AIA...A Leader Among Leaders

The Aerospace Industries Association (AIA) is unique among trade associations. Founded in 1919, AIA has been bringing together the experience and expertise of its member companies' CEOs and senior executives for more than 75 years. By establishing goals and strategies and achieving consensus among its members, AIA creates an environment conducive to:

- Preserving U.S. technological leadership,
- Monitoring and coordinating legislative and regulatory changes that affect industry,
- Building a strong industrial capability,
- Addressing international issues to improve global competitiveness, and
- Solving mutual problems.

AIA is a nonprofit trade association that strengthens its membership through teamwork. Located in Washington, D.C.—in the center of the federal government decision-making process—AIA represents the nation’s leading manufacturers of commercial, military, and business aircraft, helicopters, aircraft engines, missiles, spacecraft, and related components and equipment.

AIA coordinates the efforts of its many councils and committees, charged with studying and determining the best solutions to industry-wide problems. Senior executives from member companies serve on the councils and committees, sharing vast aerospace, aviation, and defense expertise.

AIA speaks aggressively and effectively to convey industry goals and accomplishments and voice common concerns to Congress, all relevant federal agencies, the news media, and the American public.

By taking the lead on key aerospace issues for the past 75 years, AIA has become an institution in the aerospace community, earning the right to be called the premier association for aerospace industry leaders. A leader among leaders.
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Aerospace Industries Association of America, Inc.
1250 Eye Street, N.W.
Washington, D.C. 20005
(202) 371-8400
For the Aerospace Industries Association (AIA) and the companies it serves, 1995 was a milestone year, a period that signaled the bottoming-out of a decade-long activity decline and the start of an anticipated business upturn. This more optimistic outlook is based on the flow of new orders, which reversed the downward trend in the latter part of 1994 and gained substantially in 1995 under the impetus of rekindled airline reequipment programs. Although the industry's sales fell by some $4 billion in 1995, new orders increased by more than $16 billion and the industry's backlog climbed by $11 billion.

An AIA analysis of the backlog and associated indicators predicted that overall sales, which are computed on product deliveries rather than orders, would increase by $3.5 billion in 1996 and continue upward thereafter. It must be emphasized, however, that the very welcome business upturn does not signal an end to the aerospace industrial transition. The difficult period, now in its 11th year, has been a time of continual adjustment to changing market influences: the national decision to restructure the armed forces, the financial health of the world's airlines, and increasing globalization of the aerospace/defense marketplace as more and more nations become technologically proficient and seek a share of that market. Although the health of the world's airlines has improved significantly, the other two transition influences remain. The defense segment of the aerospace industry cannot attain stability until the government commits to modernization of the defense force and a new generation of advanced technology systems become adequately funded production projects. The shifting world pattern of economic transformation demands further adjustments by the companies in the aerospace industry as they continue to "rightsize" for maximal efficiency and competitiveness. Looking further down the road to the time in the new millennium when we can officially declare the industry's transition completed, the outlook is generally bright. The industry that emerges will be quite different—smaller, of course, leaner and more efficient, and still technologically strong.

Aerospace sales will be driven primarily by commercial workload, which is expected to reach record proportions; defense production levels will most likely be well below those of the peak years 1987-89, but they will nonetheless represent substantial workload for the fewer companies participating. The promise of the new century will materialize only if our industry is able to retain its current share of the global market. That is a challenge of significant order, because we are entering an era of economic competition more intense than the aerospace industry has ever before encountered. Our companies are well prepared to meet the challenge; they have, as a result of enforced downsizing, spent a whole decade pursuing—and finding—new cost and productivity efficiencies in every aspect of their operations. There is every reason to believe that the aerospace industry of the new century will be more competitive than at any time in its history. Although our industry is changing dramatically, its basic goal remains the same: world aerospace leadership. The manner in which the industry has maintained across-the-board leadership throughout a difficult decade of transition lends confidence that the goal will be attained.
1995 Board of Governors

Officers

Norman R. Augustine, Chairman
Kent Kresa, Vice Chairman
Don Fuqua, President
George F. Capsey, Secretary-Treasurer

Executive Committee

Norman R. Augustine, President, Lockheed Martin Corporation; Kent Kresa, Chairman, President, and Chief Executive Officer, Northrop Grumman Corporation; Don Fuqua, President, Aerospace Industries Association; Renso L. Caporali, Senior Vice President, Government & Commercial Marketing, Raytheon Company; James F. Hardyman, Chairman and Chief Executive Officer, Textron Inc.; William F. Hayes, Executive Vice President, Texas Instruments Incorporated; Michael T. Smith, Vice Chairman, Hughes Electronics Corporation, and Chairman, Hughes Aircraft Company; Harry C. Stonecipher, President and Chief Executive Officer, McDonnell Douglas Corporation.

Members

Kent M. Black, Senior Vice President and Chief Operating Officer, Rockwell International Corporation; Larry D. Brady, President, FMC Corporation; Fred A. Breidenbach, President and Chief Operating Officer, Gulfstream Aerospace Corporation; David L. Burner, President, Aerospace Division, The BFGoodrich Company; Daniel P. Burnham, President, AlliedSignal Aerospace; Felix W. Fenter, President, Loral Missiles Group, Loral Vought Systems Corporation; Fred D. Gibson, Jr., President and Chief Executive Officer, American Pacific Corporation; Timothy W. Hannemann, Executive Vice President and General Manager, Space & Electronics Group, TRW Inc.; John J. Lee, Chief Executive Officer, Hexcel Corporation; Richard A. Linder, Chairman, Electronic Systems Group, Westinghouse Electric Corporation; D. Larry Moore, President and Chief Operating Officer, Honeywell Inc.; Eugene F. Murphy, President and Chief Executive Officer, GE Aircraft Engines, and Senior Vice President, General Electric Company; William F. Paul, Executive Vice President, United Technologies Corporation; Robert H. Rau, President and Chief Executive Officer, Rohr, Inc.; Frank A. Shron, Chairman-Chief Executive Officer, The Boeing Company; Robert J. Smuland, Executive Vice President and Chief Operating Officer - Aerospace, Sundstrand Corporation; Ronald L. Turner, President, Computing Devices International; James R. Wilson, Chairman, President, and Chief Executive Officer, Thiokol Corporation; Paul E. Wright, Chairman, Chrysler Technologies Corporation.
AIA's professional staff assist and support their members by monitoring administrative and technical developments and relaying that information through regular and special meetings, workshops, seminars, reports, and publications. In addition, every year AIA identifies the aerospace industry's top 10 issues of importance, which encompass the broad objectives of AIA's Board of Governors. Following are the top 10 issues for 1995, which are not arranged in any order of priority.

**Defense Readiness** Essential private-sector capabilities in defense readiness are being lost as the private sector downsizes and consolidates. AIA supports the development of policies and legislation which recognize the need to downsize the government defense industrial infrastructure, rely heavily on private-sector performance, and ensure retention of unique private-sector capabilities.

**Industry Consolidation** The diminishing defense market demands that a company be among the top few competitors in any business sector. The Department of Defense (DoD) must address the antitrust implications and the issue of allowability in connection with mergers and acquisitions.

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**Association Highlights 1995**

**International Competitiveness** To maintain U.S. aerospace preeminence in a period of increased competition and consolidation, AIA seeks to establish a working relationship with the U.S. government in which industry is regarded as a partner, not an adversary that must be controlled.

**Maintain the Industrial Base** As defense downsizing continues, preserving a financially sound industrial base to protect national security interests is an increasingly critical concern. Industry must actively support DoD efforts to increase the military’s access to commercial state-of-the-art technology and the development of dual-use processes and products.

**Small Disadvantaged Businesses and Women-Owned Businesses** The aerospace industry continues its commitment to meet the percentage of subcontracts awarded to small disadvantaged businesses and women-owned businesses, as required by DoD and NASA.

**Federal Acquisition Streamlining** The 1994 Federal Acquisition Streamlining Act sets the stage for regulatory change and ultimately for a new acquisition culture. AIA is working with government to ensure that the regulations fully implement the streamlining and simplification intended by the legislation, to determine additional legislative changes needed to maximize streamlining and flexibility, to ensure effective oversight as streamlining and simplification initiatives are put into practice, and to fully support the new DoD policy favoring non-government specifications in lieu of military specifications and standards.

**Environment, Safety, and Health** As the number of environmental and safety regulations grows, the aerospace industry continues to place greater emphasis on finding solutions that will meet and surpass current regulations.

**Health of Civil Aeronautics** The health of civil aviation depends on a broad national consensus of the importance of aviation to the national economy and a determination to maintain an environment that is conducive to the design, manufacture, and operation of civil aircraft.

**National Vision for Space** Ongoing and proposed space activities and their effective implementation are of major significance to the aerospace industry. Several key areas include international competitiveness and cooperation, improved launch infrastructure and systems, human presence in space (balanced with robotic systems), and dual-use technology.

**Government Regulatory Reform** DoD and industry must reduce the unnecessary and costly oversight burdens that result from regulatory and legislative micromanagement of the procurement process. Implementation of the 1994 Federal Acquisition Streamlining Act has begun the process of reform.
AIA’s Administrative Office guides and manages the association’s daily business operations and activities of all program areas and keeps member companies apprised of key membership issues.

The association’s general administrative functions include financial management and accounting, personnel management, data information systems, purchasing, mail operations, telecommunications, industrial security, and office management. These operations are administered on a day-to-day basis by a nine-member staff. In conjunction with the Office of Policy and Planning, the Administrative Office assists with preparing the program agenda, complete with background material, for AIA’s semiannual Board of Governors meetings and two membership meetings. AIA’s general counsel consults with the secretary-treasurer to review and revise the association’s bylaws. Staff members are responsible for incorporating any changes approved by the Board of Governors and communicating those changes to the membership. Another important function of the Administrative Office is industrial security. Under its contract with the Air Force, AIA provides various statistical analyses and reports relating to security. In addition, the Administrative Office conducts staff briefings on clearance procedures and conducts periodic reviews, briefings, and debriefings when staff members travel to various sites and countries. The secretary-treasurer serves as liaison to two standing Board of Governors committees: Finance and Nominating. The staff meet with the Finance Committee to review AIA’s investments, budget, and other financial matters. With regard to the Nominating Committee, the staff are responsible for informing committee members of their responsibilities, developing criteria for selecting nominees to the Executive Board, and answering questions about the selection process. The staff prepare reports for both committees and communicate the results to AIA’s members. The staff are also responsible for processing membership applications and expediting the appointments of new member representatives to AIA’s councils and committees.
AIA's Aerospace Research Center conducts research, provides analyses, and prepares studies to bring perspective and a better understanding to the issues, problems, and policies of the aerospace industry.

After the Cold War  The Research Center published Part 3 of a study series, After the Cold War: The U.S. Aerospace Industry in the International Market. Based on trends identified in two earlier reports, Part 3 highlights market issues facing U.S. aerospace companies and companies' competitive strategies. The report also recommends government policies that will advance U.S. aerospace trade, strengthen the industrial base, and promote technology development and application.

Facts & Perspective  A “Facts & Perspective” supplement in the AIA Newsletter reviewed prospects for U.S. helicopter manufacturers. The supplement pointed out the negative effect of the downward trend of Defense Department spending, the decline in the number of new programs, and the possible damage to the market caused by a flood of surplus U.S. government helicopters. An upturn in civil business is expected, but sales of surplus military helicopters could constrain civil sales as well.

