A few markets managed to show some traffic growth in 1991. The most important was the trans-Pacific market which resumed its strong growth in the second half of the year and managed a year-to-year growth of about 5%, fueled largely by passengers originating in Asia.

In general, airline revenue and profitability have reflected the weak traffic trends. This has been especially true in the U.S. domestic market as airlines attempted to increase traffic using fare incentives. Jet fuel prices fell to pre-Gulf crisis levels during the first half of 1991, and some airlines began to benefit from more general cost-cutting programs during the second half of the year. Airline profitability was severely depressed with estimated U.S. carriers net losses approximating \$2 billion and a total world industry loss of about \$4 billion.

The financial losses incurred by the airlines during 1990-1991, coupled with the capital adequacy problems faced by major banks in the United States and Japan, have raised concerns about the ability of the airlines to finance the airplanes they will require to accommodate growth and replacement needs over the next twenty years. Although the recent airplane financing environment has favored financially stronger carriers, there has been no indication of basic changes that would materially affect the availability of financing for the airline industry over the longer term. Total airplane financing requirements constitute a relatively small portion of the industrialized world's total capital requirements. The Company believes that adequate financing will be available to support projected airplane deliveries provided

Thus the effect of changing prices on the results of operations is minimal.

Additional information relating to sales and earnings contributions by business segment can be found on pages 50 and 51.

there is an indication of a near-term return to profitability, particularly for the major U.S. carriers. Over 65% of the Company's jet transport firm backlog dollars is from the financially strongest domestic and foreign airlines with the balance being split about equally between leasing companies and other carriers.

Declining airline traffic, route transfers, airlines operating under bankruptcy law protection and failed airlines led to an increased number of airplanes available for sale or lease during 1991. Most of the available airplanes are expected to be permanently retired from airline fleets during the 1990s. Over 1,800 airplanes in the 1991 world commercial jet transport fleet will be at least 25 years old by 1995. High costs will be necessary to maintain these older airplanes at operating levels required by the Federal Aviation Administration (FAA) and other regulatory agencies. In addition, the FAA has published specific dates by which a greater number of airplanes failing to meet their Stage III noise regulations must be progressively withdrawn from service. These maintenance and noise considerations will affect an airline's evaluation of whether to retire, re-engine or install engine hush kits on the applicable airplanes. While some airlines, particularly freight carriers, will choose re-engineing or hush kits, the Company believes that the vast majority of airplanes built before 1973 will be retired from airline service. Many of these older airplanes are likely to be used as a source for spare parts or ultimately scrapped.

The leasing industry is finding it more difficult to place some new airplanes, as evidenced by declining lease rates. Lower rates and shorter lease terms have generally enabled the leasing industry to place newly delivered airplanes.

The Company estimates that the total commercial jet transport open market (excluding the former Soviet Union) for 1992-2010 will be over \$660 billion in 1992 dollars. Traffic growth is expected to average 5.2% over this time period based on average worldwide economic growth between 3.0% and 3.5%.

Though instability makes the market environment of the Commonwealth of Independent States (CIS) unpredictable, the Company's interest in this large and diverse

## Market Environment

### Commercial Aircraft (continued)

market remains high, and sales efforts will continue in the former Soviet republics. In parallel with the restructuring underway throughout the region, the CIS airline and aviation industries are evaluating long-term strategies and alternatives.

The Company is confident that its current product line of commercial jet transports and potential derivatives is well positioned to satisfy the requirements of the airline industry. Other trends in the airline industry—reduced government regulation, alliances, mergers, privatization, and the emergence of leasing companies with significant inventories of new airplanes—continue to make the market environment uncertain. These trends have intensified competition between manufacturers in pricing, financing and other terms and conditions. These competitive conditions are likely to exist for the foreseeable future. The Company is also concerned about the continuing direct government subsidies provided to our major foreign jet transport competitor for aircraft development and sales financing, as well as the outcome of the potential foreign equity alliances of the Company's U.S. competitor.

#### Orders and Product Strategy

In 1991, a number of airlines requested rescheduling of firm aircraft orders or did not exercise options for future deliveries, and a nominal number of firm orders were removed from backlog as a result of customer insolvency. The economic slowdown has particularly affected demand for all manufacturers' aircraft with less than 150 seats. The Company will reduce the production rate on the 737 program from 21 aircraft per month to 14 per month in the fourth quarter of 1992; however, the 757 production rate was increased from 7 airplanes per month to 8½ per month in January 1992, and the 747 and 767 production rates are unchanged at 5 airplanes per month. Worldwide demand for wide-body aircraft remains strong as more carriers add international routes to their structure.

Given the economic conditions, 1991 announced orders for 257 Boeing jet transports valued at \$20.6 billion, including \$16.9 billion from foreign customers, were very encouraging. Orders by model and number of customers are as follows:

Model	Orders	No. of Customers
737	71	17
747	38	9
757	49	6
767	72	15
777	27	4

Significant progress was made toward the 777 twinjet becoming the next successful Boeing airplane family member. Including 1990 orders and a January 1992 Japan Airlines announced order for 10 aircraft, cumulative orders for 86 twinjets plus 75 options from seven airlines this early in the program compare favorably with previous new jet transport introductions.

The Company's commercial product development strategy is to offer the most competitive products by maintaining a broad product line and responding to changing market conditions by maximizing commonality within and across the Boeing family of airplanes. The Company expects to continue leading the industry in customer satisfaction by offering products which exhibit the highest standards of quality, safety, technical excellence, economic performance and in-service support.

The major focus of current product development activities continues to be the 777 program which is scheduled to enter airline service in mid-1995. From the outset this twinjet will be designed to meet airline requirements for an efficient, comfortable, high-capacity airplane to be used in domestic and intra-regional markets. In response to the market, the range for the initial model was increased from 4,200 to 4,900 nautical miles, permitting the 777 to serve such markets as London-to-Bombay and Chicago-to-Frankfurt and assuring its position as the world's longest range and largest capacity twinjet. A longer range version of the 777 is being offered for delivery in late 1996, and the aircraft could be developed for greater capability including additional range and a stretched fuselage.

The Company continually evaluates opportunities to improve current models, and conducts ongoing marketplace assessments to ensure that our family of jet transports is well positioned to meet the requirements of the airline industry. As part of this evaluation, the Company is assessing the market potential for new or derivative airplanes that are larger and have more range than the 747-400.

Significant progress was also made in implementing the Company's advanced process for the design and production of commercial jet transports based on digital product definition. The core of the process includes the world's largest computer mainframe cluster, an advanced Boeing database management system, an enhanced digital pre-assembly software, and a worldwide data communication network. The process was tested and implemented to support Boeing onsite 777 design and production teams as well as remotely located suppliers and engine manufacturers.

### Defense & Space Group and Computer Services

Events of the last year have had a significant effect on U.S. national security considerations. The disintegration of the former Soviet Union's central government authority has reduced the possibility of a major power confrontation in Europe. The Gulf War shifted the focus of the United States toward military capabilities necessary to address potential conventional conflict in Third World regions. This has resulted in increased pressure to reduce defense spending.

The additional reductions from currently planned levels of Department of Defense (DoD) budgets for fiscal 1993 and beyond, as ultimately determined by the Administration and Congress, will result in the B-2 being curtailed. Additional major Boeing programs which may be subject to stretch-out, curtailment or termination include the F-22 fighter, the RAH-66 Comanche helicopter, the V-22 tiltrotor aircraft, the KC-135 re-engine program, and possibly the Space Station Freedom if National Aeronautics and Space Administration (NASA) budgets are further restrained. Although such actions could have a significant impact on Boeing defense and space sales and earnings, they would not have a materially adverse effect on the Company's financial condition. In addition, the Company's defense and space business is broadly diversified and includes a number of programs subject to system upgrade or modification as the focus of national defense strategy changes. However, the cancellation, slide or curtailment of additional programs is possible.

Based on current programs and schedules, including the B-2 and RAH-66 reductions as proposed by the Administration, annual sales volume for defense and space programs is expected to be in the \$5 billion range for the next few years.

Despite the announced reductions, modernization of certain military hardware remains important for the United States to fulfill its national security policy. Increased emphasis will be placed on deploying conventional combat power throughout the world on relatively short notice. The annual DoD budgets for research and development and procurement of military systems still remain large. In the space arena, NASA's budget is expected to continue to grow modestly. Nevertheless, the growth rate will probably be inadequate to fund all of NASA's initiatives, and some of the programs will have to be extended to fit within the appropriations.

