

HOW GREAT IT IS TO HAVE THE DREAM,
AS WE STAND AS YOUTH BY THE STARRY STREAM.
BUT GREATER STILL IS TO LIVE LIFE THROUGH
AND BE ABLE TO SAY, "THE DREAM CAME TRUE."



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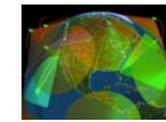
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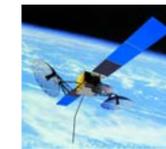
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Welcome to Boeing Space and Communications Group

Jim Albaugh, President

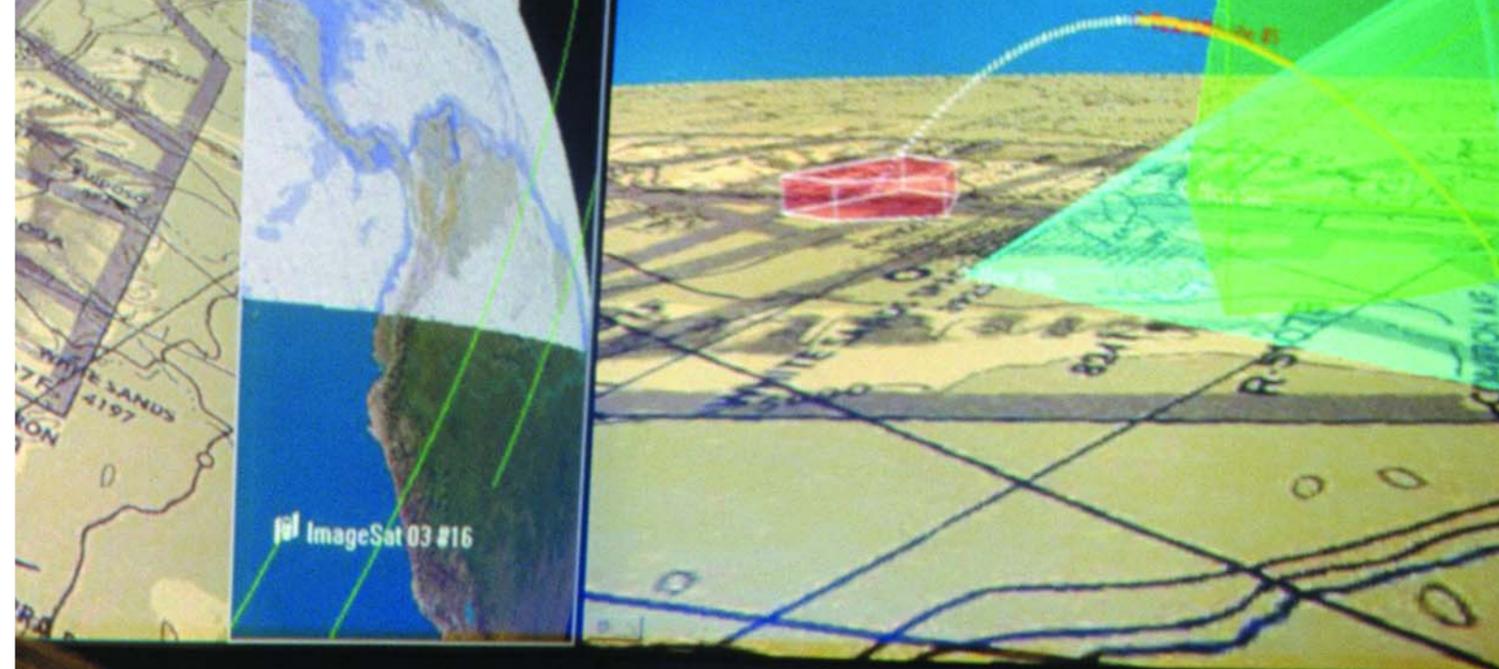


When many people think of The Boeing Company, they tend to think of airplanes and, clearly, that's an important part of the business, in which we all take great pride.

But with space-related revenues approaching \$10 billion a year, Boeing today is also the world's largest space and communications company. Nearly a quarter of the company's global workforce is involved in space-related activities – such as operating the Space Shuttle, building the International Space Station, overseeing our nation's missile defense and reconnaissance systems, or creating new satellite-based information and communications tools.

Boeing's space and communications legacy is truly remarkable. We've been responsible for the first satellite in space; the first man on the moon; the first commercial space launch at sea; a manned laboratory in low-Earth orbit; and the global communications at the speed of light.

Every American who has gone to space from the United States has gone there on a Boeing-built vehicle. More than half of all satellites ever launched were built by our engineers and every U.S. attack

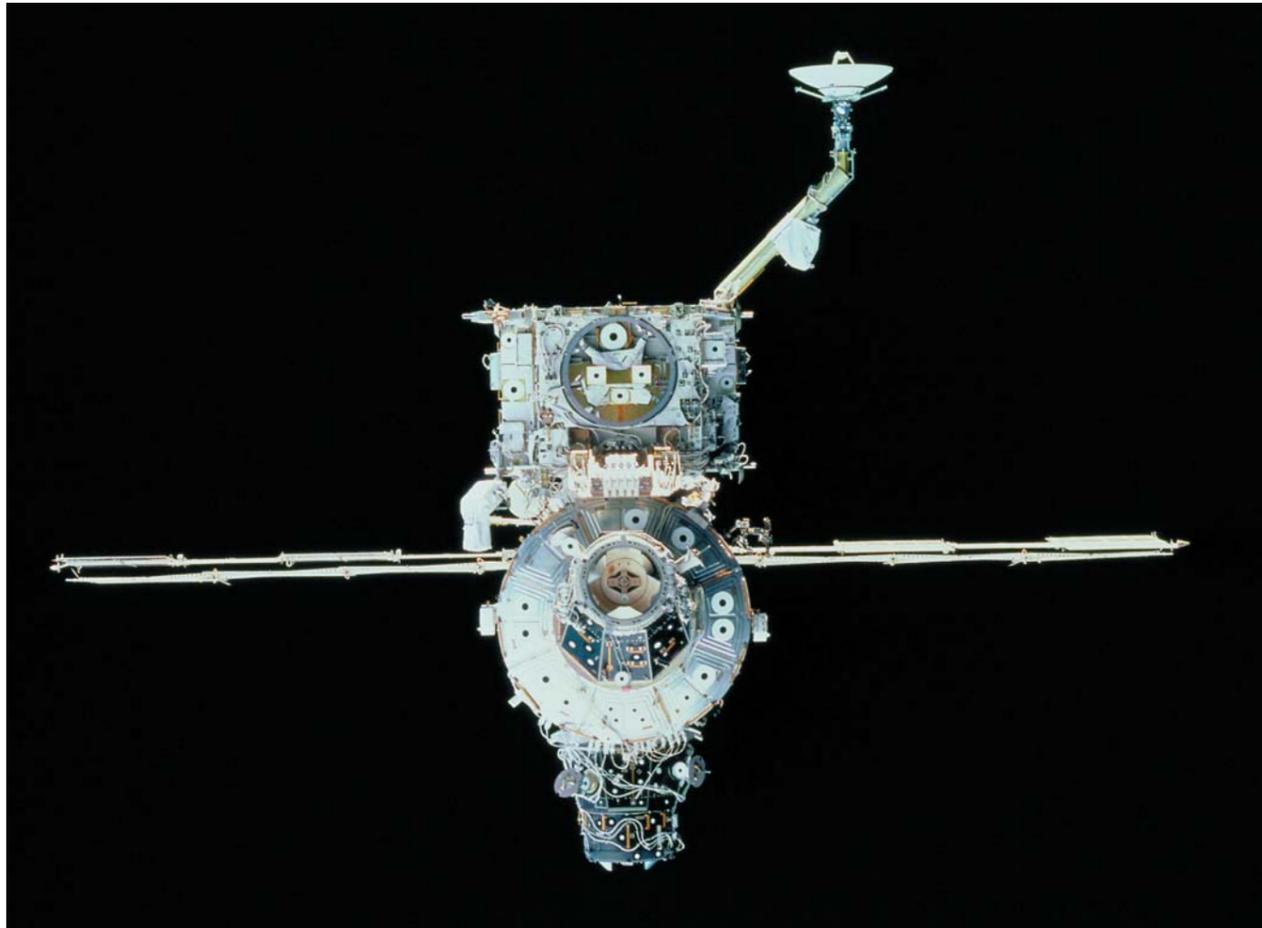




and ballistic missile submarine now afloat uses navigation systems provided by our company. Some of the most innovative, industry-shaping products in aerospace history have been built and designed by Boeing employees.

In fact, if it goes to space, operates in space, sends data via space, or protects the peace from space – chances are, it came from Boeing.

During any 24-hour period, more than 335 satellites launched by Boeing pass overhead. Ten million people in North and South America will enjoy direct-to-home television broadcasting, compliments of Boeing; and countless travelers, sportsmen, hikers and boaters will find their way home using the Global Positioning Satellite system designed and built by Boeing.

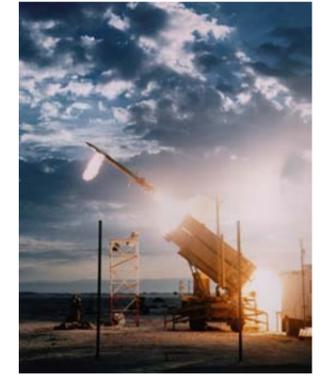




The same kind of complex program-management skill that today enables the Company to launch Delta rockets, orchestrate a missile intercept or operate a satellite constellation, tomorrow will enable us to create a space-based air traffic management system, beam the Internet to airline passengers, or make disparate military communications systems speak in a single voice.

As the above suggests – and as the following pages more fully explain – Boeing Space and Communications Group is a diverse enterprise boasting unparalleled intellectual capital and 45,000 of the brightest minds in the industry. Our portfolio includes products and services in four broad market areas: launch services, human space flight and exploration, missile defense and space control, and space-based information and communications.





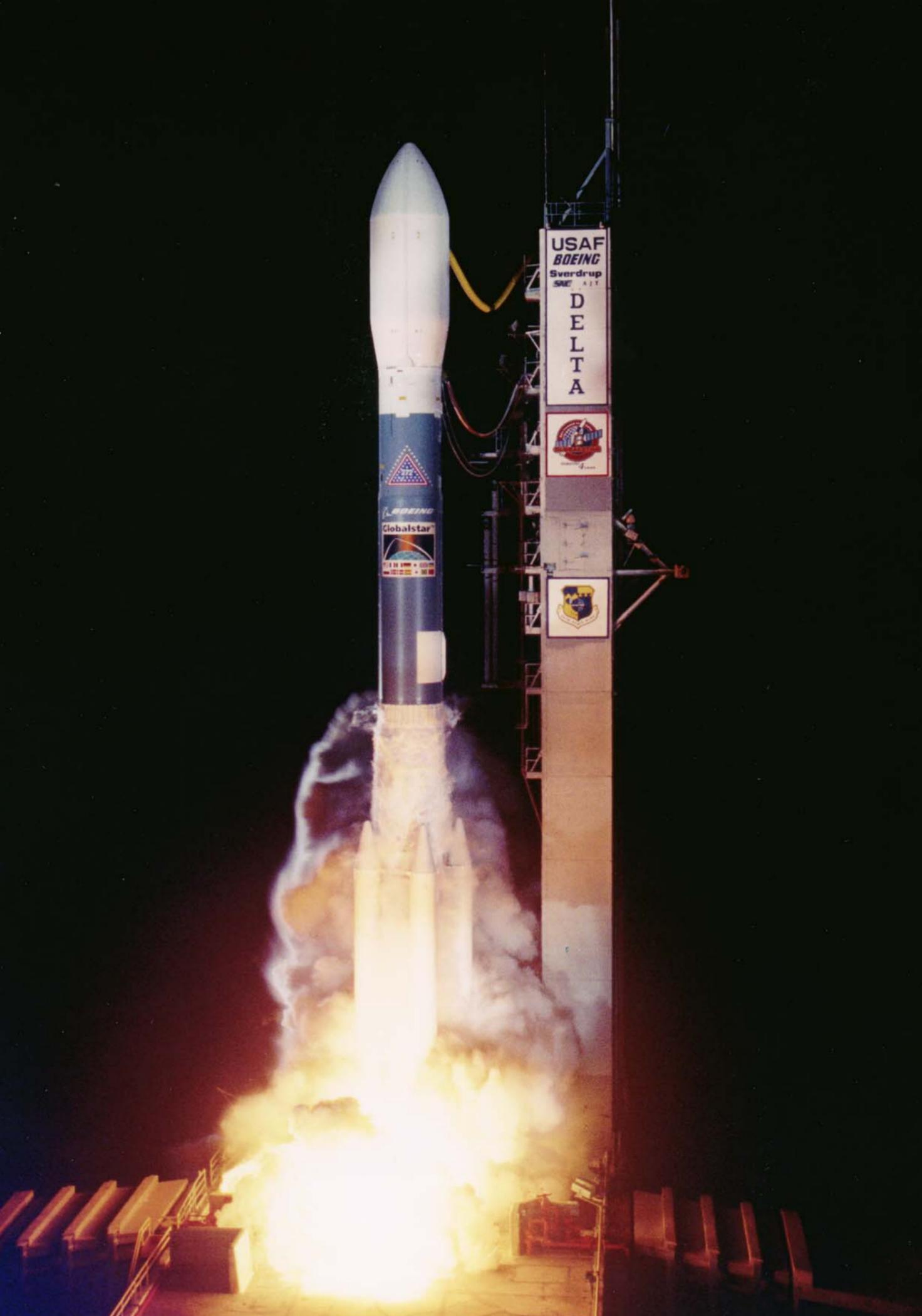
At least as impressive as the breadth of our business is the leadership team helping to drive it. Those individuals also are featured herein.

The following pages are intended to illustrate Boeing Space and Communications Group's corporate capability; to demonstrate the scope of our products and services; and to celebrate how our most valuable asset "our people" continue to forge new frontiers in space travel, national security and global communications, while creating new high-growth-potential businesses for the company overall.

I hope you'll share my pride at our accomplishments, my gratitude for the efforts of so many talented Boeing employees, and my excitement about our vision for the future.

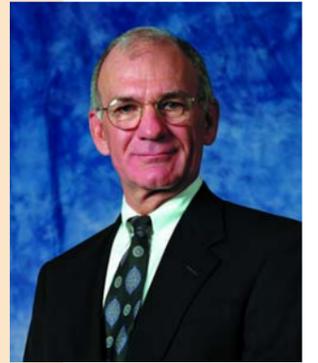
Jim Albaugh ■





"Our belief at Boeing is that a strong quality-first focus will lead to increased reliability at reduced cost. That is especially true in the launch vehicle business. Our commitment to process management in everything we do, from design through manufacturing operations, will result in improved quality, increased customer satisfaction, and affordable, assured access to space."

*Gale Schluter
Vice President & General
Manager, Expendable Launch
Systems*



The legacy of The Boeing Company's expendable launch vehicle program stretches back to Aug. 12, 1960. On that day, a Delta rocket placed NASA's Echo 1A satellite into orbit, marking the vehicle's first successful launch. Many more successes followed for Delta, gaining it the nickname "NASA's workhorse." Forty years and more than 280 launches since that day in 1960, the Delta family of vehicles now includes 10 variants capable

of lifting up to 29,850 pounds to geosynchronous transfer orbit for NASA, U.S. Air Force and commercial customers.