Employment Trends  The annual AIA Aerospace Industry Employment Survey reported that manufacturers reduced employment by 80,000 jobs in 1994, for a total workforce of 827,000. Employment was further reduced in 1995. An analysis of employment from 1962-1995 shows the impact of defense spending, economic trends, and international trade during that period.
BUSINESS OPPORTUNITIES ABROAD 1) "Aerospace Opportunities in China," an article published in the June issue of the AIA Newsletter, reports that U.S.-aerospace exports to China have topped $2 billion for each of the past three years, making that market one of the industry's largest. Political and trade issues could affect U.S. sales to China. 1) "The U.S.-Saudi Connection: Flying High," an article published in the October issue of the Newsletter, highlights the long-time role of aerospace in the relationship between these two nations. For the next several years, at least 40,000-50,000 U.S. aerospace workers will depend on Saudi commercial and military orders for their livelihood.

COMPENSATION PRACTICES COMMITTEE 1) With the dissolution of the Human Resources Council, the activities of the Compensation Practices Committee were added to the portfolio of the Research Center. The committee helps educate government agencies on industry compensation issues. 1) In April, at the request of the AIA Cost Principles Committee, members gave a presentation on employee compensation in the industry to the Defense Acquisition Regulations Council's Cost Principles Committee (DAR CPC). The presentation provided a framework for assessing the reasonableness of industry compensation systems. There is concern about the proposed issuance of Federal Acquisition Regulation requirements on Compensation System Reviews. Committee members helped prepare written comments for the DAR CPC regarding the proposed revisions. 1) Committee members participated in surveys and information exchanges, which allowed them to benchmark "best practices" in the industry. Members created and supported the Summit Survey, a respected study of executive compensation in high-technology defense and commercial companies. The Defense Contract Audit Agency, Congress, and government agencies acknowledge the survey's credibility and usefulness.

YEAR-END REVIEW AND FORECAST 1) In December, AIA released the Research Center's 1995 Year-End Review and Forecast. The Research Center staff estimated 1995 and 1996 sales, employment, and other key indicators of industry activity. Aerospace sales declined from $113 billion in 1994 to $107 billion in 1995. Sales of $111 billion are projected for 1996. An industry work force of 837,000 shrank to 776,000 in 1995 and is expected to fall to 763,000 in 1996.

AEROSPACE FACTS AND FIGURES 1) The 42nd edition of AIA's statistical yearbook, Aerospace Facts & Figures, 1994/95, was released in January 1995. Facts & Figures includes 140 industry statistical time series updated each year. Facts & Figures is a reference on aerospace for those in industry, government, the financial community, and the media.

STATISTICAL AND INFORMATION SERVICES 1) The Research Center's database supports publication of 22 statistical series grouped by general statistics, employment, production, and foreign trade. The series on "Orders, Shipments, and Backlog of Large Commercial Jet Transport Aircraft," an innovation in 1995, now includes figures for the European manufacturer, Airbus. 1) AIA financially supports an important Bureau of Census survey of "Aerospace Industry Orders, Sales, and Backlog." Research Center staff were successful in convincing the Census Bureau and the Office of Management and Budget to continue the survey's mandatory reporting requirement. Plans to make it voluntary for companies after 1995 would have threatened the survey's response rate and quality. 1) Another statistical service is a quarterly "Aerospace Indicators" page for the AIA Newsletter. Key business indicators were presented in the March, June, and November issues. 1) The Research Center introduced a new feature in the Newsletter called "Trend Lines." It employs a graphic (based on data from Aerospace Facts & Figures) to show trends that have taken place in the industry over time or to illustrate a change in the U.S. economy that affects industry activity.

SPECIAL PROJECTS AND ANALYSES 1) Research Center staff assisted other AIA departments by developing a presentation on trends in world defense trade and by surveying the extent of downsizing in recent years in terms of member company employment and square footage. Another analysis explored factors accounting for the rise and fall of commercial transport deliveries over a 35-year period.

SURVEYS 1) The Procurement and Finance Council recruited the Research Center to assist with a survey of the financial impact of False Claims Act Litigation, as well as a Contract Administration Benchmarking survey. A survey of three AIA departments (Technical Operations, International, and Procurement and Finance) was conducted concerning the priority companies place on various proposals dealing with tax and finance, regulatory reform, research and development, training and workplace issues, and export promotion. Results helped in developing comments for a congressional task force looking at ways to revive American manufacturing.

LIBRARY 1) The AIA Library maintains the association's records, reference materials, and periodicals. The Library is a source of information on the industry, which is tapped by analysts and industry scholars.
Civil Aviation

ALA's Civil Aviation Council works with domestic and international agencies, the U.S. Congress, and others in the aviation community concerning the design, manufacture, and operation of rotorcraft, fixed-wing aircraft, engines, and systems.

The Civil Aviation Council had a very busy year. Many regulatory initiatives saw significant progress. In addition, major industry efforts were required on environmental issues and on proposals to reform the Federal Aviation Administration (FAA).

INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP): PROPOSED U.S. POSITION FOR THE DECEMBER 1995 DECISION-MAKING MEETING

The third meeting of ICAO CAEP was held in December to make recommendations to the ICAO Council on international standards for measuring and controlling aircraft noise and engine emissions. ALA played a leadership role to ensure a favorable recommendation, forming a partnership with the Air Transport Association (ATA) and the Air Freight Association (AFA). ALA also secured the agreement of the International Coordinating Council of Aerospace Industries Associations—whose members include ALA, AIA Canada, European Aerospace Industries Association, and the Society of Japanese Aerospace Companies—to oppose any increase in noise or emissions stringency. ALA, ATA, and AFA worked with the U.S. administration to formulate the following U.S. position: no increase in either noise or emissions stringency; maximize operating procedures and land-use planning; support research on new technologies and climate change; propose goals for noise and emission reductions; and establish a future work plan for CAEP to accomplish the above.
**FAA Funding and Reform**  
There was great momentum in 1995 to reform the FAA. Bills were introduced in the House and the Senate dealing with FAA governance, regulatory reform, and personnel and procurement reform. AIA played a major role in this debate, working with the FAA, Congress, and other aviation associations. AIA President Don Fuqua testified before Congress, supporting FAA personnel and procurement reform and greater independence for the FAA, but opposing proposals to implement user fees to fully fund the FAA.

**Harmonization of Federal Aviation Regulations and European Joint Airworthiness Requirements (FAR/JAR)**  
Senior officials from the FAA, the European Joint Aviation Authorities (JAA), and industry met to review regulatory issues of interest to all sides. AIA expressed concerns regarding JAA's proposed Joint Aviation Requirement 21 Subpart N: Imported Products; Concurrent and Cooperative Certification, and the slow pace of completion of the harmonization work items in the program overall. In addition, AIA and the General Aviation Manufacturers Association (GAMA) continued to work with the FAA to establish a better means of having significant industry involvement in the overall management of the work program.

**European Union Directive on Electromagnetic Compatibility**  
AIA became aware of European Union Directive 89/336/EEC, which became effective January 1, 1996, and established requirements regarding performance of electric equipment in Europe. AIA, GAMA, and the Aircraft Electronics Association (AEA) worked with the European manufacturers, the FAA, the Department of Commerce, and the JAA on this issue. The application of the directive to aviation products would not produce any benefit but would increase costs substantially. The industry position, presented in a white paper to the JAA, is that the industry already meets the objectives of 89/336/EEC through compliance with rigorous aviation specifications.

**Suspected Unapproved Parts**  
The Air Carrier/General Aviation Maintenance Issues Group of the FAA Aviation Rulemaking Advisory Committee (ARAC) completed its work in developing a policy for evaluating civil aircraft parts in inventory which cannot be traced back to an approved FAA manufacturing source. Stock of this nature is considered one of the major sources of suspected unapproved aircraft parts. AIA led the Parts Approval Action Team that developed criteria addressing the installation eligibility, quality, and identification of aeronautical replacement parts. The FAA also released an order covering parts manufacture approval procedures, which were developed primarily by the AIA Manufacturing, Maintenance, and Repair Committee.

**Airplane Noise Control Committee**  
In addition to ICAO CAEP issues discussed previously, the Airplane Noise Control Committee worked to harmonize European and U.S. noise certification standards (JAR 36/FAR 36). AIA continued to support verbatim adoption of the world standard—ICAO Annex 16, Chapter 3—to reduce costs and schedule by establishing a single method for demonstrating compliance to U.S. and European noise regulations.

**Commercial Customer Support Committee**  
Areas of focus for the Commercial Customer Support Committee include developing after market product support systems, facilitating the development of regulations affecting product support, and strengthening relations with operator associations. In 1995, the committee focused on harmonization of regulations relative to parts documentation, parts support, materials management, and the development and implementation of specifications for parts acquisition. The committee initiated a review of new FAA procedures concerning deviations from FAA-approved maintenance manual procedures. At the request of ATA, the committee supported the creation of a joint ATA/AIA team to address the issue of "no fault found" in aircraft components removed from an aircraft as a result of a failure indication. In coordination with ATA, the committee worked on the development of an ATA Integrated Data Processing Materials Management document and continued development of digitized specifications for transmitting manufacturers' technical data. The committee also focused on computer-based training and worked on the development of a common digital standard, incorporating new technologies and adapting training methods to utilize new digital data and delivery tools. In addition, the committee continued to oppose proposals to establish the Illustrated Parts Catalog as an approved FAA publication.

**Manufacturing, Maintenance, and Repair Committee**  
Areas of focus for the Manufacturing, Maintenance, and Repair Committee are certification procedures for production and for airworthiness requirements relating to maintenance and repair. Initiatives in 1995 focused on parts documentation and certification, the development of proper delegation authority, and the development of updated procedures under Part 21 of the...
Federal Aviation Regulations covering certification. The committee continued to work with the FAA on supplier surveillance procedures and the FAA audit program for manufacturers’ quality systems. The committee continued to address the issue of acceptance of the proposed European requirements for imported products. The committee concluded one part of an effort to allow use of an optional FAA Form 8130-3 Airworthiness Approval Tag at foreign locations, which will result in reduced administrative costs. Continuing AIA’s efforts to have unapproved parts removed from the distribution system, the committee initiated a project with the support of the FAA to develop a paper trail covering aircraft parts and components from original manufacturer to final installation.

**Propulsion Committee** (1) A major initiative of the Propulsion Committee centered on formulating a U.S. position for engine emissions standards in CAEP, as described previously. Other activity continued to focus on harmonization and JAA Certification/Validation Procedures and Arrangements. The committee worked closely with the FAA to resolve problems that persist with the JAA’s approach to Concurrent and Cooperative Certification. Work also continued on the proposed rule on inclement weather, bird ingestion certification criteria, engine vibration, and engine windmilling. The Working Group on Auxiliary Power Unit (APU) Certification agreed to proceed with the implementation of a type certificate process for APUs, and work began on a complete revision of certification requirements for propellers.

**Rotorcraft Committee** (1) The Rotorcraft Committee worked on Federal Aviation Regulations and FAR/JAR harmonization. Both areas involve ARAC participation. In cooperation with AIA’s Technical Operations Council, the Rotorcraft Committee supported the association’s effort to address the issue of Department of Defense sales of surplus military aircraft, which has safety and financial implications for the industry.