In its electronic systems product area, the Company is planning for initial production of Update IV, a mission electronic system for the Navy's P-3 anti-submarine warfare aircraft and related hardware for maritime patrol aircraft.

The Company continues to work with the governments of the United States, Japan and other countries on a military derivative of the 767 aircraft to meet Airborne Warning and Control System (AWACS) and other requirements for introduction in the late 1990s. If sufficient orders are obtained the program could be launched in 1992. Follow-on contracts for upgrades and modification of existing AWACS aircraft and systems are expected.

The Company's rotorcraft product area includes production of new and remanufactured CH-47 helicopters, and development of the Bell/Boeing V-22 Osprey tiltrotor aircraft. The Boeing/Sikorsky team is in the early development phase of the RAH-66 Comanche helicopter program.

In the military airplanes product area, production of major structural portions of the B-2 bomber will continue until completion of all the aircraft authorized by Congress, and development of the F-22 fighter by the Lockheed/Boeing/General Dynamics team is underway. Upgrades and support to the B-1B, B-52, KC-135 and A-6 aircraft are also ongoing. Additionally, the Navy is considering procuring additional wings for A-6 aircraft.

In the missile product area, emphasis will be on executing the multi-year production of the Avenger air defense missile system. As a result of the Government's nuclear arsenal reduction decisions, the Company will focus on performing upgrades to, and developing alternate uses for, existing strategic missile systems and pursue selected opportunities in theater missile defense.

In its space product area, Boeing has responsibility for the habitat and laboratory modules and related hardware for the Space Station Freedom. This product area also includes production of the Inertial Upper Stage space booster.

The Company continues its strategy in the defense and space business of successfully performing on existing programs and focusing investments to win important development and production contracts in its product areas. Boeing remains a diverse organization without excessive dependence on any one segment of the U.S. Government's defense or space budgets.

The primary focus of the Company's Computer Services organization is the internal support of the Commercial Airplane and Defense & Space Groups through development and maintenance of application software, operation of data centers and associated data networks, telecommunications services, and procurement and maintenance of computer hardware. External sales in the computer services market are continuing to grow as a

## Market Environment

### Defense & Space Group and Computer Services (continued)

result of Government requirements to improve productivity. The external focus of Computer Services is in systems integration and support services for Government agencies. The Government's recognition that more

cost-effective, integrated systems are mandatory will result in increased demand for automated management and technical information systems.

## Backlog

Total firm backlog of unfilled orders at December 31, 1991, was \$97.9 billion, compared with \$97.2 billion at the end of 1990. Of the total December 31 backlog, \$92.8 billion or 95% was for commercial customers (including foreign governments) and \$5.1 billion or 5% was for the U.S. Government. Comparable figures at the end of 1990 were \$91.5 billion or 94% commercial, and \$5.7 billion or 6% U.S. Government.

In evaluating the Company's firm backlog for commercial customers, certain risk factors should be considered. Approximately 56% of the firm backlog for commercial jet airplanes is scheduled to be delivered beyond 1993. A continuation of the present economic downturn could result in lower than currently anticipated airline equipment requirements

and additional requests to negotiate the rescheduling or possible cancellation of firm orders. Also, the commercial airplane backlog includes some orders from leasing companies which are not supported by firm contracts for the equipment between these companies and the airlines.

Not included in firm backlog are purchase options and announced orders for which definitive contracts have not been executed and orders from customers which have filed for bankruptcy. Additionally, U.S. Government and foreign military firm backlog is limited to amounts obligated to contracts. If recognition were given to unobligated amounts under government contracts, unfilled orders at December 31, 1991, would be increased by \$8.1 billion.

## Liquidity and Capital Resources

### Cash, Debt and Equity Trends

At the end of 1991, the Company had cash (including cash equivalents) and short-term investments of \$3.453 billion, stockholders' equity of \$8.093 billion and total borrowings of \$1.317 billion. During 1991, long-term interest rates declined to the lower end of the range for the previous 15 years, and the Company issued \$1.0 billion of debt with maturities ranging from 15 to 40 years. All of the issues are unsecured and noncallable. The proceeds will be used for general corporate purposes, including funding research and development expenditures, and other costs of derivative and new jet transport models; research and development expenditures to support military, space and computing businesses; increased level of facilities investment; increased customer financing commitments; and possible business acquisitions.

Excluding the net increase in outstanding debt, cash and short-term investments declined by \$875 million in 1991. This was primarily due to additions to plant and equipment, federal income tax payments, working capital requirements primarily to support jet transport programs, dividends, customer financing and Company stock repurchases. Cash requirements will continue to exceed amounts generated from operations in 1992, principally in support of investments in the 777 twinjet and other commercial programs.

The net 1991 \$127 million increase in cash and short-term investments (including the amounts generated from borrowings) followed a 1990 increase of \$1.463 billion and a decrease of \$2.100 billion in 1989. The 1990 increase was primarily due to liquidation of net inventory that was accumulated during the 1989 IAM strike, earnings from operations, and the sale of the Company's 15% interest in Peabody Holding Company, partially offset by significant increases to plant and equipment, federal income tax payments net of refunds, increases in customer financing requirements, and repurchases of Company stock. The 1989 decrease was primarily due to increased investments in net inventory (a substantial amount related to the strike) and plant and equipment, and lump-sum wage and federal income tax payments.

During 1991, stockholders' equity increased \$1.120 billion from \$6.973 billion at the end of 1990, to a total of \$8.093 billion at the end of 1991. Total borrowings increased \$1.002 billion to a balance of \$1.317 billion, or 16% of stockholders' equity.

In December 1990, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions* (SFAS No. 106), effective for fiscal years beginning after December 15, 1992. In

### Cash, Debt and Equity Trends

summary, this new standard requires that employers accrue the cost of postretirement benefits, such as health care, over the employee's service period to the point of full eligibility for the benefits. The Company's primary postretirement benefit, applicable essentially to all employees, consists of health care coverage for all eligible employees including qualifying dependents from the date of retirement to age 65. The Company currently provides for the estimated cost of postretirement health care for eligible retirees and dependents at date of the employee's retirement but makes no accrual for active

employees. The Company is still evaluating the Standard to determine its impact on annual postretirement health care expense and reviewing the appropriate method and timing for its implementation; however, based on a preliminary assessment, the Company estimates that its additional liability at December 31, 1991, would equate to an after-tax earnings charge in the \$900 million to \$1.2 billion range. After adoption, SFAS No. 106 will also result in a significantly higher provision for postretirement health care expense than the \$105 million required in 1991 by the Company's current accounting method.

### Capital Resources Commitments and Trends

There are two primary factors that affect the Company's investment requirements and liquidity position. One is the timing of new and derivative commercial transport programs which require both high-development expenditures and an initial inventory buildup. The other is the airline industry's cyclical equipment requirements resulting in varying inventory investment levels. Other operating factors include the level of plant and equipment investment, the level of customer financing, tax payments, and investments to support current and prospective defense, space and computing programs.

In late 1990, the Company launched the 777 jet transport program which is scheduled for Federal Aviation Administration certification and first delivery to United Airlines in mid-1995. This new twinjet requires very significant investments in development, tooling, inventory, and plant and equipment during the next several years. Program development will be primarily funded by Boeing, with some assistance from the Japanese Aircraft Development Corporation, other major program participants and customer advance payments.

Total research and development expenditures incurred and charged directly to earnings in 1991 increased \$590 million to a total of \$1.417 billion. This followed increases of \$73 million and \$3 million in 1990 and 1989, respectively. The 1991 increase was primarily due to increased spending to support the 777 twinjet, slightly offset by a nominal reduction in spending for defense and space programs. The 1990 increase was also primarily due to increased spending to support the 777 twinjet, offset by reduced spending for defense and space programs, notably cost-share on the F-22 fighter. The nominal 1989 increase was attributable to greater spending for defense and space programs, primarily F-22 cost-share. Total Company research and development expenditures for 1992 are projected to be in the \$1.8

billion range and continue at levels in the \$1.4 to \$1.6 billion range during the succeeding several years, principally in support of the 777 and other commercial jet transport programs and research.