The first Delta rockets derived their design from Thor, the U.S. Air Force's intermediate-range ballistic missile. Motivated by the Soviet's launch of Sputnik in 1957, the company modified Thor's single-stage liquid-fueled design into a booster for Earth-orbiting satellites. Enhancements to the original Delta design continued

through the years, producing more powerful rockets capable of launching bigger payloads into space.

In the late 1980s, Delta II was introduced under a U.S. Air Force contract and soon began earning its reputation as the most reliable expendable launcher in the world. Its success rate in launching payloads for government and commercial users is greater than 97 percent.



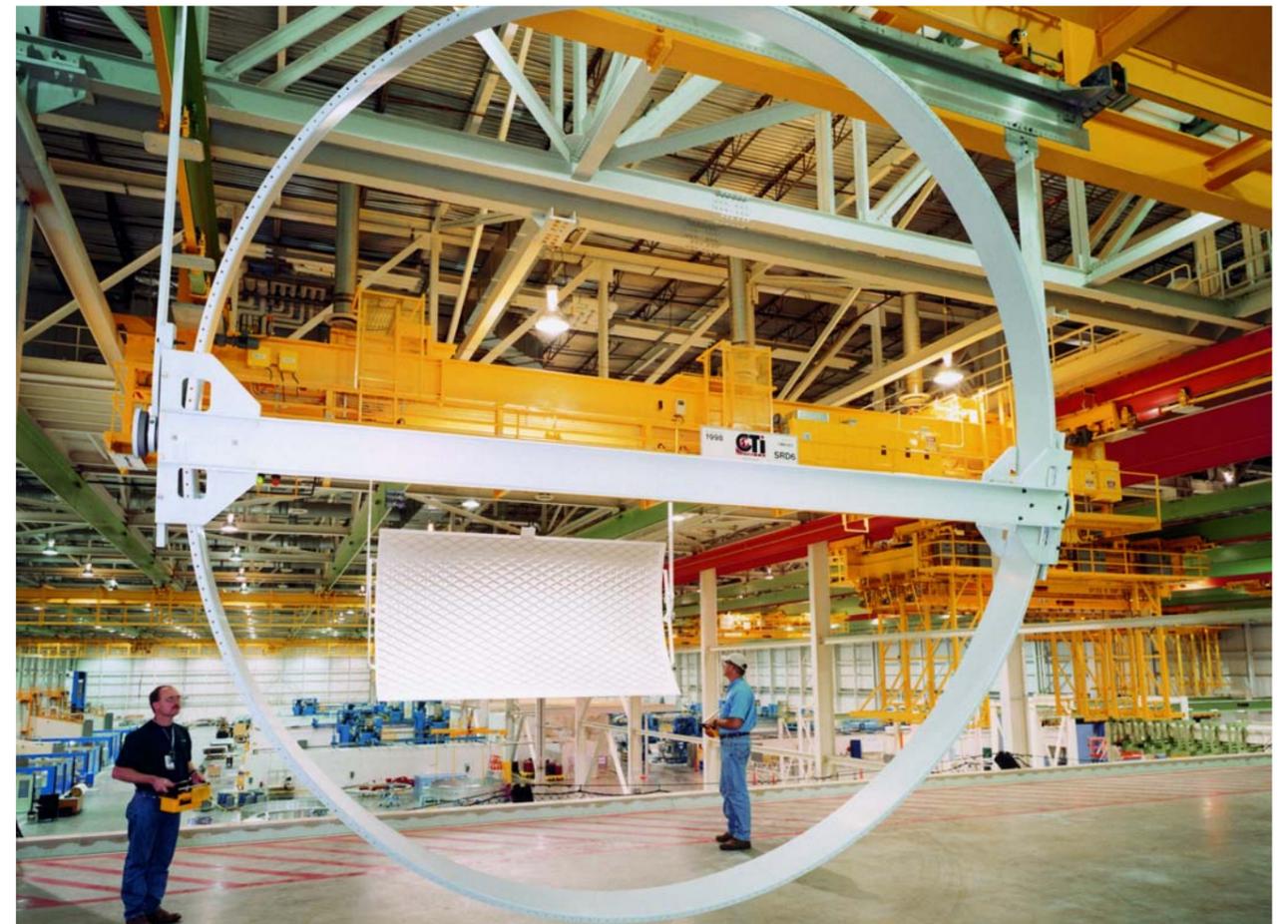
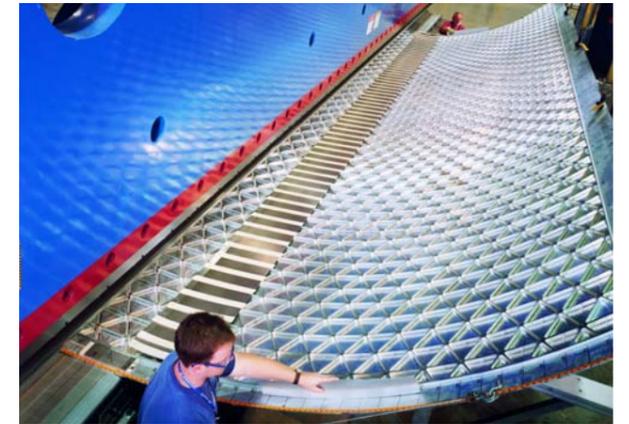
Building on its success with Delta II, Boeing has created a family of launch vehicles to meet the needs of every customer. As satellites have grown larger, so have the Delta rockets that will carry them into space.

The Delta III, which had its first successful launch in 2000, meets the worldwide demand for medium lifters to launch commercial satellites in the 4-metric-ton class. With a payload delivery capacity to geosynchronous transfer orbit of 8,400 pounds, Delta III effectively doubles the performance of the Delta II rocket.

Rounding out the Delta launch vehicle family is the Delta IV. Developed to answer the U.S. Air Force's call for reliable, low-cost access to space, it incorporates the successful legacy of its predecessors with the advanced technology needed for a new century. Reengineered from the ground up to reduce costs while increasing reliability, Delta IV innovations include a common booster core first-stage, the Boeing-built RS-68 engine with 650,000 pounds of thrust and a horizontal integration process.

Delta IV's medium- and heavy-lift capabilities will enable Boeing to meet the launch requirements of the Air Force's Evolved Expendable Launch Vehicle contract, as well as offer the rocket in the commercial market.





The Boeing Company's commitment to being the world's premier launch vehicle supplier is demonstrated at the new Delta Launch Vehicle Factory in Decatur, Alabama. Boeing built the 1.5-million-square-foot facility to manufacture

major elements of the Delta family of rockets including the common booster core, the largest single assembly. The boosters are 150 feet in length and 16 feet in diameter – roughly the size of a Boeing wide-body airplane fuselage. First-stage tanks,

5-meter upper stages and payload assemblies are also manufactured in Decatur. At the factory, Boeing incorporated the lessons learned from 40 years of rocket production with the latest lean manufacturing principles and best practices

from the manufacturing industry. Materials arrive in the state-of-the-art facility by rail at one end of the building and the completed vehicle stages emerge at the opposite end of the building ready to be shipped to the launch site.



The Boeing Company's Expendable Launch Systems also operates the Inertial Upper Stage (IUS) for the U.S. Air Force and NASA, and provides integration and launch services. Compatible with both the Titan IV rocket and the Space Shuttle, the two-stage payload delivery vehicle places spacecraft into a range of Earth orbits. It is designed to carry up to 5,000 pounds to geosynchronous transfer orbit and can boost up to 8,000 pounds out of the Earth's gravitational field to another planet. Additionally, Expendable Launch Systems supports Sea Launch activities. ■



(Facing page) The RS-68 engine, developed by The Boeing Company's Rocketdyne Propulsion and Power, is affixed to the 150-foot long, 16-foot diameter Delta IV common booster core in preparation for the first static test fire.

(Top photo this page) The 16-foot diameter payload fairing for the Delta IV being readied for painting. (Right) Inertial Upper Stage prior to mating to NASA's Chandra X-ray observatory.

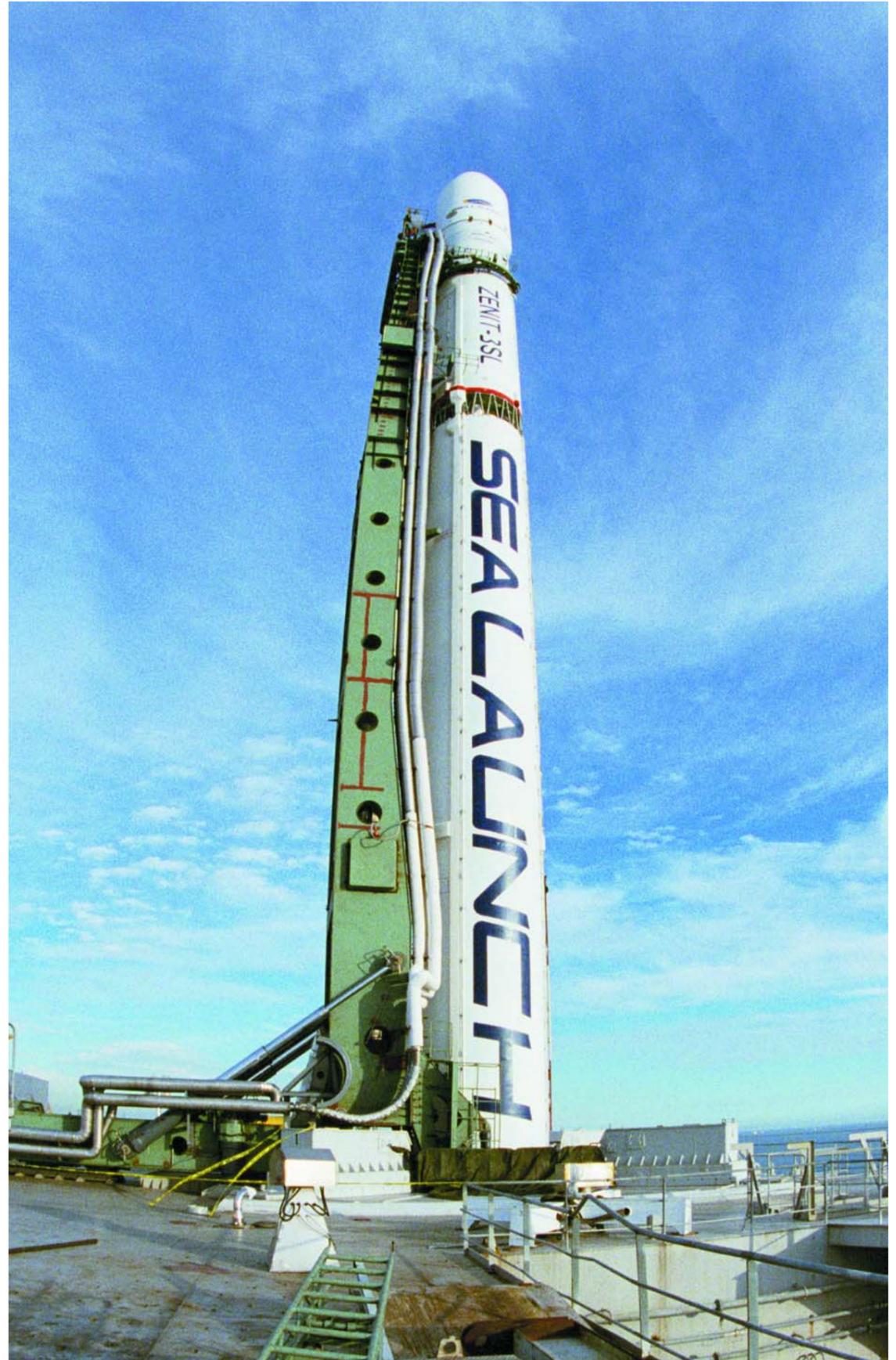


Encapsulated payload in transit from Payload Processing Facility to Assembly and Command Ship for integration with launch vehicle.



SEA LAUNCH

The Sea Launch program is an international team of American, Russian, Ukrainian and Norwegian partners providing an innovative, cost-effective, heavy launch service for commercial satellite customers. Building on proven performance and flight-tested hardware, Sea Launch offers its customers superior value, high performance and fully integrated launch services capabilities.





The Sea Launch program is a shining example of what the Boeing Space and Communications Group does best – integrate the brightest minds with the best technology to create innovative and cost-effective solutions for its customers. The Sea Launch global partnership includes Boeing Commercial Space Company, of Kent, Washington (provides project management, spacecraft integration and payload fairings); the Anglo-Norwegian Kvaerner Group, of Oslo, Norway (the vessel builder); RSC Energia of Moscow, Russia (provides the Block-DM upper stage and its integration with the launch vehicle); and SDO Yuzhnoye/PO Yuzhmash of Ukraine (provides the first two stages of the launch vehicle and launch operations support).

Aside from the developmental advantages of using hardware and technologies that already exist, Sea Launch offers customers a total package with cost savings built into every phase. The satellite processing facilities at the Home Port in Long Beach, Calif., provide more convenient launch integration. The equatorial launch site provides a

straight shot to geostationary orbit, directly where commercial satellites need to go. The powerful Zenit-3SL rocket offers customers a launch vehicle that can lift the heaviest payloads.

“Sea Launch has clearly demonstrated its depth and breadth of program expertise. Bolstered by our successful launches and bull’s-eye accuracy, the Sea Launch concept is tangible evidence of the feats that can be accomplished through international cooperation.”

*Wil Trafton,
President & General
Manager
Sea Launch Company, LDC*





Sea Launch is a self-contained operational launch facility. After sailing to its designated launch position in the Pacific Ocean (154 degrees West Longitude), the massive Zenit-3SL rocket is automatically erected, fueled, launched and tracked. The first commercial payload, the 7,600 lb. (3,450 kg) DIRECTV-1R broadcast satellite, was successfully launched in October 1999. Subsequent launches have been successful as well.





The core technologies of the Sea Launch program represent an ingenious use of off-the-shelf technology. The Ukrainians had the perfect launch vehicle and automated launch support equipment. The Russians had the flight-proven upper stage, which was always intended to fly with the Ukrainian rocket. The Norwegians had the launch platform and built the command ship to the specifications uniquely required for Sea Launch operations. And Boeing contributed its ability to bring the systems together, integrating people, cultures and hardware to build a successful system atop a successful partnership.