(1) Harmonization interest centered on Concurrent and Cooperative Certification, including JAA internal certification procedures and the FAA/JAA certification working arrangement, JAR OPS (rotorcraft operation regulations), and ICAO Annex 6, affecting single-engine operations.

**Transport Committee** (1) The Transport Committee continued work on nine ARAC projects and nine independent projects. These projects have substantial implications for maintaining safety of flight, as well as the potential for significant cost savings to industry. Projects to reduce the time and cost of certifying new and derivative products included certification maintenance requirements, structure fatigue and damage tolerance loads, airplane flight manuals, retroactive application of European airworthiness requirements, and flight tests. Working directly with international authorities and with other AIA navigation committees, the committee also supported industry efforts pertaining to ICAO’s Future Air Navigation System project. The committee also worked with the AIA Environmental Council on halon replacement.

**Civil Aviation Council and Committees** (1) Robert Davis, The Boeing Company, Chairman, Civil Aviation Council (1) Peter Gallimore, The Boeing Company, Chairman, Manufacturing, Maintenance, and Repair Committee (1) Norris Haight, McDonnell Douglas Corporation, Chairman, Airplane Noise Control Committee (1) Ed Kupcis, The Boeing Company, Chairman, Transport Committee (1) James Nolan, Pratt & Whitney Aircraft Group, Chairman, Propulsion Committee (1) Richard Papes, General Electric Company, Chairman, Commercial Customer Support Committee (1) Larry Plaster, McDonnell Douglas Helicopter, Chairman, Rotorcraft Committee
AIA’s Communications Council supports the activities of the association’s president and staff and conveys industry goals, accomplishments, and concerns to AIA member companies, Congress, the news media, and the general public.

Communications

AIA President Don Fuqua remains the leading spokesperson for the aerospace industry, delivering numerous major speeches, giving many news media interviews, and participating in aerospace-related conferences, panels, and seminars, including a roundtable co-hosted by AIA and Aviation Week and Space Technology. At the 31st Annual Year-End Aerospace Review and Forecast Luncheon on December 13, Fuqua delivered the state of the industry address. It was attended by 276 representatives from the media, government, and industry.

Media Relations

AIA’s Office of Communications is an important information source for the aerospace industry. News media interests in 1995 focused on consolidation in the industry, international trade, foreign arms sales, and depot maintenance.

Throughout the year, the Office of Communications distributed 34 news releases. Among the topics covered were industry statistics, testimony presented on Capitol Hill, reprints of Fuqua’s columns from the AIA Newsletter, AIA tax priorities for 1995, and announcements of new AIA member companies. In addition, the Office of Communications issued a news release and held a press breakfast to release the Aerospace Research Center’s third and final report on globalization of the industry.

Member Relations

The Office of Communications continued to facilitate activities of the Communications Council and to serve as an information source for industry public relations executives. The spring Communications Council meeting focused on China and included panel discussions on that country’s market and current business climate.

The Office of Communications issued its first Executive Action Report (EAR) in March. The EAR is a brief report from Fuqua, sent via fax, to keep senior executives informed of issues and events that resulted from AIA activities. In 1995, the office published and distributed the fourth edition of the AIA Directory of Member Company Public Information Representatives and two editions of the AIA Washington Aerospace Media and Public Affairs Directory. AIA purchased a small exhibit in April and displayed it at several trade shows in the Washington area. The AIA exhibit dispenses information to prospective members attending shows, as well as general information to current members and other interested individuals.

Editorial Products

The Office of Communications established a home page on the World Wide Web to provide direct access to the association. The home page currently contains recent AIA news releases, the AIA Newsletter, AIA’s Top 10 Issues, links to AIA member companies that have home pages, and background information on the association.

The AIA Newsletter entered its eighth year of publication and continued to support the association and its members by reporting on important aerospace issues. AIA publishes the Newsletter 10 times yearly and distributes it to roughly 5,600 readers in industry, government, academia, the news media, Congress, and the financial community.

The 1994 Annual Report highlighted AIA’s leadership role in the aerospace industry. The theme, “AIA… A Leader Among Leaders,” was reflected throughout the annual report with quotes from several member companies’ chief executive officers on why AIA plays a key role in the industry.
Environmental, Safety, and Health

AIA's Environmental, Safety, and Health (ES&H) Committee is concerned with environmental and occupational safety and health issues affecting the aerospace industry. The ES&H Committee bears primary responsibility for coordinating AIA efforts relating to environmental, safety, and health issues.

In 1995, the top issues for the ES&H Committee included working with the Environmental Protection Agency (EPA) to finalize air emission regulations for aerospace manufacturing and maintenance, responding to the EPA's proposed waste water discharge limits for aerospace, and working with AIA's Procurement Techniques Committee and the Department of Defense (DoD) to address concerns related to environmental issues in contracting.

Aerospace Air Regulations

Over the last four years, an AIA Clean Air Task Group has met with the EPA and other aerospace industry representatives to complete two documents that will govern air emissions from aerospace activities. These documents are the Aerospace National Emission Standards for Hazardous Air Pollutants (NESHAP) and the Aerospace Control Techniques Guideline (CTG). The Aerospace NESHAP was issued in the Federal Register on September 1, 1995. The Aerospace CTG is expected to be proposed in late 1995. On September 21, 1995, the EPA held a public ceremony to recognize AIA and other aerospace organizations that participated in developing aerospace air regulations. The regulations promote pollution prevention as a cost-effective means of meeting the new emissions limits. The Clean Air Task Group believes that this effort is a model for future cooperative efforts between the EPA and industry.

Aerospace Water Regulations

On May 30, 1995, the EPA proposed waste water discharge limits for metals and organics used in aerospace manufacturing and maintenance activities. The proposed limits would prove to be extremely difficult and expensive to meet. An AIA task group hired a contractor to analyze the proposed rule, and several meetings were held with the EPA staff to review AIA's findings. The EPA has expressed a willingness to continue to meet with AIA in 1996 to develop new waste water regulations for aerospace activities.

DoD Contracting

Representatives from AIA's ES&H Committee and the Procurement Techniques Committee have met jointly over the last three years with DoD and the military services to promote National Aerospace Standard 411 as the preferred method to develop a hazardous materials management program tailored for each specific federal contract. Finding ways to share new environmental solutions across the services is one issue presently being discussed in these periodic meetings. The 10th Annual Aerospace Hazardous Materials Management Conference was held in Cincinnati, Ohio, September 6-8, 1995. GE Aircraft Engines served as the 1995 host company for this yearly gathering of aerospace engineers. This highly popular conference attracts 200-350 attendees from manufacturing companies, subcontractors, and aerospace customers. In 1996, AIA will co-host the NASA Environmental Technology Conference, August 6-8, 1996, in Huntsville, Alabama.

Monitoring

A number of current environmental issues have the potential for affecting aerospace operations. AIA staff and designated company representatives track some of these issues to assure timely input if the need arises. These issues include an international task group that will evaluate chemicals which might replace halons as the chief fire-fighting chemicals in aviation; the development of ISO 14000, a family of international environmental management standards being coordinated under the auspices of the International Standards Organization; and new laws and executive orders which increase environmental reporting requirements or increase liability for federal contracting.
AIA's International Council encourages government policies that assist AIA member companies to compete and, where appropriate, to cooperate in the international marketplace.

International sales continued to be critical to the health of the U.S. aerospace industry in 1995. International customers accounted for well over half the value of commercial aircraft shipments during the year, and major new international orders were placed. While the defense budget seemed to have hit bottom and modest increases are anticipated, in the interim key production lines for fighter aircraft, helicopters, and missiles were sustained, sometimes entirely, by foreign orders. In spite of strong competition from Europe and Russia, U.S. firms booked several large aerospace military orders during the year.

**International**

**Defense Trade Committee**

A key objective of the International Council for some years has been to obtain from the administration an affirmative policy statement on defense exports. The lack of a clear policy had made it more difficult to argue for specific reforms in areas such as export finance, elimination of recoupment charges, and support by the Department of Defense (DoD) at air shows. In February, President Clinton approved a policy that meets most AIA objectives. In essence, the policy states that when a potential sale of defense equipment to a country is consistent with U.S. foreign policy interests, the U.S. government will work with industry to encourage that country to buy American. The policy for the first time also explicitly states that the impact of a potential sale on the U.S. defense industrial base and the availability of similar defense systems from other countries will be factored into the decision on whether or not to allow a sale.

In conjunction with the Defense Industry Offset Association, AIA reached an agreement with the administration whereby a clarification to the Defense Federal Acquisition Regulation Supplement would be issued regarding costs associated with implementing offsets on Foreign Military Sales cases. This clarification broadens the interpretation of which costs would now be chargeable to the contract. This change assures that in the future several hundred millions of dollars of offset costs, previously absorbed each year out of industry profit lines, will be treated as allowable costs that are passed on to the customer who demands the offsets.

The Defense Trade Committee continued working with the administration to help evaluate such issues as arms transfer policy to Central Europe and Latin America, integration of foreign weapons systems on U.S. platforms (and vice versa), and how to assure disposal of surplus U.S. military equipment will not disrupt potential sales of new hardware.

**Commercial Trade Committee**

With the Uruguay Round of trade negotiations completed, this was a relatively low-key year for the Commercial Trade Committee. The committee continued to make known to the administration AIA’s strong position that new entrants to the World Trade Organization should be required to adhere to the Civil Aircraft Agreement. In cooperation with other trade associations, AIA again successfully pressed the administration and Congress to extend China’s Most-Favored-Nation trade status.

AIA also worked with member companies to express to Congress the importance to the aerospace industry of maintaining a department-level institution that would be concerned with U.S. competitiveness and support our exporters overseas. As the year moved to a close, AIA began discussions with the administration as it examined whether technology transfer and offshore sourcing in the commercial aerospace sector, increasingly required by foreign customers as formal or informal offsets, was a problem that required government involvement.

**International Exhibitions Committee**

In 1995, the United States dominated the Paris Air Show with a major presentation of technologically advanced aircraft that were seen internationally for the first time. DoD, which participated directly in the show, brought the aircraft to Paris, generally using training missions, while AIA and its member companies provided an operations center for DoD personnel and provided air crews with housing, meals, and transportation. The same pattern ensued at the Dubai Air Show in November.

In addition to working to improve cooperation among air shows, AIA is also dedicated to reducing the number and AIA Board of Governors approved a statement urging the show every other year. AIA will continue to press for such...
**Export Controls Committee**

In September, 28 countries, including Russia, agreed to a set of political principles to guide the establishment of a successor to the Coordinating Committee for Multilateral Export Controls, better known as COCOM. While the committee applauds this effort to handle export controls on a multilateral basis, it continues to concern itself with various unilateral controls imposed by the U.S. government. The committee has urged the government to move all civil communications satellites and hot-section jet engine technology to the jurisdiction of the Commerce Department, rather than being split between Commerce and the State Department as is currently the case. AIA continues to press the administration to speed the licensing process and to move forward with a new Export Administration Act on the Hill.

**Legislative Committee**

The Legislative Committee continued to coordinate AIA’s efforts at obtaining legislation favorable to our global marketing interests. In particular, efforts continued to gain legislative approval of an export guarantee facility for defense products and of eliminating the requirement for recouping costs associated with research and development on military systems sold through the Foreign Military Sales process.