Total net investment in inventories decreased by \$55 million during 1991, following a decrease of \$1.585 billion during 1990 and an increase of \$1.995 billion in 1989. The 1991 decrease was primarily due to reductions in defense and space business inventories, partially offset by inventory buildup on the 757 program and 777 tooling. The 1990 decrease was primarily due to liquidation of the abnormally high jet transport inventories accumulated during the 1989 strike, offset somewhat by increased inventory buildup to support higher jet transport production rates and to further enhance customer airline spares support. The 1989 increase is attributable to significant inventory increases for all jet transport programs, commercial spare parts and, to a lesser extent, for defense and space programs. The inventory increase in the jet transport programs was due to the impact of the 48-day machinists strike on delivery schedules and to increased production rates. In 1992, net inventory levels are expected to increase due to the 757 program production rate increase and 777 twinjet tooling and long-lead production parts.

Investment in plant and equipment of \$1.850 billion in 1991 compares to \$1.586 billion and \$1.362 billion in 1990 and 1989, respectively. The high level of investment for 1989 through 1991 is attributable primarily to requirements to support increasing jet transport production schedules and the facility requirements of the new 777 twinjet. Facilities expenditures are currently estimated to continue in the \$1.5 - \$2.0 billion range for the next few years.

The timing of federal income tax payments continues to be accelerated for income associated with long-term contracts reported under

## Liquidity and Capital Resources

### Capital Resources Commitments and Trends (continued)

the cost-to-cost percentage of completion method of accounting required by current federal income tax regulations. The availability of research and development credits and benefits applicable to foreign tax-exempt income will influence future tax payments. Federal income tax payments in 1992 are anticipated to be significantly higher than the \$993 million paid in 1991.

The competitive commercial transport market continued to result in significant customer financing requirements. The Company has commitments to customers totaling \$4.034 billion to arrange or provide financing related to aircraft on order or under option. These commitments are applicable at varying

### Contingent Liquidity Items

In January 1991, the Government terminated for alleged default most of the work required under the Company's \$1.5 billion contracts for a new Saudi Arabia air defense system known as the Peace Shield program. The Government has demanded that the Company repay \$605 million of Peace Shield unliquidated progress payments and has selected another contractor to perform the terminated work. Management believes that the Government's grounds for default are not legally supportable and on appeal the Government's position will be overturned. The Company has filed its complaint to overturn the default termination, submitted the major portion of a Contract Claim for equitable adjustment to the contract prices and schedules, and requested that repayment of the unliquidated progress payments be deferred. The Company's financial statements assume that the termination for default will be overturned and that the Contract Claim will

### External Liquidity Sources

The Company has a revolving credit line agreement with a group of major banks for \$3.180 billion. The agreement provides for scheduled availability of 25% of the credit line beginning January 1, 1993, increasing in 25% increments every six months until July 1, 1994. The credit remains fully available until

### Summary

Substantial capital resources will be required to support the 777 twinjet and other commercial aircraft production and development to meet airline market needs; other Company-funded research and development; working capital investments for defense, space and computing businesses; plant and equipment investments; customer financing commitments;

amounts to aircraft scheduled for delivery for the years 1992 through 1998. It is anticipated that not all of these commitments will be utilized and that the Company will be able to arrange for third-party investors to assume a portion of the remaining commitments, if necessary.

In 1991, the Company repurchased 2.915 million shares of its stock for \$127 million compared to 1990 repurchases of 3.219 million shares for \$156 million. Shares are repurchased to meet the needs of the Company's stock option plans. The timing and size of future repurchases will depend upon the level of stock option exercises, the Company's stock price and general market conditions.

be settled in the Company's favor. If the Company's appeal of the termination for default is not successful, the Company could incur future pre-tax losses on the program approximating the value of the unliquidated progress payments, related interest, plus possible damages. (See Note 12 to the Consolidated Financial Statements on pages 49 and 50 for a more detailed discussion of the Peace Shield and other liquidity items.)

The Company is also involved in various stages of legal proceedings, claims, investigation and cleanup relative to environmental or natural resource matters, and is subject to U.S. Government investigations of business practices and cost classifications as discussed in Note 12 to the Consolidated Financial Statements.

The Company does not believe, based upon all available information, that the outcome of such environmental matters and Government disputes and investigations will have a materially adverse effect on its financial position.

June 30, 1998, then reduces to 50% on July 1, 1998, and expires on December 31, 1998. During 1991, the Company borrowed \$1 billion and believes that it has additional borrowing capability in the capital markets and can raise additional amounts if necessary.

dividend and federal income tax payments; and possible future business acquisitions. The Company believes these requirements will be satisfied by the Company's existing cash and short-term investments, projected cash flow from operations, use of the available bank credit line, and other sources of capital.

## Report of Management

### To the Stockholders of The Boeing Company:

The accompanying consolidated financial statements of The Boeing Company and subsidiaries have been prepared by management who are responsible for their integrity and objectivity. The statements have been prepared in conformity with generally accepted accounting principles and include amounts based on management's best estimates and judgments. Financial information elsewhere in this Annual Report is consistent with that in the financial statements.

Management has established and maintains a system of internal control designed to provide reasonable assurance that errors or irregularities that could be material to the financial statements are prevented or would be detected within a timely period. The system of internal control includes widely communicated statements of policies and business practices which are designed to require all employees to maintain high ethical standards in the conduct of Company affairs. The internal controls are augmented by organizational arrangements that provide for appropriate delegation of authority and division of responsibility and by a program of internal audit with management follow-up.

The financial statements have been audited by Deloitte & Touche, independent certified public accountants, whose appointment was ratified by stockholder vote at the annual stockholders' meeting. Their audit was conducted in accordance with generally accepted auditing standards and included a review of

### Independent Auditors' Report

### Board of Directors and Stockholders The Boeing Company:

We have audited the accompanying consolidated statements of financial position of The Boeing Company and subsidiaries as of December 31, 1991 and 1990, and the related statements of net earnings and cash flows for each of the three years in the period ended December 31, 1991. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements 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

internal controls and selective tests of transactions. The Independent Auditors' Report appears below.

The Audit Committee of the Board of Directors, composed entirely of outside directors, meets periodically with the independent certified public accountants, management and internal auditors to review accounting, auditing, internal accounting controls, litigation and financial reporting matters. The independent certified public accountants and the internal auditors have free access to this committee without management present.



Frank Shrontz  
Chairman of the Board &  
Chief Executive Officer



B. E. Givan  
Senior Vice President &  
Chief Financial Officer

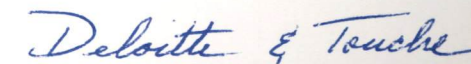


T. M. Budimich  
Vice President &  
Controller

evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of The Boeing Company and subsidiaries as of December 31, 1991 and 1990, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 1991, in conformity with generally accepted accounting principles.

As discussed in Note 1 to the financial statements, the Company changed its method of accounting for income taxes in 1989.



Deloitte & Touche  
January 31, 1992  
Seattle, Washington

## Audited Financial Statements

### Consolidated Statements of Net Earnings

(Dollars in millions except per share data)

Year ended December 31,	1991	1990	1989
<b>Sales (including other operating revenues)</b>	<b>\$29,314</b>	\$27,595	\$20,276
Costs and expenses	27,360	26,065	19,695
<b>Earnings from operations</b>	<b>1,954</b>	1,530	581
Other income, principally interest	263	448	347
Interest and debt expense	(13)	(6)	(6)
<b>Earnings before federal taxes on income and effect of change in accounting</b>	<b>2,204</b>	1,972	922
Federal taxes on income	637	587	247
<b>Earnings before effect of change in accounting</b>	<b>1,567</b>	1,385	675
Effect of change in method of accounting for income taxes			298
<b>Net earnings</b>	<b>\$ 1,567</b>	\$ 1,385	\$ 973
<b>Earnings per share:</b>			
Before effect of change in accounting	<b>\$4.56</b>	\$4.01	\$1.96
Effect of change in accounting			.86
<b>Net earnings</b>	<b>\$4.56</b>	\$4.01	\$2.82
<b>Cash dividends per share</b>	<b>\$1.00</b>	\$ .95	\$ .77%

See notes to consolidated financial statements.

