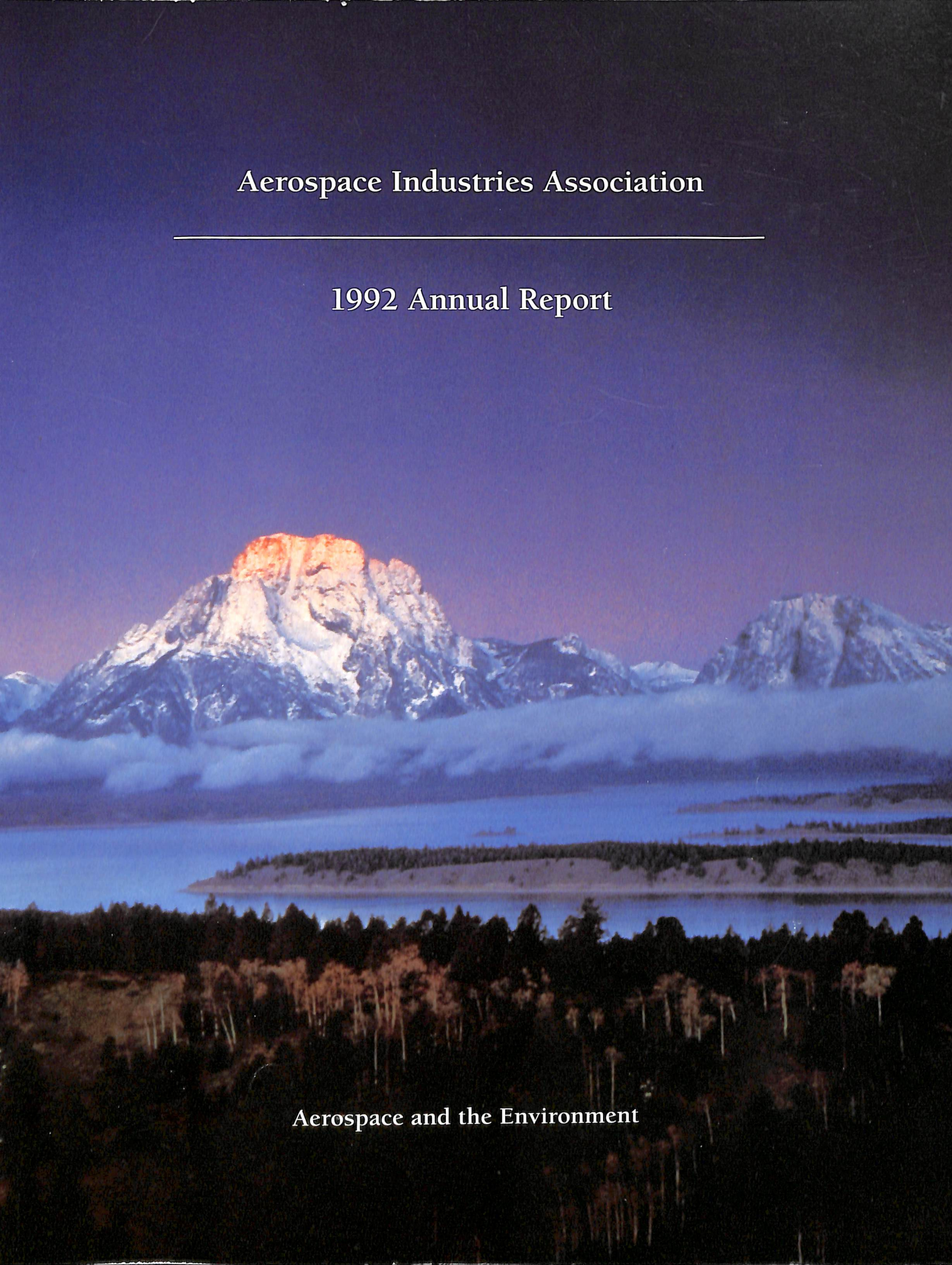
Aerospace Industries Association

1992 Annual Report



Aerospace and the Environment

Guiding Principles for Employee Safety and Health, the Community, and the Environment

AIA and its member companies are committed to conscientious stewardship of the environment, employee health and safety, and compliance with environmental and health and safety laws and regulations. Correspondingly, AIA proposes the following principles as a foundation for its member companies to use in developing their environmental, health, and safety policies and programs:

Operate facilities in a manner that is environmentally responsible and that ensures the health and safety of employees and the public.

Integrate environmental, health, and safety considerations in all planning for equipment, facilities, operations, products, processes, and plants.

Seek improvements in processes and raw materials to reduce emissions, minimize waste, and protect the safety and health of employees.

Recognize and respond to community concerns about the potential environmental impacts from company operations.

Actively exchange technical and administrative solutions to environmental, health, and safety issues to remove barriers that inhibit progress, and to create and support forums to facilitate information transfer.

Work to resolve problems associated with handling and disposal of hazardous substances.

Participate in developing responsible laws, regulations, and standards that will improve the environment and promote the health and safety of employees and the public.

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Aerospace Industries Association of America, Inc.
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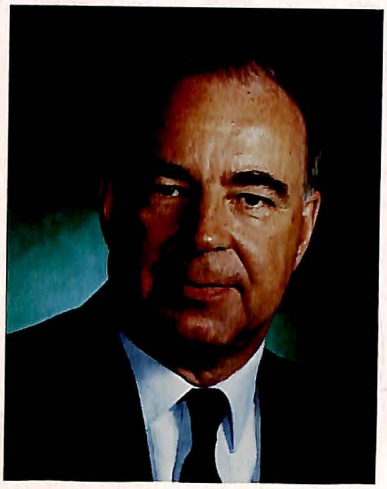
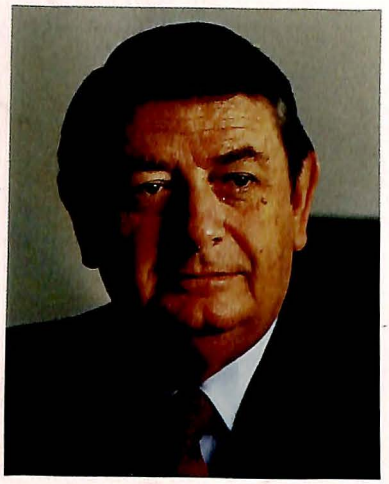
The Aerospace Industries Association 1992 Annual Report is printed on recycled paper using soy-based inks.



Richard A. Linder,
Chairman



Don Fuqua,
President

MESSAGE FROM AIA'S CHAIRMAN AND PRESIDENT

For the first time in 20 years, the aerospace industry's overall sales—the primary indicator of activity, employment, and earnings—dropped below the previous year's level. That single fact tells much of the story of aerospace in 1992.

New orders declined sharply, as did backlog. The industry's 1992 profit was some 47% below the peak earnings level of 1988. Industry employment fell by another 117,000, bringing the number of jobs lost over the three-year period 1990-1992 to 268,000—20% of the aerospace workforce.

In two instances—civil aircraft sales and export sales—what appeared to be marginal gains were in fact real term declines when adjusted for inflation.

In the military component of the industry's business, the decline was not unexpected; defense sales have been falling for several years, a consequence of a 1986 national decision to reduce the size and annual appropriations of the defense establishment.

In each year from 1987 to 1991, rapidly mounting commercial sales more than offset declining defense volume. But in 1992, commercial transport sales growth virtually halted, a casualty of continuing airline financial difficulties and attendant cancellations/deferrals of jetliner orders. For the next year or two at least, our industry faces uncommon difficulty with both of its principal areas of business in decline at the same time.

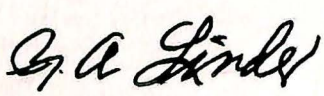
We expect the commercial segment of our business to rebound as the world economy and the airlines' financial health improve. We also expect an increase in the industry's space workload. Gains in these two areas will offset some—but not all—of the lost defense business.

The apparent outlook, therefore, is a significant decline in the industry's overall sales volume throughout this decade.

We say apparent because we believe the degree of decline can be substantially mitigated if our companies are able to find additional workload in such areas as expansion of exports; acquiring a greater share of the defense overhaul, modification and upgrade work known as "depot maintenance"; and diversification into new product lines where the industry's existing high-technology capability can be effectively employed. In addition to such production-type workload, the industry's ability to maintain the defense industrial base would benefit from broader public/private competition for research and development contracts.

This quest can succeed if we can enlist the cooperation and assistance of the government, for example, in removing government-imposed roadblocks to exporting, eliminating flawed policies and practices that restrict industry earnings, and creating new markets through the proposed technology infrastructure program.

We firmly believe that serious government consideration of our industry's situation will lead to this conclusion: that the U.S. aerospace/defense industry merits the full cooperation of the government because that industry is the linchpin of American competitiveness, a prime element of the U.S. economy and the keystone of the industrial base whose vitality is absolutely essential to the nation's security and technological advancement.



Richard A. Linder, Chairman

Don Fuqua, President

EXECUTIVE COMMITEE

Seated left to right:

Richard A. Linder,
Electronic Systems Group, Westinghouse Electric Corporation

Arthur E. Wegner,
United Technologies Corporation (retired)

Renso L. Caporali,
Grumman Corporation.

Standing left to right:

Daniel M. Tellep,
Lockheed Corporation

John F. McDonnell,
McDonnell Douglas Corporation

Don Fuqua,
Aerospace Industries Association

E.D. Dunford,
TRW Inc.

Phillip W. Farmer,
Harris Corporation

EXECUTIVE COMMITTEE

Renso L. Caporali,
Chairman, President and Chief Executive Officer, Grumman Corporation

E. D. Dunford,
President and Chief Operating Officer, TRW Inc.

Phillip W. Farmer,
Executive Vice President, Harris Corporation

Don Fuqua,
President, Aerospace Industries Association

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John F. McDonnell,
Chairman and Chief Executive Officer, McDonnell Douglas Corporation

Daniel M. Tellep,
Chairman and Chief Executive Officer, Lockheed Corporation

Arthur E. Wegner,
Executive Vice President and President, Aerospace/Defense, United Technologies Corporation (retired)

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Renso L. Caporali, *Vice Chairman*
Don Fuqua, *President*
George F. Copsey,
Secretary-Treasurer

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Chairman and Chief Executive Officer, General Motors Hughes Electronics

Norman R. Augustine,
Chairman and Chief Executive Officer, Martin Marietta Corporation

Max E. Bleck,
President, Raytheon Company

Daniel P. Burnham,
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Hudson B. Drake,
President, Aerospace & Electronics Segment and Senior Vice President, Teledyne, Inc.

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Senior Vice President, ITT and President and Chief Executive Officer, ITT Defense and Electronics, Inc.

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Executive Vice President and General Manager, Space and Electronics Group, TRW Inc.

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Gordon L. Williams,
President and Chief Executive Officer, Vought Aircraft Company

AIA continues to identify those emerging environmental and safety issues that specifically affect the aerospace industry. AIA works cooperatively with regulatory and federal agencies and others to find workable and affordable solutions to environmental problems.

EPA Clean Air Regulations

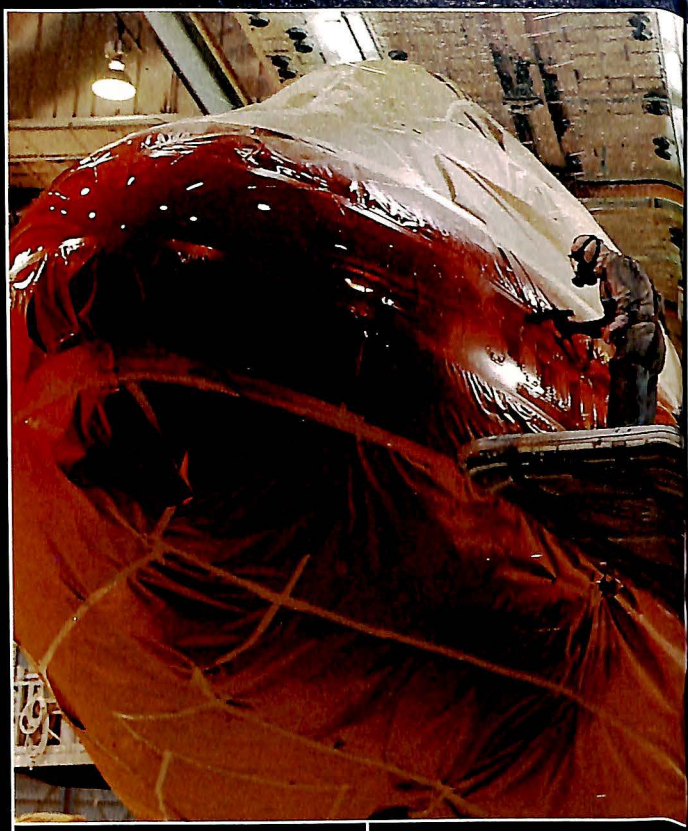
A high priority item for AIA are two Environmental Protection Agency (EPA) documents that will determine how aerospace facilities will be regulated for their air emissions of Volatile Organic Compounds (VOCs), which are smog-forming compounds, and toxic compounds. AIA is working with the EPA to develop cost-effective options to reduce VOCs and toxic air emissions.

AIA has provided the documentation necessary for the EPA to begin writing an Aerospace Control Techniques Guideline (CTG) and a National Emission Standard for Hazardous Air Pollutants for Aerospace. The two aerospace-specific documents are required under the Clean Air Act Amendments of 1990.

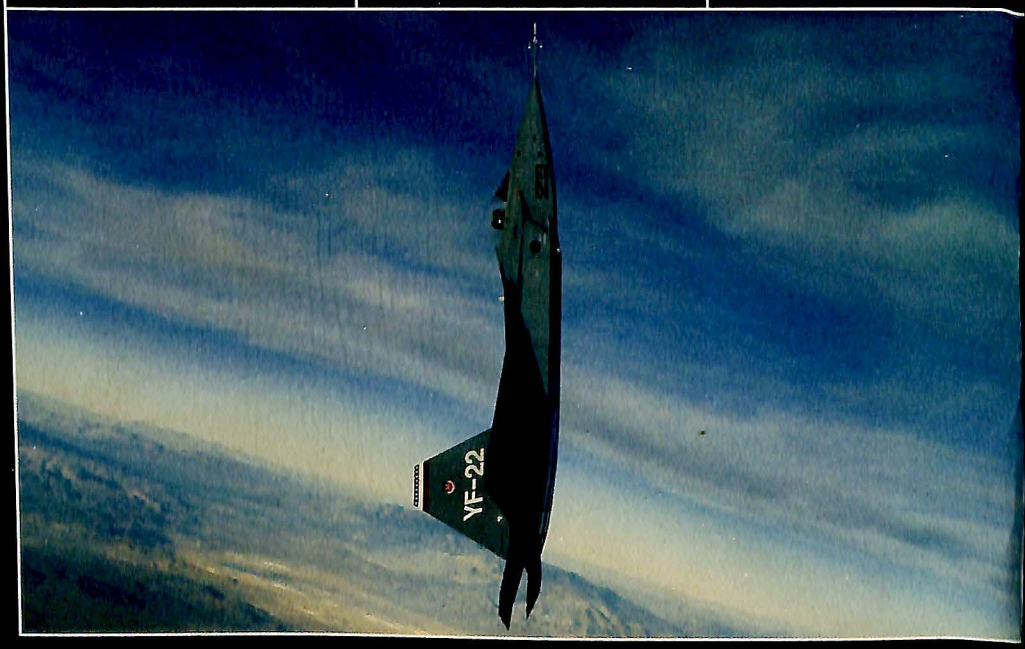
Aircraft Engine Test Cell Study

The EPA is also required to examine existing technologies to see if nitrogen oxide emissions from aircraft engine test cells can be reduced. AIA has begun a series of meetings with EPA to assist in gathering data for the study. Data collection is expected to begin early in 1993; published results are expected in November 1993.

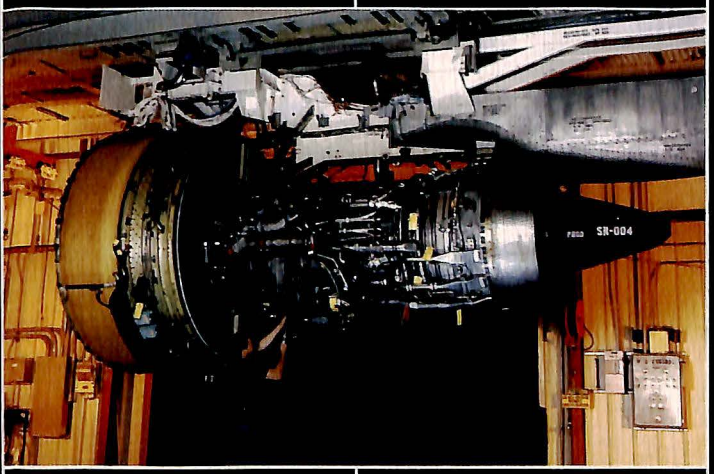
AIA and the EPA are working together to develop cost-effective options to reduce volatile organic compounds and toxic air emissions. The use of high-transfer efficiency paint guns, like this one used to paint a Boeing 747, reduce paint consumption, hazardous waste generation, and air emissions, resulting in both economic and environmental benefits.



The Air Force F-22, produced by Lockheed, General Dynamics, and Boeing, is the first military aircraft to use a Hazardous Materials Program Plan during its manufacture. AIA is working with DoD to develop environmental and safety guidelines for future weapons systems.



Halons, potential ozone-depleting compounds, will cease production by 1994. A replacement must be found for what is the chief fire-fighting agent used in aircraft. Here a potential replacement for halon 1211 is tested at American Pacific's facilities near Cedar City, Utah.



EPA is planning to study aircraft engine test cells to see if nitrogen oxide emissions can be reduced. Here a technician prepares a GE CF6-80E1 turbofan engine for testing at GE's outdoor test complex near Peebles, Ohio. This engine was designed for improved performance and maintainability and is well within International Civil Aviation Organization emissions standards and Federal Aviation Administration noise standards.

Improved manufacturing technologies and processes must incorporate environmental concerns. For example, new aqueous degreasing systems, this one at Boeing, clean metal parts without generating ozone-depleting air emissions typical of older vapor degreasers.

Halon Replacement

Production of halons, potential ozone-depleting compounds, will end by January 1994 under the terms of the Montreal Protocol on Substances that Deplete the Ozone Layer. This creates a problem for the aviation industry because halons are the chief fire-fighting agents used in aircraft. Currently, there is no acceptable replacement available.

AIA formed a Halon Replacement Task Group to address the issue. The task group is working with the U.S. Air Force and the Halon Alternatives Research Corporation to cohost an international workshop in February 1993 to develop a plan to replace halons as the chief fire-fighting chemicals in aviation.

DoD Environmental Initiatives

AIA has established an interdisciplinary task group to work with DoD to develop environmental and safety guidelines for future weapons contracts. The goal is to develop cost-effective ways to ensure that weapons systems will be developed with appropriate consideration given to the reduction or elimination of hazardous materials and to the proper control of hazardous materials that cannot be eliminated. All phases of the weapon system life cycle from design through demilitarization will be addressed.