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**International Council & Committees**

- Alan Chvotkin, Sundstrand Corporation, Chairman, Commercial Trade Committee (January 1995 - May 1995)
- Robert Jackson, Hughes Aircraft Company, Chairman, Legislative Committee
- William Schmieder, Lockheed Martin Corporation, Chairman, Defense Trade Committee
- Glenn Wise, Honeywell Inc., Vice Chairman, International Council
- Judith Wolfe, ITT Defense and Electronics Inc., Chairwoman, Export Controls Committee
AIA’s Legislative Affairs Office monitors important policy matters that affect the aerospace industry and prepares testimony that clearly and effectively communicates industry’s viewpoint to Congress.

With the Republicans gaining control of the House and Senate this year, coupled with the new leadership’s commitment to reform, 1995 was a year of great change. From the outset, one of the major priorities of the new Congress was to reduce federal spending. This proposed reduction, accompanied by the growing demand for funds from the discretionary accounts, created challenges for AIA. Against this backdrop, AIA and its member companies dealt with major legislative priorities in the areas of budget, export controls, acquisition reform, depot maintenance, compensation, civil aviation, and space.

**Budget**

The demand on the available funds from the discretionary accounts pitted the new philosophy of maintaining a strong national defense against the need for more money for social programs, creating a major challenge for AIA. AIA formed a coalition with 11 other associations to protect the defense budget and was successful in that Congress established—at least for the next three years—budget fire walls which prevent cutting the defense budget in order to boost funding for domestic add-ons.

**Export Controls**

Several major issues that AIA has followed for years were addressed this past year. First and foremost was the establishment of a Defense Export Loan Guarantee Facility. AIA
succeeded in obtaining language in the Department of Aeronautics: As Congress embarked on a series of major cuts, many Aeronautics: As Congress embarked on a series of major cuts, many believed that corporations were not shouldering their share of the burden and were receiving “corporate welfare.” One of the programs that was labeled as such was the aeronautics budget of NASA. Two major programs, the funding for High Speed Research (supersonic transports) and Advanced Subsonic Technology (next-generation wind tunnels), were targeted for cuts. AIA was effective in demonstrating the long-term value of these programs, and funding was maintained. International Space Station: AIA also successfully worked with its member companies to assist NASA in obtaining funding for a permanent manned presence in space.

Defense (DoD) Authorization and Appropriations Bills and in establishing the loan guarantee member companies compete internationally. elimination of R&D recoupment fees on Foreign considerably the price of U.S. defense products in the defense industrial base. The language to repeal Authorization Bill, and AIA is hopeful that positive

Acquisition Reform: Following passage of the Federal Acquisition Streamlining Act of 1994, Congress pursued additional acquisition reform with H.R. 1670, the Federal Acquisition Reform Act of 1995. H.R. 1670 was incorporated into the Fiscal Year 1996 DoD Authorization Bill (H.R. 1530), which by mid-December still had not been decided on by Congress. H.R. 1670 provides for expanded use of commercial products and services through simplified procedures and eliminates post-award audits, certification, and other requirements that will cut costs and administrative burdens. In addition, the bill contains such important changes as improving DoD contractor payment procedures, paper reduction, and exemption of commercial items from TINA (Truth in Negotiations Act) requirements. As a member of the Acquisition Reform Working Group, AIA provided industry input to this legislation and met with congressional members and staff to encourage inclusion of as many of industry’s recommendations as possible into the final bill.

Depot Maintenance: AIA worked vigorously during 1995 to convince Congress that the 60/40 workload ratio and the $3 million threshold for competition are bad policies for DoD and should be eliminated from any future depot maintenance plans. AIA’s goal is to provide a near-term reduction in government overcapacity and eliminate public/private competitions. AIA would like the final outcome of the depot language in the Authorization Bill to recognize these two principles, which would benefit both industry and government.

Compensation: Although not a true compensation issue, but closely related, progress payments were addressed by AIA during 1995. Language was included in the Fiscal Year 1996 DoD Appropriations Bill, but the language did not survive because Congress felt that DoD should increase progress payments from 75 percent to 85 percent, without legislation. Additional issues addressed by AIA were to assure that funds were disbursed to contractors in a timely manner and to keep the threshold of financial accountability at the $5 million level instead of the proposed $500,000 level. AIA was successful in retaining the $5 million level. In recent years, Defense Subcommittee members of both Appropriations Committees have expressed concern over the amount of pay received by defense industry executives. In the Fiscal Year 1996 Senate Defense Appropriations Bill, language was added to restrict the allowability of compensation to $250,000 paid to defense executives by DoD. AIA opposed this language on the grounds that aerospace industry executives should not be singled out for a compensation cap. Furthermore, the cap would hinder the industry’s ability to recruit and retain top talent. The compensation cap was lowered to $200,000 by the House Appropriations Committee and the issue was debated in conference. The outcome of the DoD Appropriations Conference could be positive since the conferees agreed to introduce the $200,000 cap; however, the Office of Federal Procurement Policy could issue guidelines that would remove the cap altogether.

Civil Aviation: Overhaul of the Federal Aviation Administration (FAA) was the major issue in civil aviation. A variety of bills were offered to improve the agency’s antiquated personnel and procurement systems. However, one bill proposed the implementation of user fees to make up any projected budget shortfalls. AIA strongly opposed the measure as counterproductive to the aviation community since the industry already pays roughly 75 percent of the FAA’s budget. In the end, the fees were dropped.

NASA: Aeronautics: As Congress embarked on a series of major cuts, many believed that corporations were not shouldering their share of the burden and were receiving “corporate welfare.” One of the programs that was labeled as such was the aeronautics budget of NASA. Two major programs, the funding for High Speed Research (supersonic transports) and Advanced Subsonic Technology (next-generation wind tunnels), were targeted for cuts. AIA was effective in demonstrating the long-term value of these programs, and funding was maintained. International Space Station: AIA also successfully worked with its member companies to assist NASA in obtaining funding for a permanent manned presence in space.
Procurement and Finance

The Procurement and Finance (P&F) staff and committees initiate, coordinate, prepare industry positions on, and monitor proposed legislative and regulatory changes affecting the acquisition process and acquisition management. This includes matters of intellectual property and industrial security. The P&F Executive Committee is the principal interface between the AIA Board of Governors and the P&F functional committees.

Acquisition reform continued throughout 1995, first with the regulatory implementation of the 1994 Federal Acquisition Streamlining Act, and simultaneously with the introduction of numerous additional legislative proposals. The P&F staff and committees ensured that the concerns of AIA member companies were reflected in the industry positions submitted to the Federal Acquisition Regulation (FAR) Council and to appropriate legislative sponsors and committees.

Intellectual Property Committee The dominant issue for the Intellectual Property Committee (IPC) for the past decade has been Rights in Technical Data. The IPC took the lead 10 years ago to work with the Defense Acquisition Regulations Council to develop the regulations prescribed by the Fiscal Year 1985 Department of Defense (DoD) Authorization Act. Congress directed that the regulations reflect a balancing of the interests of both the government and industry in technical data, depending on the source of funds used in developing such data. The final rule on data rights was published in June 1995. While still not perfect, the number of potential problem areas is greatly reduced. The IPC will now be able to devote more
time to a host of other issues, e.g., computer software, the impact of various trade agreements, electronic commerce, patent indemnification, and many others, and at the same time to look for ways to perfect the data rights regulation.

**Industrial Security Committee**

The Industrial Security Committee (ISC) was transferred to P&F during 1995 when the Human Resources Council was eliminated. While not directly a procurement function, many ISC matters are implemented through contractual provisions or otherwise affect contract performance. A principal ISC endeavor for several years has been the National Industrial Security Program (NISP). The NISP was formally established by executive order in January 1993, and the NISP Operating Manual (NISPOM) was issued January 1, 1995, to replace the DoD Industrial Security Manual. The primary interests of the ISC in 1996 are twofold: to ensure the continued acceptance and implementation of the NISPOM and to review and prioritize other issues that have not received full attention during this time. The most recent issue is the requirement for financial disclosure, which will affect tens of thousands of people who have access to particularly sensitive information. This requirement was legislated following the Aldrich Ames spy case. The ISC is working with the Security Policy Board at the National Security Council to ensure the least burdensome and intrusive financial disclosure form.

**Procurement Techniques Committee**

The Procurement Techniques Committee (PTC) is the focal point for all contract policy issues. Following are some highlights from 1995:

1. **National Aerospace Standard 411 (NAS 411):** In January 1995, DoD endorsed the NAS 411 Hazardous Materials Management Plan as a standard for use by all the military services. This standard, developed by AIA through its Intercouncil Environmental Task Group (chaired by the PTC), emphasizes eliminating or reducing hazardous materials in the design, manufacture, operation, and final disposal of defense systems.

2. **NASA Contracting Issues:** NASA proposed a modification to its Inspection and Correction of Defects Clause to assess penalties of 10 percent of the contract price, or 50 percent of the cost of correction, for defects attributable to contractor negligence, poor workmanship, etc. The PTC's NASA Contracting Working Group opposed the change and argued that NASA has sufficient flexibility to reward or penalize contractors through its award fee policy. AIA also noted that such a change would undermine NASA's mission by discouraging technology advancement. NASA's new award fee policy addresses many AIA concerns, and AIA has been assured that no further action will be taken on the correction of defects issue without an opportunity to present AIA's views.

3. **Block Changes:** In June 1995, the secretary of defense issued a new policy requiring non-government specifications in lieu of military specifications and standards wherever possible. However, the question of consideration when contracts are amended is a stumbling block. Rather than negotiate contract-by-contract consideration on hundreds or even thousands of existing contracts to incorporate non-government specifications or standards, contractors may opt to continue performance under current procedures until those contracts are completed. The answer to this dilemma lies in block changes, whereby every contract in a given facility could be amended by one action—without consideration—based on a determination by the administrative contracting officer that overall the benefits to both parties balance out. The PTC has been participating in a government/industry Non-Government Specifications Integrated Process Team effort, which is attempting to define a process and associated authority for implementation of block changes.

**Tax Matters Committee**

The Tax Matters Committee (TMC) initiated three legislative Congress that the aerospace industry is being unfairly taxed: R&D Tax Credit, Foreign Sales Corporations, and Long-Term Contracts. A legislative working group has been formed by member companies' Washington offices. The TMC submitted position papers to the House Ways and Means Committee and presented written testimony before the FSC issue to the House Ways and Means Committee. To the extent possible, the TMC submitted testimony before both committees on the research credit issue. A House proposal under consideration is a step in the right direction, as it extends and modifies the R&D tax credit, but does not go far enough.

**Facilities and Property Committee**

The only association with a standing committee on government property management, AIA is actively involved in DoD's rewrite of the government property regulations. AIA instigated this effort and has been a principal contributor. AIA convinced the government to issue a FAR deviation, which reduces oversight and record-keeping requirements for low-value government property ($1,500 or less). AIA also convinced the government to issue a proposed deviation to the Use and Charges Clause, which will permit more realistic pricing of the charges for the use of government property on commercial contracts.
Demilitarization  A revised draft Demilitarization Clause, issued for comment in March 1995, would make the contractor responsible for ensuring the appropriate demilitarization code on all excess government property items submitted to the government for disposal. Further, the contractor would be responsible for all demilitarization activities without any basis for estimating its cost. Industry’s concern was elevated to the director of defense procurement, and a revised clause, expected by the end of 1995, will require demilitarization codes only on those items requiring demilitarization. The clause also will provide for payment for demilitarization activities performed by the contractor.