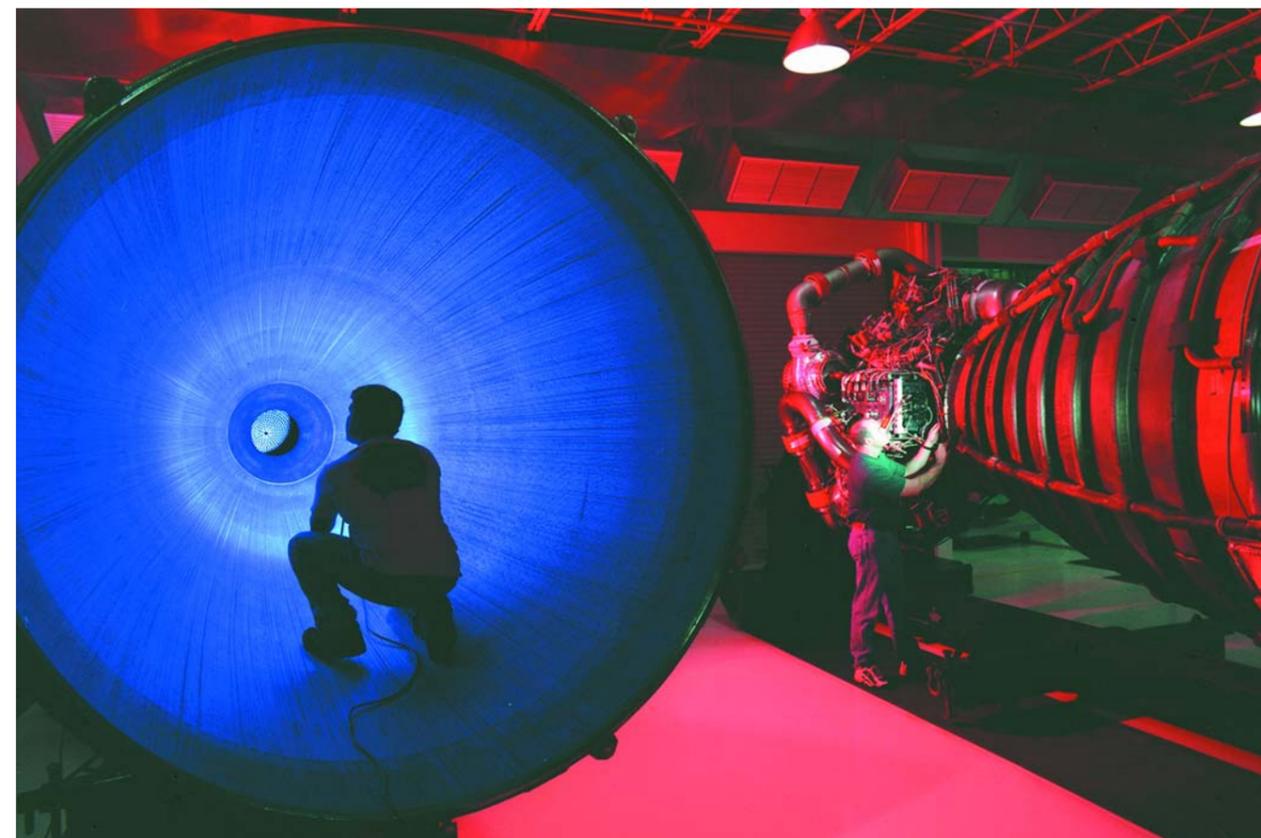
Together, each partner has access to a market that none could achieve alone. And customers have a proven launch system that changes the way they think about access to space. ■





Practically every history-making launch in the American space program has been powered skyward by Rocketdyne engines; from Redstone, Navaho, Jupiter, Atlas, Thor, and Saturn to Delta and the Space Shuttle. The legacy of excellence continues as Rocketdyne sets the standard for quality-built, low-cost expendable medium and heavy lift launch vehicles.

“Rocketdyne is leading the way in developing better, more powerful, and less complicated propulsion and applied power systems. Our vision for the future is clear; our technologies are sound; and our people are committed to providing innovative solutions.”
Byron K. Wood
Vice President and General Manager
Rocketdyne Propulsion & Power



(Opposite) Rocketdyne-produced Space Shuttle Main Engines. (Above and at right) Space Shuttle Main Engines undergoing assembly and maintenance procedures.



(Facing page) Two Linear Aerospike engines will be installed in the X-33 for suborbital flight tests at speeds up to Mach 15. (below) Technicians at Rocketdyne's Space Power Electronics Laboratory test elements of the International Space Station's electric power system, which provides electricity throughout the Space Station.



Rocketdyne Propulsion & Power is known for building powerful, efficient and dependable engines. Less well known is the work being developed to guarantee its place as the premier applied power company well into the future. While programs are underway to develop even more efficient rocket systems, new technologies, new materials and more efficient ways to bring ideas from concept and design to the final product are being perfected.

Rocketdyne's remarkable ability to transition from the present to the future is exemplified through its involvement in providing the end-to-end electric power for the International Space Station. Further evidence of Rocketdyne's grasp of the future can be found in the highly advanced Linear Aerospike engine being developed for the next generation of reusable launch vehicles.

It is this commitment to the future based on a vast wealth of experience that will define the standard for the propulsion and power business in the years ahead.





The RS-68 engine is the first large, liquid-fueled rocket engine developed in the United States since the Space Shuttle Main Engine. Remarkable for its reduced cost and cycle time, the RS-68 engine is an essential element in the development of the Boeing Delta IV family of expendable launch vehicles slated for launch in 2002.





Since the beginning of America's space program, Rocketdyne Propulsion and Power Systems has been a driving force in turning the dreams of the early space pioneers into reality while broadening the horizons for accomplishment in the 21st Century. The challenge to build new and better technologies, faster and less costly, has been met through Rocketdyne's integrated product teams providing concurrent engineering concepts, design, analysis and production. This synergy of effort has resulted in less complicated, more robust rocket engines with fewer parts – which, in turn, provides the customer with a higher quality product, more quickly and at less cost.

Rocketdyne's ability to respond to customer needs and to provide imaginative, reliable and cost effective solutions is based on a solid foundation of proven accomplishment. From the Space Shuttle Main Engines and the RS-27A for Delta II to the Linear Aerospike engine for the X-33 and the RS-68 designed for the Delta IV, Rocketdyne has become the world's most sophisticated propulsion systems provider. ■





The Space Shuttle has demonstrated significantly more capabilities than was initially envisioned. It can support missions and operations that enable higher productivity for the space program and greater utilization of space resources. The extravehicular activity

capability is unique and enables operations such as International Space Station on-orbit assembly and integration. The Space Shuttle's operational flexibility extends to: on-orbit predeployment checkout of payloads; servicing and repair of low Earth orbit space systems,

such as the Hubble Space Telescope; a test bed for new technologies; an observation platform; and providing an on-orbit laboratory capability as a foundation for human and robotic stations of the future.

The Boeing Space & Communications Human

Space Flight & Exploration legacy under NASA's leadership provided the basic tools and a solid foundation of spacecraft systems knowledge to help make the Space Shuttle system a reality.

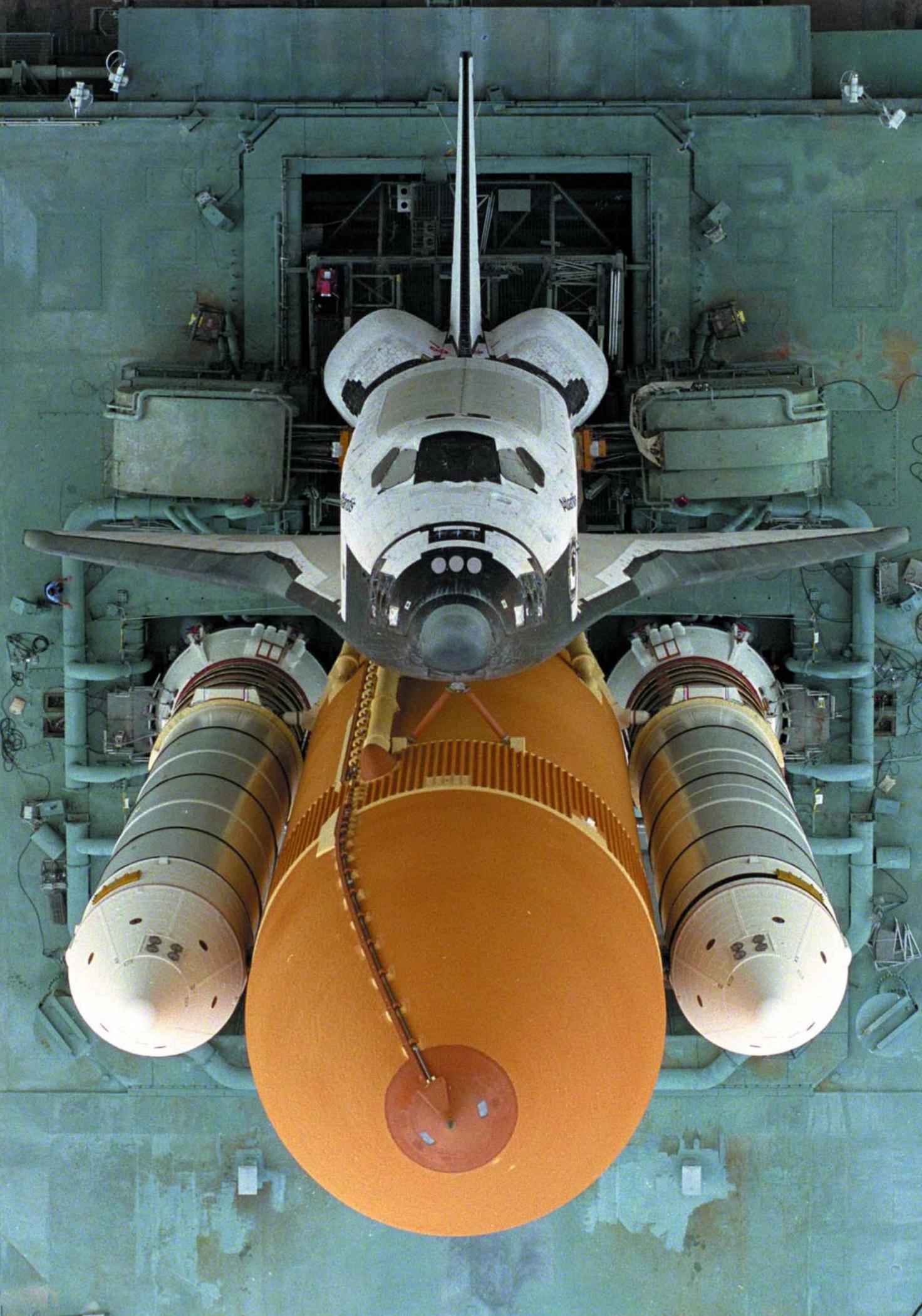
The technical elegance of the Space Shuttle has been verified, and the unique on-

orbit capabilities of the fleet are proving to be key to opening entirely new branches of scientific discoveries, technology, and associated industries of the greatest significance.

Today, the Space Shuttle fleet of four orbiters (Columbia, Discovery, Atlantis, and Endeavor) each

with a 100-mission design life, is proving the soundness of the basic design and demonstrating the system's flexibility. These vehicles are projected to be operational well into the 21st century.



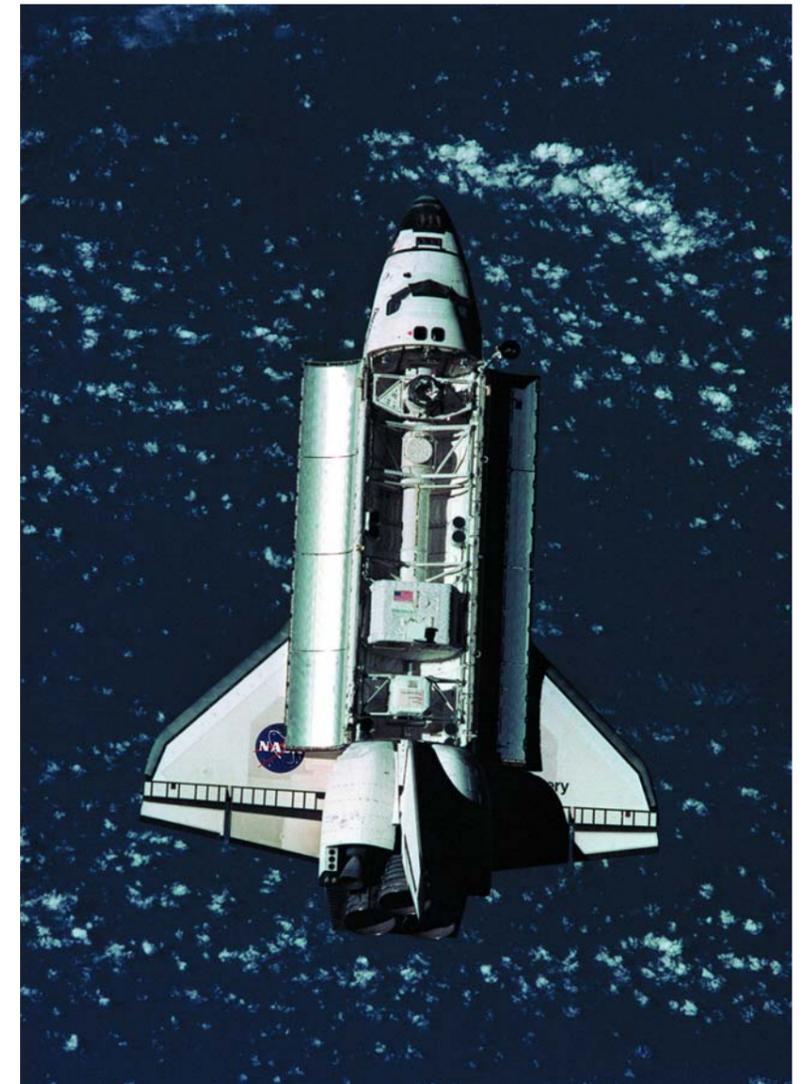


“Less than forty years ago, to blast off from earth and return again in the same vehicle was only a dream. Today it is a reality and the workhorse of that reality is the Space Shuttle. If the Wright brothers gave us wings, the Space Shuttle has opened space for human exploration.”
Mike Mott
*Vice President & General Manager
Human Space Flight*

In addition to being the proud producer of the Space Shuttle orbiters and their main engines, Boeing plays a multitude of behind-the-scenes roles ensuring the success of all Space Shuttle missions.

Boeing integrates Space Shuttle system elements and payloads as well as conducting orbiter maintenance and modifications. The company also prepares Space Shuttle payloads for orbiter installation at the Kennedy Space Center in Florida.

Boeing engineers serve as technical experts on the design and operation of the orbiter fleet to ensure continued safety, flight-readiness, efficiency and overall mission success. Activities range from resolving day-to-day turnaround issues and mission anomalies to assessing the need for, and impact of, system modifications and upgrades and maintaining archives, databases and critical skills.





The Space Shuttle is continuously being modified and upgraded to meet the evolving needs of our nation's space program. Together with United Space Alliance and NASA, Boeing has supported Space Shuttle upgrades to improve safety, lower program costs, and enhance performance. Boeing is committed to maintaining a viable Space Shuttle program for decades to come and will provide the world with reliable and affordable transportation to space for humans and cargo.