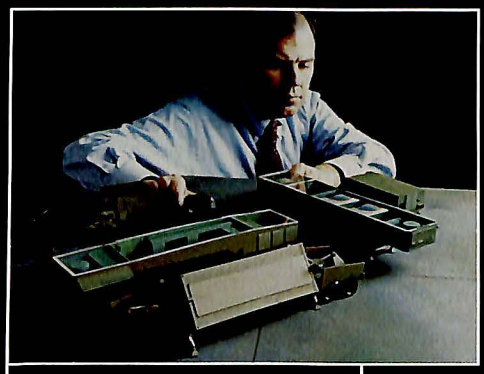
The relationships formed and initiatives taken by AIA in 1992 bode well for environmental problem solving in 1993. AIA will be an active participant in these endeavors.

For the Department of Defense (DoD), 1992 was a difficult year characterized by changes in DoD's restructuring program and resultant shifting of acquisition priorities. The Bush administration's new Base Force Plan, the blueprint for defense forces until President Clinton submits his first budget in early 1993, would reduce the strength of the active military establishment, by the end of Fiscal Year 1997, to a level some 25% below that of FY '90.

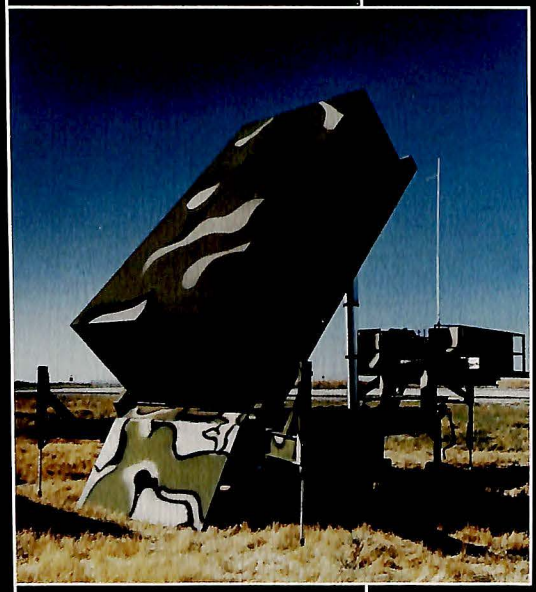
The size of the Base Force Plan was determined by the administration's conclusion that regional conflict is the major foreseeable threat to U.S. global interests and that the defense establishment must be sufficiently large and flexible to respond to crises, maintain a forward presence, provide continuing strategic deterrence and defense, and be able to expand should an emergency dictate. A reordered acquisition strategy tailored to those requirements calls for cancellation or deferment of production plans for a number of major weapon systems, sanctions new production starts only when the need is absolute, and emphasizes research and development and modification or upgrade funding.

For the aerospace/defense industry, in the seventh year of its own downsizing effort, it was a year of declining overall sales as defense sales dipped for the fifth straight year and dropped to the lowest level since 1984. Industry firms nonetheless achieved significant progress in developing and producing advanced defense systems.

A highlight of the year was the first successful test flight of the



In September the Army Space and Strategic Defense Command announced award of a contract to Raytheon Company for a Ground Based Radar (GBR) family of radars, to be part of both the National Missile Defense and Theater High Altitude Area Defense systems. In photo, models of the multiple, air-transportable elements of the GBR system.



In September DoD announced that a team headed by Lockheed Missiles and Space Company had won a competition for a 48-month demonstration/validation phase of the Army's Theater High Altitude Area Defense (THAAD) program. In photo, a full scale mockup of the THAAD launcher undergoing testing for quick reload capability.

Successful tests of the Army/Lockheed Missiles & Space ERIS missile, a space interceptor, demonstrated the ability of the vehicle to discriminate and intercept a mock warhead.

A BFGoodrich Aerospace technician adjusts a servo control unit for the ATACMS (Army Tactical Missile System).

A USAF F-15 launches an AMRAAM (Advanced Medium Range Air-to-Air Missile) built by Hughes Aircraft, a unit of GM Hughes Electronics. In December a USAF F-16 used an AMRAAM to shoot down an Iraqi fighter, the first operational success for the weapon.

In November Rockwell International's Tactical Systems Division delivered to the Air Force the first production units of the AGM-130 Standoff Weapon System.

Early in 1992, Aerojet Propulsion Division successfully completed simulated high altitude tests of its XLR-132 advanced upper stage rocket.

An ERINT long-range interceptor missile successfully completed its first flight in June. ERINT was developed by Loral Vought Systems Corporation for the Strategic Defense Initiative Organization.

Northrop-built AGM-137 air-launched Tri-Service Standoff Attack Missile (TSSAM) in June (the missile is also being developed in an Army MGM-137 version). DoD released some details of the hitherto highly classified TSSAM program: the weapon is targeted for low-rate initial production in 1993; Air Force/Navy plans, still being evaluated, call for production of more than 11,000 air-launched missiles; and The Boeing Company was designated second source contractor.

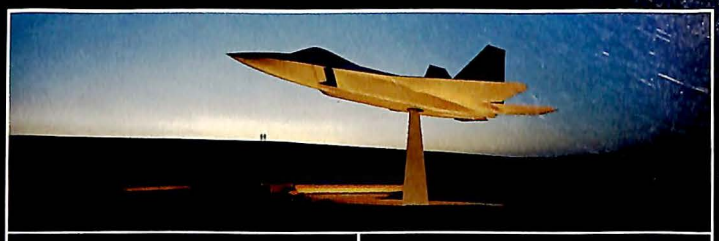
In February DoD granted the Army approval to proceed with the demonstration/validation (dem/val) phase of the Theater High Altitude Area Defense (THAAD) program. In September DoD announced that a team headed by Lockheed Missiles & Space Company had won a competition for the 48-month dem/val phase.

In March the Army issued Requests for Proposals (RFPs) for a new CORPSSAM (Corps Surface-to-Air Missile) weapon system intended as a replacement for the Hawk missile for medium/high altitude defense. In July the Army selected six contractors—Lockheed Missiles & Space, LTV, Martin Marietta, Hughes Aircraft, Raytheon, and British Aerospace—for concept definition contracts.

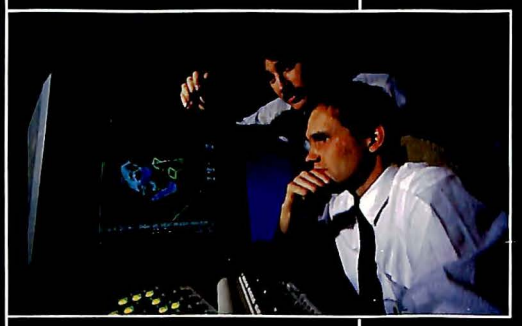
In June the Defense Acquisition Board (DAB) approved development of a Joint Stand Off Weapon (JSOW), a 40-mile-range glide bomb to be used by Navy and Air Force planes beginning in 1997. Texas Instruments Incorporated is prime contractor.

In other 1992 missile-related activity,

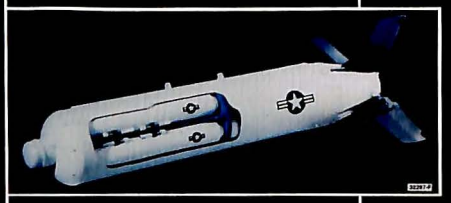
- In April the DAB approved full-rate production of the Air Force's radar-guided AMRAAM (Advanced Medium Range Air-to-Air Missile). The missile had been in low-rate production by dual sources Raytheon and Hughes Aircraft.
- In October the Boeing-developed, Hummer-mounted Avenger Army air defense system began a series of tests using a combination of complementary British Starstreak and U.S. Stinger missiles. Other missiles were to be tested with the Stinger through mid-1993.
- An LTV-built ERINT (Extended Range Interceptor) missile successfully completed its first flight in June, fired from a canister mounted on a Patriot launcher. Seven additional flights were scheduled through mid-1993. Rockwell International provides a K-band radar guidance seeker.
- In August the Navy conducted the first test of an improved version of the air-launched Standoff Land Attack Missile (SLAM); McDonnell Douglas is the SLAM contractor.
- The Army issued RFPs in November for a Ground Based Interceptor dem/val program, a follow-on to a GBI-X experimental program nearing completion at yearend. Competitors include Rockwell, Martin Marietta/ Lockheed, and McDonnell Douglas/Hughes.
- In November the Army awarded Martin Marietta Corporation a contract to build 36 Hellfire II test missiles with an option for full-rate production that could run to more than 20,000 missiles. Scheduled for initial production in late 1994, Hellfire II is an upgraded version of the Hellfire laser-guided antitank weapon.



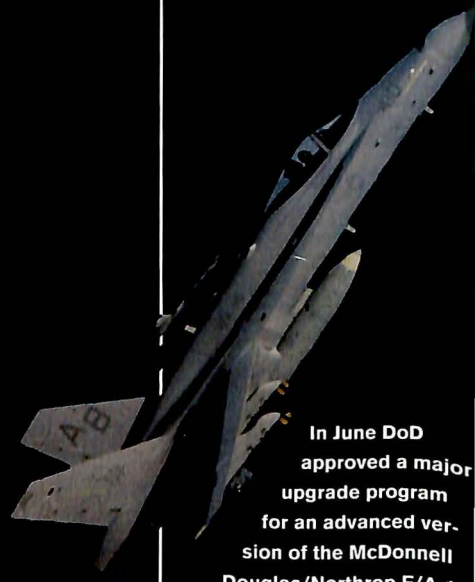
A high-fidelity pole model of the USAF/Lockheed F-22 advanced tactical fighter was built for radar cross-section measurements to evaluate the aircraft's low observable (stealth) characteristics.



A Grumman engineer studies a computer design of a component for the A-X advanced multimission aircraft. A Grumman-led team is one of five competing in the concept definition phase of the A-X program.



In March Textron Defense Systems was awarded an Air Force contract to begin production of the Sensor Fuzed Weapon, a general purpose munition to be used against armor and combat support targets.



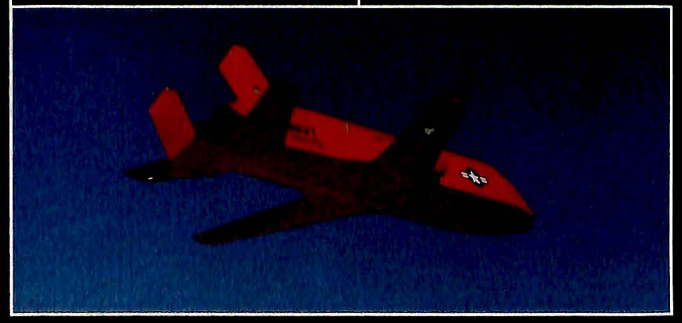
In June DoD approved a major upgrade program for an advanced version of the McDonnell Douglas/Northrop F/A-18 to be designated F/A-18E/F. Production is to begin in 1996. In photo, an F/A-18C on a training mission.

In October the fifth Air Force/Northrop B-2 made its first flight.

In October the Air Force finalized plans for a major upgrade of the General Dynamics F-16 Block 50 in use by the air forces of five nations.

A Grumman design (right), Vought Aircraft's Pampa 2000 (above) and the Beech PC-9 Mark II (below), are among the competing designs in the DoD's Joint Primary Aircraft Training System (JPATS) competition, to be decided in 1994.

In May the YQBM-145A Medium Range Unmanned Aerial Vehicle, being developed by Teledyne Ryan Aeronautical for the Air Force, Navy, and Marine Corps, successfully completed its first powered flight.



• In July the Air Force selected two industry teams for the dem/val phase of the satellite-based Follow-on Early Warning System (FEWS). The teams are TRW Inc./Grumman Corporation and Lockheed Missiles & Space/Hughes Aircraft.

Among aircraft developments, the Navy in December extended the concept definition phase of the A-X advanced multimission aircraft by eight months, moving selection of two finalists for the dem/val phase back to the fall of 1993. Five industry teams are competing. In June DoD approved a major upgrade program for an advanced version of the McDonnell Douglas/Northrop F/A-18 designated F/A-18E/F and planned for large-scale production. The E/F version will feature a new engine and extensive modification of both airframe and avionics. Limited production would begin in 1996.

The Air Force McDonnell Douglas C-17 airlifter continued in production and flight test. The fourth production C-17 made its first flight in December, at which time the other four airplanes in flight test—the prototype and three production airplanes—had accumulated more than 700 hours of flight time. In November the No. 3 production plane was deployed to Elgin Air Force Base, Florida, for climatic testing.

In other aircraft developments,

• The first radar-equipped Navy/ McDonnell Douglas AV-8B Harrier II made its initial flight in September. First deliveries of the Harrier II to the U.S. Marine Corps are targeted for April, 1993; Italy and Spain are also planning procurement of the plane.

For the Department of Defense (DoD), 1992 was a difficult year characterized by changes in DoD's restructuring program and resultant shifting of acquisition priorities. The Bush administration's new Base Force Plan, the blueprint for defense forces until President Clinton submits his first budget in early 1993, would reduce the strength of the active military establishment, by the end of Fiscal Year 1997, to a level some 25% below that of FY '90.

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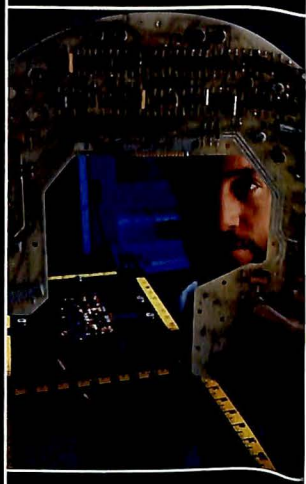
In January Beech Aircraft Corporation received an Army contract for six RC-12N electronics special mission aircraft to be delivered in 1993/94. The RC-12N is a military version of the Beechcraft Super King B200C corporate turboprop.

Boeing's Helicopters Divisi initiated a modernization program for the CH-47C helicopters operated by the U.S. Army and the British Royal Air Force.

Hughes Aircraft developed a new system that employs x-rays to inspect solder joints; if approved by DoD, it could replace costly manual inspection of joints in tactical missiles.



In July the F-111F Pacer Strike prototype made its initial flight. The Pacer Strike avionics upgrade program is being conducted for the Air Force by a team headed by Rockwell's Autonetics Marine and Aircraft Systems Division.

The V-22 Osprey tiltrotor aircraft entered the engineering manufacturing development phase. The V-22 is being jointly developed by Bell Helicopter Textron and Boeing Defense & Space Group's Helicopters Division.

Bell Helicopter Textron developed a company-funded, highly modified OH-58D Kiowa Warrior variant that offers light utility capability.

A Rockwell/TRW/Harris Corporation team won a contract for engineering manufacturing development of the Hummer-mounted SMART-T tactical terminal for use with the Milstar satellite.

Raytheon Electromagnetic Systems Division developed an electronic intelligence version of the Beech Model 350 turboprop aircraft.

Among other developments,

- Flight testing continued on two prototypes of the Army/McDonnell Douglas AH-64D Apache Longbow helicopter; construction of two more prototypes was planned. The Army plans to upgrade more than 200 Apaches to the Longbow configuration.
- In November the Army completed a flyoff evaluation of five contenders for the New Training Helicopter (NTH), to be used for primary and instrument training. Bell Helicopter Textron and a Grumman-led team were among the competitors. The Army expected to select one helicopter for production by the end of February 1993.
- In November the Army released details of a rotary wing modernization plan it will present to the new Congress. The plan calls for gradual reduction of the helicopter inventory between FY 1993 and FY 2010, to an ultimate level of more than 5,800 helicopters, down 22% in units from the FY 1992 level. The number of types in the inventory would similarly be reduced to seven or eight, with four principal types: the Boeing Sikorsky RAM-66 Comanche, the Sikorsky UM-60 Black Hawk, the McDonnell Douglas AH-64C/D Longbow Apache, and an advanced version of the Boeing CH-47.
- In August Bell Helicopter Textron rolled out its Huey II demonstrator, a modified military UH-1 featuring increased performance and reduced cost of operation.
- Also in August, Boeing Defense & Space Group's Helicopter Division received an initial contract on a long-term program to upgrade Navy and Marine Corps H-46 helicopters, including CH-46 amphibious assault aircraft.

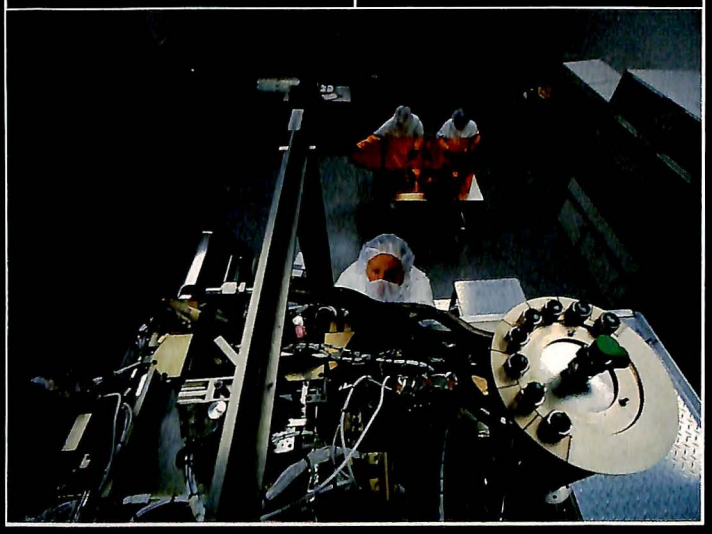
"A blockbuster year for space science missions," NASA termed the year 1992, citing a lengthy list of discoveries, from hints as to how the universe began to black holes to stellar evolution to the innermost workings of the human cell. At year-end, NASA had 31 space science missions operating and returning data, providing an unprecedented level of science information.

A major new observatory launched in 1992 was the Extreme Ultraviolet Explorer (EUVE). Sent into orbit in June by a McDonnell Douglas Delta 2 launch vehicle, EUVE contains four sensitive telescopes designed to conduct a two-year all-sky survey in a particular band of the spectrum never before explored. Among principal contractors are General Electric Company and McDonnell Douglas Astronautics Company.