Legal Committee  In addition to assisting in the filing of several amicus (friend of the court) briefs, and participating in a coalition of corporate general counsels concerned with amendments to the False Claims Act, the Legal Committee held a working seminar with representatives from the Army, Navy, Air Force, and Department of Justice to discuss the status of alternative dispute resolution (ADR) in defense contracting. The committee also led an ADR panel at an industry-sponsored acquisition conference. Historically, government and industry have relied on protracted negotiations, bid protests, and litigation to resolve disputes. ADR can lead to faster resolution at lower costs. The committee is seeking ways to increase ADR use among member companies and to explore impediments to greater use and what can be done about them.

Economic Advisory Committee  Contract payments and financing continued to be the principal focus of the Economic Advisory Committee (EAC) during 1995. Payment problems in the Defense Finance and Accounting Service’s (DFAS) Columbus (Ohio) office created cash flow problems for several member companies. EAC members met with the DoD comptroller to urge remedial actions and obtain assurances that the Grassley amendments to the 1995 and 1996 DoD Appropriations Acts would not cause additional delays in processing progress payment and final delivery invoices. In 1995, the Grassley amendment required the matching of each invoice over $5 million with an obligating document before payment could be made. A planned reduction in the FY 1996 matching requirement from $5 million to $1 million was not implemented due in large part to the efforts of the EAC chairperson. An increase in the current 75 percent progress payment rate was a recurring theme in the meetings held by the EAC and the Defense Policy Advisory Committee on Trade with congressional staff and the DoD comptroller. Congress opted not to prescribe the higher progress payments in the final 1996 DoD Appropriation Act, since DoD had implied the rate would be raised. However, DoD now states the current 75 percent rate is adequate.

Cost Principles Committee  The Cost Principles Committee (CPC) is the focal point within AIA for cost allowability issues that surface in proposed federal cost principles and in standards promulgated by the Cost Accounting Standards (CAS) Board. Restructuring Costs: CPC members developed and coordinated responses from the Council of Defense and Space Industry Associations (CODSIA) regarding the interim rule on External Restructuring costs and the proposed rule on Internal Restructuring costs. They also met with DoD acquisition policy officials to provide additional justification for industry opposition to these potentially costly and burdensome rules. DoD recently withdrew the proposed internal restructuring rule and established a government/industry task force to recommend ways for expediting the legislative mandate to obtain approvals for undertaking external restructuring projects. Travel Costs: At a FAR Council public meeting, the CPC chairperson led a group of CODSIA member company representatives in presenting compelling facts and figures to justify the government’s return to the pre-1986 test of reasonableness as support for contractor’s direct and indirect cost travel claims. If, as expected, the FAR Council elects to eliminate the current requirement on contractors for the use of per diem rates from the Federal Travel Regulations and Joint Travel Regulations, a great deal of the credit must go to the CPC chairperson.

Cost Accounting Standards: Members of the CPC Ad Hoc Committees prepared papers and/or met with the CAS Board staff to present industry’s positions on revisions to the CAS Board Disclosure Statement form, changes in the two pension cost standards (412 and 413), definitions of Cost Accounting Practice Changes, recognition and pricing of Capital Asset Values Resulting from Mergers and Business Combinations, and simplification of Contract Price and Cost Adjustment Impact Statements. The CAS Board staff indicated that these face-to-face meetings with CPC mem-
bers have been most helpful, and plans are being made to continue such constructive dialogues in 1996.  ad hoc projects: CPC members devoted a considerable amount of time and effort to preparing position papers on a variety of subjects, developing responses to proposed regulations and policies, and meeting with DoD acquisition policy and audit staffs to further support industry/AIA positions. For the most part, these efforts have resulted in beneficial changes in initial DoD positions. Subject areas included restrictions on executive compensation; planned DoD compensation system reviews; allowability of costs associated with agreements between contractors and their employees which limit the right to sue following resignation, retirement, or termination; environmental remediation costs; advanced cost management methods; and legal proceedings costs.

Procurement and Finance Council and Committees

David Buchanan, Lockheed Martin Corporation, Chairman, Controllers' Forum
Paul Cherecwich, Jr., Thiokol Corporation, Chairman, Tax Matters Committee
John Currier, GEC-Marconi Electronic Systems Corporation, Chairman, Legal Committee
Ronald R. Finkbiner, Lockheed Martin Corporation, Chairman, Procurement and Finance Executive Committee
Roger Israelson, Texas Instruments Incorporated, Chairman, Procurement Techniques Committee
David M. Koonce, Lockheed Martin Corporation, Chairman, Economic Advisory Committee
Frank S. McDermid, McDonnell Douglas Corporation, Chairman, Facilities and Property Committee
Meredith Murphy, McDonnell Douglas Corporation, Chairwoman, Washington Procurement Committee
Troxell Snyder, United Technologies Corporation, Chairman, Intellectual Property Committee
Hugh Sommer, United Defense LP (FMC/BMY Partnership), Chairman, Cost Principles Committee
AIA's Technical Operations Council focuses on all aspects of technological, operational, and engineering efforts to advance all aspects of program management, development, engineering, testing, manufacturing, quality, materiel management, standards development, and product support to better address the issues stemming from the production of aircraft, missiles, and space vehicles.

**Non-Government Standard Integrated Process Team**

The Air Force Materiel Command requested the Council of Defense and Space Industry Associations, with AIA serving as the lead association, to assist in a joint government/industry Integrated Process Team (IPT) to identify opportunities, alternatives, issues, and concepts that could provide greater flexibility in the methods and procedures used in the source selection process. The IPT focused its review on how the Department of Defense (DoD) can fully exploit contractors competing on the basis of their own design and process excellence rather than standards dictated by DoD. The final results of the effort were accepted by the Joint Aeronautical Commanders Group and presented to chief executive officers of AIA's member companies at an Air Force Materiel Command conference in September 1995. AIA presented industry's endorsement to Dr. Paul Kaminski, under secretary of defense for acquisition and technology.

**Interface with the Defense Standards Improvement Council**

The Defense Standards Improvement Council (DSIC) was chartered to review DoD specifications and standards for disposition using Defense Secretary William Perry's Memorandum on Specifications and Standards Reform. With the help of AIA, the DSIC developed a list of 108 "heartburn" specifications and standards, while AIA provided recommendations on the proper disposition. The DSIC has effectively eliminated 70 of the 108 specifications and standards from DoD contracts. AIA's Engineering Management Committee instituted a process within AIA to review another 250 specifications and standards involving all appropriate AIA committees.

**Small Business Administration Process Action Team**

With the probability of a 50 percent reduction in budget and personnel, the Small Business Administration (SBA) is reengineering its organization to focus on government agency oversight and small business outreach with a deemphasis on company oversight. The SBA requested that AIA form a Process Action Team (PAT) to help streamline its activities. As a result of the PAT, the SBA drafted a memorandum of agreement to delegate SBA oversight of company small business programs to the Defense Logistics Agency. The PAT also worked with the Office of Federal Procurement Policy to rescind previous conflicting policy on subcontracting plans and to publish current cohesive policy covering subcontracting plans issues.

**Subcontract Acquisition Reform**

One of the key issues in DoD implementation of the 1994 Federal Acquisition Streamlining Act (FASA) concerning commercial items is laws and clauses applicable and inapplicable to subcontracts. AIA's Materiel Management Committee formed an ad hoc group to specifically review the laws and clauses when they were published in the Federal Register and found them to be appropriate. As part of FASA implementation, the Office of Federal Procurement Policy published in the Federal Register a policy letter on company-wide subcontracting plans for commercial products. The Materiel Management Committee made the argument for eliminating the flow-down of the subcontracting plan requirement to subcontractors in purchasing commercial products. This argument was accepted in the final policy letter.

**Environmental Workshop on Compliant Materials and Processes**

The fourth AIA Materials Workshop was sponsored by the Manufacturing Committee. Each company attending exchanged information on environmental projects that they had successfully accomplished or were working on. Topics included ozone depleting substances, coatings, vapor degreasing, primers and topcoats, aqueous cleaners, prebond pastes, and water-based maskants. The workshop was extremely successful and another is planned for 1996.

**Manufacturing Legislative Initiatives Survey**

Rep. Bob Franks (R-NJ), chairman of the congressional Manufacturing Task Force, requested comments from AIA's Manufacturing Committee on a report for the Northeast-Midwest Congressional Coalition. The report contains 40 proposals that the Congressional Coalition will be attempting to enact into legislation over the next two years. The committee's approach for comment was to determine a priority for these proposals through a survey. The results show a consistent high priority for six recommendations. The committee will be presenting these results to Rep. Franks.
Support to the DoD Affordability Task Force

The Manufacturing Committee placed high priority on supporting the National Center for Advanced Technologies (NCAT) with manpower for the purpose of interfacing with government officials concerned with manufacturing. Manufacturing Committee representatives are members of the executive committee of the Multi-Association Industry Affordability Task Force, which is interfacing with the Defense Manufacturing Council. Through NCAT, Manufacturing Committee representatives participated in three roundtables with congressional staff members, senior DoD officials, and Manufacturing Center representatives. The goal was to increase funding for the Manufacturing Science and Technology (MS&T) Program through joint service planning of the program without congressional earmarks. As a result, congressional representatives increased funding for the MS&T Program and substantially reduced earmarking.

National Aerospace Standards

The National Aerospace Standards Committee continually maintains the current body of more than 3,000 National Aerospace Standards and develops new standards as they are needed by the aerospace industry. During 1995, the committee continued to publish and revise standards as required by member needs. The need to update and maintain standards is becoming more important with the increased attention on part inspection resulting from the Fastener Quality Act. The committee is also actively exploring ways of replacing materials in its standards which pose potential environmental hazards.

Standards Go Commercial

AIA is taking an active role in ensuring that its members have the standards they need to function effectively during defense downsizing. In response to DoD directives to use commercial and performance specifications, military specifications are aggressively being canceled. AIA committees have been actively exploring converting many of these to AIA National Aerospace Standards. A variety of military part standards are also being converted to National Aerospace Standards by the Defense Logistics Agency. In addition, AIA is coordinating industry positions on cancellation of federal material specifications and their proper supercession by industry standards.

Space Advocacy

AIA developed a series of papers to highlight space infrastructure needs and its concomitant potential for America. The papers discuss the benefits that can be achieved from maintaining adequate space investments, by addressing such issues as humans in space, long-term economic growth, earthly benefits, and inspiring the next generation of scientists and mathematicians. Six papers were published and distributed in early 1995.
**International Standardization**

The Aerospace International Organization for Standardization is the five working groups, addressing an extensive work program. AIA President Don Fuqua serves as chairman and delegates, representing nine countries, participated in focused on recognition of de facto international standards, committees, and ways to harmonize part certification.

**Product Support**

The strength of AIA's Product Support Committee lies in its active interface with DoD customers and in working joint projects. The chief projects in 1995 included depot maintenance (privatization and outsourcing), surplus helicopters, and contractor supply support.