### Consolidated Statements of Financial Position

(Dollars in millions except per share data)

December 31,	1991	1990
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 2,938	\$ 2,188
Short-term investments, at cost, which approximates market	515	1,138
Accounts receivable	2,085	2,044
Current portion of customer financing	14	13
Deferred federal taxes on income		55
Inventories	13,742	14,402
Less advances and progress billings	(10,465)	(11,070)
Total current assets	8,829	8,770
Customer financing	1,183	1,120
Property, plant and equipment, at cost	10,600	8,991
Less accumulated depreciation	(5,070)	(4,543)
Investments and other assets	242	253
	<b>\$ 15,784</b>	<b>\$ 14,591</b>
<b>Liabilities and Stockholders' Equity</b>		
Current liabilities:		
Accounts payable and other liabilities	\$ 5,466	\$ 5,566
Advances and progress billings in excess of related costs	667	1,083
Federal taxes on income (\$113 and \$0 deferred)	139	479
Current portion of long-term debt	4	4
Total current liabilities	6,276	7,132
Long-term debt	1,313	311
Deferred federal taxes on income	102	161
Deferred investment credit		14
Stockholders' equity:		
Common shares, par value \$5.00 - 600,000,000 shares authorized; 349,256,792 shares issued	1,746	1,746
Additional paid-in capital	583	581
Retained earnings	6,064	4,840
Less treasury shares, at cost - 1991 - 7,969,075; 1990 - 5,683,314	(300)	(194)
Total stockholders' equity	8,093	6,973
	<b>\$ 15,784</b>	<b>\$ 14,591</b>

See notes to consolidated financial statements.

**Consolidated  
Statements of  
Cash Flows**

(Dollars in millions)

Year ended December 31,	1991	1990	1989
<b>Cash flows - operating activities:</b>			
Net earnings	\$ 1,567	\$ 1,385	\$ 973
Adjustments to reconcile net earnings to net cash provided (used) by operating activities:			
Depreciation and amortization -			
Plant and equipment	768	636	584
Leased aircraft, other	58	42	43
Deferred federal taxes on income	109	(107)	(247)
Deferred investment credit	(14)	(11)	(18)
Effect of change in method of accounting for income taxes			(298)
Undistributed earnings of affiliates	1	(5)	(15)
Gain on sale of affiliates		(74)	
Change in operating assets and liabilities -			
Accounts receivable	(41)	(233)	(250)
Inventories	55	1,585	(1,995)
Customer financing	(100)	(301)	225
Accounts payable and other liabilities	(100)	554	235
Advances and progress billings in excess of related costs	(416)	(362)	141
Federal taxes on income	(453)	227	108
<b>Net cash provided (used) by operating activities</b>	<b>1,434</b>	<b>3,336</b>	<b>(514)</b>
<b>Cash flows - investing activities:</b>			
Change in short-term investments	623	(798)	(51)
Acquisition of UTL		(16)	
Proceeds from sale of affiliates		168	
Net additions to plant and equipment	(1,850)	(1,586)	(1,362)
Other	(3)	3	
<b>Net cash used by investing activities</b>	<b>(1,230)</b>	<b>(2,229)</b>	<b>(1,413)</b>
<b>Cash flows - financing activities:</b>			
Debt financing activities	993	15	22
Stockholders' equity -			
Cash dividends paid	(343)	(328)	(269)
Acquisition of treasury shares	(127)	(156)	(2)
Exercise of stock options, other	23	27	25
<b>Net cash provided (used) by financing activities</b>	<b>546</b>	<b>(442)</b>	<b>(224)</b>
<b>Net increase (decrease) in cash and cash equivalents</b>	<b>750</b>	<b>665</b>	<b>(2,151)</b>
Cash and cash equivalents at beginning of the year	2,188	1,523	3,674
<b>Cash and cash equivalents at end of the year</b>	<b>\$ 2,938</b>	<b>\$ 2,188</b>	<b>\$ 1,523</b>

See notes to consolidated financial statements.

**Notes to Consolidated Financial Statements**

Years Ended December 31, 1991, 1990 and 1989

**Note 1**

**Summary of Significant  
Accounting Policies**

(Dollars in millions except per share data)

**Principles of consolidation**

The consolidated financial statements include the accounts of all subsidiaries. Intercompany profits, transactions and balances have been eliminated in consolidation.

**Inventories**

Inventoried costs on long-term commercial programs and U.S. Government and foreign military contracts include direct engineering, production and tooling costs, certain prepaid costs and applicable overhead. In addition, for U.S. Government fixed-price-incentive contracts, inventoried costs include research and development and general and administrative expenses estimated to be recoverable. Inventoried costs are generally reduced by the estimated average cost of deliveries.

For mature commercial programs, average cost of deliveries is based on the estimated total cost of units committed to production. For commercial programs in the early production stages, average cost of deliveries is based on the estimated total cost of units representing what is believed to be a conservative market projection. For U.S. Government and foreign military contracts, average cost of deliveries is based on the estimated total cost of contractual units.

To the extent total costs as determined above are expected to exceed the total estimated sales price, charges are made to current earnings to reduce inventoried costs to estimated realizable value.

In accordance with industry practice, inventoried costs include amounts relating to programs and contracts with long production cycles, a portion of which is not expected to be realized within one year.

Commercial spare parts and general stock materials are stated at average cost not in excess of realizable value.

**Revenue recognition**

Sales under commercial programs and U.S. Government and foreign military fixed-price type contracts are generally recorded as deliveries are made. For certain fixed-price type contracts that require substantial performance over a long time period before deliveries begin, sales are recorded based upon attainment of scheduled performance milestones. Sales under cost-reimbursement contracts are recorded

as costs are incurred and fees are earned. Certain U.S. Government contracts contain profit incentives based upon performance as compared to predetermined targets. Incentives based on cost are recorded currently. Other incentives are included in revenues when awards or penalties are established, or when amounts can reasonably be determined.

**Cash and cash equivalents**

Cash and cash equivalents consist of highly liquid instruments such as certificates of deposit, time deposits, treasury notes and other money market instruments which generally have maturities of less than three months.

**Capital assets**

Property, plant and equipment, and aircraft and related aircraft equipment on operating leases are recorded at cost and depreciated over useful lives, principally by accelerated methods. Interest costs are capitalized with respect to plant and equipment additions.

**Excess costs over net assets of acquired companies**

The excess of acquisition costs over the fair value of net assets of businesses purchased is included in other assets and is being amortized by the straight-line method over a period not to exceed 40 years.

**Research and development, general and administrative expenses**

Research and development (including the Company-sponsored share of research and development activity conducted in connection with cost-share contracts) and general and administrative expenses are charged directly to earnings as incurred except to the extent estimated to be directly recoverable under U.S. Government flexibly priced contracts.

**Retirement benefits**

The Company's funding policy is to contribute, at a minimum, the statutory required amount to an irrevocable trust. Benefits under the plans are generally based on years of credited service, age at retirement and average of last five years' earnings. The actuarial cost method used in determining the net periodic pension cost is the projected unit credit method.

Postretirement health care benefits are accrued (but not funded) for eligible retirees including qualifying dependents.



**Note 1**

*Summary of Significant Accounting Policies (continued)*

**Taxes on income**

Effective January 1, 1989, the Company adopted the provisions of Statement of Financial Accounting Standards No. 96, *Accounting for Income Taxes* (SFAS No. 96). Accordingly, the Company changed its method of computing income taxes from the deferred method used in prior years to the asset and liability method prescribed by SFAS No. 96. Under the asset and liability method, deferred income taxes are provided for the temporary differences between the financial reporting basis and the tax basis of the Company's assets and liabilities. These deferred taxes are measured by the provisions of currently enacted tax laws. The effect of the change in accounting was an increase to 1989 earnings of \$298 or \$.86 per share.

Investment tax credits are deferred and recorded as reductions in the provision for income taxes over the lives of the applicable assets. State taxes on income, which are relatively minor in amount, are included in general and administrative expenses.

Except as discussed in Note 9, the proposed amendments to SFAS No. 96 will not have a material impact on the Consolidated Financial Statements.

**Per share data**

All references in the financial statements to weighted average number of shares; per share amounts; and stock plan data and related prices have been restated for the 1990 three-for-two stock split. Net earnings per share are computed based on the weighted average number of shares outstanding of 343,355,917, 345,204,551 and 345,346,827 for the years ended December 31, 1991, 1990 and 1989, respectively. There is no material dilutive effect on net earnings per share due to common stock equivalents.

**Reclassifications**

Certain reclassifications have been made to 1989 and 1990 financial statements to conform with the presentation used in 1991.

**Note 2**

*Accounts Receivable*

**Accounts receivable at December 31 consisted of the following:**

	1991	1990
Amounts receivable under U.S. Government contracts	\$1,528	\$1,491
Accounts receivable from commercial and foreign military customers	557	553
	<b>\$2,085</b>	<b>\$2,044</b>

Accounts receivable at December 31, 1991, included amounts not currently billable of \$613, principally relating to sales values recorded upon attainment of scheduled performance milestones, which differ from contractual billing milestones. Portions of claims and other amounts subject to future negotiations were \$48. No significant amounts

in accounts receivable represented retainages under contracts.