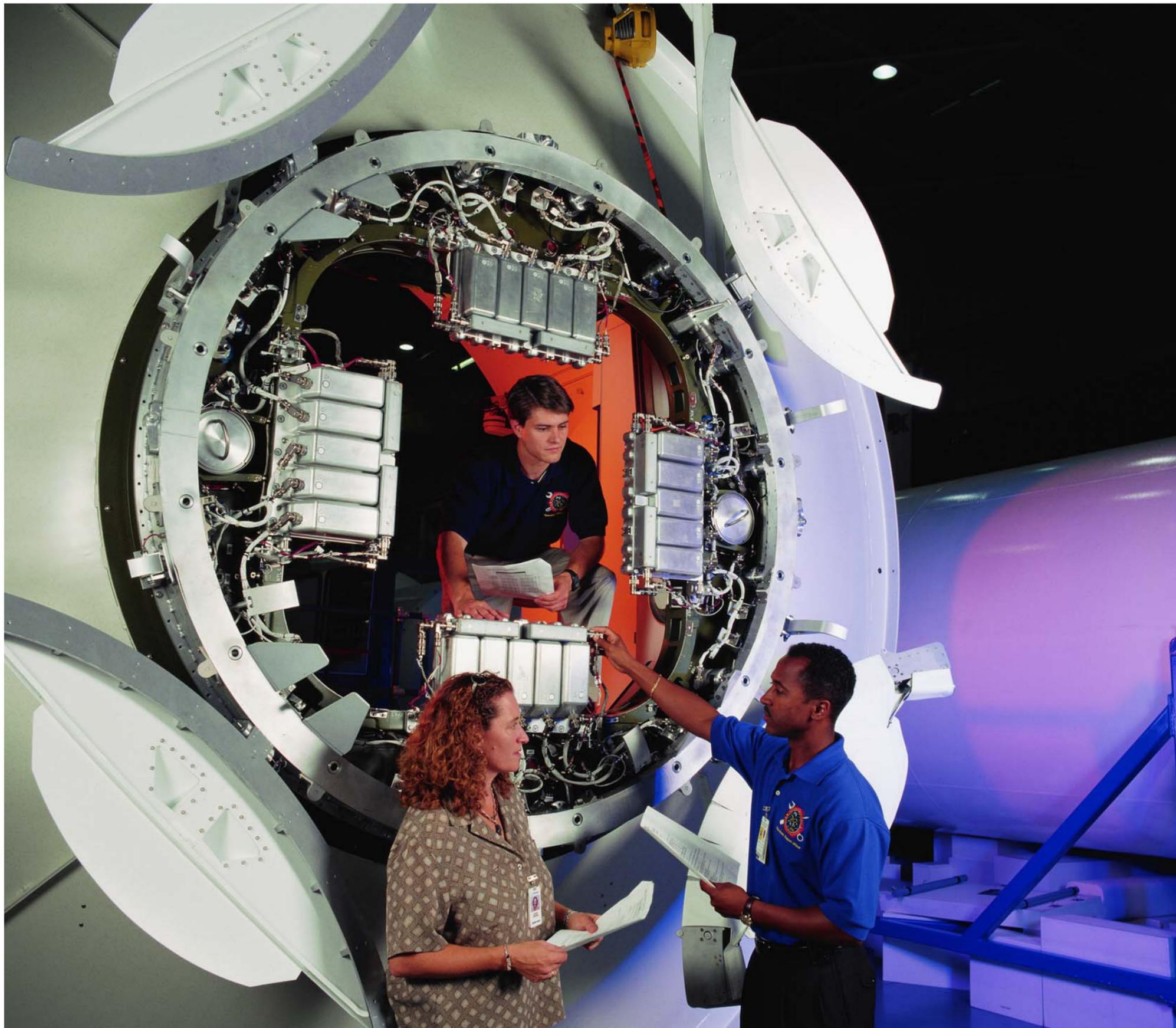
The all-glass, upgraded cockpit (opposite page), while the most obvious physical improvement, is but one of countless on-going improvements that have been engineered, developed and integrated into the Space Shuttle program. With an eye on always improving the safety of the Space Shuttle fleet, these upgrades are also increasing the reliability and performance while reducing the turnaround time, obsolescence and operational cost of the fleet.





Boeing is engaged in a number of activities developing and testing the technologies that will be used on future reusable launch systems. Whether utilized on X-vehicles or to upgrade the Space Shuttle, those technologies will form the basis for the next revolution in space transportation. By joining in partnership with NASA and the U.S. Air Force on the X-40 and X-37 programs, Boeing is ensuring it stays at the leading edge of space transportation technologies.

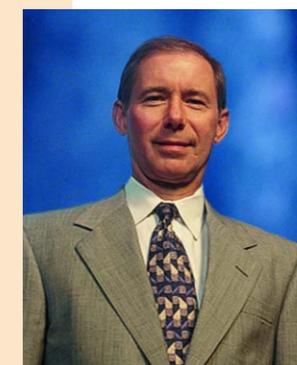


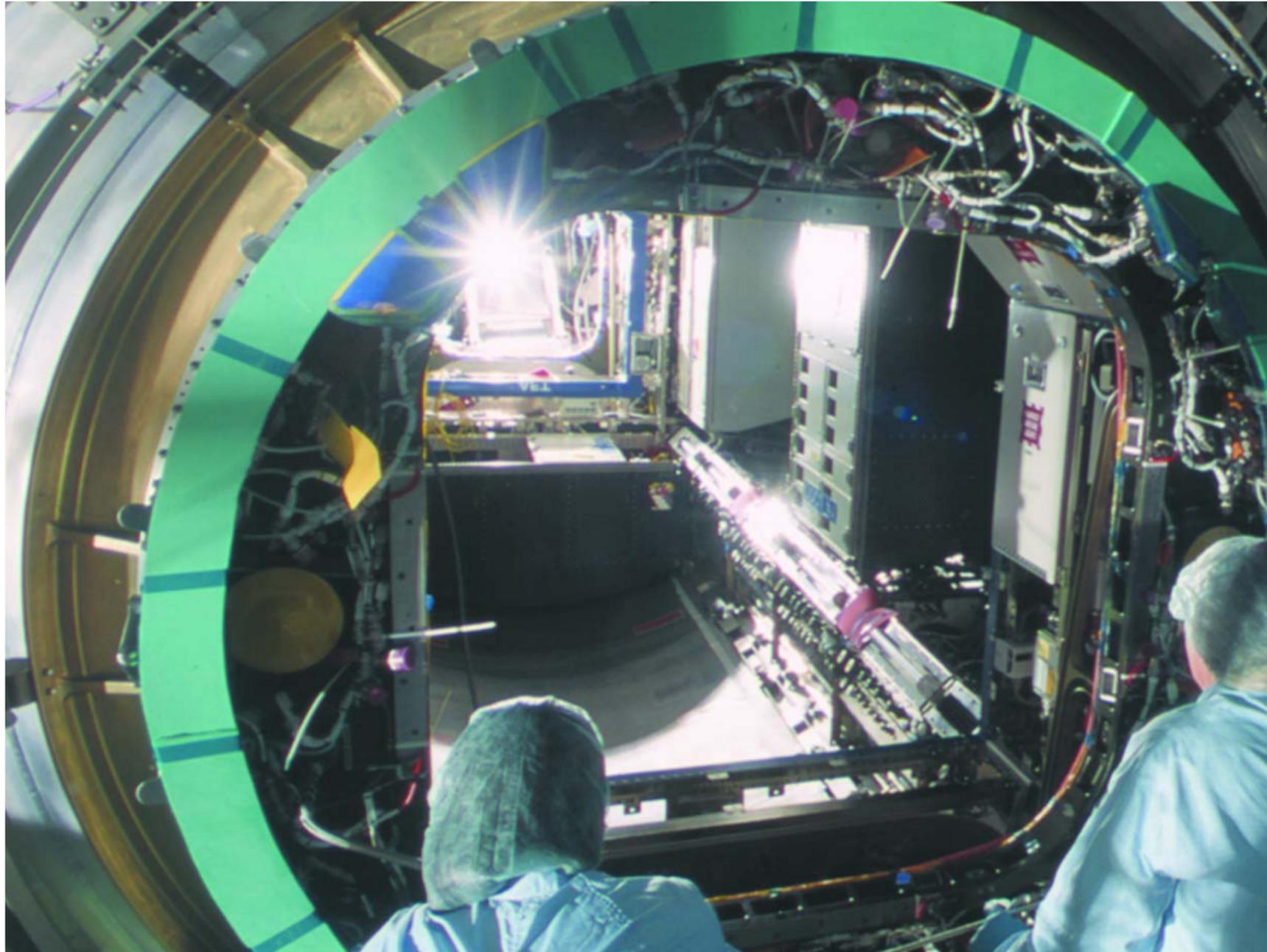


The construction of the International Space Station is the most complex venture into space ever attempted. When fully assembled, it will be the size of a city block and the third brightest object in the night sky; only the moon and Venus will be more visible. The 470-ton structure will house a crew of up to seven, in 46,000 cubic feet of pressurized volume, the size of a 747 Boeing jet. Its 100 separate elements will be carried aloft during 88 total flights – 37 U.S. Space Shuttle and 51 Russian Soyuz, Progress and Proton missions.

This grand endeavor bears Boeing's fingerprint in every step of its development. The U.S. components are being designed, built and tested at Boeing facilities in Houston, Huntsville, Huntington Beach, Canoga Park, Tulsa and Kennedy Space Center. Moreover, Boeing is directing the national industry team comprising most major U.S. aerospace companies and hundreds of small contractors. The Boeing-led team is also responsible for integrating the systems, procedures and components of the 16 participating countries that have joined together to form International Space Station.

"The job of building the Space Station is a tremendous journey that connects America's technologies, systems and intellectual capital with similar resources of 15 other nation partners. The success of this important venture will provide benefits of epic proportions that will be felt globally for generations to come."
Brewster Shaw,
Vice President & Program
Manager, International
Space Station





Boeing has the central role in practically every aspect of the International Space Station. Each part and component has to be specially designed, tested and integrated on Earth for its ultimate use and assembly in the harsh zero-gravity environment of outer space. Nothing is left to chance. Every component, system and procedure is designed, developed and tested so that when the parts are carried to space, they perform flawlessly.

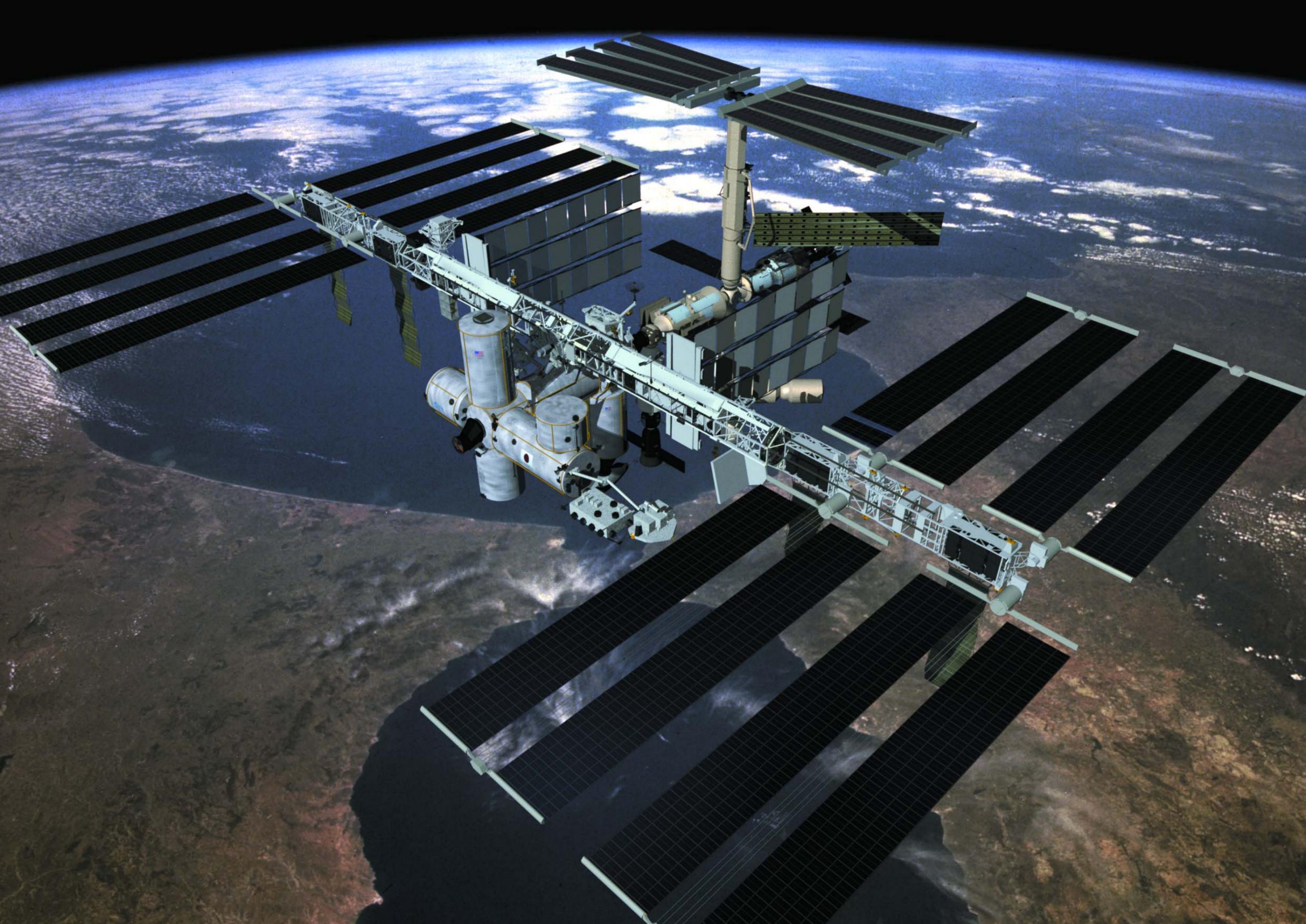
In addition to building many of the Space Station components and systems, Boeing's ability to create a functional infrastructure on which the whole system can be built and operated and transported piece-by-piece to the building site, in this case orbital flight, is a task few other companies can provide. Large-scale systems integration is a task at which Boeing excels.