**Depot Maintenance (Privatization and Outsourcing)**

The Product Support Committee completed its third year of a coordinated effort to increase private-sector work shares within the defense industrial base for operation and support of defense weapon systems. Emphasis has expanded from depot maintenance per se to privatization of defense activities. This emerging issue is fueled by the report of the Commission on Roles and Missions, which recommends that DoD privatize virtually all depot maintenance activities, and by the administration decision to “privatize-in-place” the San Antonio and Sacramento Air Logistics Centers after both appeared on the 1995 base closure list. AIA has extended the charter of its Industry Support Group on Depot Maintenance and is focusing on the privatization issue. The group is working with Dr. Joshua Gotbaum, the DoD principal on privatization, and is presenting the industry views of AIA and nine other associations to the new Defense Science Board Task Force, which is chartered to develop a government position on privatization and outsourcing of defense activities.

**Disposal of Surplus U.S. Army Helicopters**

A Product Support Committee white paper, forwarded in January 1995 to Dr. Paul Kaminski, under secretary of defense for acquisition and technology, became the catalyst for efforts to minimize the impact on the industry by DoD's disposal of large numbers of excess Army helicopters. Industry concerns centered around liability, certification, and industrial base/commercial market impacts. Significant gains were made during 1995 in the following three areas.

1) **Flight Safety Critical Aircraft Parts**: A DoD/Federal Aviation Administration (FAA) integrated process team for flight critical aircraft parts agreed on procedures to identify, track, and control the disposal of parts that might enter the commercial marketplace. 2) **Surplus Aircraft**: DoD placed tighter restrictions on public recipients of surplus aircraft. Loopholes on unauthorized second use are being closed. DoD has notified the General Services Administration (GSA) and the military departments that the trade, barter, or selling of such aircraft for other than the intended use is prohibited. AIA has expressed its concerns in letters to senior officials at DoD, GSA, the FAA, and the U.S. Coast Guard. 3) **Defense Reutilization and Marketing Office**: Approximately 500 excess helicopters will be offered to the general public through the Defense Reutilization and Marketing Office over the next five years. The FAA is assessing the probable “certifiability” of each of these aircraft before sale. DoD has completed an economic analysis that will limit annual sales to 60 aircraft per year to minimize market impact and maximize return to the government on these sales.

**Contractor Supply Support**

The Product Support Committee has been working with DoD for two years to determine where industry can assume a greater role in the materiel management process (provisioning, cataloging, inventory management, etc.). This joint process is becoming increasingly more important as DoD investigates privatization of its functions. DoD has agreed to conduct prototype tests (Army and Navy system) to test the viability of transferring specific materiel management functions to industry. The committee will provide support to DoD as requested.

**Quality Assurance**

The Quality Assurance Committee has provided active leadership in a promising, multi-association venture with several government agencies—known as the Government-Industry Quality Liaison Panel—to construct a vision for quality in the 21st century and a strategy to guide government and industry efforts to achieve this vision. The panel is committed to constructing a quality road map and championing its implementation. The panel’s goals are to attain a single quality management system, within a contractor’s facility, that is capable of meeting each customer’s requirements; to attain government and industry recognition, sharing, and use of advanced quality concepts in requirements definition, design, manufacture, and acceptance of products; and to establish and implement effective and efficient oversight methods.
During 1995, the panel published a strategic and tactical plan of action, called the "Road Map for Quality in the 21st Century"; obtained government and industry approval of a memorandum of understanding authorizing and endorsing the mission of the panel; established a voluntary pilot program to implement and evaluate the single quality process within contractor's facilities; and developed and published an ISO 9000 Training Template for common understanding and interpretation of quality management systems conforming to ISO 9000. The panel received the Hammer Award from Vice President Gore's National Performance Review for its accomplishments.

**TECHNICAL OPERATIONS COUNCIL & COMMITTEES**

- Ed Akers, Lockheed Martin Corporation, Chairman, National Aerospace Standards Committee
- William W. Dunlop, Texas Instruments Incorporated, Chairman, Materiel Management Committee
- Anthony J. Farrington, AlliedSignal Aerospace, Chairman, Product Support Committee
- Gordon F. Neary, McDonnell Douglas Corporation, Chairman, Engineering Management Committee
- Harry D. Oakley, E-Systems, Inc., Chairman, Quality Assurance Committee
- Dr. Carmen J. Palermo, Harris Corporation, Chairman, Technical Operations Council
- Oren B. Phillips, Thiokol Corporation, Chairman, Space Committee
- John Ramsey, Lockheed Martin Corporation, Chairman, Manufacturing Committee
In October 1995, the aerospace industry marked the 10th year of a restructuring effort characterized by extensive reductions in the labor force, production facilities, and the base of lower-tier suppliers. In terms of sales, 1995 was another year of decline; sales fell by more than $4 billion, or 3.7 percent. However, it appeared that 1995 would be the bottoming-out year in the industry's long activity decline; AIA predicted that sales would increase by about $3.5 billion in 1996, which would be the first upturn—in inflation-adjusted constant dollars—since 1990, and that the activity curve would continue upward. The prediction was reinforced by data on new orders, which recorded an 18 percent gain in 1995 and once again topped the $100 billion level. The industry's backlog increased by $11 billion to almost $182 billion. From a product perspective, sales were down in every category except space systems, which recorded an almost negligible gain. The greatest decline was in sales of civil aircraft, down $2.4 billion, or more than 9 percent. Export volume and the aerospace trade balance fell off again, for the third straight year. Exports, at $32.6 billion, were down by $4.8 billion, or more than 12 percent. The drop was largely a consequence of a continuing worldwide recession in commercial transport sales, and the export volume was generally regarded as a relatively strong showing in a depressed global market. AIA's long-range forecast predicted 1) a moderately climbing defense activity curve, accelerating when the government commits to full modernization of the defense force and, at some time in the first decade of the new century, a return to defense production stability at activity levels far below those of the peak years 1987-89; 2) a slight upturn in civil space activity over the next decade, with increased commercial space business offsetting downtrending government funding; and 3) consistent growth in civil aircraft manufacture, beginning in 1996 and accelerating to record levels after 2000 under the impetus of a 20-year market for commercial jetliners estimated at $1 trillion.

Aerospace Highlights 1995

Textron Inc. Cessna

Scheduled for first deliveries in 1996 is the latest U.S. entry in the business jetliner field, the Cessna Citation X.

Hughes Electronics Corporation

In development for NASA is an advanced version of the Tracking and Data Relay Satellite, which will enable NASA to communicate with the Space Shuttle, the International Space Station, and unmanned spacecraft in low Earth orbit.

Rockwell International Corporation

Originally designed as a nuclear weapons carrier, the Air Force B-1B is undergoing transformation into a conventional bomber under the B-1B Conventional Mission Upgrade Program.
In 1995, aerospace industry sales to the Department of Defense (DoD) declined for the eighth consecutive year, but nonetheless the agency remained the leading customer category at just under 40 percent of total sales. In terms of dollar value, defense sales dropped to their lowest level since 1983, when the Reagan administration's defense buildup was just gaining momentum. Despite reduced funding, there was substantial industry activity on defense programs, including advances over a wide range of modernization projects in R&D status, moderate production of upgraded systems, and limited production of entirely new systems. Among major developments in the aircraft field, the Air Force/Navy Joint Advanced Strike Technology (JAST) program evolved from a general technology development effort into a program aimed at producing a 21st century family of advanced, affordable strike aircraft, based on a common baseline design. The family would include conventional and STOVL (Short Take Off, Vertical Landing) designs that would replace existing U.S. strike fighters. In 1995, three competing industry teams were working on several designs for the Air Force, Navy, and Marine Corps. The competitors include teams led by Boeing, Lockheed Martin, and McDonnell Douglas/Northrop Grumman. Depending on funding availability, DoD planned to down-select two of the three design concept/manufacturing plans for a four-year prototype design and demonstration phase, beginning in 1996. The JAST EMD (engineering, manufacturing, and development)
A June ceremony marked the start of assembly for the first Air Force F-22 EMD (engineering, manufacturing, and development) aircraft.

**Lockheed Martin Corporation, The Boeing Company**

phase is scheduled to start in 2000. Propulsion companies in the program include Pratt & Whitney, Rolls-Royce, and a General Electric/Allison Advanced Development Company team.

- The McDonnell Douglas C-17 Globemaster III advanced airlifter scored major successes in 1995. In July, the airplane successfully completed an Air Force Reliability, Maintainability, and Availability Evaluation Program involving more than 500 flights by 12 test aircraft. The C-17 exceeded requirements in 11 of 12 key test areas and scored an overall launch reliability rating of 99 percent. In November, the Defense Acquisition Board announced that the C-17 would be DoD's core airlifter with a planned "buy" of 120 aircraft. On December 15, a C-17 made its debut flight for the North Atlantic Treaty Organization's Bosnia peacekeeping mission, delivering 100,000 pounds of equipment to Tuzla, Bosnia.

In other aircraft developments:

- The Air Force's Lockheed Martin/Boeing F-22 advanced tactical fighter passed its Critical Design Review in February, demonstrating compliance with some 8,500 product requirements. At year-end, the first EMD aircraft was being assembled and an initial flight was scheduled for May 1997. The Air Force EMD flight test plan calls for testing nine aircraft over a 60-month period.

- The Navy F/A-18E/F Super Hornet prototype, designated E-1, successfully completed its first test flight on Nov. 29. Principal contractors are McDonnell Douglas, Northrop Grumman, General Electric, and Hughes Aircraft.

- The U.S./Japan FS-X fighter prototype made its first flight from a Nagoya airport on Oct. 9. Lockheed Martin is the principal U.S. contractor.

- The McDonnell Douglas F-15 completed its flight test program and the first production model was rolled out in September. McDonnell Douglas is building 72 of the fighters for Saudi Arabia.

- The first Northrop Grumman E-8C Joint Surveillance Target Attack Radar System (JSTARS) made its initial flight in August. Northrop Grumman is building 20 E-8Cs (modified Boeing 707-300s) over a 10-year span.

- In February, Chrysler Technologies Corporation initiated

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**McDonnell Douglas Corporation, Northrop Grumman Corporation**

The first Navy F/A-18E Super Hornet strike fighter made its initial flight in November.

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**Hughes Electronics Corporation**

In production at Hughes Aircraft is the advanced APG-73 radar used in the Navy F/A-18E/F and earlier F/A-18s of several nations.

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**Lockheed Martin Corporation**

Lockheed Martin Aeronautical Systems rolled out the first two upgraded C-130Hs in October.
design work on the E-6B Tacamo Command Post, a modification of the E-6A in Air Force service since 1989. In October, Lockheed Martin (Georgia) rolled out the first of 25 C-130J upgraded transports for the United Kingdom’s Royal Air Force (RAF), along with another C-130J for the U.S. Air Force. The upgraded transport will undergo a year’s flight testing prior to first RAF deliveries at the end of 1996. The U.S. Air Force is buying the C-130J in limited numbers to replace its aging C-130Es and Hs. In July, DoD announced selection of Raytheon Aircraft’s Beech Mark 2 turboprop as the new primary trainer for the Air Force and Navy. In December, Bell Helicopter Textron mated the wing and fuselage of the first EMD version of the V-22 Osprey tiltrotor tactical aircraft. The Army’s Boeing/Sikorsky RAH-66 Comanche helicopter prototype was delivered to Sikorsky’s West Palm Beach, Fla., facility to begin flight testing in December. A second prototype was scheduled to fly in 1998. First flight of the Army’s McDonnell Douglas AH-64D Longbow Apache took place at the company’s Mesa, Ariz., facility on Sept. 29. In November, the Army delivered the first two AH-64A helicopters to be remanufactured into AH-64D Longbows. The Army planned a multiyear Longbow production program for at least 232 aircraft. The modernization team includes Lockheed Martin (Hellfire missile) and Westinghouse (fire control radar). In June, the General Atomics Predator surveillance UAV (Unmanned Aerial Vehicle) made its debut in Bosnia operations, highlighting a DoD program of increasing interest and expanded development.
tal activity in long-endurance UAVs. Predator, a Tier 2 system, is one of three U.S. UAV programs directed by the Defense Airborne Reconnaissance Office (DARO). A new entry is the Tier 2 Plus UAV being developed by Teledyne Ryan Aeronautical; it is designed to stay aloft for 42 hours with a one-ton surveillance payload. Lockheed Martin and Boeing are developing the Tier 3 DarkStar, a stealthy version intended to image well-protected “hard” targets.