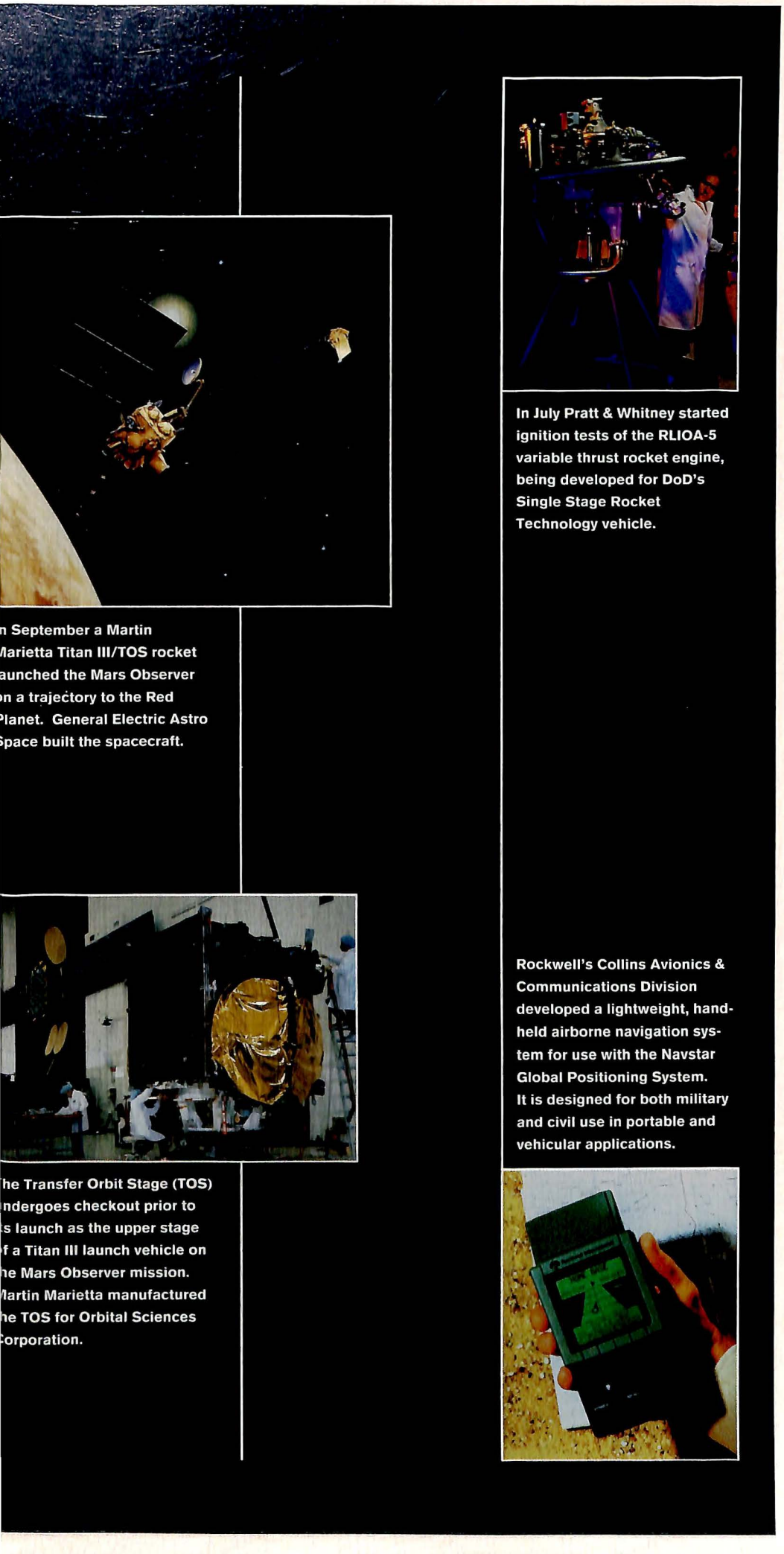
EUVE was one of five payloads launched in 1992 by expendable launch vehicles. In July another Delta 2 carried the U.S./Japan Geotail satellite into orbit. Also in July, an LTV-built Scout launched SAMPEX, a small Explorer-class space physics satellite and in November another Scout delivered a Strategic Defense Initiative Organization (SDIO) payload. In September a Martin Marietta Titan III/TOS sent the Mars Observer on a trajectory to Mars; TOS, for Transfer Orbit Stage, is an upper stage system manufactured by Martin Marietta for Orbital Sciences Corporation. The Mars Observer spacecraft was developed by General Electric Astro Space.

A major contributor to NASA's "blockbuster" year of science discoveries was the TRW-built Compton Gamma Ray Observatory, in orbit since April 1991.

Shown in preflight checkout Hughes Space and Communications Company's Optus B communications satellite for Australia was launched in August.



In development at Grumman Corporation is an advanced infrared sensor designed to detect missile launches from space. Grumman, with teammate TRW, is competing for the USAF's Follow-on Early Warning System satellite program.



n September a Martin Marietta Titan III/TOS rocket aunched the Mars Observer on a trajectory to the Red Planet. General Electric Astro Space built the spacecraft.

In July Pratt & Whitney started ignition tests of the RLIOA-5 variable thrust rocket engine, being developed for DoD's Single Stage Rocket Technology vehicle.

he Transfer Orbit Stage (TOS) ndergoes checkout prior to s launch as the upper stage f a Titan III launch vehicle on he Mars Observer mission. Martin Marietta manufactured he TOS for Orbital Sciences Corporation.

Rockwell's Collins Avionics & Communications Division developed a lightweight, hand-held airborne navigation system for use with the Navstar Global Positioning System. It is designed for both military and civil use in portable and vehicular applications.

The Space Shuttle had a banner year with eight missions scheduled and eight flown; seven of the eight lifted off on the day set at the Flight Readiness Review and the eighth was a day late.

Among the highlight Shuttle missions were the first flight of the new Orbiter Endeavour in May, during which the crew rescued a wayward Intelsat commercial communications satellite; three missions — in January, June, and September — in which the Shuttle Orbiter carried the Spacelab pressurized module for extensive life sciences and microgravity experimentation; and the use of the Shuttle as a short-term orbiting observatory in March, when it carried the first of a series of ATLAS science instruments packages. Principal Space Shuttle contractors are Rockwell International (Orbiter and main engines); Thiokol (solid rocket boosters); and Martin Marietta (external tank).

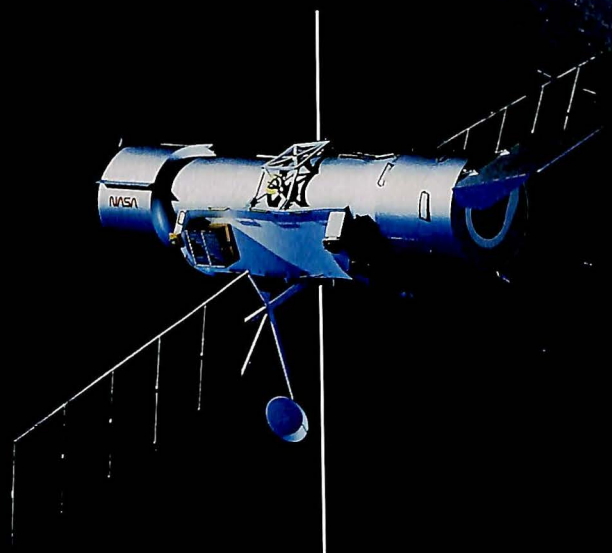
NASA termed 1992 "probably the most active" year in the agency's history with regard to international cooperative activities. In addition to the Shuttleborne ATLAS and International Microgravity Laboratory missions, which involved more than 200 scientists from 16 countries, and the U.S./Japan Geotail, international activities included:

- In August the U.S./French Topex/Poseidon was launched by an Ariane IV vehicle to conduct a study of ocean circulation and its role in regulating global climate.

• The July/August STS-46 Shuttle mission included experiments with the U.S./Italian Tethered Satellite System and the NASA European Space Agency Eureca (European Retrievable Carrier Platform). Martin Marietta built the deployer boom, reel, and tether for the Italian-built Tethered Satellite.
• The October STS-52 Shuttle mission featured deployment of the U.S./Italy LAGEOS II passive satellite, to be used for measurement of the movement of Earth's tectonic plates.

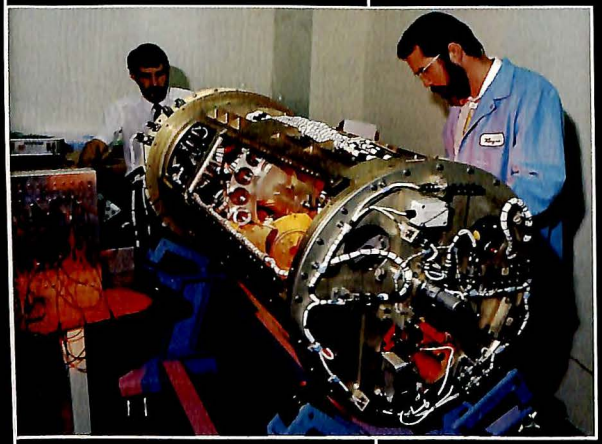
Among major NASA development programs, Space Station Freedom design work and initial hardware tests proceeded on schedule toward a June 1993 Critical Design Review (CDR). Completion of the CDR marks the point where the design is 90 percent completed and contractors are given the authority to proceed with development of flight hardware. The Space Station is being developed by three teams of contractors headed by Boeing Defense and Space Group, McDonnell Douglas Astronautics, and Rocketdyne Division of Rockwell International. Grumman Corporation is engineering and integration contractor.

In other developments,
• The Earth Observing System (EOS) program was reviewed with the goal of reducing funding by approximately 30 percent while retaining the essence of the science plan. The program is on schedule for first satellite launch in June 1998.
• A comprehensive examination of the Cassini spacecraft and mission was completed in December.

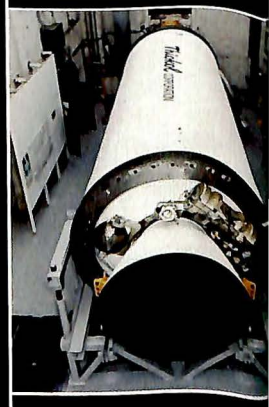


In development at TRW is t
Advanced X-ray Astrophys
Laboratory, the third of
NASA's Great Observatorie
scheduled for launch in 19

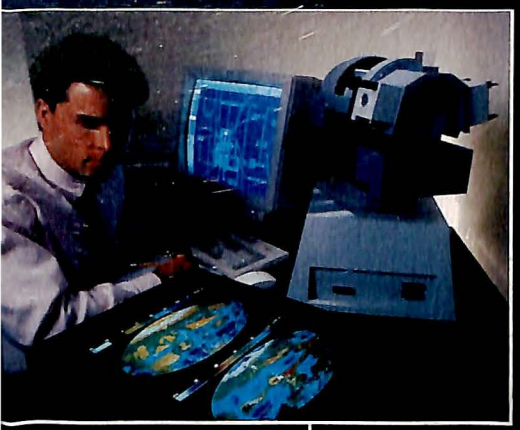
In development at TRW Space & Electronics Group is a TOMS-EP (Total Ozone Mapping Spectrometer Earth Probe) lightsat for accurate prediction of global ozone depletion rates. The NASA satellite is planned for service in the mid-to-late 1990s.



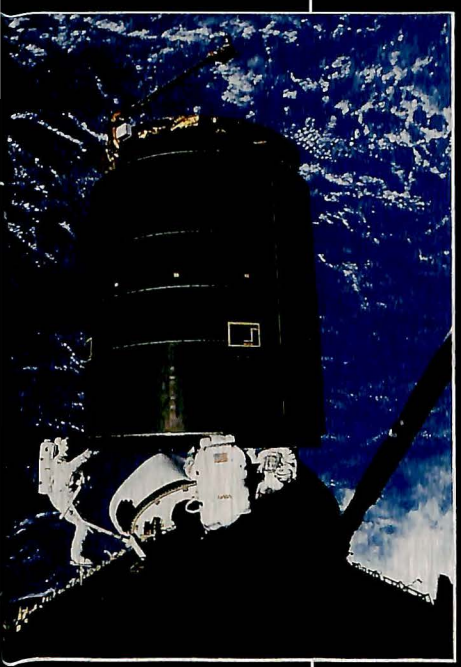
Flown on the June/July U.S. Microgravity Laboratory mission was the Crystal Growth Furnace developed by Teledyne Brown Engineering.



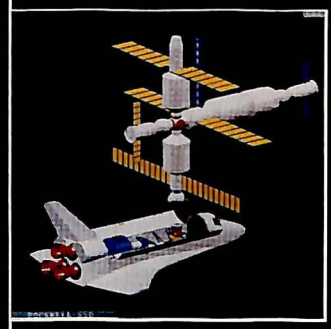
Thiokol Corporation developed the Castor 12 solid rocket motor.



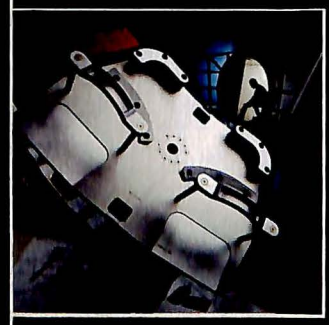
right in the photo is a full-
e mockup of the CERES
ouds and Earth Radiant
ergy System) instrument
ing developed by TRW for
ght on NASA's first Earth
serving System satellite,
S-A1, in 1998.



a dramatic mission in
y, a Shuttle Orbiter crew
ptured and redeployed an
elsat IV satellite that had
en stranded in a useless
bit. Principal Shuttle con-
ctors are Rockwell, Martin
rietta and Thiokol.



Rockwell International and the Russian company NPO Energia signed an agreement for pursuing joint business opportunities. The companies are exchanging data relative to a planned 1995 docking of the Rockwell-built Space Shuttle Orbiter with the Russian MIR space station. The computer-generated photo shows one possible docking scenario.



Lockheed Engineering & Sciences Company developed an articulating portable foot restraint to aid astronauts working outside Space Station Freedom.

Cassini is targeted for launch in 1997 and arrival at Saturn in 2004 to begin a four-year orbital study of the ringed planet and its 18 moons.

- NASA conducted a workshop to define the requirements for the first lunar orbiting "precursor" missions (unmanned preliminaries to manned missions) and made a technical study of a First Lunar Outpost. The agency also initiated conceptual studies of possible mission scenarios for human exploration of Mars.
- The joint USAF/NASA program office designated General Electric Astro Space as prime contractor for the Landsat 7 advanced Earth resources survey satellite.

In military space, much of the activity centered around the efforts of the Strategic Defense Initiative Organization (SDIO) to develop a defense against ballistic missiles that would include three elements: ground-based interceptors, space-based interceptors, and a rapidly-transferrable regional theater defense component. Among SDIO activities,

- The first of a series of Miniature Seeker Technology Integration (MSTI) satellites was launched in December on a six-day test of infrared sensors designed to detect heat sources—such as missiles—in space.
- In November, SDIO issued Requests For Proposals for launch services in connection with an Electric Propulsion Science Test Satellite powered by the Russian Topaz 2 thermionic nuclear power system. The satellite is to be launched in 1995.
- In October SDIO awarded launch service contracts involving use of two new launch vehicles in

the 2,500-pound-payload class: the Taurus, being developed by Orbital Sciences Corporation, and the Conestoga, built by EER Systems.

• A Raytheon Patriot missile equipped with an advanced seeker intercepted and destroyed another Patriot in an August test at White Sands Missile Range. The seeker, developed by Raytheon and Germany's Telefunken Systems, allows the interceptor to operate independently of ground radar during the kill phase.

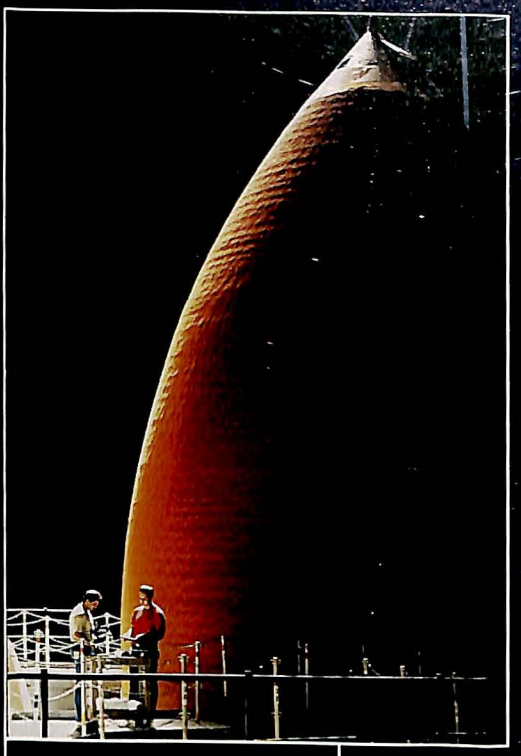
In other DoD space activity,

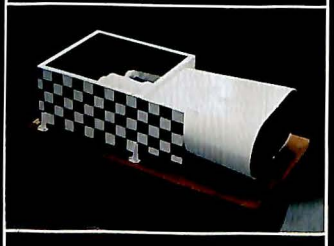
• The Air Force awarded a contract in December to Lockheed Missiles & Space Company for development and test of a second generation, high-capacity Milstar 2 communications satellite.

• In July the USAF launched a DSCS-III satellite, the 12th of the Defense Satellite Communications System series. The satellite was built by General Electric Astro Space.

• Also in July, the Air Force selected two contractor teams for demonstration/validation programs on the Follow-on Early Warning System (FEWS) satellite. The teams selected are TRW/Grumman Corporation and Lockheed Missiles & Space/Hughes Aircraft.

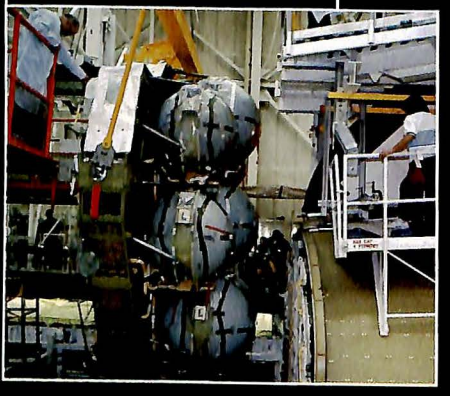
The Space Shuttle flew eight successful missions in 1992. A behind-the-scenes contributor was Lockheed Space Operations Company (LSOC), NASA's principal Shuttle contractor. In photo, two LSOC technicians are working near the top of the huge Shuttle external tank.

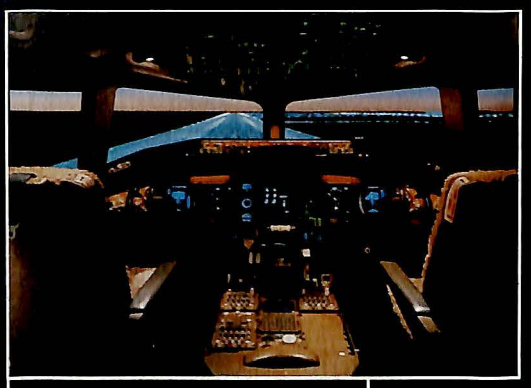




Being developed for flight aboard a GOES-M satellite in 2001 is the Lightning Mapping Sensor, which will pinpoint lightning activity, measure total rainfall and determine regions of strong convection. TRW is NASA's contractor.

The Extended Duration Orbiter (EDO) cryogenic pallet containing supplemental hydrogen and oxygen for the Orbiter's fuel cells is fit checked at Rockwell Space Transportation Systems Division. The EDO kit, which gives the Space Shuttle a 16-day mission capability, was used in the Orbiter Columbia in its June/July flight.