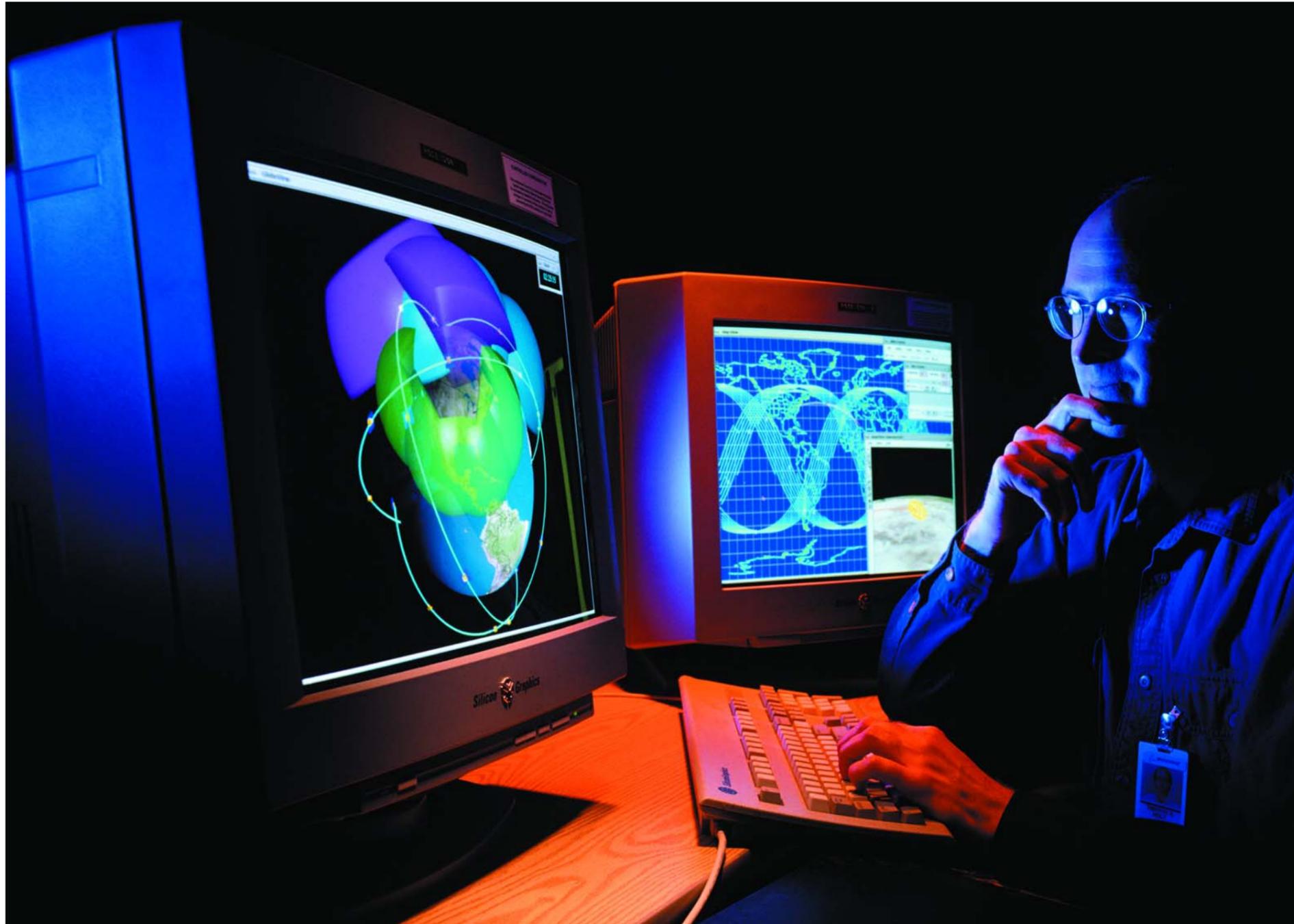




There has never been anything like the International Space Station. No precedent has existed for putting together such a complex operation in space; especially with 15 international partners. Boeing is proud to be the lead integrator in this history-making endeavor. ■

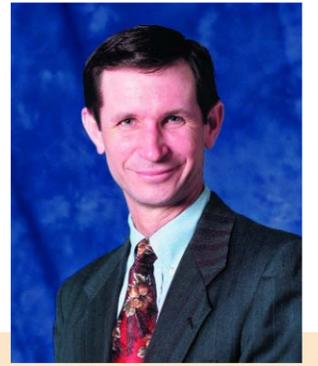






With a core of existing contracts and a healthy service-business base, the Space & Communications Services unit is responsible for delivering outstanding service and support to current customers, integrating Boeing capabilities to meet service market needs and creating new services and solutions.

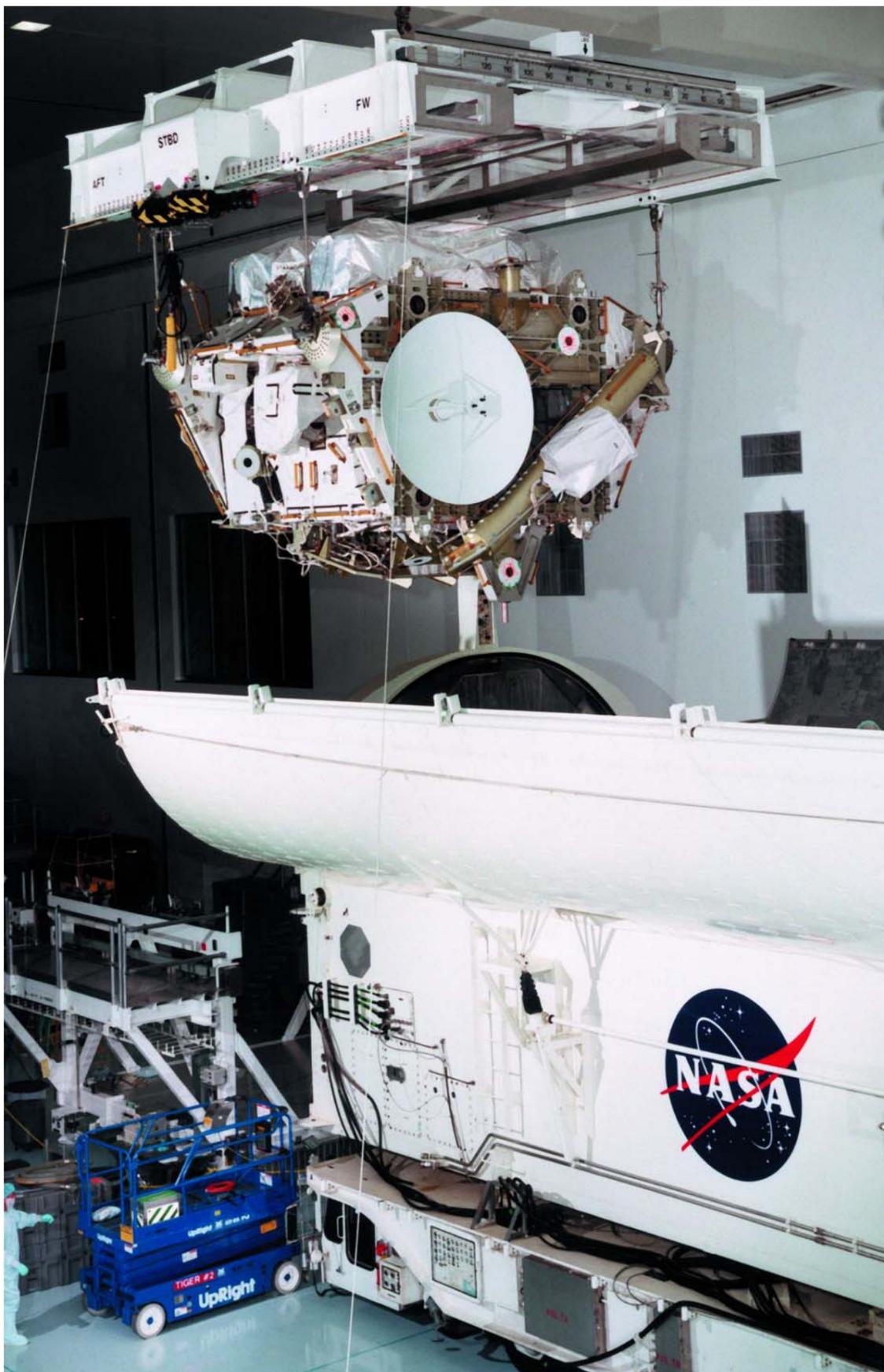
While maintaining its current involvement with NASA and the Department of Defense, Boeing Space & Communications Services is expanding its services to other government agencies and new commercial customers that require highly specialized day-to-day sustainment services to improve their business efficiency and cut costs. Leveraging its historical expertise in launch services and systems engineering and integration experience, Boeing can help usher in the next generation of launch vehicle range architecture, replacing space lift range systems with space-based range systems and control networks.



“We’re living in a rapidly changing business environment where customer needs and requirements should drive what services we offer. At Boeing Space & Communications Services, we are committed to understanding our customer’s needs and designing successful, economical and efficient service solutions to meet those needs.”

*Rick Stephens
Vice President & General Manager
Space & Communications Services*





The Boeing Company has been involved in all of America's pioneering manned missions, being the largest single contractor at Kennedy Space Center during the Apollo era. Today, Boeing Space & Communications Services is involved in the final payload processing, checkout and assembly of the International Space Station, NASA, the Department of Defense Expendable Launch Vehicle missions and Sea Launch.

Space & Communications Services was established to capture new market opportunities in the exciting and growing customer support and commercial services market. Its charter is to aggressively offer the aerospace industry solutions in the areas of product support, logistics and engineering services. Although the Company's rich heritage is in the aerospace business, its expertise in providing service solutions has helped create successful models on which other business solutions can be mapped.

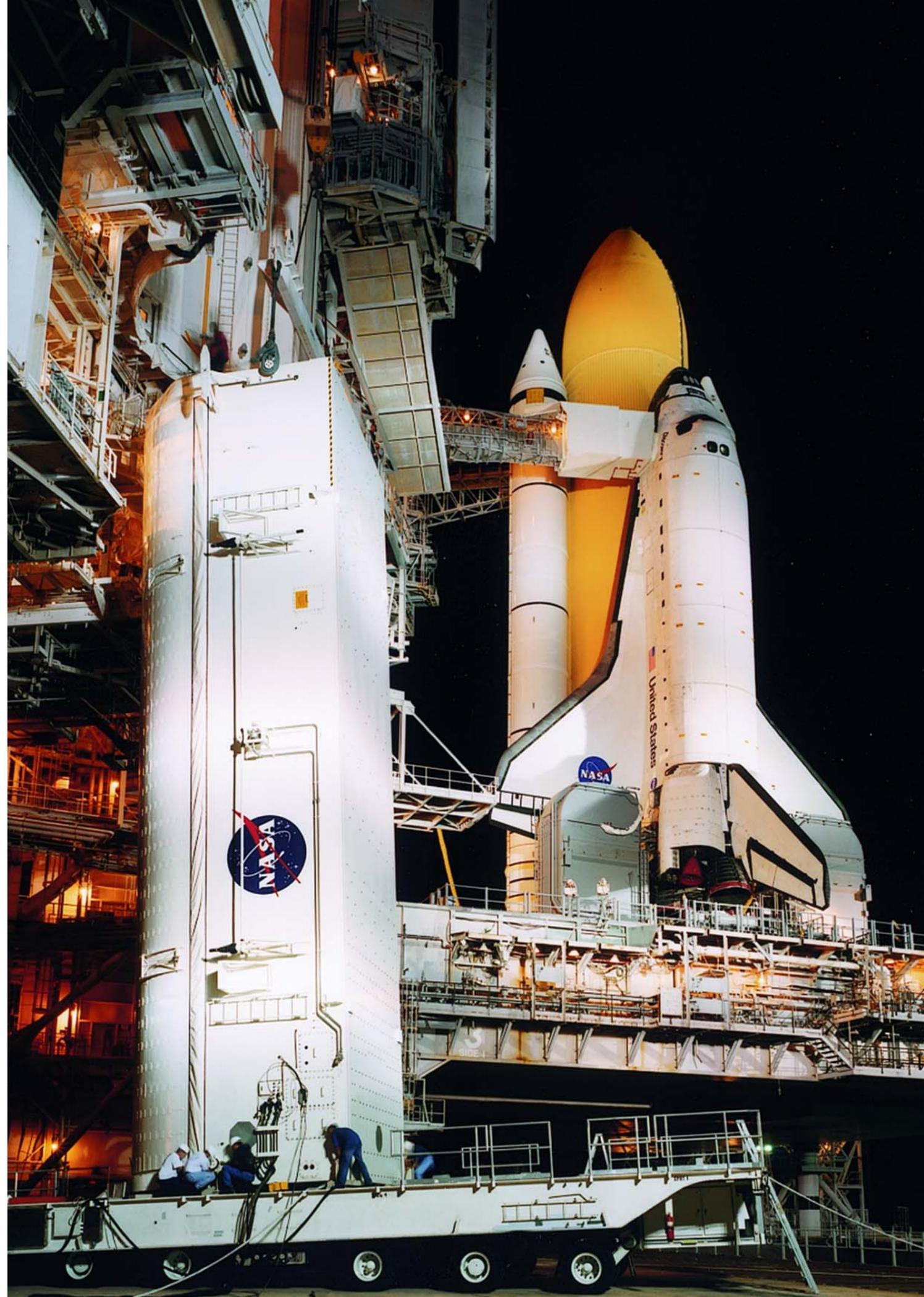
The ability to successfully manage a program as complex and involved as the International Space Station illustrates Boeing's unique capability to provide complex managerial and logistical service to other businesses both within the aerospace industry and elsewhere.





Space and Communications Services currently provides operations support to programs ranging from the International Space Station and the Space Shuttle to America's Intercontinental Ballistic Missile fleet, the GPS constellation and Naval Communications program.

This hands-on involvement with complex programs gives the Company a unique expertise in the marketplace. With a highly successful track record in working such diverse programs, the Company has the range and depth of experience to offer its customers day-to-day sustainment services that enable them to operate more efficiently and free them to focus resources on other things like research and development of new assets.





Boeing's role as the contracted operator of the newly introduced Iridium Satellite LLC is simply the latest example of how the Company is applying its core competency in satellite operations to support emerging service opportunities.

With the explosion of information in today's world, the ability to gather, keep track of and assimilate information is critical to corporate survival. Boeing

Space and Communications Services is able to map Boeing competencies to a wide range of commercial applications. By combining innovative applications, software development and successful processing procedures with space-based communications, the Company can provide asset tracking and sustainment support to practically any commercial environment. ■



Today, more than ever, government customers require cost-effective, integrated systems solutions that meet their rapidly evolving information and communications needs.

Government Information & Communications Systems (GI&CS), one of the fastest

growing business areas within The Boeing Company, is well positioned to meet the world's most demanding information and communications requirements – today and into the future.

GI&CS has an international reputation for

developing high-quality, cost-effective, integrated systems solutions for government customers through new technology, sophisticated system engineering, software development, system integration techniques and innovative business systems.



The 737 Airborne Early Warning & Control system has been selected by the Australian Defence Force and Turkish Government. The platform features a Multi-role Electronically Scanned Array radar capable of tracking air and sea targets simultaneously.

Four 767 Airborne Warning and Control System (AWACS) have been delivered to the government of Japan.



Boeing is replacing the Tactical Command System (TCS) on 21 of the United Kingdom's Nimrod maritime patrol aircraft to extend the capability of the Nimrod aircraft well into the 21st century.



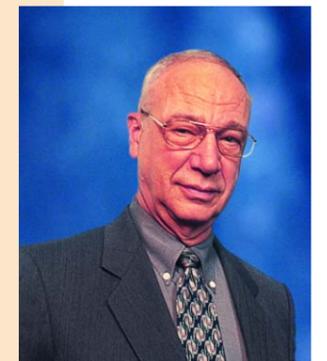
GI&CS, headquartered in Anaheim, California, directs a professional force of some 3,000 people at Anaheim and other Boeing sites in California, Seattle, the United Kingdom and Australia under the leadership of Vice President and General Manager Carl O'Berry.

GI&CS employs state-of-the-art technology in global navigation systems, Airborne Early Warning & Control (AEW&C), and numerous other aerospace and maritime communications and information systems, to address various market segments such as integrated command, control and communications systems; integrated battle management systems; and information operations.