Among missile development activity, the Air Force was preparing at yearend to launch a competition for the Joint Air-to-Surface Standoff Missile (JASSM). The Air Force planned to select two contractors for a two-year pre-engineering and manufacturing development program and then down-select to one contractor for a two-year EMD program with low-rate production.

In other missile developments:

1. Lockheed Martin and H&G Company (a joint Hughes/Raytheon venture) were selected by the Army as the U.S. teams for the project definition and validation phase of the international Medium Extended Air Defense System (MEADS), a surface-to-air missile system, to be developed in cooperation with European partners.

2. In December, the Army and Lockheed Martin conducted the fourth test of the Theater High Altitude Area

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KAMAN AEROSPACE CORPORATION

The company’s Magic Lantern system for detecting mines, mounted on a Kaman SH-2 helicopter, successfully completed Navy trials.

GEC-MARCONI ELECTRONIC SYSTEMS CORPORATION

GEC’s Multifunctioned Information Distribution System provides high-capacity communications for advanced tactical missile systems.

LORAL VOUGHT SYSTEMS CORPORATION

Loral Vought initiated development of an Improved Launcher Mechanical System that will sharply reduce firing time for Army weapons launches from the Multiple Launch Rocket System pictured.

RAYTHEON COMPANY, HUGHES ELECTRONICS CORPORATION

The Aegis System Standard Missile-2 Block IV successfully completed at-sea testing. This missile is produced by Standard Missile Company, owned 50-50 by Raytheon and Hughes.
Defense (THAAD) missile, scoring a partial success; the THAAD kill vehicle's seeker successfully acquired, designated, and tracked the target rocket but ran out of propellant before it could intercept. The Raytheon-developed Ground Based Radar performed as planned. The THAAD demonstration/validation phase involves 10 additional flights through 1996. In September, DoD cleared the JDAM (Joint Direct Attack Munition) program for progression to the next phase: engineering and manufacturing development. Intended to allow all-weather precision strikes with 1,000- and 2,000-pound free fuel bombs, the JDAM program involves contractor development of low-cost, satellite-aided guidance hits for the bombs. Lockheed Martin and McDonnell Douglas are competing for the EMD assignment. JDAM production is to begin in 1997; initial operational capability is targeted for 1998. In December, the first production Army Javelin missile and its associated Command Launch Unit were publicly displayed at Lockheed Martin's Pike City (Alabama) facility. The missile system is being produced by a Lockheed Martin/Texas Instruments joint venture team. In March, DoD approved the SADARM (Sense and Destroy Armor) precision munition for low-rate initial production. GenCorp's Aerojet is the Army's prime contractor, and Alliant Techsystems is principal subcontractor. The first SADARMS

Harris Corporation

Harris' Small Tactical Terminal System provides forward-deployed Air Force field units with real-time weather satellite imagery.

Computing Devices International

The lightweight Wearable Computer offers full computer functionality, combined with sophisticated voice recognition and display technology, for a broad range of defense applications.

Lockheed Martin Corporation, Texas Instruments Incorporated

In production as a joint venture is the Army and the Marine Corps' Javelin "fire and forget" antiarmor weapon system.

Lucas Aerospace Inc.

In production at Lucas Aerospace Cargo Systems are hydraulically powered, externally mounted rescue hoists for the Army's UH-60 Black Hawk helicopter.
are slated for deployment with Army field units in 1999. In May, the Army/Marine Corps Hellfire 2 missile system began launch tests. The Hellfire 2 system, a ground-launched offshoot of the helicopter-launched anti-armor weapon, was developed jointly by Lockheed Martin and Boeing to provide mobile forward scouting platoons with anti-armor capability. The system includes a four-wheeled vehicle with a rear-mounted launcher that can fire four Hellfire 2 missiles; additional missiles are carried for reload.

In mid-year, the Army awarded Loral Vought a contract to integrate BAT (Brilliant Anti-armor Technology) into the Army Tactical Missile System shown.

**LORAL VOUGHT SYSTEMS CORPORATION**

In mid-year, the Army awarded Loral Vought a contract to integrate BAT (Brilliant Anti-armor Technology) into the Army Tactical Missile System shown.

**AAI CORPORATION**

In production at AAI is the Objective Individual Combat Weapon, which fires both kinetic energy and high explosive air-bursting ammunition.

**ROCKWELL INTERNATIONAL CORPORATION**

In October, Rockwell delivered the 50,000th unit of the Department of Defense standard hand-held Precision Lightweight GPS (Global Positioning System) Receiver.

**DIGITAL EQUIPMENT CORPORATION**

In production is Digital's family of Alpha Server multiprocessing systems.

In mid-year, the Army awarded Loral Vought a contract to integrate BAT (Brilliant Anti-armor Technology) into the Army Tactical Missile System shown. Loral Infrared and Imaging Systems, which teamed with Sanders in the Army competition for the award, will provide the associated Missile Approach Warning System. At mid-year, a multinational team, led by Hughes Aircraft, was selected to develop the Evolved Sea Sparrow Missile (ESSM), an advanced version of the air-to-air weapon long used by U.S. services; the ESSM will have twice the speed and maneuverability of the current RIM-7 Sea Sparrow. The development team includes aerospace companies from the United States and the nine other nations that plan to use the missile.
For the U.S. scheduled airlines 1995 was a welcome turnaround year, the first profitable year since 1989. Although final figures for the year’s fourth quarter were not available at yearend, the Air Transport Association (ATA) estimated 1995 earnings at approximately $2 billion. Passenger traffic increased by 3.7 percent over the 1994 level; the industry boarded 548 million passengers. Total revenue passenger miles rose by 4 percent, and the average load factor was 67 percent, a post-World War II record. The profit, as estimated, would also be a record; the previous high was $1.7 billion. However, ATA cautioned that the profit does not signal instant airline prosperity; the carriers have large-scale equipment requirements and some incurred heavy debt during the five-year recession (1990-94) which losses totaled $13 billion. However, a number of U.S. and foreign airlines were able to initiate equipment programs. Although jetliner sales dropped by almost $3 billion, to $15.3 billion, the aerospace industry’s commercial aircraft manufacturing segment reported a sharply rebounding flow of new orders. As of September 30, 1995, the latest date for which information was available at yearend, the jetliner backlog was 1,133 aircraft, with an aggregate value of $71 billion. This compared with 1,126 transports, worth $67.7 billion at yearend 1994. By value, foreign orders represented 61.3 percent of the total backlog in 1995. As of September 30, Boeing Commercial Airplane Group had orders on the books for 1,003 commer-

Honeywell Inc.

Technicians at Honeywell's Phoenix lab inspect liquid crystal displays being produced for the cockpit of the Boeing 777.

Dowty Aerospace

In production at Dowty Aerospace Yakima was the Boeing 777 Volumetric Anti-skid Fuses shown. Yakima also produced landing gear actuators for the Cesna Citation, while Dowty Aerospace Los Angeles manufactured fly-by-wire control systems for the Saab 2000.

McDonnell Douglas Corporation

In October, McDonnell Douglas launched a new production program, the MD-95, a twinjet in the 100-seat class. First flight is planned for 1998.
Sundstrand Corporation

In production at Sundstrand were the main and back-up (shown) electrical power systems for the Boeing 777.

In development and production at GE Aircraft Engines was the GE90 high thrust engine for the Boeing 777. The first GE90-powered 777 was delivered to British Airways in December.

General Electric Company

Lucas Aerospace Cargo Systems developed a non-pneumatic Solid Tire Cargo Wheel Drive for use in the cargo compartment of the Boeing 747.

Lucas Aerospace Inc.

In development at Raytheon was the Premier 1, first member of a planned family of advanced technology corporate jets to be produced by automated manufacturing techniques, designed to lower both purchase price and operating costs. At yearend, Raytheon had almost 50 orders for the Premier 1, an eight-place aircraft scheduled for first flight in 1998.

DuPont Company

To improve passenger safety and comfort, DuPont developed Nomex Thermacolor aramid fibers to meet FAA smoke and flammability requirements.

Highlights

AMERICAN PACIFIC CORPORATION

Developed by American Pacific's Halotron, Inc. subsidiary, the Halotron I environmentally clean halon gas replacement was approved by the Environmental Protection Agency and the FAA.

Amcor recognises the Halotron I environment-friendly fire suppression system developed by American Pacific Corporation subsidiary Halotron, Inc. - a new technology for aerospace applications.
1997 and certification in 1998. In November, Gulfstream Aerospace Corporation's Gulfstream V long-range business jet made its first flight, which also marked initial use of the BMW Rolls-Royce BR700-series turbofan engine. Designed to carry eight passengers and a crew of four 6,500 nautical miles, the Gulfstream V is expected to complete certification testing in the fourth quarter of 1996. In production at Textron Inc.'s Cessna Aircraft Company was the new Citation X mid-size business jet, which has transcontinental range. First deliveries are planned for the spring of 1996. Among rotary wing developments, the McDonnell Douglas MD600N production prototype helicopter made its maiden flight in December at McDonnell Douglas Helicopter Systems' Mesa, Ariz., facility. A larger version of the company's MD520N, the MD600N is an eight-place helicopter with a six-bladed main rotor system. It features the NOTAR (No Tail Rotor) anti-torque system and a FADEC (Full Authority Digital Engine Control) system for improved power plant efficiency. McDonnell Douglas expects Federal Aviation Administration (FAA) certification in mid-summer 1996, with first deliveries immediately thereafter. In June, United Technologies Corporation's Sikorsky Aircraft announced plans to begin full-scale development of five S-92 Helibus prototype medium-lift helicopters, in cooperation with an international team of partners. A 24,000-pound aircraft, powered by two General Electric C77 turboshift engines, the S-92 is targeted for first flight in 1998. In May, Kaman Aerospace Corporation's
K-MAX aerial truck, which was certified in 1994, made its European debut. It went into service with the Swiss company Helog in logging and heavy lift operations. At Bell Helicopter Textron, the company was using its XV-15 tiltrotor technology demonstrator in a study aimed at optimizing a design for a commercial tiltrotor aircraft. At a September convention, Bell aired a proposal for a twin-engine tiltrotor corporate aircraft that would be approximately the size of the XV-15 and carry nine passengers. Bell was also a participant in NASA's civil tiltrotor research effort, part of the agency's Advanced Subsonic Technology program. Along with the Army, one of the original partners in the XV-15 exploratory project, NASA and Bell conducted extensive studies on the aeroelastic tailoring of composite tiltrotor wings. The civil tiltrotor research program focuses on technologies that could overcome inhibitors to acceptance of this new type of air transport, such as safety and environmental considerations. NASA's High Speed Research (HSR) program, conducted with broad industry participation, continued to explore design factors associated with a 21st century supersonic civil transport. Researchers established a baseline design concept to serve as a common configuration for HSR studies and conducted wind tunnel investigations with a 19-foot model. A full-size transport of this type would carry 300 passengers over route segments as long as 5,000 miles at a speed of Mach 2.4, or 1,600 miles per hour. Among the industry participants in the continuing NASA HSR program are air-

**TELEFLEX INC./TFX AEROSPACE GROUP**

In production at Teleflex Aerospace/Defense was the MECS (Mechanical Engine Control System) for the McDonnell Douglas MD Explorer helicopter.