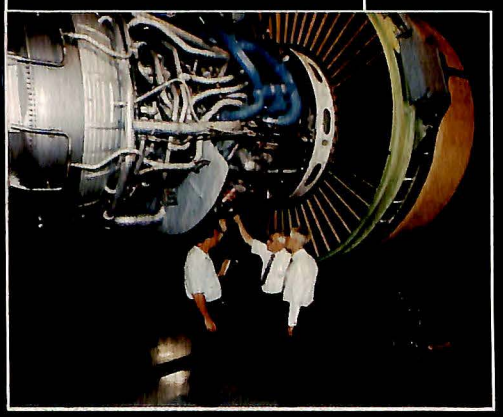




In development by Boeing Commercial Airplane Group is the Boeing 777 high-capacity twinjet transport, scheduled for service introduction in 1995. In photo, the 777's advanced cockpit design.

In production by McDonnell Douglas is the MD-11 trijet pictured, along with various models of the MD80/90 series.

In August Pratt & Whitney's PW4084 engine attained 90,000 pounds thrust in early ground tests. The engine will enter service in 1995 on the Boeing 777.



Boeing and General Electric officials discuss maintainability of the GE90 propulsion system, one of three being developed for the Boeing 777.

For the world's airlines, 1992 was another troubled year as lagging economies in the U.S. and abroad, increasing operating costs and a variety of other difficulties conspired to cause heavy financial losses among most of the world's carriers.

Speaking for the U.S. scheduled airlines, Air Transport Association (ATA) reported a preliminary estimate that the year's losses would approach $2 billion, marking a third consecutive year of record losses and a total loss over the three-year period of almost $8 billion.

The losses occurred despite boarding of a record 470 million passengers in 1992. But the bulk of this traffic was in the summer months when the airlines were offering large discounts. Overall, revenue per passenger mile (based on the first 10 months of 1992) dropped three percent.

At year-end, the U.S. airline jet fleet numbered some 4,400 aircraft and the airlines had billions of dollars worth of new aircraft on order. However, the airlines cancelled or deferred a number of those orders, citing the sluggish economy and overcapacity.

The impact of those deferrals on the aircraft manufacturing industry was expected to show up in 1993 and later years, but for 1992 industry sales of jetliners remained high. Jetliner deliveries — 558 aircraft valued at $27.8 billion — were up by $1 billion in value but down by 31 units.

The backlog of transport orders fell below the previous year's level. As of September 30, 1992, the civil transport backlog was $101 billion,

down from $108.8 billion at the end of 1991. Foreign orders constituted 70% of the backlog value.

Overall civil aircraft sales — transports, helicopters and general aviation planes — totaled 1,775 units (down from 2,181) worth $29.7 billion (up from $29 billion). Deliveries of civil helicopters dropped sharply in both units (337) and value ($146 million); the comparable figures for the previous year were 571 units worth $211 million. Shipments of general aviation aircraft fell to 880 units (down from 1,021) valued at $1.8 billion (down from $2 billion).

At the end of September 1992 (the latest date for which firm figures are available), Boeing Commercial Airplane Group had orders for 1,266 transport aircraft. The largest component of that backlog was 490 orders for the B-737 short-to-medium range twinjet. Other aircraft on order included 289 B-757s, 219 B-747s, 152 B-767s and 116 of the new B-777, still in development.

Launched in 1990, the B-777 is an advanced technology, high capacity long range twinjet with an initial gross weight in the area of 500,000-535,000 pounds. The B-777 is scheduled for first deliveries in 1995.

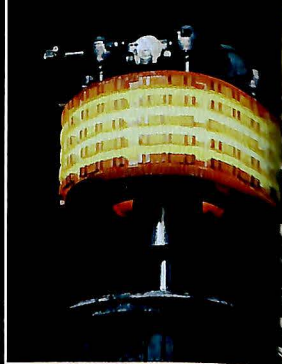
Orders for McDonnell Douglas transports totaled 269 airplanes, including 158 of the MD80/90 series of twinjets and 111 of the MD-11 trijets. Douglas Aircraft Company was studying possible development of a stretched derivative of the MD-11 and also conducting pre-launch development of the four-engine MD-12, which

Cessna Aircraft received c
fication for its six-passeng
Citation Jet and at yearend
first production model wa
being readied for service.

Rockwell International's Tulsa Facility extended its contract for production of Boeing 747 structure shipsets.

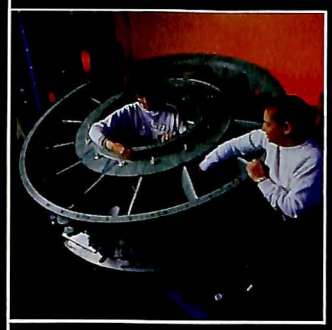
Reflectone delivered to Ansett Airlines the first Full Flight Simulator certified under new International Civil Aviation Organization guidelines.

A carbon composite material called CARBENI
4000, developed by AlliedSignal Aerospace, is subjected to a 3,000 degree temperature in a t
the material is to be used
brakes for jetliners.



ur Raytheon companies amed in a project to supply ftware, advanced displays d other equipment to mod- nize Norway's air traffic con- l system. In photo, the graded tower at Oslo's rnebu Airport.

Precision Cast Parts Corp. produces this turbine rear frame casting for a Boeing 777 engine.



Kaman Aerospace Corporation introduced its K-MAX "aerial truck."

March Williams ernational was granted tification for the Williams- lls FJ44 commercial turbo- , shown here in a test tallation.

An advanced fuel nozzle for the GE90 engine undergoes test at Parker Bertea Aerospace. Parker will manufacture 30 fuel nozzles for each GE90.

features the first full-length double deck design for airline use. A developmental highlight of the year was an 800-hour wind tunnel test series on a scale model of the MD-12 wing design.

In the field of aircraft propulsion, one of the year's highlights was completion of initial tests on Pratt & Whitney's very high bypass ADP (Advanced Ducted Prop) demonstrator. The tests confirmed noise, fuel consumption and thrust projections. A second series of tests, to be conducted in NASA/Ames Research Center's 40 by 80 foot wind tunnel, was planned for 1993.

Pratt & Whitney was also developing a PW4000 family of engines, including the PW4084 turbofan intended for the B-777 twinjet. On only its second test run — in August — the PW4084 achieved a thrust rating of 90,000 pounds. The company planned to operate seven engines in a certification test program; certification was planned for April 1994.

General Electric Aircraft Engines was also developing a B-777 engine, the GE90, the company's most powerful engine. In November GE successfully completed the first run of the power plant's core; full engine tests were to start early in 1993.

Also in development by CFM International, the joint venture of GE and France's SNECMA, was a new growth version of the CFM-56 series of jetliner engines. The 34,000-pound thrust CFM-56-5C4 was to start ground tests in March 1993 toward certification late in 1994.

In helicopter development activity, the McDonnell Douglas MD Explorer made its initial test flight in December. The aircraft is an eight-place, twin engine helicopter featuring the company's NOTAR system for anti-torque and directional control, which eliminates the conventional exposed tail rotor. McDonnell Douglas Helicopter Company has orders for more than 250 MD Explorers. Certification is expected by October 1994, with deliveries to begin immediately thereafter.

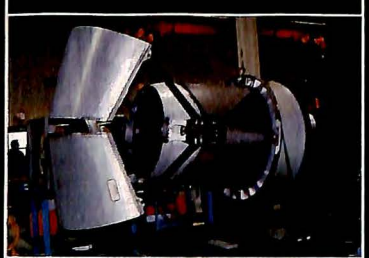
Another rotary wing development was testing by Sikorsky Aircraft of a new folding rotor blade system for the S-76 helicopter; the folding feature is designed to expand the market for the helicopter by making it operable from a ship's deck and improving its attractability to oil platform operators. Tests, conducted at Ames Research Center's full-scale wind tunnel, involved stowing the blades by a three-man crew working in winds up to 45 knots.

Among government research programs, NASA continued to conduct the High Speed Civil Transport (HSCT) program aimed toward eventual development of an environment-friendly second generation supersonic transport. A new development in 1992 was creation, early in the year, of a government/industry team — NASA's Lewis Research Center, GE and Pratt & Whitney — to develop advanced materials for a U.S. supersonic transport engine. The five-year program focuses on composite materials for high-temperature, low-emission engine combustion chambers.

B.H. Aircraft is engaged in development of turbine engine noise reduction programs; in photo, a nozzle for Gulfstreamll/lll aircraft.

A BFGoodrich Aerospac neer checks the first pro tion unit of a new all-con ite Pneumatic Impulse Ic Protection system.

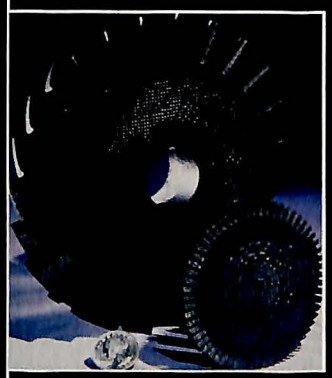
Raytheon's Beech Aircraft Corporation was granted certification for the Starship 2000A all-composite business aircraft; Beech delivered 20 Starships to operators.



In July ASTECH/MCI Manufacturing, Inc. received airworthiness certification for the company's new design of a McDonnell Douglas MD-80 series tailpipe.

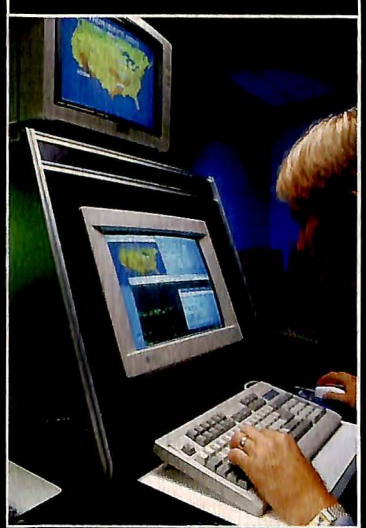
Lord Corporation develo and flight-tested in a bu aircraft an experimenta vibration isolator for re cabin noise.

Final assembly and inspection of actuators at Dowty Aerospace Los Angeles. The company was one of seven suppliers selected to receive Boeing Commercial Airplane Group's award for excellence.



Produced by Du Pont, Ceramic and Metal Matrix Composite turbine engine and turbopump rotor components are making high-temperature engine operation possible.

ndstrand Data Control intro-
ced a new solid state Flight
a Recorder (shown) and a
kpit Voice Recorder
igned for superior crash
vivability and minimal life
le cost.



In development for the Federal Aviation Administration by E-Systems' Garland Division is the VISTA FLITE NET system, which provides a mix of flight data and imagery from weather radars and satellites.

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NCAT, the nonprofit foundation formed by AIA in 1989, coordinates the activities of government, industry, and academia to expedite the development of key technologies. The Center promotes a better national understanding of the importance of advanced technologies, acts as an information source for advanced technology development, and serves as a research planning and advisory organization for government, industry, and academia.

John M. Swihart
President
NCAT

NCAT

The National Center for Advanced Technologies (NCAT) has largely completed its work on the Key Technologies roadmaps and strategic development plans. The plans represent a broad-based, national consensus on the importance of the Key Technologies to future U.S. competitiveness. NCAT is now identifying Demonstrations of Engineering and Manufacturing Operations (DEMOs) as the logical way to validate technologies for application to products.

NCAT finished the last technology development plan—advanced metallic structures—in December 1992. In addition to 11 published roadmaps, a total of eight strategic development plans have been completed.

NCAT was directed by its Board of Trustees and the AIA Board of Governors to secure external funding with the goal of becoming self sufficient in 1992. The boards agreed that the main task of NCAT was to facilitate the DEMOs for selected technology areas. NCAT was successful in securing a grant from NASA to support their civil space technology effort, and AIA has agreed to match this funding.

In addition, NCAT was awarded a contract to support the Department of Defense's (DoD's) Director of Defense Research and Engineering on the Science and Technology Thrust 7, Technology for Affordability effort. NCAT is also hoping to work with the Critical Technologies Institute for the Office of Science and Technology Policy and with the Department of Energy. NCAT continues to receive strong technical support from AIA.

NCAT's role with the Technology for Affordability effort is especially interesting because it cuts across all the other areas of DoD's new science and technology strategy to design and build weapons that meet identified needs and are cost effective. Increasingly, Technology for Affordability focuses on the integration of manufacturing and other proc technologies with the DoD Science and Technology program.

The first of a series of workshops was held November 6, and subsequent ones will be held about every six weeks. The objective is to bring industry into the planning process for the Science and Technology program and to integrate process technologies with technology development.

Congress has shown great interest in expan defense technology development to civilian and to integrate the manufacturing and oth processes into programs at the outset.

Such an approach is clearly consistent with that of NCAT. As the emphasis on multi-u defense technology increases, the concentra on melding manufacturing and other proce into the development cycle will increase. NCAT believes it can lead the way in facilitating an effective and coordinated fusion of these processes.

NCAT supports this approach by facilitati the DEMO process. NCAT's role has bee arrange meetings stressing cooperative effo of industry and government participants. date NCAT has been successful in facilita arrangements for four DEMOs: advanced computational/analysis methods, interacti enterprise integration net, smart engines, a fly-by-light, power-by-wire.

Several trade associations and professional societies have joined with NCAT in the Technology for Affordability effort. In addition to AIA, NCAT has received assurances of cooperation from the Electro Industries Association, National Security Industrial Association, National Associatio of Manufacturing, American Defense Preparedness Association, American Instit of Aeronautics and Astronautics, and the Institute of Electrical and Electronic Engi

ASSOCIATION ACTIVITIES

The following short explanations of the top ten issues of importance to the aerospace industry are not arranged in order of priority.

International Competitiveness

In a tightening global market, government and industry must promote U.S. aerospace products worldwide, pursue more equitable rules for fair trade, assure export financing, and minimize existing impediments to exports.

Environment

The aerospace industry must continue its aggressive efforts to enhance worker safety and protect the environment and work more closely with the government to further reduce environmental contamination through design of products and processes that use less polluting materials. The costs of environmental remediation are necessary business costs.

Integrated Technology Base

The interests of competitiveness require that the commercial and defense segments of the U.S. technology base be integrated into a single technology base supporting both areas. This demands improved government/industry and intra-industry cooperation in technology development.

Air Transport System

Areas that can have positive effects on the financially ailing civil aviation industry include tax and antitrust reform, air traffic management modernization, product liability reform, regulatory modification, and improved government/industry cooperation in developing key civil aviation technologies.

SDB Awards

The aerospace industry is playing a spearhead role in making Small Disadvantaged Businesses (SDBs) an integral part of the industrial base by continuing increases in SDB awards to meet goals established by DoD and NASA.

Contract Financing

The aerospace industry seeks government policy changes, such as streamlining contract financing practices, higher progress payments, elimination of fixed-priced contracts for R&D, an end to government recoupment of nonrecurring costs, and an equitable method of taxation to replace the current percentage of completion method.

Industrial Base

Government and industry must create a single, flexible industrial base. Essential steps include orderly transition to lower spending levels, R&D funding, focus on dual-use technologies, government modification of industry-impeding profit, procurement and tax policies, and implementation of the National Industrial Security Program.

Space Policy

U.S. competitiveness in commercial space activities requires policy improvements in 1) balanced government investment in space launch technologies, manufacturing programs, and infrastructure and 2) promoting the interests of free and fair trade in space services and hardware.

Commercial Buying

DoD purchase of commercial products offers more favorable prices, equal or better products, and generally reduced delivery times, but legislative and regulatory impediments constitute an insurmountable barrier. There is need for new legislation to require acquisition of commercial items in accordance with commercial terms and practices.

Acquisition Strategy

DoD industrial base planning has not addressed some crucial issues, such as identification of critical equipment and suppliers, balanced government/industry sharing of depot-level maintenance work, and an acquisition strategy adequate to maintain critical skills and emergency expansion of production.

AIA is organized to provide staff support to member company councils and committees. AIA's professional staff keeps up with administrative and technical developments and relays that information to members through regular and special meetings, workshops, seminars, reports, memoranda, and regular publications.

AIA SENIOR STAFF:
Don Fuqua, AIA President

George F. Copsey, Secretary/Treasurer

Sandra Carney-Talley, Assistant Vice President, Policy and Planning

LeRoy J. Haugh, Vice President, Procurement and Finance

Herbert E. Hetu, Vice President, Communications

Joel L. Johnson, Vice President, International

Virginia C. Lopez, Executive Director, Research Center

Daniel J. Nauer, Vice President, Human Resources

Robert E. Robeson, Vice President, Civil Aviation

Stan Siegel, Vice President, Technical and Operations

Thomas N. Tate, Vice President, Legislative Affairs

Policy and Planning coordinates the key policy issues identified by AIA's Board of Governors and establishes goals and strategies for achieving consensus and action.

Sandra Carney-Talley
Assistant Vice President
Policy and Planning

Aerospace Research Center researches, provides analysis, and prepares studies to bring perspective and a better understanding to the issues, problems, and policies of the industry.

Virginia C. Lopez
Executive Director
Aerospace Research Center

AEROSPACE RESEARCH CENTER

Facts & Perspective

The Research Center regularly publishes reports and analyses in a supplement to the *AIA Newsletter* titled *Facts & Perspective.*

- In March *Facts and Perspective* highlighted "The Importance of Aerospace to the Nation's Economy" and provided data to show how aerospace affects other industries.
- In June the Research Center focused on "High-Tech Market Share and Research and Development (R&D) Trends." U.S. share of the world high-technology market is declining; so is real R&D investment. Still, forecasters expect U.S. R&D investment will significantly increase later in the 1990s.
- An October *Facts & Perspective* examined "Foreign Direct Investment (FDI) in the U.S. Aerospace/Defense Sector." FDI in aerospace has been relatively modest and generally directed toward small- and medium-sized subcontractors. The article concluded that, as international competitiveness becomes a greater concern, more restrictions could be placed on FDI. Yet this would be counterproductive, given the global nature of the aerospace industry.
- In November the Research Center conducted a "Statistical Review of Industry Performance." In the first half of 1992, four of six industry segments experienced negative growth. Positives: strong commercial transport sales and a decline in industry debt.

Year-end Review and Forecast

Annually, Research Center staff prepares year-end estimates of industry activity, based on nine months of data, and projections for the coming year. The forecast and analysis were presented by AIA President Don Fuqua at AIA's Year-end Aerospace Review and Forecast luncheon in December.

In 1992 the Research Center staff estimated sales fell 4% to $134 billion, from 1991's record of $139 billion. Much of the decline is traceable to reduced spending by the Department of Defense (DoD). The industry's sales to NASA and other federal agencies increased slightly. After inflation, sales were down somewhat for civil aircraft and parts manufacturers and for space-related products.

Aerospace orders were down 23%; backlog was down 11%. Employment fell by 117,0 to 1,063,000.

Industry profits rose marginally, up $69 million to $2.6 billion in 1992. Profits the last two years have been lower than at a time since 1982. Investment in new plant a equipment should grow 10% in 1992, heav influenced by the commercial aircraft secto

AIA projects further sales declines in 1993, to $126 billion. The number of civil aircraf produced should rise because of higher projected helicopter shipments, but shipme value will fall nearly $3 billion. Jet transpor production should decline by 103 aircraft. Further cuts in jobs are expected; reports indicate at least 4% or 47,000 fewer jobs in aerospace in 1993.