An estimated \$274 of the total accounts receivable at December 31, 1991, is not expected to be collected within one year. This estimate included \$223 of the not currently billable amounts, \$7 of the amounts subject to future negotiations and other deferred items.

**Note 3**

*Inventories*

Inventories at December 31, 1991, consisted of inventoried costs relating to long-term commercial programs and U.S. Government and foreign military contracts, less estimated average cost of deliveries, of \$12,597 (\$13,236 at December 31, 1990) and commercial spare parts, general stock materials and other inventories of \$1,145 (\$1,166 at December 31, 1990). General and administrative and research and development expenses included in inventories represented approximately 1% of total inventories.

All commercial jet transport programs except the 777 are being accounted for as mature programs as described in Note 1. The

December 31, 1991, deferred production costs balances will be recovered from existing firm orders and they do not include amounts for the 777 program. Inventory costs included unamortized tooling of \$1,037 in 1991 for all commercial jet transport programs and \$833 in 1990 for the 737, 747, 757 and 767 programs. It is estimated that \$162 of such costs will be amortized over firm orders received after December 31, 1991.

Additionally, the 1991 inventory balance included \$687 subject to claims or other uncertainties related to U.S. Government contracts, principally for the Peace Shield program. (See Note 12.)

**Note 4**

*Customer Financing*

Customer financing balances shown on the Consolidated Statements of Financial Position

are net of the amount of participation by other financing parties.

**Long-term customer financing, less current portion, at December 31 consisted of the following:**

	1991	1990
Notes receivable	\$ 505	\$ 329
Investment in sales-type leases	112	186
Operating lease aircraft, at cost, less accumulated depreciation of \$126 and \$90	616	630
	<b>1,233</b>	<b>1,145</b>
Less allowance for customer financing	(50)	(25)
	<b>\$1,183</b>	<b>\$1,120</b>

The operating lease aircraft category includes new jet and used commuter aircraft, spare engines and spare parts.

**Principal payments under notes receivable and sales-type leases for the next five years are as follows:**

	1992	1993	1994	1995	1996
	\$14	\$39	\$41	\$42	\$32

Certain notes currently bear interest at fixed rates of 8.3% to 12.0% while the remainder are at interest rates which vary with commercial bank prime rates, up to 2.25% above the prime rate.

**Note 5**

*Property, Plant and Equipment*

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

	1991	1990
Land	\$ 415	\$ 380
Buildings	3,487	3,148
Machinery and equipment	5,533	4,816
Construction in progress	1,165	647
	<b>\$10,600</b>	<b>\$8,991</b>

Interest capitalized amounted to \$44, \$22 and \$18 in 1991, 1990 and 1989, respectively.

**Note 6**

*Federal Taxes on Income*

The provision for federal taxes on income consisted of the following:

Year ended December 31,	1991	1990	1989
Taxes paid or currently payable	\$542	\$ 705	\$ 512
Change in deferred taxes	109	(107)	(247)
Amortization of investment credit	(14)	(11)	(18)
	\$637	\$ 587	\$ 247

The provisions for federal taxes on income, exclusive of the 1989 accounting change, are less than those which result from application of the statutory corporate tax rate due to the following:

	1991	1990	1989
Statutory tax rate	34.0 %	34.0 %	34.0 %
Amortization of investment credit	(0.6)	(0.6)	(2.0)
Foreign Sales Corporation tax benefit	(3.2)	(4.9)	(4.8)
Research benefit	(1.8)		(0.7)
Other	0.5	1.3	0.3
Effective tax rate	28.9 %	29.8 %	26.8 %

The 1991 research benefit listed above relates to benefits earned in prior years.

Deferred taxes that appear on the Consolidated Statements of Financial Position result from temporary differences, principally due to inventory valuation methods required for tax

purposes, depreciation of property, plant and equipment, and recognition of employee benefit plan costs.

The change in deferred taxes, exclusive of the 1989 accounting change, principally resulted from the following:

Year ended December 31,	1991	1990	1989
Long-term contract method and related inventory costs	\$ 99	\$(108)	\$(250)
Aircraft financing	21	12	15
Domestic International Sales Corporation	(11)	(11)	(11)
Other			(1)
	\$109	\$(107)	\$(247)

Income taxes have been settled with the Internal Revenue Service for all years through 1978. It is the Company's position that adequate provision has been made for all

amounts due for the years 1979 through 1991. Federal income tax payments were \$993, \$563 and \$403 in 1991, 1990 and 1989, respectively.

**Note 7**

*Accounts Payable and Other Liabilities*

Accounts payable and other liabilities at December 31 consisted of the following:

	1991	1990
Accounts payable	\$2,335	\$2,586
Employee compensation and benefits	1,554	1,405
Lease and other deposits on commercial and foreign military programs	347	353
Other	1,230	1,222
	\$5,466	\$5,566

**Note 8**

*Long-Term Debt*

The Company has established a \$3,180 credit agreement effective January 1, 1992, with a group of commercial banks. Under this agreement, there are informal compensating balance arrangements, and retained earnings totaling \$939 are free from dividend

restrictions. The current scheduled availability of the credit line, which can be accelerated at the Company's option, provides for a 25% availability beginning on January 1, 1993, increasing in 25% increments every six months until July 1, 1994.

Long-term debt at December 31 consisted of the following:

	1991	1990
Unsecured debentures:		
8 <sup>3</sup> / <sub>8</sub> % due March 1, 1996	\$ 249	\$248
8 <sup>1</sup> / <sub>10</sub> % due November 15, 2006	175	
8 <sup>3</sup> / <sub>4</sub> % due August 15, 2021	398	
8 <sup>3</sup> / <sub>4</sub> % due September 15, 2031	248	
8 <sup>5</sup> / <sub>8</sub> % due November 15, 2031	173	
Other notes	74	67
Less current portion	(4)	(4)
	\$1,313	\$311

The unsecured debentures are not redeemable prior to maturity. The Company has complied with restrictive covenants contained

in debt agreements. Interest payments were \$32, \$27 and \$24 in 1991, 1990 and 1989, respectively.

Maturities of long-term debt for the next five years are as follows:

	1992	1993	1994	1995	1996
	\$4	\$18	\$7	\$2	\$261

Note 9

Retirement Benefits

The Company has various noncontributory plans covering substantially all employees. The majority of the pension plans have plan assets that exceed accumulated benefit obligations.

The following table summarizes the funded status of these plans and the amounts recognized in the Consolidated Statements of Financial Position at December 31.

	1991	1990
Actuarial present value of benefit obligations:		
Vested	\$(5,636)	\$(5,103)
Nonvested	(489)	(451)
Accumulated benefit obligation	(6,125)	(5,554)
Effect of projected future salary increases	(1,231)	(1,151)
Projected benefit obligation	(7,356)	(6,705)
Plan assets at fair value - primarily bonds, real estate, other fixed income obligations, equities and equity equivalents	7,945	6,583
Plan assets in excess of (less than) projected benefit obligation	589	(122)
Unrecognized net loss (gain)	(264)	59
Unrecognized prior service cost	425	421
Unrecognized net asset at January 1, 1987, being recognized over the plans' average remaining service lives	(105)	(116)
Prepaid pension cost recognized in the Consolidated Statements of Financial Position	\$ 645	\$ 242

The pension provision included the following components:

Year ended December 31,	1991	1990	1989
Service cost (benefits earned during the period)	\$ 299	\$ 289	\$ 249
Interest cost on projected benefit obligation	561	511	452
Actual return on plan assets	(972)	(361)	(752)
Net amortization and deferral	427	(135)	281
Net periodic pension provision	\$ 315	\$ 304	\$ 230

The actuarial present value of the projected benefit obligation at December 31, 1991, 1990 and 1989, was determined using a weighted average discount rate of 8.25%, 8.5% and 8.25%, respectively, and a rate of increase in future compensation levels of 6.0%, 6.5% and 6.5%, respectively. The expected long-term rate of return on plan assets was 8.5% at December 31, 1991, 1990 and 1989.

The retirement plans have been amended to provide that, in the event there is a change in control of the Company which is not approved by the Board of Directors and the plans are terminated within five years thereafter, the assets in the plans first will be used to provide the level of retirement benefits required by the Employee Retirement Income Security Act, and then any surplus will be used to fund a trust to continue present and future payments under the postretirement medical and life insurance benefits in the Company's group insurance programs.