**ALLIED SIGNAL AEROSPACE**

The most powerful member of AlliedSignal's engine family, the TFE731-60, was certified in May.

**TEXTRON INC.**

In production at TR Textron was the electromechanical rudder actuator for the Cessna Citation X.

**KAMAN AEROSPACE CORPORATION**

Using its K-MAX aerial truck, Kaman conducted a two-month demonstration of the possibility of using a commercial helicopter for the Navy's vertical replenishment mission.
Westinghouse Electric Corporation

In production at Norden Systems was the ASDE (Airport Surface Detection Equipment) antenna for monitoring ground traffic at airports. The FAA began installation of ASDE systems at major airports; the one pictured is at St. Louis-Lambert International Airport.

THE BFGOODRICH COMPANY

BFGoodrich expanded its aircraft lighting product line with anti-collision/position light assemblies for McDonnell Douglas MD-80 aircraft.

AAI CORPORATION

In production at AAI/Systems Management Inc. is the ASOS (Automated Surface Observing System), a series of atmospheric sensors that consistently monitor surface weather conditions at airports.

frame manufacturers Boeing and McDonnell Douglas and engine manufacturers GE Aircraft Engines and Pratt & Whitney, a division of United Technologies. The FAA made progress in its program to improve flight and safety services. Late in the year, the FAA concluded an agreement with industry for an Aviation Safety Community Data Sharing Group, through which the airlines will share safety information with the FAA and each other. The FAA also embarked on a program to improve weather services through development of new technology for observation and forecasting and by continuing demonstrations of advanced weather information systems and weather-related countermeasure products. In 1995, the FAA also advanced the U.S. air traffic control system by commissioning some 1,400 major systems such as Terminal Supplier Weather Radars, next-generation weather radars, airport surface detection equipment, tower voice switches, and air route surveillance radar. A major development was the installation of Harris-built Voice Switching and Control Systems at nine of the 21 air route traffic control centers; the other centers are to be similarly equipped in 1996-97.

HARRIS CORPORATION

At the FAA's training facility in Oklahoma City, FAA personnel are being trained in management and maintenance of the new Harris Voice Switching and Control Systems. The FAA installed Harris systems at nine of the 21 air route traffic control centers.

HEATH TECNA AEROSPACE COMPANY

In production at Heath Tecna are structural composite cross sections for such applications as floor beams, floor panels, and wing stiffeners for commercial aircraft.
The principal space highlight of the year was the December arrival of NASA's Galileo spacecraft at Jupiter and the dramatic plunge of its instrumental probe into the Jovian atmosphere. On July 13, Galileo began the 50-million-mile "final approach" of its six-year journey to Jupiter, after releasing the 747-pound instrumental probe. The probe proceeded independently of the main spacecraft, arriving at Jupiter on Dec. 7 and plunging into the Jovian atmosphere at 106,000 miles per hour. While the main Galileo spacecraft swung into orbit around the planet, the probe descended by parachute about 400 miles into the gaseous planet, making the first direct measurements of Jupiter's clouds, lightning, winds, and other features, and relaying them to the Orbiter for later transmission to Earth. NASA's Jet Propulsion Laboratory developed and constructed the main spacecraft; Hughes Space and Communications Company built the probe.

NASA flew seven successful Space Shuttle missions in 1995, three of them to the Russian Mir orbiting station as part of a preliminary agenda to provide a framework for the International Space Station's assembly operations, which begin in 1997. On Feb. 3, NASA launched STS-63, Orbiter Discovery, to a non-docking rendezvous with Mir; the flight validated a number of rendezvous and communications techniques for subsequent docking missions. On a June flight (STS-71), the Orbiter Atlantis made a historic docking with Mir (June 29), 161 miles above central Asia near the Russian/Mongolian borders. In November, Atlantis again docked with Mir on STS-74, a flight that delivered a docking module and new solar arrays to Mir; the two spacecraft remained docked for two days while the two conducted joint scientific experiments.

In other Space Shuttle activity, the longest Shuttle mission ever flown (17 days) began March 2, with the
launch of STS-67, Orbiter Endeavour. The principal payload was the Astro-2 astronomical observatory, with which the crew conducted round-the-clock observations of several hundred celestial sources. On STS-70 in July, Orbiter Discovery delivered another in the NASA series of Tracking and Data Relay Satellites and conducted Earth observations and experiments in orbital atmospheric chemistry and microgravity science. STS-69, Orbiter Endeavour, was launched Sept. 7; the primary payload was the Wake Shield Facility, an experiment in producing an “ultra vacuum” in orbit for growing improved semiconductor thin films. The final mission of the year, STS-73, flown by Orbiter Columbia in October/November, was the second mission of the U.S. Microgravity Laboratory, which carried a wide range of materials processing and scientific experiments. Principal Space Shuttle contractors are Rockwell International Corporation (Orbiters and main engines), Thiokol Corporation (solid rocket boosters), and Lockheed Martin Corporation (external tank). In November, NASA announced that United Space Alliance, a Rockwell/Lockheed Martin joint venture, had been selected to manage Space Shuttle operations.

In other spaceflight activity:

- In April, the Rockwell-built constellation of Global Positioning System satellites was declared operational.
- In May, Space Systems/Loral launched an Intelsat international communications satellite into a position off Brazil’s Atlantic coast.
- GOES-9 (Geostationary Operational Environmental

Hughes Electronics Corporation

Shown in a pre-launch test, the GMS-5 weather satellite was launched by a Japanese booster in March. The satellite was built by Hughes Space and Communications Company for Japan’s NEC Corporation.

Honeywell Inc.

In development is the Honeywell/Racal multi-channel airborne satellite communications system; in photo, company engineers are checking the system prior to shipment.

Rockwell International Corporation

The Rockwell-built constellation of Global Positioning System satellites was declared operational in April by the Air Force.

Honeywell Inc.

In development is the Honeywell/Racal multi-channel airborne satellite communications system; in photo, company engineers are checking the system prior to shipment.

Hughes Electronics Corporation

In June, the Hughes Space and Communications Company’s DBS-3 direct broadcast satellite was delivered to orbit for use by Hughes’ DIRECTV direct broadcast satellite service.
in development at lockheed martin manned space systems is the space shuttle super lightweight tank’s aluminum-lithium test article, shown mounted for testing in a nasa dome weld x-ray fixture.

In October, Aerojet conducted a successful test of the Russian NK-33 rocket engine, which is being modified for application to U.S. launch vehicles under an agreement with Russia.

among major development programs, the NASA-led international space station program advanced with the phase I series of shuttle/mir flights preliminary to the start of assembly operations. Manufacturers were turning out the first hardware components of the station, and it was estimated that, by yearend 1995, they...
would have delivered 100,000 pounds of station hardware. Boeing Defense & Space Group is prime contractor for station development and integration; principal subcontractors are McDonnell Douglas Aerospace and Rockwell Rocketdyne. In March 1995, NASA embarked on a new Reusable Launch Vehicle (RLV) program designed to develop a new generation of space boosters capable of delivering payloads to orbit at significantly lower cost. The principal RLV development, a joint NASA/industry effort, carries the designation X-33. NASA signed cooperative agreements with three companies for X-33 development: Rockwell Space Systems, Lockheed Martin Advanced Development Company, and McDonnell Douglas Aerospace. Under the agreements, government laboratories will work with each of the industry design teams to assure input of the latest lab-developed technology to the new launch system. During a 15-month Phase I contract definition and design program, each contractor will develop its own vehicle design, operations plan, and business investment strategy. The results of Phase I will provide the basis for a White House decision in 1996 as to whether to proceed with Phase II, which involves design, construction, and flight testing of an X-33 vehicle.

**ROCKWELL INTERNATIONAL CORPORATION**

Rockwell's concept of a Reusable Launch Vehicle (RLV) capable of delivering 25,000 pounds to orbit. Rockwell, McDonnell Douglas, and Lockheed Martin received NASA study contracts for design of an X-33 subscale vehicle to prove out the full RLV configuration.

**RAYTHEON COMPANY**

In development at Raytheon is the Main Mission Transceiver Antenna System for the Iridium communications satellite system, expected to be in service in 1998.

**HUGHES ELECTRONICS CORPORATION**

Hughes Space and Communications Company is developing the Inmarsat-P mobile communications satellite for the Inmarsat-P affiliate company of London; the 10-satellite system will operate in intermediate Earth orbit beginning in 1999.
AIA Member Companies

Year-End 1995

AAI Corporation
Aerojet, A Segment of GenCorp
Alliant Techsystems Inc.
AlliedSignal Aerospace
American Pacific Corporation
Argo-Tech Corporation
B.H. Aircraft Company, Inc.
The Boeing Company
Chrysler Technologies Corporation
Coltec Industries Inc
Chandler Evans
Delavan Gas Turbine
Menasco Aerosystems
Walbar
Computing Devices International
Digital Equipment Corporation
Dowty Aerospace
Yakima
Los Angeles
DuPont Company
FMC Corporation
GEC-Marconi Electronic Systems Corporation
General Dynamics Corporation
General Electric Company
The BFGoodrich Company
Landing Systems
Maintenance, Repair, and Overhaul
Safety Systems
Sensors and Integrated Systems
Gulfstream Aerospace Corporation
Harris Corporation
Heath Techa Aerospace Company
HEICO Corporation
Hexcel Corporation
Honeywell Inc.
Hughes Electronics Corporation
Delco Electronics Corporation
Hughes Aircraft Company
Hughes Telecommunications and Space Company
DIRECTV, Inc.
Hughes Network Systems, Inc.
Interturbine Corporation
ITT Defense and Electronics Inc.
Kaman Aerospace Corporation
Lockheed Martin Corporation
Loral Vought Systems Corporation
Lord Corporation
Lucas Aerospace Inc.
McDonnell Douglas Corporation
Northrop Grumman Corporation
Parker Hannifin Corporation
Raytheon Company
Rockwell International Corporation
Rohr, Inc.
Rolls-Royce North America Inc.
Sundstrand Corporation
Teledyne, Inc.
Teledyne Brown Engineering
Teledyne Controls
Teleflex Inc./TFX Aerospace Group
Teleflex Aerospace/Defense
Mal Tool & Engineering
Texas Instruments Incorporated
Defense Systems & Electronics Group
Textron Inc.
Thiokol Corporation
TRW Inc.
United Technologies Corporation
Aerospace/Defense:
Pratt & Whitney
Sikorsky
Hamilton Standard
Westinghouse Electric Corporation
Electronic Systems Group
Williams International