Facts & Figures

The Research Center published the 40th edition of AIA's statistical handbook, *Aerospace Facts & Figures.* The theme, "The Challenge of Change," referred to the downsizing of the defense industry and focused on applying capabilities to commercial and civil government needs. *Facts & Figures* is provided to key individu in the administration and Congress, financ analysts, and the news media. The Researc Center also handles sales of the handbook. More than 1,200 copies of the 39th editio *Facts and Figures* were sold.

Employment Survey

The Aerospace Employment Survey showe employment dropped sharply during 199 largely in response to cuts in defense spending. It was the biggest drop in employment since 1971. The survey show the fifth year of declining employment in military aircraft sector; employment fell by 45,000 to 325,000. In contrast, employme

commercial jet transport manufacturing
ached a 23-year high. Missile and
ace-related employment declined for the
urth straight year. Production workers lost
th the greatest number of jobs and the
gest share of employment.

.S. Civil Aircraft Leadership

year-end, the Research Center was
veloping a report identifying factors that
uld diminish U.S. civil aircraft industry
dership:

Deteriorating health of U.S. airlines.

Inadequacy of airports and airways.

Insufficient investment in commercially-
ented aeronautical technology.

Rising costs linked to regulations, health
re insurance, product liability, and antitrust
islation.

Lack of adequate financing for exports.

An export control process that impedes
rket access.

aff is developing other civil aviation issue
pers. One addresses the financial problems
air carriers and what this means for U.S.
craft manufacturers. Another examines the
ed for bilateral maintenance agreements and
ingle certification and inspection system.

ternational Space Market

ports were underway at year-end on
status of national and regional space
grams since the breakup of the Soviet
ion. One will examine the European space
gram and the other, space programs in
Asia-Pacific region.

ecial Projects and Analyses

search Center staff performed these project-
cific research and analyses:

Drafted testimony presented by Fuqua to
House Ways and Means Subcommittee on
ade. Testimony dealt with the industry's
npetitiveness in international markets.
ckground was drawn from the Research
nter's report: *The U.S. Aerospace Industry
the 1990s: A Global Perspective.*

- Assisted in coordinating and publishing two compilations of industry positions: AIA's Regulatory Initiatives and Industry Competitive Enhancement Initiatives.
- Evaluated various impact models in response to questions about the economic and jobs impact of various defense budget scenarios.
- Prepared an analysis of FY 1991 subcontracting awards to small and small disadvantaged businesses.
- Drafted a statement for International Trade Commission hearings on "The Economic Effects of Significant U.S. Import Restrictions."
- Performed an analysis of DoD budget trends by major categories over 50 years.
- Assisted in developing a data base used in a study by the Center for Strategic and International Studies on the impact of federal regulations on the government's ability to purchase from the commercial sector.
- Wrote an article on U.S. aerospace for Department of Commerce inclusion in Singapore Air Show materials.

Surveys

Staff conducted association surveys on company information technology expenses, government processing of contractor payments, and the impact on U.S. civil aircraft manufacturers of certifying aircraft to two standards—the Federal Aviation Regulations and the European Joint Airworthiness Requirements.

Statistical and Information Services

The Research Center staff regularly updates and disseminates 22 statistical series grouped by the categories of general, employment, production, and foreign trade. Staff answers data and general information queries and this year introduced a system of faxing statistical series from computer terminals to save time and money.

Using improved techniques and technology, Northrop significantly reduced its airborne emissions by reducing the amount of paint used in each Boeing 747 center fuselage section (pictured) by 1,000 pounds.

Civil Aviation Council works with domestic and international agencies, Congress, and others in the aviation community concerning manufacture of civil aircraft, including commercial aircraft, business jets, and rotorcraft.

Robert E. Robeson, Jr.
Vice President
Civil Aviation

Mike Hudson
Allison Gas Turbine Division
General Motors Corporation
Chairman, Civil Aviation Council

CIVIL AVIATION

Working through the Civil Aviation Council and its committees, the Office of Civil Aviation gave a high priority in 1992 to rulemaking and harmonization of U.S. and European airworthiness requirements. In addition, AIA worked to enhance the effectiveness of the International Coordinating Council of Aerospace Industries Associations (ICCAIA), the official industry observer to the International Civil Aviation Organization (ICAO).

Regulatory Harmonization

AIA worked closely with the Association Europeenne des Constructeurs de Materiel Aerospatial (AECMA) and the General Aviation Manufacturers Association (GAMA) on harmonization issues. AIA also began examining the possibility of accomplishing industry's goal of a single product certification through mutual recognition of type design approval and airworthiness certificates by the various authorities.

The ninth annual meeting of the Federal Aviation Administration (FAA), European Joint Aviation Authorities (JAA), and industry was held in June. Industry and the authorities reached agreement on a process for harmonization of the Federal Aviation Regulations (FAR) and the European Joint Aviation Requirements (JAR) and associated implementing materials, such as advisory circulars. Agreement was also reached on a list of 89 specific priority items to be worked, with criteria established for measuring progress on each item.

ICCAIA

ICCAIA is an international organization of aerospace industry associations that was established in 1972 to promote the advancement of economical and safe civil air transport. Presently, ICCAIA has four members: Aerospace Industries Association of America, Aerospace Industries Association of Canada, Association Europeenne des Constructeurs de Materiel Aerospatial, and The Society of Japanese Aerospace Companies.

As an official observer to the ICAO, ICCAIA members provide advice and technical support to that organization, which governs civil aviation standards of member nations.

In September ICCAIA members approved the revised Charter and Bylaws, the charter for the ICCAIA Engine Manufacturers Committee, and the establishment of an ICCAIA Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) Committee.

The CNS/ATM Committee will formulate industry positions concerning the design and implementation of the Air Traffic Management (ATM) system of the future. It will design a standardized international ATM system for the year 2015 and a plan to transition to that system from the existing ATM system.

The team will base the new system on industry's expectation of the capabilities that will be available in 2015, rather than extrapolate from the existing system. The initial outline of the new system will be prepared by a small group of ICCAIA members representing manufacturers of avionics, airframes, computers, and software. Following completion of the initial phase, participation will be expanded to include authorities and operators. The final product will be presented to the ICAO by industry experts on behalf of ICCAIA. The target date for this presentation is 1996.

In addition to the above activities, ICCAIA observers participated in the working groups concerning engine emissions, noise, and financial matters at the ICAO Civil Aviation Environmental Protection Conference on June 2, 1992. ICCAIA observers also submitted comments on ICAO recommendations that resulted from the ICAO Accident Investigation Divisional Conference.

Parts Manufacturer Approvals (PMAs)

AIA continued its participation in a joint effort with the Air Transport Association (ATA) to

review the process by which the FAA grants PMAs. The FAA Aircraft Certification Service has identified problems with its decades-old parts approval system and has asked industry to cooperate in developing solutions. The immediate focus of this effort has been on suppliers that produce original parts for holders of type and production certificates (TC/PC). The problem, which the FAA has identified, is that many of these suppliers have continued to produce and sell parts in the aftermarket without proper FAA production approval authority. Such products are technically unapproved under the regulations, even though they are produced under the identical conditions to those sold to the TC/PC holder and conform to the type design.

AIA and GAMA developed a joint response to the priority action items presented by FAA. Two joint panels were established within the AIA/GAMA Unapproved Parts Task Force: the Aerospace Manufacturer Self-Audit Panel is addressing current supplier-TC/PC holder relationships and procedures; the Aerospace Industry Approved Parts Panel is working with users to resolve parts supply problems. The work conducted by the existing AIA/GAMA Parts Manufacturer Approval Working Group was assumed by the Aerospace Manufacturer Self-Audit Panel to promote consistency and flexibility.

Airplane Noise Control Committee
Implementation of the Airport Noise and Capacity Act of 1990 was a major issue before the committee. The final rule issued by the FAA took into account many of AIA's major concerns and attempted to resolve the issues expressed by local communities.

At the ICAO Civil Aviation Environmental Protection Conference in December 1991, AIA members, as ICCAIA observers, prepared eight working papers for presentation at the conference to refute the increased stringency recommended by some countries. The committee also provided key inputs for the data report of a special ICAO stringency study subgroup. These included analysis of 1) improvements in the world noise climate as stage 2 aircraft are phased out, 2) technology available in stage 3 airplanes, and 3) lack of identified new step improvements. The committee also prepared three draft papers concerning subsonic transport aircraft for the FAA to use at the ICAO conference.

Commercial Customer Support Committee (CCSC)
CCSC expanded its scope to include support, publications, training, field service, technical services, repair support, ground support equipment, and warranty administration. CCSC worked closely with the ATA in developing industry specifications and standards on material, training, and maintenance data. CCSC worked on Original Equipment Manufacturers/Unapproved Parts/PMA as well as the more difficult problem of regulation of distributors.

Committee on Industry and Regulatory Affairs (CIRA)
CIRA worked to develop AIA position papers concerning the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) and North American Free Trade Agreement negotiations.

The GATT Options Working Group coordinated AIA positions related to the GATT Agreement on Trade in Civil Aircraft and multilateralization of the U.S.-European Community bilateral Airbus agreement. The Large Aircraft Sector Understanding Working Group led the AIA activity with respect to official financing of civil aircraft.

CIRA worked closely with other committees on competitiveness issues, including U.S.-Japanese-European cooperation, Eastern Europe and the Confederation of Independent States, the integrity of commercial loan guarantee programs, Most-Favored-Nation trade status for China, and nontariff barriers to trade.

Brad Cvetovich
The Boeing Company
Chairman,
Commercial Support
Committee

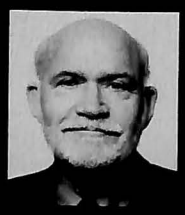
Peter Gallimore
The Boeing Company
Chairman,
Manufacturing
Integrity Committee

Webster Heath
McDonnell Douglas
Corporation
Chairman, Transport
Committee

Paul Jodon
Textron Inc.
Chairman,
Propulsion
Committee

Kenneth Orth
The Boeing Company
Chairman, Airplane
Noise Control
Committee

Susan Walsh
Pratt & Whitney
Chairman,
Committee on
Industry and
Regulatory Affairs



Robert Warren
United Technologies
Corporation
Chairman, Rotorcraft
Committee

Manufacturing Integrity Committee (MIC)
MIC concluded the active phase of designing the FAA Aircraft Certification System Evaluation Program. The committee also 1) participated in AIA's project on unapproved parts, 2) continued work on the FAA Export Airworthiness Release Certificate, 3) coordinated positions with AECMA on manufacturing certification issues and draft approval of maintenance organizations, and 4) worked on FAR/JAR 21 harmonization.

Propulsion Committee (PC)
Ongoing issues addressed by PC include engine certification requirements for bird ingestion, requirements concerning rotor burst containment, policies relating to rotor integrity, and continued airworthiness assessment methodology.

The committee established working groups to address issues of engine in-flight restart capability and certification of auxiliary power units.

Rotorcraft Committee (RC)
RC continued to work with the JAA to develop helicopter certification requirements and JAR and ICAO helicopter operational requirements. The committee also provided comments to FAA opposing a petition to permit revenue operation of a Russian helicopter in U.S. airspace without FAA certification.

Transport Committee (TC)
TC focused on major safety issues, including flight test requirements and cabin fire safety. Seven other projects, including thrust reverser systems, worn brake performance, and all-weather operations, were transferred to the FAA Aviation Rulemaking Advisory Committee. TC also began a major project to study the capability of wide-body aircraft to withstand a terrorist bomb blast. The committee will also examine the feasibility of improving that capability.

Groundwater extraction and treatment systems *(pictured)* remove chemicals from the groundwater and return cleaned water to the aquifier at Aerjoet Propulsion Division. The company currently has six systems in operation, and the Sacramento, California, facility alone has treated more than 20 billion gallons of groundwater.

A new solution, HF1189, developed by Hughes Aircraft Company, replaces harmful chlorofluorocarbons (CFCs) used in manufacturing processes. The solution, used in wave soldering machines *(pictured)*, is a nontoxic formula containing a citric acid-base that is removed by water rather than CFC-based solvents. Hughes expects to reduce its use of CFC-based solvents by up to 300,000 pounds per year.

COMMUNICATIONS

AIA President Don Fuqua continued in his position as primary spokesperson for the aerospace industry, delivering 21 major speeches in 1992 and participating in more than 40 news media interviews.

On July 14, AIA and *Aviation Week and Space Technology* magazine cohosted a senior aerospace executive roundtable discussion on international competitiveness. The roundtable included nine CEOs from industry and six *Aviation Week* editors. The August 24 issue of *Aviation Week* contained a major article on the issues discussed during the roundtable, accompanied by a series of personal interviews with the industry leaders who participated. The issue also contained an editorial calling for greater government support of the aerospace industry. The roundtable resulted from a January 1992 editorial board meeting with Don Fuqua, AIA senior staff members, and the staff from McGraw-Hill's *Aviation Week* Group.

In conjunction with this project, AIA prepared a white paper, "Maintaining an Internationally Competitive Aerospace Industry," which identifies ten issues that have had the most impact on the industry's ability to compete in the global market. An article by Don Fuqua on the same topic was published in *Aviation Week's* "Aerospace Forum" column in the May 11 issue.

At the 28th Annual AIA Year-end Aerospace Review and Forecast luncheon on December 16, Fuqua delivered the state of the industry address, calling for the government to correct an inequitable situation created by the growing nationalization of the U.S. aerospace industry and citing a significant decline in industry sales and employment.

More than 380 people attended, including 164 media and 47 government public affairs representatives, as well as 107 communicators from AIA member companies.

Media Relations

AIA is an important information source on the aerospace industry. In 1992 media interest focused on the industry's adjustment to a declining defense budget and the resultant effects on aerospace employment and the defense industrial base. The industry's focus on aerospace exports, including foreign military sales, air and trade shows, and the international marketplace, is also of great interest to the media.

In June AIA responded to the president's announcement of a new policy to eliminate recoupment fees with a statement from Don Fuqua. AIA played an important role in explaining to the media what recoupment is and why the change was so important to the industry.

AIA responded to 837 inquiries from the media, arranged 230 staff interviews, held 3 press breakfasts, and issued 57 news releases in 1992.

Member Relations

AIA continues to facilitate activities of the Communications Council and task groups of industry communicators.

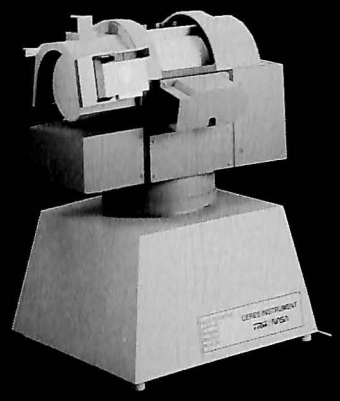
"Competing for Aerospace Markets in a Changing World" was the theme of the spring 1992 Communications Council meeting in Washington, D.C. Discussions centered on the national elections, coping with lower defense spending, the economy, and global competition in future aerospace markets.

At the fall 1992 Communications Council meeting in San Diego, California, members were briefed on environmental groups and initiatives, the outlook for commercial aviation, east and west coast views of national and state elections, and the outlook for the California aerospace/defense industry.

Communications Council supports the public activities of AIA's president and staff and conveys industry goals and accomplishments to AIA members, the news media, and the public.

Herbert E. Hetu
Vice President
Communications

Harold Carr
The Boeing Company
Chairman,
Communications
Council



TRW is designing and developing the Clouds and Earth Radiant Energy System (CERES) instruments (pictured) for NASA's international Earth Observing System program. Beginning in 1997, CERES instruments will fly on NASA's Polar Orbiting Platform, the European Earth Orbiting Polar Platform, and the Tropical Rainfall Measuring Mission. Continued monitoring of the Earth's radiation loss will enable scientists to determine whether the Earth is experiencing a long-term warming or cooling trend. CERES data will also enable scientists to evaluate the effect of clouds on the greenhouse effect.

At the Sixth Annual Speechwriters and Editors Roundtable in December, AIA staff briefed attendees on upcoming challenges in the legislative, environmental, and international arenas. Dr. Gordon Adams, director, Defense Budget Project, was a guest speaker. A panel of industry communicators discussed internal and external communications challenges associated with industry downsizing and recent mergers and acquisitions.

The Space Task Group met several times in 1992 to foster understanding and support for the U.S. space program. The group opened a dialogue with Bill Livingstone, NASA's Associate Administrator for Public Affairs, who met with AIA and other space-related organizations to discuss the challenges facing NASA and the aerospace industry in effectively communicating positive information about the U.S. space program. The meeting was held at AIA during the World Space Congress on August 31. Attendees formed teams to continue discussions in specific areas: NASA's public affairs mechanism, public targeting, education, and lobbying efforts.

The AIA Member Company Product Directory was updated in December and distributed to media, AIA member companies, and government public affairs representatives.

AIA's video, "AIA...The Aerospace Leadership Team," is being used to brief new members of Congress, potential AIA members, and AIA councils and committees.

Editorial Products

AIA Newsletter. Now in its fifth year, the *AIA Newsletter* focuses on noncompetitive issues of interest to the aerospace industry. Ten times yearly the *Newsletter* is distributed to AIA members, Congress, government agencies and departments, financial institutions, news media representatives, and universities. Circulation has grown to approximately 16,000.

Topics covered in 1992 include technology transfer, the Department of Defense's new acquisition strategy, competitiveness, technology development, computer connectivity, the new recoupment policy, and AIA's export trade certificate. Since 1991 each *Newsletter* has featured at least one article on an environmental issue.

Key Speeches. Published 10 times yearly and distributed to 4,500 key members of industry, Congress, the executive branch, and the news media, *Key Speeches* is a collection of speeches by industry and government leaders on aerospace-related topics.

In 1992 AIA published 32 full texts of speeches and 14 excerpts. Companies featured included Boeing, Grumman, Honeywell, Hughes Aircraft Company, Lockheed, Loral, Martin Marietta, McDonnell Douglas, Northrop, Raytheon, Rockwell, Smiths Industries, and Westinghouse. Because of a budget cut, December 1992 was the last issue of *Key Speeches.* AIA will continue to cover speeches of interest to the aerospace industry in the *AIA Newsletter.*

Annual Report. "Leadership Through Technology" was the theme of the *1991 Annual Report,* a yearbook and year-end report of the aerospace industry and AIA activities. The theme was advanced by depicting technological triumphs from each decade, beginning in the 1900s with the first flight of the Wright Flyer and ending in the 1990s with the promise of more efficient access to space with the National Aero-Space Plane.

Other Editorial Products. Other projects include a 10-minute visual presentation on AIA, meeting forms, flyers, and membership materials. Upgrades to the in-house electronic publishing system have produced significant savings in design and production costs for AIA.