Although the Company has no intention of doing so, should it terminate certain of its retirement plans under conditions where the plan's assets exceed the plan's obligations, the Company has an agreement with the Government whereby the Government is entitled to a fair allocation of any of the plan's reverted assets based on plan contributions that were reimbursed under Government contracts. Also, the Revenue Reconciliation Act of 1990 imposes a 20% nondeductible excise tax on the gross assets reverted if the Company establishes a qualified replacement plan or amends the terminating plan to provide for benefit increases, otherwise a 50% tax is applied. Any net amount retained by the Company is treated as taxable income.

The Company has a number of defined contribution plans, principally the Voluntary Investment Plans and the Financial Security Plan. Under the terms of the Voluntary Investment Plans, eligible employees are allowed to

Retirement Benefits

contribute up to 12% of their base pay. The Company contributes amounts equal to 50% of the employee's contribution to a maximum of 4% of the employee's pay subject to statutory limitations. The provision for these defined contribution plans in 1991, 1990 and 1989 were \$205, \$193 and \$166, respectively.

In December 1990, the Financial Accounting Standards Board issued Statement of Financial Accounting Standards No. 106, *Employers' Accounting for Postretirement Benefits Other Than Pensions*, effective for fiscal years beginning after December 15, 1992. In summary, this new standard requires that employers accrue the cost of postretirement benefits, such as health care, over the employee's service period to the point of full eligibility for the benefits. The Company's primary postretirement benefit, applicable essentially to all employees, consists of health care coverage for all eligible employees including qualifying dependents from the

date of the employee's retirement to age 65. The Company is still evaluating the standard to determine its impact on annual postretirement health care expense and reviewing the appropriate method and timing for its implementation; however, based on a preliminary assessment, the Company estimates that its additional liability at December 31, 1991, would equate to an after-tax earnings charge in the \$900 to \$1,200 range. The application of deferred tax benefits to the postretirement health care charge is dependent upon the adoption by the Financial Accounting Standards Board of proposed amendments to SFAS No. 96, *Accounting for Income Taxes*. After adoption, the standard will also result in a significantly higher provision for postretirement health care expense than the \$105, \$75 and \$61 for 1991, 1990 and 1989, respectively, as required by the Company's current accounting method.

Note 10

Research and Development, General and Administrative Expenses

Expenses charged directly to earnings as incurred included the following:

Year ended December 31,	1991	1990	1989
Research and development	\$1,417	\$ 827	\$ 754
General and administrative	1,291	1,246	1,066

Note 11

Stockholders' Equity

Changes in stockholders' equity for the three years ended December 31, 1991 consisted of the following:

(Shares in thousands)	Common Stock		Additional Paid-In Capital	Retained Earnings	Treasury Stock	
	Shares	Par Value			Shares	Amount
Balance, December 31, 1988	155,246	\$ 776	\$565	\$4,137	2,013	\$ (74)
Net earnings				973		
Cash dividends paid				(269)		
Three-for-two stock split:						
Transfer from retained earnings, \$5 per share	77,623	388		(388)	1,007	
Partial shares paid in cash	(17)			(1)		
Acquisition of treasury shares					38	(2)
Treasury shares issued for exercise of stock options			4		(762)	19
Tax benefit related to stock options			3			
Balance, December 31, 1989	232,852	1,164	572	4,452	2,296	(57)
Net earnings				1,385		
Cash dividends paid				(328)		
Cash dividends accrued				(86)		
Three-for-two stock split:						
Transfer from retained earnings, \$5 per share	116,426	582		(582)	1,148	
Partial shares paid in cash	(21)			(1)		
Acquisition of treasury shares					3,219	(156)
Treasury shares issued for exercise of stock options			4		(980)	19
Tax benefit related to stock options			5			
Balance, December 31, 1990	349,257	1,746	581	4,840	5,683	(194)
Net earnings				1,567		
Cash dividends paid				(343)		
Acquisition of treasury shares					2,915	(127)
Treasury shares issued for exercise of stock options			(5)		(629)	21
Tax benefit related to stock options			3			
Expired or surrendered stock appreciation rights			4			
Balance, December 31, 1991	349,257	\$1,746	\$583	\$6,064	7,969	\$(300)

In July 1987, the Company adopted a Stockholder Rights Plan and declared a dividend distribution of one Right for each outstanding share of common stock. Under certain conditions, each Right may be exercised to purchase one one-hundredth of a share of Series A Junior Participating Preferred Stock at a purchase price of \$150, subject to adjustment. The Rights

will be exercisable only if a person or group has acquired, or obtained the right to acquire, 20% or more of the outstanding shares of common stock; following the commencement of a tender or exchange offer for 30% or more of such outstanding shares of common stock; or after the Board of Directors of the Company declares any person, alone or together with affiliates

Stockholders' Equity

and associates, to be an Adverse Person. If the Board of Directors declares that a person is an Adverse Person or a person acquires more than 30% of the then outstanding shares of common stock (except pursuant to an offer which the independent Directors determine to be fair to and otherwise in the best interests of the Company and its stockholders), each Right will entitle its holder to receive, upon exercise, common stock (or, in certain circumstances, cash, property or other securities of the Company) having a value equal to two times the exercise price of the Right. The Company will be entitled to redeem the Rights at 5 cents per Right at any time prior to the earlier of the expiration of the Rights in August 1997 or ten days following the time that a person has acquired or obtained the right to acquire a 20% position. The Company may not redeem the Rights if the Board of Directors has previously declared a person to be an Adverse Person. The

Rights do not have voting or dividend rights, and until they become exercisable, have no dilutive effect on the earnings of the Company.

At December 31, 1991, options for 8,123,033 shares of the Company's stock at prices ranging from \$5.56 to \$60.06 per share were outstanding, of which options for 4,487,833 shares were exercisable. Stock appreciation rights applied to outstanding options for 2,397,540 shares as of December 31, 1991, of which options for 1,659,684 shares were exercisable. During 1991, options for 1,597,400 shares were granted; options for 623,688 were exercised at prices ranging from \$5.56 to \$43.13 per share; options for 69,141 shares were canceled or expired; and options for 301,748 shares were surrendered for cash on exercise of stock appreciation rights. An additional 10,166,355 shares are available for stock option grants under the present stock option and incentive compensation plans.

Note 12

Contingencies

Various legal proceedings, claims and investigations are pending against the Company related to products, contracts and other matters. Except for the items discussed below, most of these legal proceedings are related to matters covered by insurance.

In January 1991, the Company received from the Government a notice of partial termination for default which terminated most of the work required under the Company's \$1,500 contracts to develop and install a new air defense system for Saudi Arabia, known as the Peace Shield program. The Government has filed with the Company a demand for repayment of \$605 of Peace Shield unliquidated progress payments plus interest commencing January 25, 1991. Also, the Government has selected another contractor to perform the work which is the subject of the contracts that have been terminated for default, and the Government will likely assert claims related to the reprourement. The Company does not expect the Government to assert such claims prior to completion of the reprourement contract which is scheduled for late 1995.

Management's position, supported by outside legal counsel which specializes in government procurement law, is that the grounds for default asserted by the Government in the Peace Shield termination are not legally supportable. Accordingly, management and counsel are of the opinion that on appeal the termination for default has a substantial probability of being converted to termination for the convenience of the Government, which

would eliminate any Government claim for damages or cost of reprourement. Additionally, the Company has a legal basis for a claim for equitable adjustment to the prices and schedules of the contracts (the "Contract Claim"). Many of the same facts underlie both the Contract Claim and the Company's appeal of the Government's termination action.

The Company has filed its complaint in the United States Claims Court to overturn the default termination, and the major portion of the Contract Claim has been submitted. The Company expects that its position will ultimately be upheld with respect to the termination action, and that it will prevail on the Contract Claim. Additionally, the Company submitted a request for a deferred payment agreement which, if granted, will delay the Company's potential obligation to repay the \$605 of unliquidated progress payments until the conclusion of the appeal process.

The Company's 1990 and 1991 financial statements have been prepared on the basis of a conservative estimate of the revised values of the Peace Shield contracts including the Contract Claim and the Company's position that the termination was for the convenience of the Government. At this time, the Company cannot reasonably estimate the length of time that will be required to resolve the termination appeal and the Contract Claim. In the event that the Company's appeal of the termination for default is not successful, the Company could incur future pre-tax losses on the program approximating the value of the

**Note 12**

*Contingencies  
(continued)*

unliquidated progress payments, related interest, plus any damages assessed by the Government.