The unit leads the Company's work on the Airborne Warning and Control System, the world's current standard for airborne early warning systems, and on the 737 AEW&C, the next-generation airborne early warning system.

"Today's military forces require innovative, cutting-edge systems solutions that enable them to execute their missions effectively, efficiently and with acceptable risk in an increasingly challenging global environment. At GI&CS, the combination of our collective experience, systems-of-systems

technology, and market position in communication, navigation and surveillance enables us to create total solutions that help our forces redefine the future of warfare."
Carl O'Berry
Vice President & General Manager
Government Information & Communications Systems





The Boeing Combat Survivor Evader Locator (CSEL) is a multi-satellite, over-the-horizon system that provides precision location and navigation data to rescue forces, enabling them to locate and safely recover downed pilots.

GI&CS is a major participant in the burgeoning space-based communications and services marketplace through its work on satellite programs such as the Global Positioning System.

The Navstar GPS is a U.S. Department of Defense satellite-based radio navigation system. Originally developed to aid military navigation, GPS has revolutionized both timing and navigation for military, commercial and civil interests. Millions of travelers, sportsmen, hikers and boaters routinely find their way home using the global navigation system, and new applications for GPS are being developed every day.

GI&CS designed and built 40 first- and second-generation Navstar GPS satellites for the U.S. Air Force beginning nearly three decades ago, and continues to provide launch and on-orbit support for this system from Shriever Air Force Base in Colorado.

In April 1996, GI&CS was selected by the U.S. Air Force to design, develop and produce the next-generation of GPS satellites, Block IIF. Up to 12 Block IIF spacecraft will be built through 2009.

GI&CS is also a supplier of specialized user equipment and receiver designs that incorporate GPS, including



the Combat Survivor Evader Locator (CSEL), a global communication and information system that enables rescue forces to locate and recover downed pilots.

Joint Direct Attack Munition is a low-cost guidance kit that converts unguided free-fall bombs into highly accurate guided weapons that can be launched up to 15 miles from the target in virtually any weather condition.





GI&CS has a 30-year legacy in providing navigation and communication systems for the U.S. Navy. Our Fiber-Optic Data Multiplex System (FODMS) introduced state-of-the-art broadband communications networks to the Arleigh Burke destroyers. We are extending innovations in communication technology with the development of phased array antennas for wideband satellite communications from surface platforms.

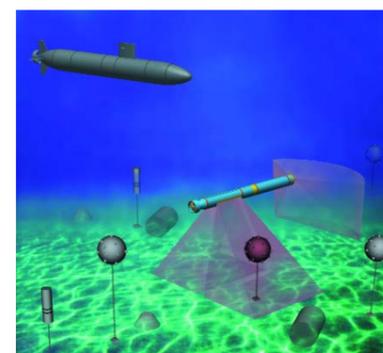
Boeing inertial navigation equipment enabled the first submarine missions beneath the polar icecaps. Today, our navigation systems continue to set the standard for the U.S. fleet. GI&CS provides leading technology for unmanned underwater vehicles for the submarine community. Our demonstrated autonomous guidance and control software enable the Long-term Mine Reconnaissance System (LMRS) to perform unattended surveillance missions up to forty hours in duration. Autonomous vehicles such as the LMRS will provide the U.S. Navy with future force multipliers for clandestine forward presence.

Future naval mission superiority requires

integrated communication, command, control, computers and intelligence (C4I) solutions. GI&CS is actively employing Boeing capabilities in navigation, communication and surveillance to create an integrated undersea information network that will provide real-time battlespace situational awareness. All operations converge in our mission operating centers that automate mission-critical operations.



The Arleigh Burke Class destroyer is equipped with a Boeing-developed naval communications system. Boeing has worked in partnership with the U.S. Navy for more than 20 years to provide systems to achieve seamless integration of shipboard control and data networks.



The Long-term Mine Reconnaissance System (LMRS) is an unmanned, underwater surveillance system that provides the U.S. Navy with a clandestine capability to determine the existence of mines in potential threat environments.



Airborne Warning and Control Systems (AWACS) provide decision makers with a total integrated picture of the battlefield scenario by fusing data and information from multiple sources.



Increased battlefield situational awareness across the entire spectrum of operations enables the warfighter to be more responsive, versatile and sustainable.



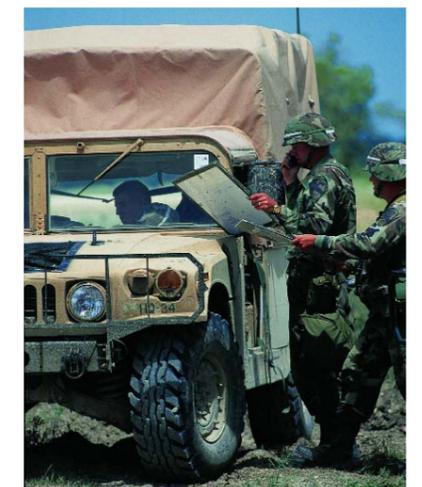
At the heart of Boeing's GI&CS business is the new Boeing Integration Center (BIC), an 11,000 square foot state-of-the-art systems integration proving ground that supports sophisticated design and development work needed to meet Department of Defense Joint Vision 2020 requirements.

The BIC is the bridge between traditional warfare and military operations of the future. It enables GI&CS to bring the power of information technology to people in uniform and

provides the capability that makes these individuals and their systems more effective.

Whether it's designing a global navigation system that someday may guide a downed pilot safely out of harm's way or building the architecture that enables a battlefield commander to protect and maximize the use of assets, GI&CS is at the forefront in creating systems solutions that will enable more effective, more timely decisions in the coming age of network-centric operations. ■

Recent advancements in mobile, broadband transmit and receive communications, developed by Boeing, will provide the mobile commander with a communications link that can transfer data and information, including video imagery, to command centers resulting in a more complete battlefield picture.

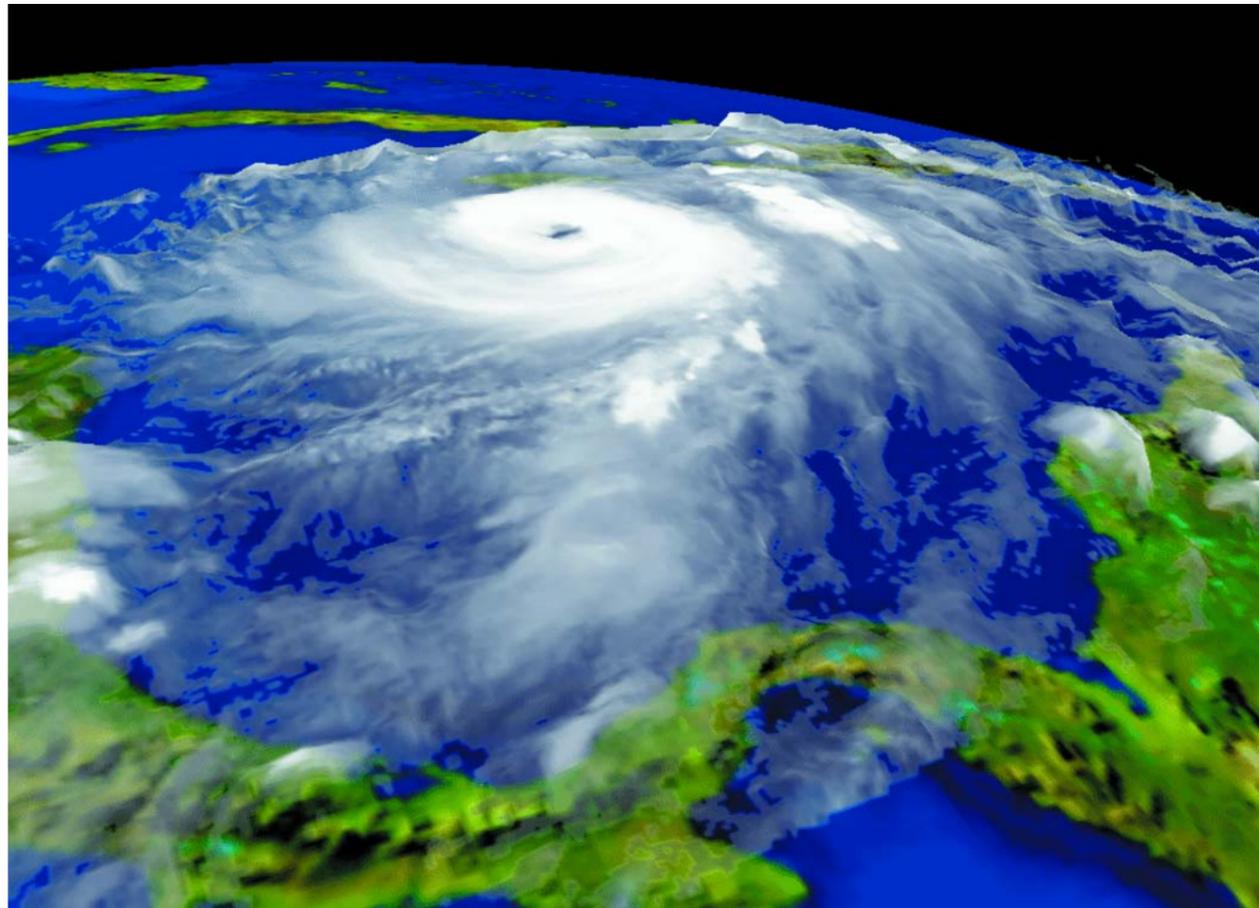




A team led by The Boeing Company's Integrated Defense Systems (IDS) will provide a more capable but less costly architecture for the nation's next generation of imagery reconnaissance satellites under the Future Imagery Architecture (FIA) program.

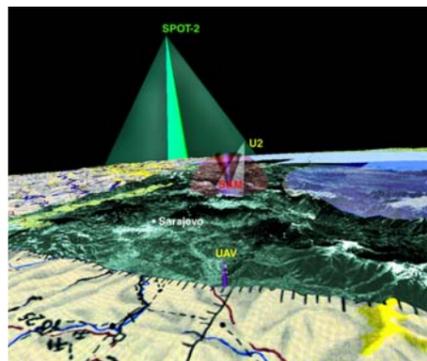
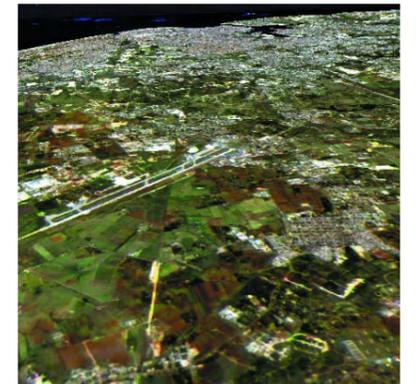
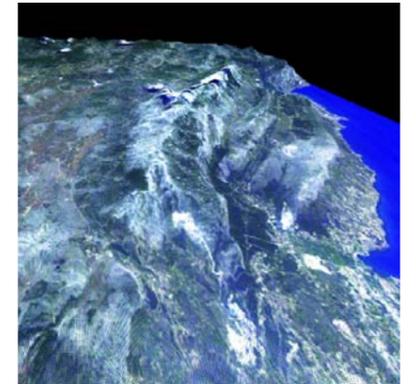
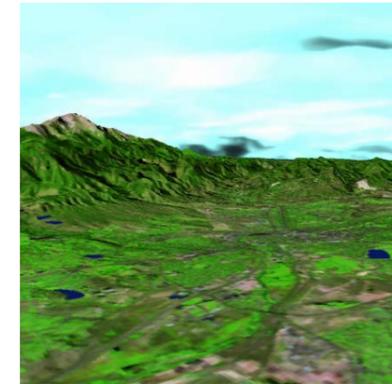


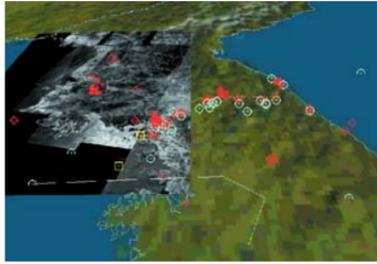
"A key element of the NRO's space-based architecture, the FIA award, confirms the leadership position of Boeing's space imaging. The FIA program will provide the customer with a significant enhancement to America's critical imagery capability over the next decade,"
Roger Roberts,
Vice President & General Manager
Integrated Defense Systems



Integrated Defense Systems is the focal point within Boeing for all intelligence programs. IDS began as a provider for tactical ground systems under the auspices of the Tactical Exploitation of National Capabilities (TENCAP) program. This experience, combined with the expertise attributed to the mergers of Boeing, McDonnell Douglas and Rockwell, has made IDS a leader in large-scale systems integration, Intelligence, Surveillance and Reconnaissance (ISR) systems, ground systems, network systems, network protection and security systems.

These robust capabilities set the stage for a Boeing win of the Future Imagery Architecture program from the National Reconnaissance Office. This space-based imagery reconnaissance architecture is a significant enhancement to America's critical intelligence capability over the next decade. It will provide a more capable but less costly means of fulfilling the nation's imagery needs and includes the ability to accommodate commercial products.





By combining national systems imagery with commercial imagery, a comprehensive picture can be developed for tactical users.

With the enhancements in FIA, it became crucial for the National Imagery and Mapping Agency (NIMA) to increase its capability to meet the higher supply and demand needs of imagery. NIMA's increased capacity requirements are consistent with the general need within the Intelligence community and the Government, at large, to securely receive, manipulate and transmit ever-increasing volumes of data. These challenges led IDS to acquire Autometric, Inc., the leading geospatial information technology

company in the United States. Autometric, founded from Paramount Pictures, has an impressive portfolio of offerings that enable simplification of complex data presentation using highly advanced visualization techniques.

Another cornerstone to address the "capability gap" resulting from modern information flow rates is the acquisition of Hughes Space and Communications. The inherited communications and satellite technologies, combined with our existing network and security skills,

Autometric's visualization portfolio, and existing IDS large-scale systems integration competencies provide space reconnaissance systems for the NRO and Department of Defense (DoD).

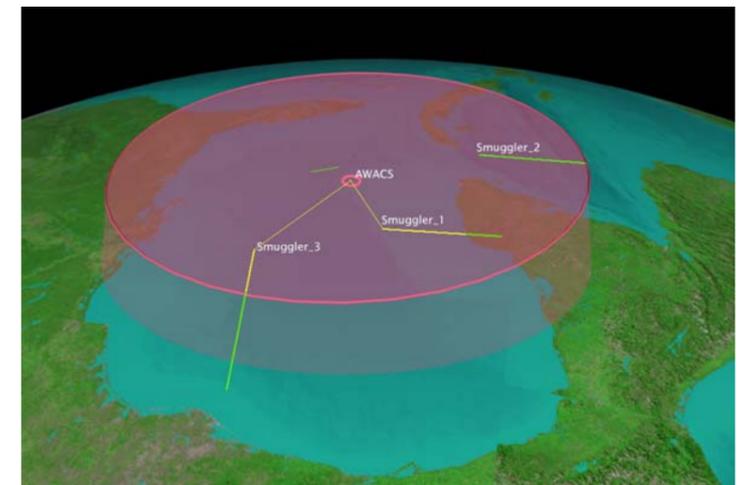
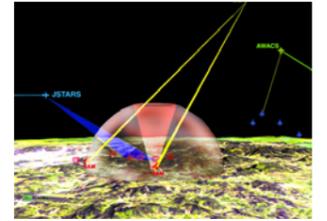
As part of the Integrated Defense Systems team, Autometric brings the added capabilities of specialized modeling, visualization, simulation and analysis of imagery and associated digital geographic products.