HUMAN RESOURCES

Compensation Practices

Executive Compensation. "The Summit Survey of Executive Compensation" is a survey of employers in high-technology industries focusing on total direct compensation, defined to include base salary, annual bonus, and the value of long-term incentives. Towers Perrin conducts this survey with a steering committee of human resources professionals from AIA member companies. The steering committee has determined a consistent, logical rationale for categorizing companies as either primarily defense or primarily commercial.

Organizations were classified primarily defense if they met either of the following conditions:

- If sales to the government represented 40% or more of annual revenues.
- If the company was among the top 15 companies on the Department of Defense (DoD) prime contract award list three out of the past five years beginning with fiscal 1987.

Applying these criteria to the 65 organizations surveyed, 22 companies were identified as primarily defense, and 43 were identified as primarily commercial.

Summit survey results show that there is no evidence that one industry's pay patterns differ significantly from another. For certain jobs the commercial cluster pay levels are higher, for others the defense cluster is higher. The variation is not consistent by job family.

The survey is valued by participating members for dealing with the Defense Contract Audit Agency (DCAA) during compensation audits. More important, the survey helps to counter the recent increase in criticism from some congressional committees as well as the Securities and Exchange Commission, the media, and the general public, who believe that compensation paid to defense executives is too high. AIA anticipates these attacks will continue for the next few years and expects the Summit Survey to prove a valuable tool in blunting such attacks.

Compensation for Personal Services. AIA continues its efforts to engage in a constructive dialogue with DCAA on issues including 1) the definition of compensation offsets, 2) the imposition of disallowances based on collective bargaining agreements, 3) consideration of company executives as a class of employees rather than subjects of individual analysis, 4) the proper percentage deviation from survey rates to determine reasonableness of executive compensation, and 5) DCAA's reliance on broad and inappropriate survey data in compensation audits.

Overtime Payments. Along with other associations, such as the Labor Policy Association, AIA is presenting a coordinated response to the U.S. Department of Labor's interpretation of the Fair Labor Standard Act requiring the payment of overtime to employees traditionally considered exempt from its provisions.

Industrial Security

National Industrial Security Program (NISP) Status. Government/industry task groups have been meeting throughout the year developing procedures and processes necessary to implement the NISP. There are 11 working groups responsible for developing details of policy implementation via a NISP Operating Manual, which is scheduled to be published one year after the president signs the executive order authorizing the NISP. AIA expects NISP to be fully operational four to six years after the signing of the executive order.

Current Industrial Security Projects. With the increased globalization of aerospace markets, AIA is working to simplify procedures for foreign classified visits, the transfer of properly protected information, and reciprocity of facility/personnel clearances.

Human Resources Council is concerned with labor and employee relations, industrial security, employee compensation, occupational safety and health, and environmental issues relevant to the aerospace industry.

Daniel J. Nauer
Vice President
Human Resources

Arch Rambeau
General Dynamics Corporation
Chairman, Human Resources Council

Shirley Curry
TRW Inc.
Chairman,
Compensation
Practices Committee

Farrell Kunz
Honeywell Inc.
Chairman, Industrial
Security Committee

William Lavallee
Vought Aircraft
Company
Chairman,
Occupational Safety
and Health
Committee

Alan Leibowitz
ITT Defense, Inc.
Chairman,
Environmental Affairs
Committee

Through the Council of Defense and Space Industry Associations, AIA successfully challenged a DoD decision that would have required defense contractors to replace thousands of containers (i.e., filing cabinets) with extremely costly General Services Administration-approved containers.

Drug-Free Work Force. In July 1992, DoD withdrew its Drug-Free Work Force rule, which went into effect November 1991. The DoD final rule infringed on existing labor agreements and the conduct and confidentiality of participants in employee assistance programs. It called for the intrusion of unqualified DoD personnel in the decision as to who will or will not be permitted to return to work after successful completion of an employee assistance program. The Human Resources Council worked closely with the Procurement and Finance Council to get DoD to revert back to the interim rule.

AIA Health Care Study. At its spring 1992 meeting, the AIA Board of Governors directed the Human Resources Council to address the health care crises faced by member companies and the country at large. Members of the task group determined that AIA should not prescribe a unitary solution to the national health care debate. Instead, AIA will develop a set of general principles and best practices to be considered by member companies in the management of their own health care programs.

Legislation. The Human Resources Council continued to work with AIA's Office of Legislative Affairs on these legislative issues: family and medical leave, employee drug testing, mandated health care, Occupational Safety and Health Administration reform, banning striker replacement, joint trusteeship of pension plans, new plant closing legislation, and elimination of caps on punitive and compensatory damages under the Civil Rights Act.

Environmental Affairs and Occupational Safety and Health

The Aerospace CTG. AIA's Clean Air Task Group has furnished the Environmental Protection Agency (EPA) with the documentation necessary to write the Control Techniques Guideline (CTG) and the Maximum Available Control Technique (MACT) documents for the aerospace industry. As required under the 1990 Clean Air Act, these documents will specify how aerospace facilities will control their air emissions. The Clean Air Task Group will review and comment on each section of the CTG and MACT as they are completed.

AIA's Aircraft Engine Test Cell Task Group. The Clean Air Act requires EPA to study reducing nitrogen oxide emissions from aircraft engine test cell facilities. EPA has agreed to cooperate with the AIA Aircraft Engine Test Cell task group and submitted a test cell questionnaire to the task group for its comments.

The task group met with EPA to review industry comments on the questionnaire and to initiate the data gathering effort for the study. Other members of the AIA task group include the Air Transport Association, NASA, General Aviation Manufacturers Association, Aeronautical Repair Station Association, and Helicopter Association International. DoD and the Federal Aviation Administration are participating under memoranda of understanding with the EPA.

Halon Replacement Task Group. As directed by the president, production of ozone-depleting chlorofluorocarbons (CFCs) and halons will cease December 31, 1995.

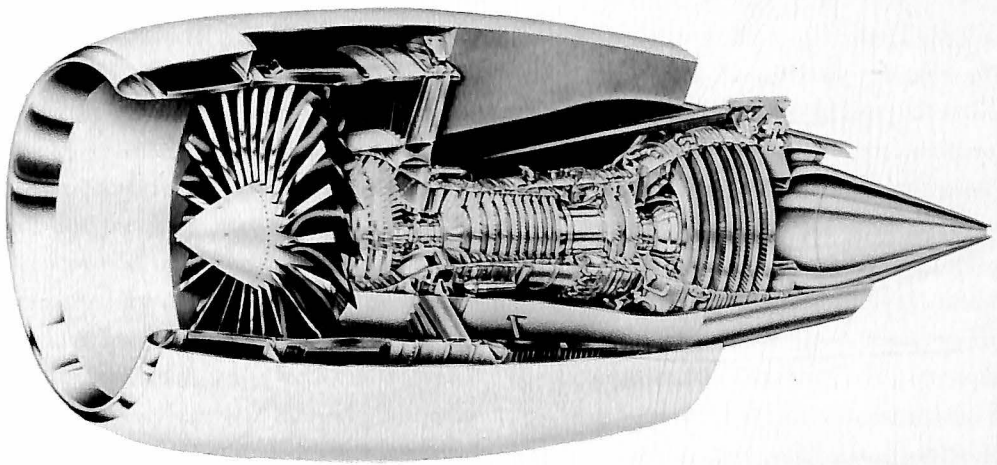
AIA plans to cohost a workshop with the U.S. Air Force and the Halon Alternatives Research Corporation focusing on replacing halon as the basic fire-fighting chemical in aviation.

The workshop establishes international work groups with two main objectives: 1) to develop a replacement agent design guide and certification criteria and 2) to establish a halon banking system. Participants in the halon replacement workshop include government regulators, standardization bodies, the chemical industry, research organizations, the commercial and military aviation industries, and other halon users. AIA formed a halon replacement task group composed of representatives from AIA's Environmental Affairs Committee and Transport Committee.

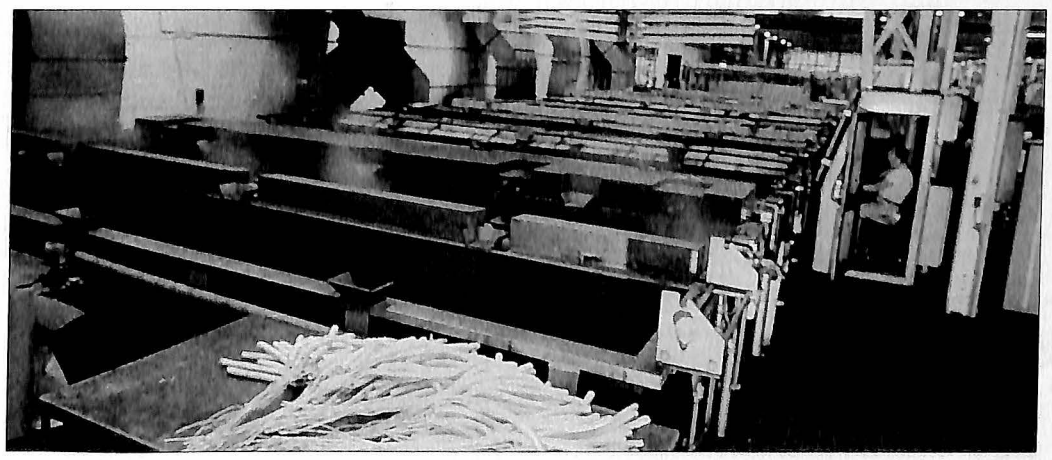
Monthly AIA Environmental Activity Review. The director of Environmental Affairs and Occupational Safety and Health has begun monthly one-hour meetings with AIA staff to review and coordinate efforts dealing with environmental or safety issues.

AIA Appointments to EPA Advisory Councils. The aerospace industry benefits from being represented on advisory councils that give advice to the EPA on issues associated with domestic and international environmental policies, programs, and technologies. Although competition for representation is great, AIA has placed a representative from the Northrop Corporation on EPA's National Air Pollution Control Techniques Advisory Committee. This complements our efforts in working with EPA on the Aerospace Control Techniques Guideline.

A representative from The Boeing Company is an AIA member of the American Institute for Pollution Prevention. In addition, AIA has a nominee from Aerojet for EPA's Science Advisory Board and one from McDonnell Douglas Corporation to the National Advisory Council for Environmental Policy and Technology.



The GE90 super-high-thrust turbofan engine *(pictured)*, being developed by General Electric Company, completed its first testing stage in late 1992 and is scheduled for delivery in 1995. GE's most powerful engine, the GE90 is specifically designed to operate well within current and anticipated emissions and noise regulations throughout the world. The newly developed dual-dome combustor will ensure that the engine will discharge fewer pollutants into the atmosphere than existing engines. Total emissions including oxides of nitrogen, the most prevalent pollutant in a jet engine's exhaust, will be reduced by 35% or more.



In the 1970s Grumman began installing counterflow rinse water tanks *(pictured)*. Today, the tanks are used in most manufacturing rinse processes and require far less water than conventional rinse tanks, saving approximately five million gallons of water each year. The savings permits a tenfold reduction in the amount of waste water that needs to be treated at Grumman's waste water treatment facilities.

International Council addresses international issues affecting the ability of U.S. firms to compete and cooperate in a global marketplace.

Joel L. Johnson
Vice President
International

John Hayden
The Boeing Company
Chairman,
International Council

INTERNATIONAL

In 1992 the trend continued for international sales to expand as a share of both commercial and military sales. Forty-one percent of civil aerospace products were exported in 1986. By 1991 the percentage had climbed to 56%, and the backlog for civil transport was nearly 70% for export by mid-year 1992. Similarly, exports of military aerospace products were less than 8% in 1986 and nearly 13% by the end of 1991. Reduced domestic military budgets and increased exports will augment that percentage in 1992 and in the future.

The greater importance of foreign sales to the health of the industry has increased the level of interest in issues related to maintaining the dominant position of U.S. aerospace in the global marketplace. To respond to industry and government, the International Council established five committees at the beginning of the year: Defense Trade, Regional Trade, International Exhibitions, Export Controls, and Legislative.

Defense Trade

The executive branch and Congress showed a new willingness to take steps to improve the competitiveness of U.S. defense products. For example, the administration agreed to eliminate all recoupment charges, except for government-to-government sales of major defense equipment that are required by law. Sixteen senators agreed to sponsor legislation, supported by AIA, to establish an export finance guarantee facility for defense products, an initiative that failed in the final days of the Congress, primarily for procedural reasons. The Department of State established a private sector Defense Trade Advisory Group, which includes participants from AIA staff and many AIA member companies.

At the same time, the U.S. government increased efforts to find multilateral ways to limit regional arms races and to increase the availability of information on arms transfers. The five permanent members of the United Nations (UN) Security Council discussed a plan to notify each other of possible sales of defense equipment to Middle East countries, and the UN General Assembly approved, in principle, an arms registry for which countries would volunteer data on exports and imports of defense equipment. AIA generally supported these initiatives, taking the view that any such multilateral actions would only mirror unilateral notification procedures already undertaken by the United States.

It is expected that a major focus of the new administration will be the formulation of its own policies on arms transfers and arms control. The International Council will attempt to play a role in that process.

International Trade Shows

In April AIA was granted an Export Trade Certificate of Review by the Department of Commerce. The certificate provides AIA members with antitrust protection for purposes of dealing collectively with overseas international trade shows. In turn, AIA reorganized its International Exhibitions Committee to an Export Trade Certificate Committee, which reports to the International Council and AIA president.

Under that umbrella, AIA members have been able to discuss their participation in specific overseas air shows. A survey of AIA members indicated that a majority of companies would like to limit their major participation to one international show a year. However, differing company priorities have made putting that goal into practice difficult.

Meetings have been held with the management of the Farnborough and Paris Air Shows to discuss specific ways to cut costs and increase the benefits of industry participation. The committee is also examining various options to reduce expenses associated with air shows, such as obtaining group rates on lodging and using common ground transportation between shows and hotels.

During the year, the Department of Defense (DoD) supplied aircraft and equipment to two major shows, Singapore and Farnborough, with support from AIA and its members. Congressional opponents of such participation offered amendments to the Defense Authorization bill to restrict DoD involvement. However, the final language in the bill provides for DoD to bring aircraft to shows at the request of industry, if industry picks up incremental costs as it did at recent air shows. DoD can also participate in shows at its own expense if it notifies armed services committees 45 days in advance of its intention to do so and supplies a rationale for such participation and an estimate of the cost of participation. AIA will work with the new administration as it writes the regulations to implement the new law.

Regional Trade and Cooperation

The Regional Trade Committee, in cooperation with the Civil Aviation Council, closely monitored negotiations in the General Agreement on Tariffs and Trade and with Mexico and Canada on the North American Free Trade Agreement to assure that resulting agreements were supportive of U.S. aerospace interests. The committee also arranged for briefings with the administration on aerospace issues related to the entrance of emerging market economies (the former Soviet bloc countries and China) into the international marketplace.

A working group of the committee coordinated AIA company responses to a petition from the U.S. gear manufacturing industry seeking protection on national security grounds. The Commerce Department concluded that protection was not warranted. Finally, the committee worked with AIA's Japanese counterpart association to write a paper on cooperation between Japanese and U.S. aerospace companies.

Export Controls

AIA continued to work with the administration and Congress to press for limited use of export controls, improve the administration of export controls, and apply necessary controls on a multilateral, rather than a unilateral, basis. AIA has continued to see a reduction in controls of aerospace products sold to the former Soviet bloc. This includes commercial satellites and the treatment of a variety of dual-use aerospace products as commercial goods instead of as munitions items. On the other hand, AIA is still troubled by U.S. controls on items related to missile technology, which are broader than those of our competitors, and the use of unilateral foreign policy controls.

The Department of State published a revised International Traffic in Arms Regulation (ITAR), on which an AIA-led association coalition had invested several years of effort. AIA also worked extensively with the Customs Service on the *Customs Handbook on Procedures for the ITAR*, which was published in 1992.

Legislative

The council's principal legislative interests in 1992 were to press for congressional approval of an export credit guarantee facility for defense products, the elimination of recoupment charges on defense exports, and the prevention of negative legislation with respect to individual arms sales and DoD participation in air shows. While the initiative on an export credit guarantee facility was unsuccessful, progress was made on the other issues: 1) AIA has been assured of congressional attention to the recoupment issue next year, 2) roughly $40 billion in arms transfers were notified to Congress without any major efforts at blocking a sale, and 3) language in the Defense Authorization Act on leasing DoD equipment and DoD participation in air shows will allow continued DoD-industry cooperation.

Edward Bursk, Jr.
Raytheon Company
Chairman, Defense Trade Committee

Raymond Garcia
Rockwell International Corporation
Chairman, Regional Trade and Industrial Cooperation Committee

Mark Kronenberg
McDonnell Douglas Corporation
Chairman, Legislative Committee

Richard Milburn
Grumman Corporation
Chairman, Export Trade Certificate Committee

Candace Miller
Lockheed Sanders, Inc.
Chairman, Export Controls Committee

LEGISLATIVE AFFAIRS

Legislative Affairs monitors policy matters affecting the industry and prepares testimony that communicates industry's viewpoint to Congress.

Thomas N. Tate
Vice President
Legislative Affairs

Recoupment of Nonrecurring Costs

AIA worked actively with Congress, the administration, and the Department of Defense (DoD) to eliminate recoupment of nonrecurring costs for research and development.

The president eliminated recoupment fees, except for sales of major defense equipment (MDE) for military purposes as required by the Arms Export Control Act (AECA). The president then called for legislation eliminating the statutory requirements to collect recoupment fees on government-to-government sales of MDE.

Although a consensus could not be reached in Congress to amend the AECA, AIA has been assured that recoupment will be the subject of hearings in 1993.

The Senate version of the FY 1993 Defense Appropriations bill mandated the collection of recoupment fees for military sales and expanded recoupment fees under the AECA to commercial sales of military articles. This would have reversed the president's policy on the elimination of recoupment fees announced earlier. AIA was successful in working with the Congress to have this provision deleted.

Defense Conversion

The FY 1993 Defense Authorization bill provided $1.5 billion for defense conversion to help the defense industry make a transition into commercial markets, retrain former defense workers and separated military personnel, and promote the development of dual-use technology. The FY 1993 Defense Appropriations bill provided $1.8 billion for defense conversion. Slightly less than half of the money will actually go toward defense conversion.

In addition, the House version of the FY 1993 DoD Authorization bill included a controversial measure mandating unreduced early retirement benefits for laid off defense workers. It provided for a $500 per month bridge for Social Security until age 62. All benefits were to be paid by the contractors without consideration of existing benefit plans. As a result of much hard work by AIA, this section was removed in the final version of the DoD conference report.

Minority Subcontracting

AIA's commitment to seek opportunities to increase contract awards to Small Disadvantaged Businesses (SDBs) continued in 1992. The association worked closely with the House and Senate Armed Services Committees to reauthorize the DoD 5% minority subcontracting goal. The 5% goal was extended until the year 2000. Congress also extended for an additional year the pilot program for negotiation of subcontracting plans on a company-wide or division-wide basis for the current participants.