The Company is involved in various stages of legal proceedings, claims, investigation and cleanup relative to environmental or natural resource matters, some of which relate to waste disposal sites. The Company has provided for costs incurred and the estimated cost to complete cleanup actions where it is probable that the Company will incur such costs in the future, including cleanup actions in which it has been named a potentially responsible party by the Environmental Protection Agency or similarly designated by other environmental agencies. The amount provided for by the Company is net of amounts paid, or due to be paid, by insurance carriers or other parties responsible for a share of the cleanup costs where such parties have agreed to settlements, and where the Company believes it is probable the insurance carriers or other responsible parties will fulfill their commitments to pay. Government claimants generally assert that the Company is jointly and severally liable to clean up sites where it has been named a potentially responsible party; however, the Company usually only provides for its share of estimated cleanup costs. In some cases, the Company has filed claims against other potentially responsible parties who have not agreed to

settlements. The Company believes that it cannot determine the impact of possible additional environmental issues on future operations because it cannot reasonably estimate the full extent of potential costs related to such issues. This is due in part to the issues and uncertainties regarding the extent of required cleanup, the complexity of applicable Government laws and regulations and their interpretations, the varying costs and effectiveness of alternative cleanup technologies and methods, the uncertain level of insurance or other types of recovery, and the questionable level of Company involvement.

The Company is subject to several U.S. Government investigations of business practices and cost classification from which civil, criminal or administrative proceedings could result. These procedures could involve claims by the Government for damages as well as fines and penalties. Based upon Government procurement regulations, under certain circumstances, a contractor can be suspended or debarred from Government contracts if proceedings result from the investigations.

The Company does not believe, based upon all available information, that the outcome of the Government disputes and investigations and environmental matters discussed in the preceding paragraphs will have a materially adverse effect on its financial position.

Transportation Products and Related Systems involve research, development, production and modification of such products primarily for the U.S. Government and also for foreign governments. Missiles and Space operations primarily involve research, development and production of various strategic and tactical missiles and space exploration products, principally for the U.S. Government.

The Company operates primarily in three industries: (1) Commercial Transportation Products and Services, (2) Military Transportation Products and Related Systems and (3) Missiles and Space. Operations in Commercial Transportation Products and Services principally involve development, production and marketing of commercial aircraft and providing related support services mainly to commercial customers. Operations in Military

**Foreign sales by geographic area consisted principally of the following:**

Year ended December 31,	1991	1990	1989
Europe	\$ 8,745	\$ 7,762	\$ 5,429
Asia	5,458	4,962	3,213
Oceania	1,659	1,798	1,164
Western Hemisphere	1,436	1,088	888
Africa	558	483	327
	<b>\$17,856</b>	<b>\$16,093</b>	<b>\$11,021</b>

*Industry Segment  
Information*

Military sales were approximately 5%, 10% and 8% of total sales in Europe for 1991, 1990 and 1989, respectively. Military sales were approximately 5%, 6% and 5% of total sales in Asia for 1991, 1990 and 1989, respectively. Exclusive of these amounts, sales of Military Transportation Products and Related Systems and Missiles and Space were principally to the U.S. Government.

Financial information by segment for the three years ended December 31, 1991, is summarized below. Revenues consist of sales plus other income applicable to the respective segments. Corporate income consists principally of interest income from corporate investments. Corporate expense consists of interest on debt and other general corporate expenses. Corporate assets consist principally of cash, cash equivalents and short-term investments.

Year ended December 31,	1991	1990	1989
<b>Revenues</b>			
Commercial Transportation Products and Services	\$22,970	\$21,230	\$14,305
Military Transportation Products and Related Systems	4,188	4,123	3,962
Missiles and Space	1,658	1,739	1,467
Other Industries	498	503	542
Operating revenues	29,314	27,595	20,276
Corporate income	263	448	347
Total revenues	<b>\$29,577</b>	<b>\$28,043</b>	<b>\$20,623</b>
<b>Operating profit</b>			
Commercial Transportation Products and Services	\$ 2,246	\$ 2,189	\$ 1,165
Military Transportation Products and Related Systems	(145)	(299)	(559)
Missiles and Space	43	(119)	85
Other Industries	(2)	(66)	26
Operating profit	2,142	1,705	717
Corporate income	263	448	347
Corporate expense	(201)	(181)	(142)
Earnings before taxes	<b>\$ 2,204</b>	<b>\$ 1,972</b>	<b>\$ 922</b>
<b>Identifiable assets at December 31</b>			
Commercial Transportation Products and Services	\$ 7,806	\$ 6,267	\$ 6,675
Military Transportation Products and Related Systems	3,048	3,556	3,367
Missiles and Space	1,214	940	911
Other Industries	196	351	329
	12,264	11,114	11,282
Corporate	3,520	3,477	1,996
Consolidated assets	<b>\$15,784</b>	<b>\$14,591</b>	<b>\$13,278</b>
<b>Depreciation</b>			
Commercial Transportation Products and Services	\$ 484	\$ 349	\$ 280
Military Transportation Products and Related Systems	199	197	208
Missiles and Space	70	64	72
Other Industries	51	62	62
Total depreciation	<b>\$ 804</b>	<b>\$ 672</b>	<b>\$ 622</b>
<b>Capital expenditures, net</b>			
Commercial Transportation Products and Services	\$ 1,445	\$ 1,001	\$ 612
Military Transportation Products and Related Systems	244	407	506
Missiles and Space	73	89	155
Other Industries	88	89	89
Total capital expenditures, net	<b>\$ 1,850</b>	<b>\$ 1,586</b>	<b>\$ 1,362</b>

**Note 13**

*Industry Segment  
Information*

**Note 14**

*Financial Instruments with Off-Balance-Sheet Risk*

The Company is a party to financial instruments with off-balance-sheet risk in the normal course of business to meet the financing needs of its customers, primarily commercial aircraft customers, and to reduce its own financing exposure. These commitments can include extensions of credit, direct credit guarantees, tax benefit transfers, foreign government expropriation guarantees, interest rate swaps, and agreements with other financing parties to participate in long-term receivables with interest rate terms different from those of the related receivable.

The future airline financing commitment amount for aircraft relates to undelivered aircraft on order, including options, whereby the Company has irrevocably committed to make financing available to the customer. As of December 31, 1991, these commitments totaled \$4,034 and relate to aircraft delivering from 1992 through 1998. The Company anticipates that not all of these commitments will be

utilized and that it will be able to arrange for third-party investors to assume a portion of the remaining commitments, if required.

The Company's exposure to credit and market related losses related to direct credit guarantees, tax benefit transfers, and foreign government expropriation guarantees totaled \$145 as of December 31, 1991.

The Company has entered into interest rate swaps with third-party investors whereby the interest rate terms differ from those of the original receivable. These swaps related to long-term receivables that totaled \$317. In addition, participation in the Company's long-term receivables by third-party investors with interest rate terms different from the original receivable totaled \$106. Any potentially adverse interest rate spread on \$19 of these participations has been hedged by purchasing interest rate cap contracts callable on the applicable interest payment dates.

**Note 15**

*Significant Group Concentrations of Credit Risk*

Substantially all financial instruments entered into by the Company relate to the U.S. Government, and international and domestic commercial airline customers. As of December 31, 1991, the Company's financial instruments balance included \$4,179 that are off-balance-sheet and described in Note 14, and \$2,666 that appear as Accounts Receivable and

Customer Financing on the Consolidated Statements of Financial Position. The Accounts Receivable total included \$1,528 relating to the U.S. Government. Customer financing for aircraft is collateralized by security in the related asset, and historically, the Company has not experienced any problem in accessing this collateral.