Autometric's software products allow a wide variety of users to understand and model their own specialized world. Satellite modeling tools allow the results of complex analysis to be presented quickly and effectively to decision makers. Weather and environmental capabilities, for instance, can be presented to help develop high-fidelity predictions. High profile programs like Space Based Infrared System and the Global Positioning System (GPS) can be

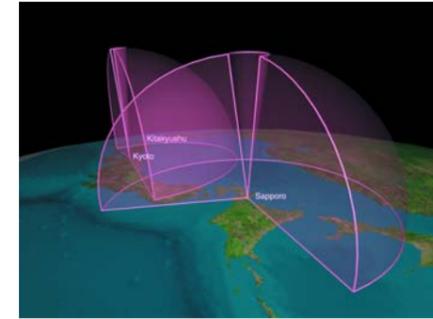
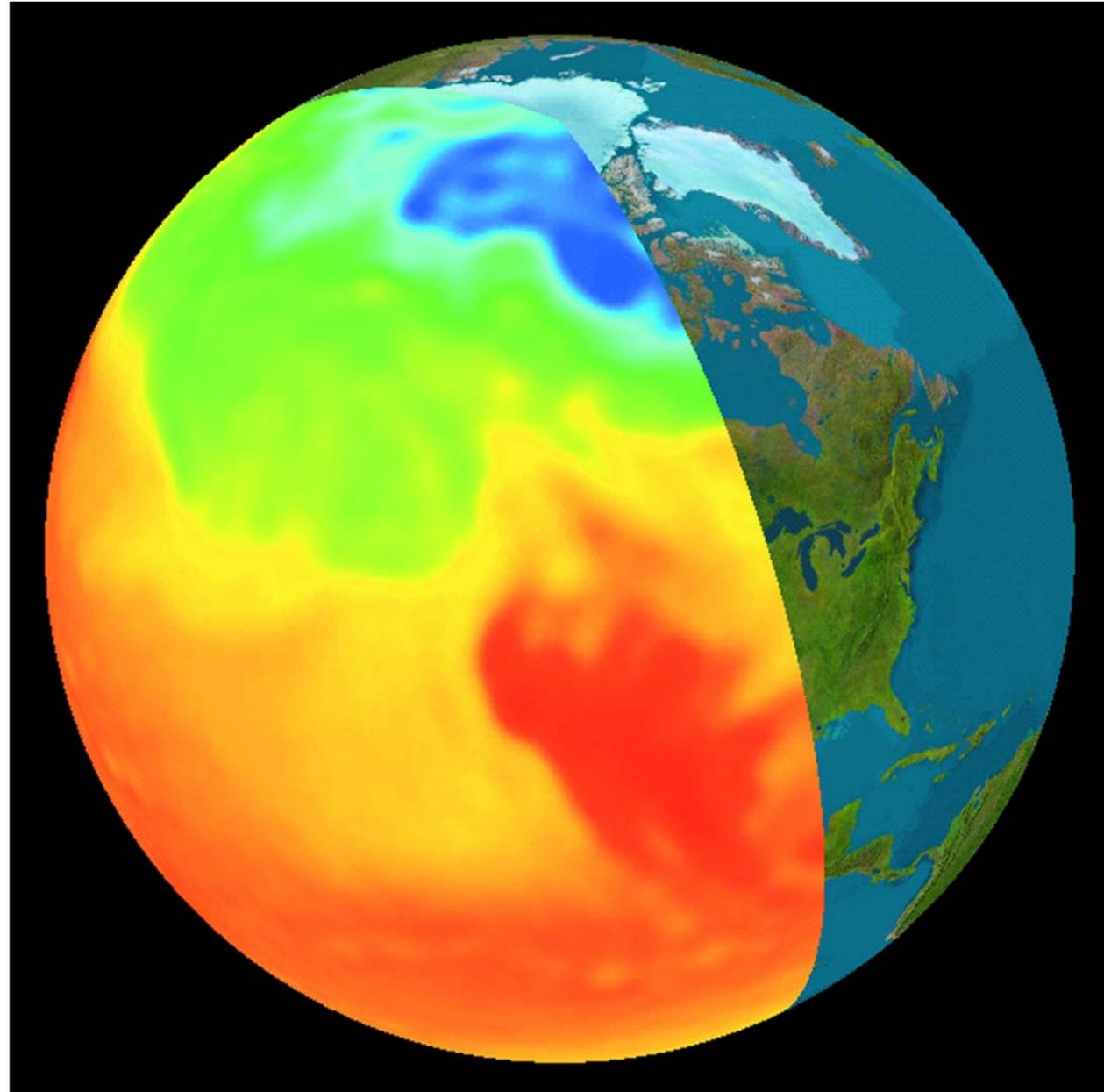
accurately modeled and displayed. Global and regional events can be shown in their context so that national level intelligence agencies can reach informed decisions.

Autometric's BattleScape™ and other commercial products enable military commanders to understand complex engagements involving air, land, sea, and ground forces so they can use their assets effectively in pursuing asymmetric fast transit tactics.

With Autometric's off the shelf products as part of the Integrated Defense Systems package, a picture is worth more than a thousand words – especially when the intelligence information is so complex and time-sensitive.



Whether the data needed is complex or a snapshot of a segment of the battlefield, the IDS-developed imagery architecture will be flexible enough to provide for all contingencies.



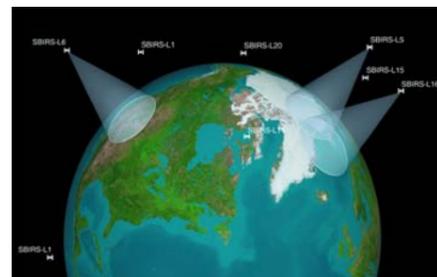
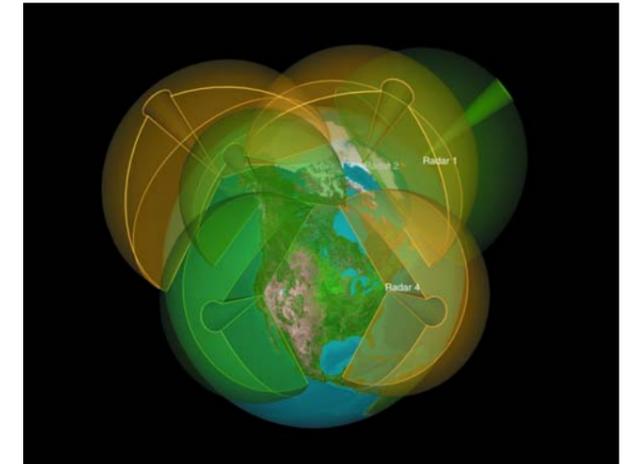
Similarly exciting is IDS' ability to offer end-to-end intelligence services such as tasking and mission management, processing of collected data, exploitation of that data, and dissemination to national and tactical users. It is through these new intelligence services not only at the NRO and NIMA, but also the National Security Agency, the Defense Intelligence Agency and other intelligence agencies that Boeing can help to create fused intelligence products for all customers.

IDS is not limiting itself strictly to national intelligence, however. One of the key aspects to solving future information challenges is the integration of national and tactical collection assets into common architectures. IDS is chartered with ensuring the best practices, products, and services throughout Boeing are made available in order to provide

an integrated ISR architecture for the United States.

These robust capabilities can enable Boeing to be a partner with the DoD and the intelligence community, dedicated to the development of highly advanced, cost-effective system solutions. Near-term activities include the integration of several architectures for reconnaissance and surveillance, as well as architectures for space control and network security that enable real-time intelligence and information operations.

IDS is aggressively working with high-tech commercial partners in deploying integrated defense solutions to the challenges and opportunities of today's information age. ■





“Our National Missile Defense program is a multi-faceted and extremely complex effort aimed at demonstrating the technical feasibility of defending the United States against incoming ICBMs. The integration of large-scale sophisticated systems of this magnitude is what The Boeing Company is very good at. We are successfully working toward solutions that will meet the program objectives.”

*James W. Evatt
Executive Vice President and General Manager, National Missile Defense
Executive Vice President, Boeing Space & Communications Group
President, Boeing Government Systems*



The National Missile Defense program is designed to protect our 50 states against limited intercontinental ballistic missile attack. Currently, the United States has no mechanism to protect our cities and citizens from attack. However, we live in a time in which nuclear technology is proliferating through the world at an alarming rate. National Missile Defense, or NMD, would deter use of such technology against the country and protect our land and citizens with an effective defense if needed.

The program brings together existing, as well as new and advanced technology, to accomplish the mission. Boeing is working with a team of dedicated companies to develop technologies, enhance capabilities and integrate all elements into one operational system. No company is better suited to define technologies for a complex system than Boeing.

The NMD program is now in a rigorous flight and ground test phase – testing all elements in a variety of scenarios and against a range of targets. Major elements include radars, the interceptor, the command and control system, and interfaces to space-based satellites.





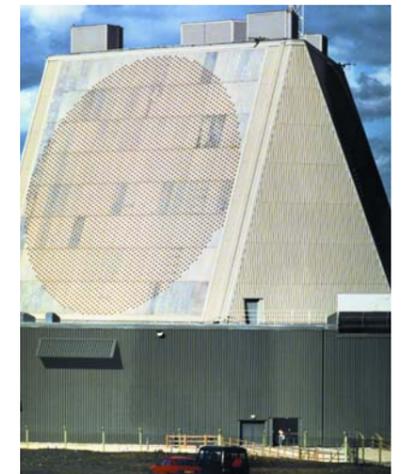
Extensive ground testing and simulation testing is an essential part of the NMD program. Facilities at a variety of locations have been constructed to simulate and test every component of the NMD system. The test silo, built in Huntsville, Ala., tests the interfaces from the control system to the interceptor itself. All of these testing facilities provide a wealth of information that is used to enhance the system and create reliable and fail safe processes.

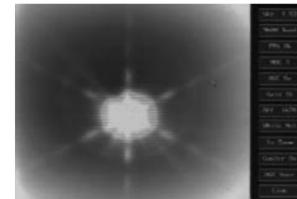




The system is operated with a human in control based on information from surveillance radars and sensor devices. The command and control element of the system will analyze data, characterize incoming objects and begin necessary launch processes.

Once interceptors have been launched, data will be communicated to the interceptor itself to ensure correct positioning, characterization, and ultimately, a successful mission.





The interceptor itself consists of a booster rocket and a “kill vehicle” designed to identify a target from a suite of objects and, ultimately, obliterate the incoming destructive element. The kill vehicle utilizes hit-to-kill kinetic energy, not a warhead or explosive, to destroy the target. By virtue of the fact that the intercept takes place outside the atmosphere, potentially dangerous fallout and debris will be eliminated before entering the earth’s atmosphere.

Technology has made the world a better place in most respects. However, it has also made it more dangerous and vulnerable to destructive missiles launched by states of concern or even an accidental launch from other nations. National Missile Defense will deter use of destructive force against the United States and protect our cities, states and, most importantly, our citizens.

NMD is a challenging endeavor. The Boeing Company is meeting the challenge to provide the defense that all Americans deserve. ■



Missile Defense & Space Control (MD&SC) is a recognized leader in its addressed markets of strategic missiles, missile defense systems, precision navigation products, laser and electro-optical systems, as well as electronic and sensor systems. The organization has its headquarters in Anaheim, California, and a major operational site in Canoga Park, California.

The foundation of MD&SC work through the years has been the development and production of guidance and control systems for land-based Intercontinental Ballistic Missiles (ICBMs), and submarine inertial navigation systems. The performance excellence of these products has earned the organization international recognition.

For more than 40 years, Missile Defense & Space Control has helped to produce all successful generations of Minuteman ICBMs. MD&SC is now leading a team of contractors to replace the aging guidance system electronics in the Minuteman III ICBM, designated to be the backbone of the U.S. fleet. The organization also plays a key role in overall sustainment for the U.S. missile fleet and its operations.



"The many core capabilities within the Missile Defense & Space Control organization position us as a leader in this emerging market. From guidance and seeker technologies to directed energy and electro-optical capabilities, the business has the advanced and interoperable technologies that are key to success. Our goal is to continue to develop our capabilities to best meet the requirements of our government customers."