AIA continued to support Senator Sam Nunn (D-GA) and his staff in their efforts to strengthen the authorized FY 1991 Mentor/Protege Program. Mentor/Protege provides incentives for industry to offer business, technical, financial, and contractual assistance to SDBs. Funding for the program for FY 1993 was approved at $45 million with $25 million fenced for specific programs. In October regulations were released allowing reimbursement of Mentor/Protege costs.

Space Policy

The NASA budget was signed by the president on October 6, 1992, after a second year of intense scrutiny by the House and Senate. Once again, the Space Station was the major issue of contention as members of Congress were faced with serious fiscal boundaries and policy decisions revolving around the focus of the civilian space agency.

In the end, the Station received the full funding requested by President Bush—$2.1 billion for FY 1993. The total budget figure for NASA held at $14.1 billion, compared to $15.2 billion for FY 1992.

Contractor Liability

AIA met with congressional staff to discuss language included in the House FY 1993 NASA Authorization bill regarding contractor liability on high-risk research and development contracts.

The language stated that NASA would conduct a study of the relationship between NASA and contractors, but recommended implementation of contracting regulations before the study was concluded. AIA successfully worked with congressional staff to reach an agreement to conduct the study, but not prejudge the results.

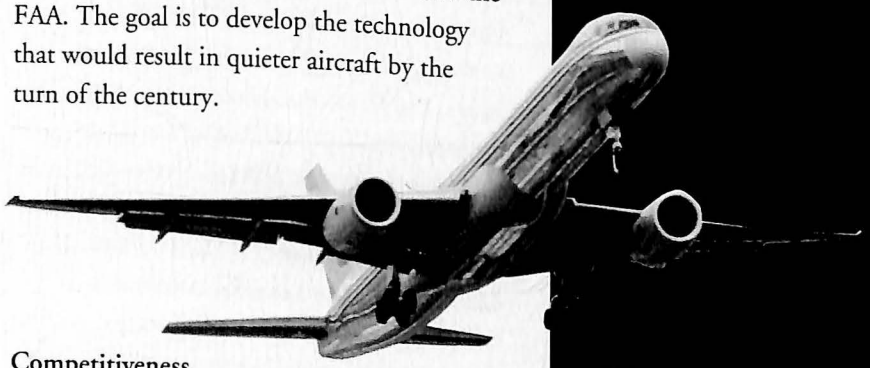
Defense Export Financing

AIA continued in 1992 to work with members of Congress and the administration on the need for an export financing program for defense products. A bipartisan amendment proposing such a program was offered for inclusion in the 1993 Defense Authorization bill. However, due to procedural objections, the amendment, which was cosponsored by sixteen senators, failed to be attached to the bill.

Civil Aviation

One of the final bills passed in the 102nd Congress was the reauthorization of the Federal Aviation Administration (FAA). Included in the bill that was signed by President Bush (P.L. 102-581) is the establishment of the Airline Consumer Protection and Competition Emergency Commission. The commission will focus on the manufacturing sector, which has been adversely affected by the downturn in the airline travel industry. AIA may have a representative appointed to the commission.

Also in the reauthorization measure is legislation introduced by Senator Frank Lautenberg (D-NJ) promoting the "development and use of a new generation of quieter airplanes." Lautenberg's proposal establishes a coordinated research and development program between NASA and the FAA. The goal is to develop the technology that would result in quieter aircraft by the turn of the century.



Modern aircraft like the Boeing 757 (pictured) use less fuel, make less noise, and produce significantly less atmospheric pollution than earlier models. In the Boeing 777, which will be assembled starting in 1993, the company has incorporated processes from factory to flight line to ensure that the new twin engine jet is environmentally friendly. The 777 is quiet, burns up to 25% less fuel per passenger than comparable three and four engine planes, and features reduced emissions of carbon monoxide, carbon dioxide, and nitrous oxide.

Competitiveness

This year AIA had several opportunities to testify before Congress on issues that enhance the aerospace industry's ability to remain competitive. In March AIA President Don Fuqua testified before the House Ways and Means Subcommittee on Trade on the U.S. international competitive position in the aerospace sector. He also testified at a similar hearing held in August by the House Foreign Affairs Subcommittee on International Economics and Trade Policy concerning jobs and the U.S. aerospace industry.

Fuqua used both occasions to outline AIA's position on a variety of competitiveness issues. He also encouraged a cooperative relationship between the industry and government to ensure that the U.S. aerospace industry remains a strong global leader.

Du Pont is the corporate sponsor for the Perseus high-altitude aircraft for stratospheric ozone research *(pictured)*. The unmanned aircraft will probe the stratosphere fifteen miles above the Antarctic and Arctic, measuring the ozone parts per trillion and gathering crucial air samples for the study of ozone depletion. Here, the prototype soars over the Mojave Desert on 30-foot wings made of Kevlar aramid and Nomex honeycomb composites supplied by Du Pont.

PROCUREMENT AND FINANCE

Procurement and Finance Council monitors and coordinates legislative and regulatory changes and initiates actions for improvement in procurement and procurement-related issues, including patents and data rights.

LeRoy J. Haugh
Vice President
Procurement and Finance

Fred Zimmer
Rockwell International
Chairman,
Procurement and Finance Council

The Procurement and Finance Council Executive Committee set the 1992 agenda for the council's eight committees and the Controllers' Forum. The Executive Committee emphasized four major areas: 1) the increasing number of multi-discipline issues and the need for intercommittee and intercouncil coordination, 2) simplified contract financing, 3) NASA procurement issues, and 4) environmental issues. Following are brief summaries of some of the significant committee efforts in 1992.

Environmental Issues

The Procurement Techniques Committee (PTC) took the lead in establishing an Environmental Intercouncil task group to respond to costly contract requirements proposed by the Air Force. The group proposed a military standard (MIL-STD) and Data Item Description for the management of hazardous materials in Department of Defense (DoD) contracts, noting that most environmental requirements should not need micromanagement by the buying activities.

DoD has indicated that rather than address hazardous materials management in a single MIL-STD, such considerations should be incorporated into all acquisition-related MIL-STDs. DoD has begun to implement that approach with the proposed revision to MIL-STD-499B, Systems Engineering. The task group is continuing its efforts to persuade DoD to adopt the single document approach, which would greatly facilitate industry's pricing, proposal preparation, and management of hazardous materials.

The allowability of costs incurred for environmental cleanup remains an unresolved issue. A proposed cost principle is being held up until the moratorium on regulations expires. The proposed cost principle would reportedly make most cleanup costs unallowable unless the contractor could prove that it was not at fault in creating the situation. Industry prefers no cost principle.

Recoupment of Nonrecurring Costs

The PTC, working with a multiassociation task group, urged both DoD and the president to support repeal of DoD's recoupment regulations. DoD required recoupment charges on products or technologies developed with appropriated funds when sold either commercially or through Foreign Military Sales (FMS). The task group successfully argued that the regulations adversely affect industry's competitive posture in world markets and would cause a further loss of jobs. On June 19, 1992, President Bush announced that DoD was rescinding recoupment charges on all future sales not covered by the Arms Export Control Act (AECA) and that the administration would work with Congress to repeal that portion of the AECA as well.

On October 7, 1992, the Deputy Secretary of Defense signed a P.L. 85-804 determination authorizing the elimination of the recoupment requirement from existing DoD contracts, except as expressly required by statute. On October 9, military services were directed to modify or amend such contracts by adding a clause that deletes the reporting and payment of recoupment charges for sales executed after October 7, 1992, except for sales covered by the AECA. Industry still seeks an amendment to the AECA that would eliminate the recoupment requirement in the case of government-to-government FMS of major defense equipment.

NASA Contracting Issues

Recent policy changes proposed by Congress and NASA have the potential to significantly increase contractor risk and reduce profits on NASA contracts.

The FY 1993 NASA Authorization Act includes an amendment that requires NASA to 1) assess the allocation of risk between the government and its contractors for future Research and Development (R&D) contracts and 2) identify options for allocating risk for correction of defects in materials and

workmanship or other failures to conform to contract requirements. The original amendment would have mandated the use of negative fees and retroactive fee adjustments. Partly as a result of industry's efforts, the final legislation requires NASA to consider such fee adjustments and also consider limiting or eliminating the use of clauses that obligate the government to pay for the correction of defects.

Notwithstanding the modified amendment, NASA proposed a new policy on award fees that includes fee take-back provisions, elimination of base fees, and negative fee provisions. AIA strongly opposed these and persuaded NASA to withhold publication of the proposed rule in order to resolve industry's concerns first.

A joint NASA/industry team is developing metrics for use in gauging contractor performance. NASA's plan is to provide a report card to the affected company CEOs every six months.

Potential termination liability on NASA contracts also remains an unresolved issue. In today's environment, with the increased prospect of program cancellations, the lack of funded termination liability or a special termination clause places AIA's affected members at greater risk than ever before.

Timeliness of Contract Payments

The Economic Advisory Committee (EAC) continued its efforts with the Defense Finance and Accounting Service (DFAS) to improve the timeliness of contract payments, including financing payments. While DFAS is still unable to meet DoD payment standards, AIA is pressing for system enhancements to track payment performance, spot trends, and make faster corrective actions. The committee successfully persuaded DFAS to reprogram its systems to accommodate electronic funds transfer for manually processed progress payments and cost vouchers, the area that covers most of the dollar volume that AIA members process.

Simplified Contract Financing

Throughout 1992 the EAC supported an ad hoc committee of CEOs to work with DoD towards simplifying contract financing procedures. The committee was established by the Executive Committee of AIA's Board of Governors and chaired by Dan Tellep, Chairman and Chief Executive Officer, Lockheed Corporation.

The committee helped to convince DoD not to automatically reduce the current 85% progress payment rate for large businesses on April 1, 1992. DoD is developing changes to the current policy. Indications are that DoD will change the inventory investment factor in progress payment rate calculations from 2.5% to 2%, which will result in retention of the current 85% progress payment rate. Any changes to progress payment rates and policies, including the flexible progress payment method, will be implemented through the normal regulatory process, including publication in the *Federal Register*.

AIA will continue to work with DoD in 1993 to explore the feasibility of time-based progress payments and to eliminate the complexities in the current system. The estimate at completion computation is particularly onerous.

Drug-Free Work Force

At the urging of AIA and the National Security Industrial Association, DoD announced on July 23, 1992, the suspension of the final drug-free work force rule and the reinstatement of the interim rule. The final rule, to which industry had strong objections, significantly departed from the interim rule by requiring random drug testing of employees in sensitive positions despite conflicting collective bargaining agreements or state and local laws. DoD suspended the controversial 1991 rule in response to AIA's concern that the public had not been given adequate opportunity to express its views and have them considered in the development of the

Jerry Batschi
The Boeing Company
Chairman, Cost Principles Committee

David Buchanan
Martin Marietta Corporation
Chairman, Controllers' Forum

Ronald Finkbiner
Lockheed Corporation
Chairman, Economic Advisory Committee

M. Walker Grubb
United Technologies Corporation
Chairman, Procurement Techniques Committee

Daryl J. Lee
Thiokol Corporation
Chairman, Legal Committee

J. Peter Mohn
The Boeing Company
Chairman, Intellectual Property Committee

Gordon Thomas
Textron Inc.
Chairman, Washington Procurement Committee

Frederick Wallach
Raytheon Company
Chairman,
Tax Matters
Committee

final rule. The reinstated interim rule imposes less stringent requirements on contractors.

AIA's Legal Committee took the lead to prepare a response to DoD stressing that contractors must be allowed the flexibility to craft their own drug abatement programs and be permitted to design programs tailored to their particular situation. The interim rule was endorsed as adhering most closely to these conditions. DoD is still evaluating comments on the rule.

Record Keeping for Government Property

In response to the president's request for ways to reduce the burden of government regulations, AIA recommended that DoD regulations be revised to require a summary record for government property valued at less than $1,500. In addition, physical inventory, detailed record keeping, and other non value-added administrative requirements on these classes of property could be eliminated. AIA's Facilities and Property Committee estimates that savings would exceed $49 million annually.

AIA requested an exception to the president's moratorium on regulations, and a proposed rule was subsequently published in the *Federal Register.* Unfortunately, the government proposes to adopt only a portion of AIA's recommendation, and the potential savings to industry and government will not be achieved. The proposed rule does not include special tooling and special test equipment and fails to address the physical inventory requirements. Although the proposed rule adopts a threshold of $5,000 and endorses the use of summary records, it retains restrictive requirements regarding periodic physical inventories, thus negating the potential savings. AIA has submitted a response to the proposed rule and will continue to press for full acceptance of its recommendations.

Commercially Available Material

DoD frequently provides Government Furnished Material (GFM) to its contractors. Often this takes the form of sophisticated components, but at other times it may be in the form of low-value, common products such as paints, lubricants, nuts, bolts, or other commercially available items. Once these common items enter the contractor's government property system, they are subject to the same detailed level of record keeping, inventory, and disposal as other more exotic GFM, without regard to their low value.

The Facilities and Property Committee recommended that DoD discontinue the practice of providing low-value, commercially available GFM in order to save the added administrative costs and to provide contractors more flexibility in managing these common items.

DoD was receptive to this initiative and proposed a revision to the Federal Acquisition Regulation (FAR) that would require the contracting officer to justify in writing any decision to provide commercially available material as GFM. However, the civilian agencies are not in favor of this change because they see it as a burden on the contracting process. Discussions with representatives of the General Services Administration (GSA) and the Department of Energy indicate that, while not opposed to the concept, they do not want any additional requirements imposed on the contracting officer. Discussions among AIA, GSA, and DoD are continuing.

Contract Disputes Act Certification

Contractors must certify claims before submitting them to the government for payment. In the past two years, the issue of who can sign a certification has resulted in more than 100 claims being dismissed by the courts. The Legal Committee actively participated in a broad industry effort to seek a legislative change to resolve the dilemma resulting from interpretation of the Contract Disputes Act (CDA).

The Federal Courts Administration Act of 1992 (S. 1569), supported by AIA and signed

by the president on October 30, 1992, includes a provision that broadens the definition in the CDA of who can sign the claim. It specifies that the certification "may be executed by any person duly authorized to bind the contractor with respect to the claim." It also solves a technicality in the act pertaining to the jurisdiction of the courts to adjudicate contract claims "concerning termination of a contract, rights in tangible or intangible property, compliance with cost accounting standards, and other nonmonetary disputes." The signing of this bill is a major victory for industry in its fight to resolve a long-standing legal problem and should lead to more expeditious recovery of millions of dollars of contractor claims.

Penalties for Unallowable Costs

Section 911 of the 1986 DoD Authorization Act (P.L. 99-145), codified at 10 U.S.C. 2324, included a provision to penalize contractors if they include any unallowable costs, even inadvertently, in a proposal for the settlement of indirect costs.

Both the Defense Contract Audit Agency and the Defense Contract Management Command (DCMC) issued guidance that interpreted the statute as imposing absolute liability on contractors for errors, even if inadvertent or identified by a contractor prior to negotiation. Because of the government's rigidity, several AIA companies indicated that they would refuse to submit final overhead proposals until the issue was resolved.

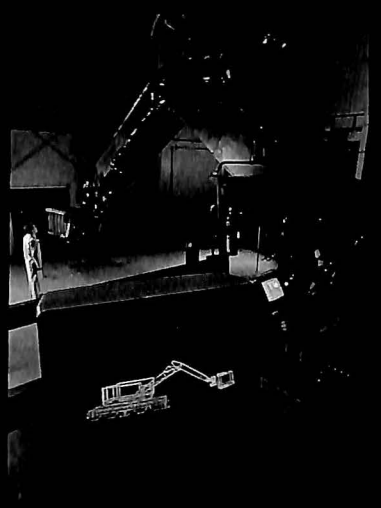
AIA sought change through a provision in the FY 1993 DoD Authorization Act. Cost Principles Committee (CPC) representatives met with DoD in June to work out acceptable statutory language. The proposed amendment, which would prescribe penalties only on expressly unallowable costs included in final indirect cost proposals, was forwarded to the Senate and, with two exceptions, was included in the FY 1993 DoD Authorization Act. AIA subsequently worked with the House Armed Services Committee to ensure that House conferees were aware of the problem.

The final language amending 10 U.S.C. 2324 was published as Section 818 in the FY 1993 DoD Authorization Act. Besides prescribing penalties only on expressly unallowable costs included in final indirect cost proposals, Section 818 authorizes the Secretary of Defense to waive a penalty in certain circumstances, such as when the amounts involved are insignificant or were inadvertently included.

Superfund Tax

Another significant CPC issue in 1992 was allowability of the Superfund tax. This tax arose out of the Superfund Amendments and Reauthorization Act of 1986 (P.L. 99-499), which designated funding sources for the Hazardous Substance Response Trust Fund (Superfund). Among these sources was a tax enacted by Section 516 of the Act and codified in Internal Revenue Code (IRC) Section 59A. The amount of the tax is equal to 0.12% of that portion of the corporation's modified alternative minimum taxable income that exceeds $2,000,000. Although Section 59A does not use the term income tax to characterize the Superfund tax, the section itself is codified in subtitle A (income tax provisions) of the IRC. DoD maintained that, due to the positioning of the statute and the direct relationship of the tax rate to income, the Superfund tax is an income tax and, therefore, an unallowable cost under government contracts.

Since 1988 AIA has had many discussions with DoD on this issue. In December 1990, DoD issued a rule that revised the FAR to recognize that the costs of the Superfund tax were allowable as a matter of public policy. It was thought that the allowability would be retroactive to the inception of the tax in 1986. However, further discussions with DoD officials indicated that they were only willing to allow the costs on a prospective basis. AIA is exploring the possibility of a court challenge to DoD's decision, if member companies agree that the amounts potentially recoverable warrant such action.



Robotics technology originally developed by Martin Marietta for the military is now being applied to environmental restoration and handling of hazardous waste. The Teleoperated Robotic Excavator *(pictured)* can be manipulated remotely from a control center at extended distances, eliminating human handling of hazardous materials.

Technical Data Rights

The Defense Procurement Improvement Act of 1984 directed DoD to promulgate regulations on rights in technical data. These regulations were to balance the interests of DoD and the private sector, depending on the funds used to develop the data. However, balanced regulations continue to be elusive.

In 1989 AIA's Board of Governors established a CEO-level ad hoc committee on rights in technical data. By early 1990 this executive effort had expanded to a multiassociation effort. While dialogue with DoD was enhanced, the government continued to develop proposed regulatory coverage behind closed doors. Industry contended that this should be a joint effort and prevailed on Congress to establish a joint government/industry committee on rights in technical data (Section 807 in the FY 1992 DoD Authorization Act). The committee is compiling a report to the Secretary of Defense scheduled for release in February 1993, with a DoD report to Congress expected shortly thereafter.

Concurrently, the advisory panel established by the FY 1991 DoD Authorization Act (Section 800) to make recommendations to Congress on streamlining and codifying acquisition laws is considering a proposal that, rather than establish rights in technical data, would require the developing contractor to screen all components and parts for competitive opportunity. The nonoriginal equipment manufacturers and aftermarket suppliers view both efforts with suspicion.