**Quarterly Financial Data (Unaudited)**

*(Dollars in millions except per share data)  
(Share data restated for 1990 three-for-two stock split)*

Quarter	1991				1990			
	4th	3rd	2nd	1st	4th	3rd	2nd	1st
Sales (including other operating revenues)	\$7,753	\$7,657	\$7,813	\$6,091	\$7,015	\$7,176	\$6,969	\$6,435
Earnings from operations	498	510	576	370	380	389	389	372
Net earnings	403	401	454	309	318	378	387	302
Net earnings per share	1.17	1.17	1.32	.90	.92	1.10	1.12	.87
Cash dividends per share	.25	.25	.25	.25	.25	.25	.25	.20
Market price:								
High	51.13	53.00	49.75	52.50	49.38	61.88	58.50	49.67
Low	41.25	42.63	45.00	43.13	41.63	38.50	45.67	37.75

(Dollars in millions except per share data)  
(Share data restated for 1990 three-for-two stock split)

	1991	1990	1989	1988	1987
<b>Operations</b>					
Sales (including other operating revenues)					
Commercial	\$23,752	\$22,158	\$14,994	\$12,170	\$10,623
U.S. Government	5,562	5,437	5,282	4,792	4,882
Total	29,314	27,595	20,276	16,962	15,505
Net earnings	1,567	1,385	675*	614	480
Per share	4.56	4.01	1.96*	1.79	1.38
Percent of sales	5.3%	5.0%	3.3%	3.6%	3.1%
Cash dividends paid	\$ 343	\$ 328	\$ 269	\$ 237	\$ 217
Per share	1.00	.95	.77 <sup>7/8</sup>	.68 <sup>8/9</sup>	.62 <sup>2/9</sup>
Other income, principally interest	263	448	347	378	308
Research and development expensed	1,417	827	754	751	824
General and administrative expensed**	1,291	1,246	1,066	954	891
Additions to plant and equipment	1,850	1,586	1,362	690	738
Depreciation of plant and equipment	768	636	584	541	486
Salaries and wages	6,502	6,487	6,082	5,404	5,028
Average employment	159,100	161,700	159,200	147,300	136,100
<b>Financial position at December 31</b>					
Total assets	\$15,784	\$14,591	\$13,278	\$12,608	\$12,566
Working capital	2,553	1,638	1,987	1,856	2,246
Long-term customer financing	1,183	1,120	822	1,039	392
Cash and short-term investments	3,453	3,326	1,863	3,963	3,435
Total borrowings	1,317	315	280	258	270
Long-term debt	1,313	311	275	251	256
Long-term deferred taxes	102	161	174	205	189
Stockholders' equity	8,093	6,973	6,131	5,404	4,987
Per share	23.71	20.30	17.73	15.67	14.55
Common shares outstanding (in thousands)	341,288	343,573	345,834	344,774	342,614
<b>Firm backlog</b>					
Commercial	\$92,826	\$91,475	\$73,974	\$46,676	\$26,963
U.S. Government	5,090	5,719	6,589	6,925	6,241
Total	\$97,916	\$97,194	\$80,563	\$53,601	\$33,204

\*Exclusive of the effect of adopting Statement of Financial Accounting Standards No. 96, Accounting for Income Taxes.  
Net earnings including the effect were \$973 or \$2.82 per share.

\*\*Prior years have been restated to conform with the presentation used in 1991.

Cash dividends have been paid on common stock every year since 1942.

## Market Information

The Company's common stock is traded principally on the New York Stock Exchange. Boeing common stock is also listed on the Amsterdam, London, Swiss, and Tokyo stock exchanges. Additionally, the stock is traded on the Boston, Cincinnati, Midwest, Philadelphia, and Brussels exchanges. The number of shareholders of record as of January 31, 1992, was 99,538.

### Annual Meeting

The annual meeting of Boeing stockholders will be held at the Washington State Convention & Trade Center, 800 Convention Place, Seattle, on April 27, 1992. Formal notice of the meeting, proxy statement and form of proxy will be sent to stockholders about March 26-30, 1992.

### Notice to Holders as of March 29, 1966, of Unregistered 4½% Convertible Subordinated Debentures of The Boeing Company Due July 1, 1980.

Boeing has made an undertaking in a proceeding entitled *Van Gemert, et al. v. The Boeing Company, et al.*, 66 Civ. 1820, filed in the United States District Court for the Southern District of New York, to pay certain sums to any person who provides evidence that he or she was a holder on March 29, 1966, of the debentures described above and did not convert the debentures on that date or that he or she is an assignee or transferee of such holder by purchase or operation of law.

If you believe you may be entitled to receive such payment, or desire further information, contact Shareholder Relations.

### The Boeing Company Shareholder Relations

Michelle Tramm  
P.O. Box 3707, Mail Stop 10-13  
Seattle, Washington 98124-2207  
Telephone: 206-655-1976

Please direct inquiries relating to the following subjects to

### Public Relations & Advertising

Harold Carr  
Vice President  
Mail Stop 10-06

## Corporation Information

### The Boeing Company General Offices

7755 East Marginal Way South  
Seattle, Washington 98108

### General Auditors

Deloitte & Touche

### Transfer Agent and Registrar

The First National Bank of Boston

Our transfer agent is responsible for our shareholder records, issuance of stock certificates, and distribution of our dividends and the IRS Form 1099. Requests concerning these matters are most efficiently answered by corresponding directly with The First National Bank of Boston at the following address:

The Boeing Company  
c/o The First National Bank of Boston  
Mail Stop 45-02-09  
P.O. Box 644  
Boston, Massachusetts 02102-0644  
Telephone: 617-575-2900 or 800-442-2001

The offices where certificates may be hand-delivered for transfer are as follows:

**The First National Bank of Boston**  
100 Federal Street, Floor 1-B  
Boston, Massachusetts  
Telephone: 617-434-3830

**BancBoston Trust Company of New York**  
55 Broadway, 3rd Floor  
New York, New York  
Telephone: 212-422-1350

### Investor Relations

Larry Bishop  
Vice President  
Mail Stop 11-FF

## Board of Directors

### (\*Committee Chairmen)

#### Robert A. Beck

Chairman Emeritus  
The Prudential Insurance Company of America  
(insurance)  
Audit Committee

#### John B. Fery

Chairman of the Board & Chief Executive Officer  
Boise Cascade Corporation (forest products)  
Finance Committee

#### Paul E. Gray

Chairman of the Corporation  
Massachusetts Institute of Technology (education)  
Audit Committee

#### Harold J. Haynes

Retired Chairman & Chief Executive Officer  
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Compensation and Organization & Nominating  
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#### Stanley Hiller, Jr.

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#### Lee L. Morgan

Director & Retired Chairman  
Caterpillar Inc. (heavy equipment manufacturer)  
Compensation Committee

#### Donald E. Petersen

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Ford Motor Company (automotive products)  
Compensation Committee

#### Charles M. Pigott

Chairman of the Board & Chief Executive Officer  
PACCAR Inc (transportation equipment)  
Organization & Nominating Committee\*

#### Frank Shrontz

Chairman of the Board & Chief Executive Officer  
The Boeing Company

#### George P. Shultz

Distinguished Fellow, Hoover Institution  
Stanford University (education)  
Finance Committee

#### George H. Weyerhaeuser

Chairman of the Board  
Weyerhaeuser Company (forest products)  
Organization & Nominating Committee

#### T.A. Wilson

Chairman Emeritus  
The Boeing Company  
Finance Committee\*

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Senior Vice President

Thomas M. Budinich, Jr.  
Vice President - Controller

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Improvement

Lawrence W. Clarkson  
Vice President - Planning & International  
Development

F. G. (Bud) Coffey  
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Theodore J. Collins  
Vice President - General Counsel

Dennis J. Crispin  
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Insurance & Taxes

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Senior Vice President - Operations

Andre Gay  
Vice President - Facilities

Boyd E. Givan  
Senior Vice President - Chief Financial Officer

John F. Hayden  
Vice President - Washington, D.C., Office

Heather Howard  
Corporate Secretary

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Vice President - Treasurer

Larry G. McKean  
Vice President - Human Resources

B. Dan Pinick  
Executive Vice President - President of  
Boeing Defense & Space Group

John R. Potter  
Vice President - Safety, Health &  
Environmental Affairs

Frank Shrontz  
Chairman of the Board & Chief Executive Officer

Dean D. Thornton  
Executive Vice President - President of  
Boeing Commercial Airplane Group

A. D. (Bert) Welliver  
Senior Vice President - Engineering  
& Technology

## Operating Divisions

### Boeing Commercial Airplane Group

Renton, Washington

Dean D. Thornton  
President

Richard R. Albrecht  
Executive Vice President

Philip M. Condit  
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777 Division

Benjamin A. Cosgrove  
Senior Vice President

Robert L. Dryden  
Executive Vice President

Bruce Gissing  
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B. Dan Pinick  
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C. Gerald King  
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Bellevue, Washington

Arthur E. Hitsman  
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Seattle, Washington

Wally E. Alder  
Vice President - General Manager



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