Taxing Long-Term Contracts

The Tax Matters Committee (TMC) continued its efforts to achieve a more equitable method of taxing long-term contracts. The aerospace industry is required to report income from long-term contracts under the percentage of completion method (PCM), which imposes tax as costs are incurred. Long-term contracts are defined as those involving unique items or items with a production period of more than 12 months. Other manufacturers report income from sales as products are delivered. PCM results in a higher tax cost on our industry than that imposed on other industries. To reduce this inequity, legislation has been proposed to limit the application of PCM to contracts involving items with production periods of 24 months or longer. This proposal was presented to the House Ways and Means Committee and the president.

On the regulatory side, TMC representatives met with the Internal Revenue Service (IRS) on regulations governing the definition of a long-term contract. AIA wants to narrow the definition of such contracts to substantially reduce the number of contracts subject to long-term contract accounting. The IRS agreed to consider excluding preproduction R&D and material procurement in determining whether an item requires more than 12 months to produce. They also seemed amenable to limiting the application of "unique" to contracts that are predominantly R&D. TMC will continue to pursue these initiatives.

Looking Ahead to 1993

The challenges of maintaining a viable industrial base while coping with defense conversion and economic readjustment, the transition to a new administration, and the increased emphasis on global competitiveness, environmental cleanup, and nondefense acquisition (particularly NASA) suggest an increased workload for 1993.

The recommendations of the Section 800 Panel for streamlining DoD Acquisition Laws should be the centerpiece for a congressional overhaul of the statutory underpinnings of the entire DoD acquisition process. The panel report is scheduled to be presented to Congress on January 15, 1993, and it is hoped that Congress can accept the challenge to streamline and avoid micromanaging... provide policies, but allow the executive branch flexibility to implement them.

Key Technologies Committee

The Key Technologies Committee completed work on technology plans in 1992 and began supporting the National Center for Advanced Technologies (NCAT) on their Demonstrations of Engineering and Manufacturing Operations (DEMOs) *(see pg. 22)*. The committee supported NCAT's demonstration workshop in February and narrowed the list of DEMOs to 10 and then to four. The committee charter is being changed to reflect the support for NCAT contract activity. Henceforth, the committee will be called the Competitive Technologies Committee.

Small Disadvantaged Business (SDB) Update

In October 1992, the SDB Development Panel met with the Department of Defense (DoD) to discuss the final policy and regulations for the Mentor/Protege Program. The program now allows the mentor to charge personnel assistance efforts to indirect cost and still apply this assistance toward their SDB subcontracting goal.

At fiscal year-end there were 17 mentors and 20 proteges with approved mentor/protege agreements, 14 mentors and 22 proteges with approved letters of intent toward final agreements, and eight mentors and nine proteges with submitted letters of intent being processed for approval. For FY 1992 and 1993, $75 million has been appropriated for DoD's Mentor/Protege Program.

In a policy letter, NASA further clarified the term mandatory goal as used in a recent Procurement Information Circular on Achieving NASA's 8% SDB Goal. The clarification is onerous to industry because NASA's request for proposals will establish a mandatory goal of a certain percentage of contract value for subcontracting with small businesses and SDBs. The SDB Development Panel, in conjunction with the Procurement Techniques Committee, will develop a position on the effect of this policy on make-buy decisions, award fees, data gathering, and other management issues, which can be used in discussions with Congress and NASA to seek a change in this policy.

Educating Suppliers on Electronic Data Interchange (EDI)

An EDI project was initiated by the Information Technology Committee (ITC) and the Materiel Management Committee (MMC) to sponsor EDI education conferences for subcontractors and suppliers. The MMC is responsible for inviting attendees and conference program approval, while the ITC is responsible for the program administration. These AIA conferences cost at least 50% less than individual company conferences on EDI. Three conferences, held in Dallas, Texas, and Long Beach and San Jose, California, were successful. The next conference is planned for March 1993 in Boston, Massachusetts.

Air Force Ban on Ozone Layer Depleting Substances (OLDS)

Representatives from member companies became aware of a draft Air Force policy concerning the early institution of an Air Force-wide ban on the purchase of OLDS and equipment that uses these substances. In letters to the Air Force, AIA expressed its concern that implementation of the policy by October 1, 1993, would seriously impair the defense industrial base in the production of weapon systems programs supporting the Air Force.

The Air Force appointed a staff officer to work with industry associations to meet defense needs in an environmentally acceptable manner. During the first meeting, a consensus was reached on how to handle substitutions for OLDS in existing contracts.

Manufacturing Committee (MC) Status

The MC is making a concerted effort to educate both the government and industry manufacturing communities on the necessary funding profile, integration, and principles needed to implement Concurrent Engineering. Through surveys, the MC is determining the

Technical and Operations Council focuses on all aspects of technological, operations, and engineering efforts to advance all aspects of program management, industrial base, engineering, development, test, manufacturing, quality, materiel management, product support, and information to better address issues stemming from the production of aircraft, missiles, and space vehicles.

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status, requirements, and needed solutions to properly train and educate manufacturing workers. Members of the MC have participated in the development of plans and roadmaps for AIA's Key Technologies and reviewed the manufacturing aspects of DoD's Critical Technologies. The MC will continue to play a major role in these areas, particularly as Key Technologies move in the direction of demonstrations.

Interfacing with National Laboratories

Members of the MC toured the Los Alamos and Sandia National Laboratories in October. These laboratories continue to develop technologies and manufacturing processes for the Department of Energy (DoE). Although industry has had little access to this knowledge in the past, DoE and its national laboratories are now looking to transition their technologies and manufacturing developments to the industrial sector through Cooperative Research and Development Agreements (CRADAs) and partnerships or consortia. Through conferences and laboratory tours, a dialogue on the applicability of the national laboratory work to individual companies has begun. AIA is developing a model CRADA for use by member companies to reduce CRADA administration and implementation time and increase priority and funding availability in DoE.

Manufacturing Technology (ManTech) Rescission

DoD funding for ManTech in 1992 was on the rescission list sent to Congress by the administration. Even though Congress supports the ManTech Program, congressional conferees agreed to reduce ManTech from $100 million to $31 million. In a letter to DoD, AIA explained that the development of the industry-supported DoD National ManTech Development Plan is in jeopardy without funding.

AIA met with the Under Secretary of Defense and successfully demonstrated how ManTech and the Industrial Modernization Incentives Program (IMIP) are complementary and important to the new DoD thrust to develop affordable technology. The Under Secretary committed to review the decision cancelling IMIP.

Agile Manufacturing Evaluated

In developing the National Defense Manufacturing Technology Plan, DoD contracted with the Iacocca Institute of Lehigh University to establish a vision of the twenty-first century manufacturing enterprise: agile manufacturing. The MC has determined that agile manufacturing is an excellent compilation of existing best practices for U.S. companies to adopt to compete in the global marketplace. However, the best practices identified were mainly developed from high-volume, commercial scenarios. Many of these best practices are not adaptable to the defense industry because of 1) acquisition approaches that limit product type and quantity, 2) required government oversight and regulations, 3) uncertain funding and production quantities, and 4) cost-based, rather than price-based, buying. In 1993 the MC will sponsor an industry group to interact with the Iacocca Institute to sort out the agile manufacturing best practices that could be applied to the defense industry and to evaluate the effects of this application.

National Aerospace Standards (NAS) on Work Measurement

AIA and Air Force Systems Command participated in a work measurement process review using the Total Quality Management philosophy. Principal among the proposed changes from the industry was the replacement of military standard (MIL-STD) 1567A on work measurement with a set of broadly structured criteria embodied in a draft revision of the MIL-STD. Although the Air Force appears to have dropped further consideration of revisions to the MIL-STD or other contract regulations, AIA has agreed to publish the proposed revision to the MIL-STD as a National Aerospace Standard (NAS 825). The standard can be used as an alternative

to MIL-STD-1567A in negotiating the application of work measurement on specific contracts. NAS 825 is in the final stages of review and should be published in early 1993.

Quality Assurance
AIA's Quality Assurance Committee (QAC) continues to work with DoD. In addition to the major activities described below, ongoing projects include upgrading military standards in the areas of metrology and nondestructable testing and software quality program requirements.

Process-Oriented Contract Administration (PRO-CAS). The Defense Logistics Agency instituted a new program, PRO-CAS, to establish guidelines for the measurement of contractor performance. The Defense Contract Management Command (DCMC) will utilize performance-based management criteria to focus resources and management attention on contractor performance and to promote consistent treatment of contractors under the new program. The QAC worked with DCMC to develop the best formats for achieving these goals. While industry views the program as a positive approach to process-oriented contract administration, the umbrella approach used by DCMC to develop best industry practices raised some concern due to the divergent processes used in industry and the stated goal of DCMC to promote consistency of applications.

International Quality Standards. The QAC continued working with DoD to reconcile international quality standards with applicable military standards. Related to the adoption and integration of international standards (ISO 9000 series) is the issue of U.S. certification and registration of quality systems. Certification can be a requirement under the ISO program, and, because there is no internationally recognized U.S. certifying organization, this poses a potential barrier to trade. While DoD has been reluctant to adopt these international standards, they have established a joint government/industry task group to work toward the integration of the divergent standards. The QAC is represented on this task group whose work will continue through 1993.

Department of Commerce (DoC) Conformity Assessment Program. Acting through the National Institute of Standards and Technology (NIST), DoC has proposed a Conformity Assessment Systems Evaluation program to ensure the competence of individual assessment organizations and follow-on certification covering laboratory testing, product certification, and quality systems. In view of ongoing private initiatives to establish a similar system, the QAC urged NIST to create one government-recognized evaluation program and suggested a study be performed to determine the relative viability of the public and private approaches to conformity assessment and certification. The rulemaking was still under review at year-end.

Contractor Integrated Technical Information Services (CITIS)
The ITC and Technical Management Committee (TMC) submitted joint comments to the DoD/Computer-Aided Acquisition and Logistics Support Program and Evaluation Office on the proposed CITIS specification. CITIS objectives include automating government repositories for technical data, access to contractors' data bases, both technical and business, and the use of digital formats throughout the acquisition process. Industry is concerned about the extent to which government could access proprietary data under the specification. In the revised specification, data access is limited to the contract deliverable requirements list. A final draft of the specification is to be submitted for further industry review and comment.

Network Interconnections
At the conclusion of a project to test the operational capability of the Government Open Systems Interconnection Protocol and based on findings that indicated a lack of network interconnections, the ITC initiated a

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project to encourage the development of a U.S. data infrastructure for the transmission of high-volume, technical information. AIA has assessed alternatives to a data structure, including creating an interconnection service or integrating private AIA member networks. The committee will continue this initiative as well as evaluating the expansion and integration of member private networks with other existing special interest networks.

Provisioning Process Action Team

Industry and DoD have been involved in a very successful two-year effort to improve the provisioning process. The team has developed generic functional requirements and eleven new products and procedures that are refining and improving the provisioning process. The recommendations in the team's September 1992 final report have been included in DoD's new logistics policy regulations. AIA will continue to monitor DoD implementation through a joint DoD/industry ad hoc group.

Contractors in a Contingency

Drawing on Desert Shield/Storm experience, AIA provided recommendations on how contractors could best support the military services in a contingency. AIA called for integration of contractor requirements into the military logistics system and increased joint contingency, requirements, and procurement planning. A version of AIA's recommended in-theater special repair activity is being incorporated into Army doctrine under a forward repair activity concept.

Depot Maintenance

A key issue arising from the defense drawdown is that of industry's participation in the $20 billion depot maintenance activity. Increased public/private competition, reduced workloads, excess capacities, underutilization of facilities, and other factors dictate the need for a strong industry role to maintain a viable U.S. industrial base. AIA is seeking a fair and equitable industry/DoD workload allocation and effective legislation and DoD policy to implement these changes.

MIL-STD-499, System Engineering

The TMC is working closely with government to revise MIL-STD-499, a standard that defines the scope and requirements of the system engineering efforts required to transform identified needs into an effective, affordable weapon system. Industry has agreed to use the standard if a statement is incorporated requiring development of a System Engineering Management Plan (SEMP). The SEMP would be tailored to the contractor's view of the program and upon contract award would become the controlling contract document with respect to system engineering. Industry also suggested that all environmental statements in the standard be removed to a central specification addressing environmental issues.

Benchmarking in Design

The TMC surveyed industry representatives on benchmarking the process of designing aerospace products. The key survey findings indicated that most companies 1) benchmark their design and development function, 2) use informal benchmarking techniques, 3) will continue to benchmark, 4) have similar goals in benchmarking, 5) believe benchmarking is beneficial, and 6) are willing to benchmark their processes with others. The TMC plans to act as a facilitator to begin matching partners who indicated an interest in joint benchmarking early in 1993.

Subsidiary Specifications

Strict interpretation of a contract could mean that if the latest issue of a specification were used when procuring a part or using a specific process, the contractor could be declared in nonconformance with the contract. TMC, in cooperation with the QAC and the Procurement and Finance Council, developed a proposal to seek authorization for automatic advancement to the latest issue of a specification or standard at the contractor's discretion as long as form, fit, or function are not altered. The government recognizes the problem and has met with industry to begin resolving it.

Testing of Threaded Fasteners

The Air Force revised two specifications dealing with measurement of threaded fasteners. These revisions require that the threads of all Class 3 threaded fasteners be tested with indicator gauges to assure proper measurement of the attributes of the screw thread. Industry has objected to the revisions because there was no rationale for the change based on aircraft incidents or accidents. Furthermore, the proposed change would add cost without increasing quality or reliability.

The Federal Aviation Administration (FAA) and DoD have received congressional inquiries asking why the new specifications are not used for commercial aircraft or have not been placed on new military aircraft contracts and alleging that their non-use may be a safety hazard. NIST stated that using the old standards as a model for a proposed new NAS would be technically incorrect and create a safety hazard in that nonconforming threaded products could be accepted on commercial aircraft.

In every instance, AIA has met with the interested parties to assure them that the need for such expensive testing is only necessary on those parts that are determined to be safety critical by the design engineer. For the thousands of other run-of-the-mill uses for Class 3 fasteners, attribute testing is not needed. AIA is continuing to work with Congress, FAA, NIST, and DoD to advocate appropriate testing of screw threads.

Space Policy Advisory Board

AIA's Space Committee (SC) submitted a report on the general health and needs of the U.S. space-related industrial base to the Industrial Base Panel of the Space Policy Advisory Board. The mission of the panel was to rate the current strength of the industrial base and identify prospects for its health and vitality over the next decade. In its report, the SC considered the implications of the declining defense budget, the nature and scope of international competition, and projected security needs. The report provides a rough estimate of future job losses, discusses the potential for loss of industrial capacity, identifies industry sectors at risk, and highlights impediments to economic growth in the United States.

International Standardization

ISO/TC 20, the international standardization committee for aerospace, completed its 32nd plenary meeting in Paris, France, in October. AIA holds the chairmanship and secretariat of the committee. Actions taken by the 13 member nations included 1) establishing a major new subcommittee on space systems and operations, 2) forming a working group to investigate environmentally sound alternative methods of paint stripping, 3) developing a new procedure to facilitate international adoption of existing, widely utilized aerospace standards, such as U.S. standards, and 4) initiating a study of the relationship of international aerospace standardization to environmental issues.

In April AIA published a study titled, "Impact of International Standardization and Certification on the U.S. Aerospace Industry." The study identified harmonization of airworthiness standards and certification of quality systems to international standards (i.e., the ISO 9000 series) as the immediate priority concerns for industry. Additional concerns included international design and product standards, European regional standardization, certification of suppliers, and metrication.

The study concluded that, in the future, the U.S. aerospace industry increasingly will be subject to technical requirements that are determined internationally. Lack of awareness or responsiveness could put U.S. products at a competitive disadvantage. The study recommended an increase in industry participation to assure that standards, testing, and certification do not escalate into barriers to trade. In May AIA's Board of Governors approved the study and passed

The visible and infrared Operational Line Scan imaging system *(pictured)*, built by Westinghouse Electronic Systems Group, is used aboard U.S. Air Force Defense Meteorological Satellites to help with such operations as photo mapping, aerial refueling, and identification of severe weather conditions. The imaging system is also used in non-military applications by the National Oceanic and Atmospheric Administration.

a resolution calling for increased industry support for participation in international standards activities.

Software Issues

AIA's Embedded Computer Software Committee noted that DoD-STD-2167, Defense System Software Development, is being combined with DoD-STD-7935A, Automated Information Systems Software, and is now designated DoD-STD-SDD, Software Development and Documentation. In a letter to DoD, AIA expressed its concern that the software development standard and the systems engineering standard (MIL-STD-499A) should be compatible.

AIA maintains that a revision of the MIL-STD 2168A, Software Quality Program, is premature in view of limited company experience and minimal problems with the standard. AIA also supports close coordination with the revision of DoD-STD-2167A.

AIA is concerned with 1) the misuse of the Software Engineering Institute's (SEI's) software capability evaluation method in source selection and 2) that two different evaluation methods are currently in use. Meetings with SEI and DoD have increased awareness of the problem, and solutions are being developed.

Maintenance of NAS

The National Aerospace Standards Committee (NASC) continually maintains the current body of more than 3,000 NAS standards and develops new standards as they are needed by the aerospace industry. During 1992 the NASC developed three new standards, revised 128 standards, and inactivated 15 standards. The need to revise and update NAS to accurately reflect the products required by aerospace systems has become even more critical with the increased emphasis on quality, in general, and implementation of the Fastener Quality Act, in particular. The NASC has doubled their production of new and revised standards in the last three years.

Cancelling Military Documents

As part of the Defense Management Review, DoD is continuing to review all of its specifications and standards. AIA believes that DoD should not cancel a technically correct military specification if it is still being used by industry, nor should a nongovernment standards body publish a copy of military specifications just to support the cancellation of a military document. The NASC and Materials and Structures Committee are reviewing DoD's cancellation actions and are requesting that any document still needed by the aerospace industry be reinstated. In those cases where DoD has cancelled a specification without a replacement or has called out as replacement a commercial grade document, NASC will consider developing an aerospace standard as a replacement for the cancelled military specification.

Advanced Composite Materials

The chief problem in using advanced composites in products is the lack of standardization of properties and processes between the composite manufacturers and the aerospace users. For the last two years, AIA and the Society of Advanced Composite Materials Association (SACMA) have been actively involved in developing plans and initiatives to promote industry-wide standardization of test methods, material and process specifications, quality systems, design criteria, and a design-allowable data base.

AIA's Materials and Structures Committee, in conjunction with SACMA and Composite Materials Characterization, Inc., has recommended establishing a nonpermanent, umbrella organization that would promote, develop, and implement standardization. Membership in this organization would consist of aerospace manufacturers, aerospace material suppliers, government agencies, and standards writing bodies. Currently, the interested parties are identifying sources to fund this effort.

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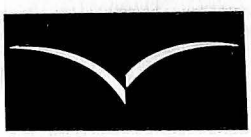

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