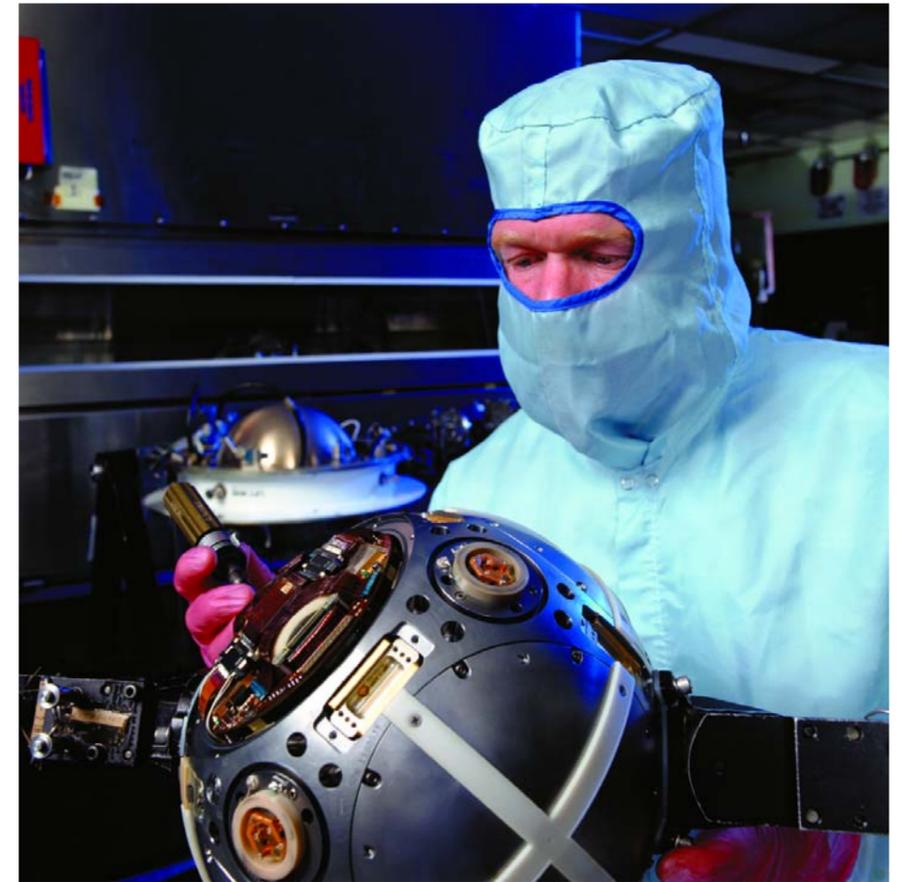
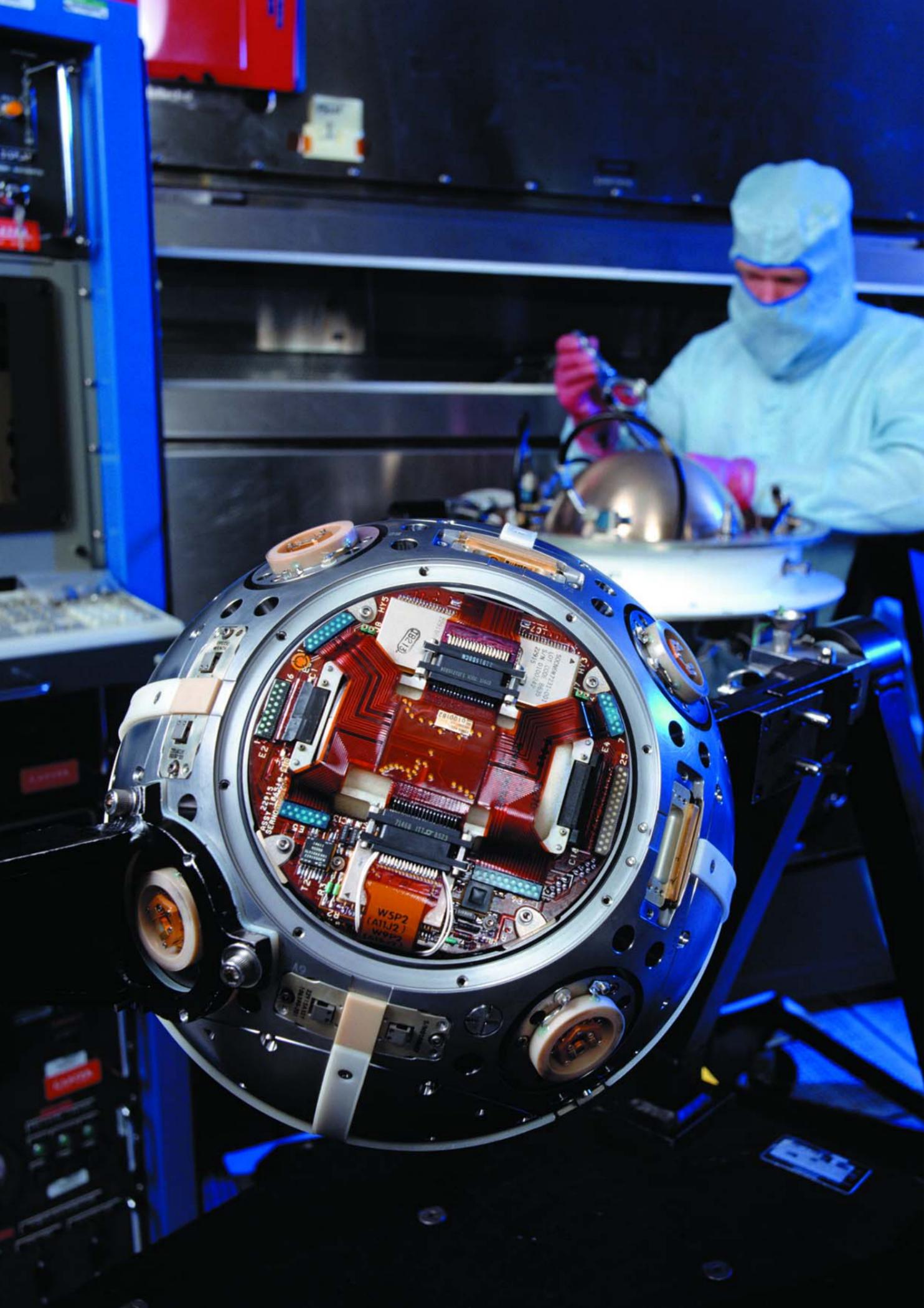
*Allen B. Ashby
Vice President & General
Manager, Missile Defense &
Space Control*





The organization's successful history in navigation also extends below the sea. In 1958, a U.S. Navy atomic-powered submarine made the first transpolar crossing under the polar ice cap. The navigator guiding that historic voyage was produced at what is now known as Missile Defense & Space Control. Today, Boeing equipment is installed on all U.S. Navy tactical and strategic submarines, as well as UK Trident submarines.

Support for the equipment continues in our Boeing Guidance Repair Center located in Heath, Ohio. BGRC repairs, tests, and calibrates nearly every type of guidance/navigation system including: inertial navigation units for aircraft such as the F-15, F-16, F-117, B-1B, B-2, B-52, C-17, C-130, and C-141B, as well as the Minuteman III and Peacekeeper ICBMs. BGRC also services advanced cruise missile sensors and maintains the Dual Miniature Inertial Navigation System for the Navy's aircraft carriers.

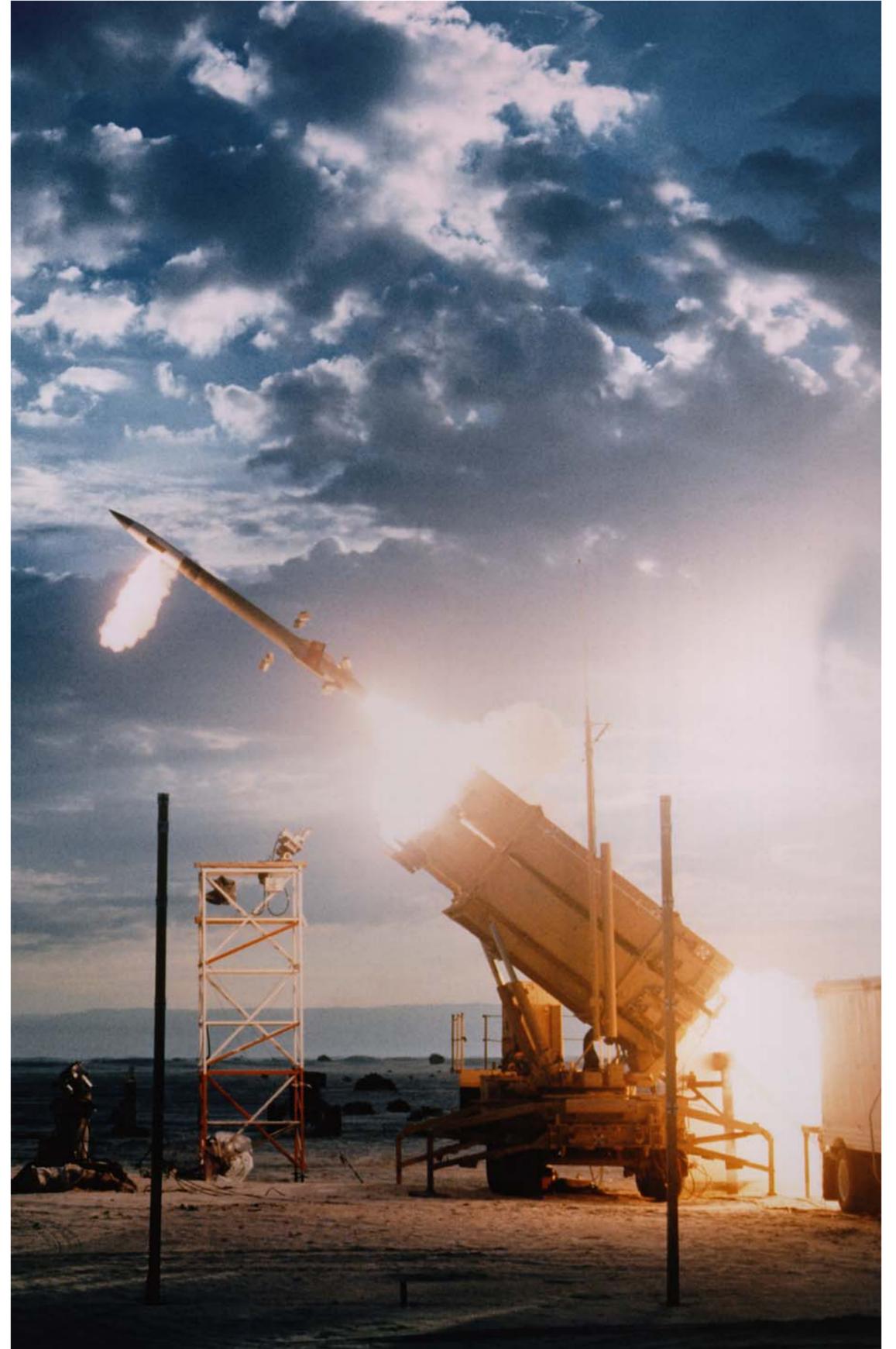




Missile Defense & Space Control supports a wide range of air defense requirements. The organization provides the advanced seeker for the Patriot Advanced Capability (PAC-3) missile that is designed to operate in various locations as required to defend troops and assets from short- and medium-range threats. The PAC-3 seeker provides hit-to-kill lethality against ballistic missile warheads and weapons of mass destruction.

MD&SC also provides the kinetic energy guidance assembly, propulsion elements and integration capability for the U.S. Navy's sea-based theater air defense program, Navy Theater Wide.

Not limited to missile technology, MD&SC also offers ground-based air defense support. The Boeing-built Avenger is the U.S. Army's premiere line-of-sight, mobile, shoot-on-the-move, air defense system. Avenger is a key element of the U. S. Armed Forces air defense architecture that includes C2I, radars, platforms and air defense missiles.





Also produced by Missile Defense & Space Control is space electronic and sensor equipment. With applications ranging from defense and aerospace usage to commercial purposes the focal plane arrays, infrared seekers and high-speed processors are designed for accuracy and high-reliability. MD&SC focal plane arrays installed aboard the Hubble Space Telescope, as well as ground-based telescopes, have captured astounding images that are changing the face of astronomical research.

Missile Defense & Space Control's continuing development of advanced technologies will allow Boeing to continue to support our nation's most stable defense programs, as well as meet the emerging requirements in both the defense and space sector.





The Battle Management, Command, Control, Communication, Computers and Intelligence (BMC4I) segment provides surveillance, communication, planning, and central command and control of the ABL weapon system.

Within the last decade, theater ballistic missiles – such as the Scuds used by Iraq during Desert Storm – have emerged as major threats to American forces deployed abroad and to allied nations as well.

As part of a U.S. Air Force effort to defend against those types of missiles, Boeing is leading a team in the development of an accurate, airborne, high-energy laser weapon system. This Airborne Laser (ABL) will be capable of shooting down theater ballistic missiles while they are in the boost phase, ensuring that the warhead falls over enemy territory.

The first prototype is now being built with oversight by the Laser & Electro-Optical Systems division of Missile Defense & Space Control.

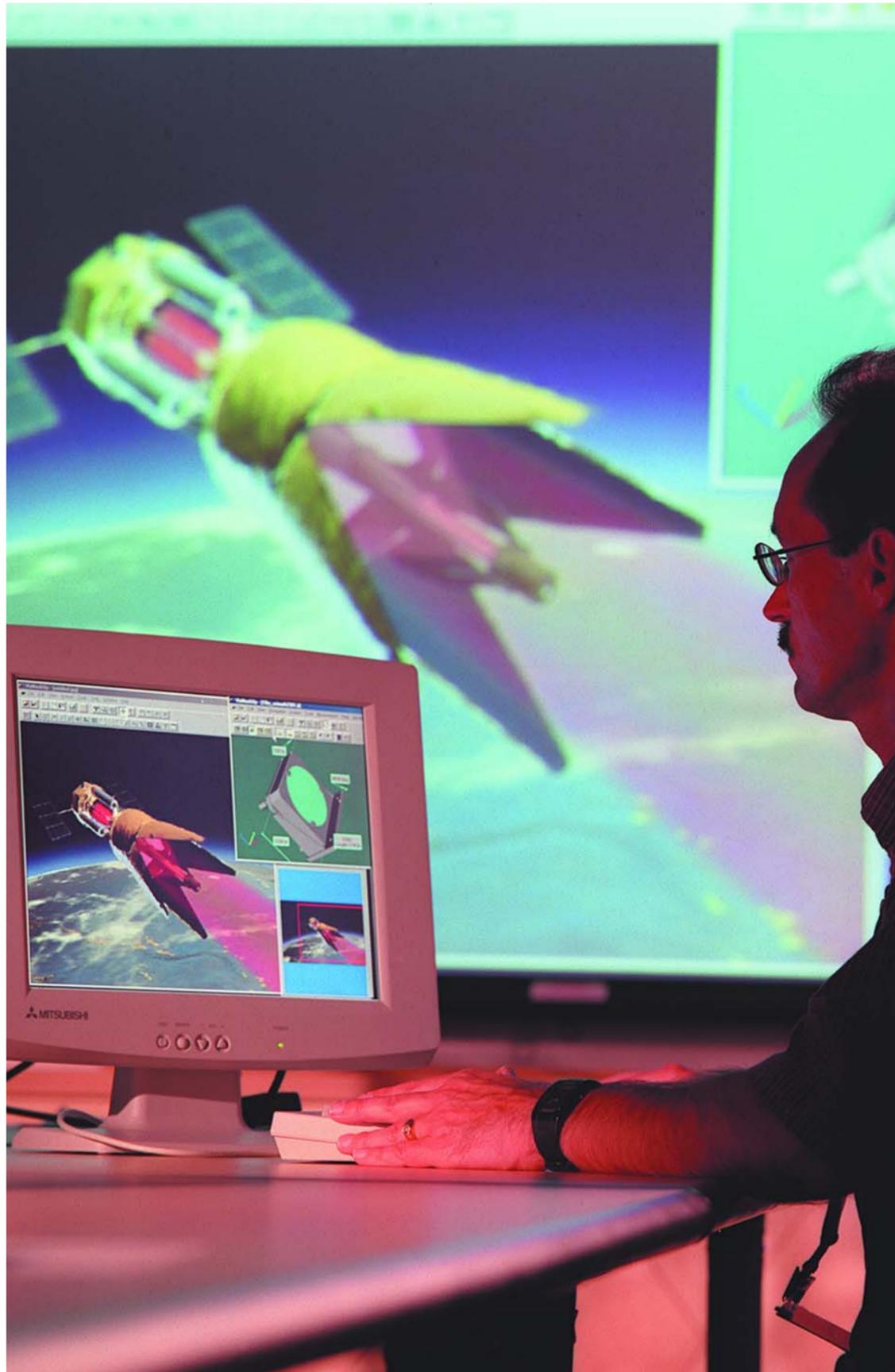
Using a high-energy Chemical Oxygen Iodine Laser carried aboard a modified Boeing 747-400F, the ABL will locate and track missiles in the boost phase of their flight, then accurately point and fire the high-energy laser, destroying enemy missiles near their launch areas.

Equally important, the ABL will be a “force multiplier,” providing missile launch and impact point prediction cues to other theater assets. And it can be fully integrated into joint theater operations.

The Air Force envisions an initial fleet of seven ABL aircraft, rapidly deployable anywhere around the globe, to provide a strong deterrent to any potential use of theater ballistic missiles.

“Directed energy weapons will revolutionize warfare in the future. We have assembled a strong team and hold leadership positions in the major development programs.”
Mike Skolnick,
Vice President & General Manager, Laser and Electro Optical Systems.



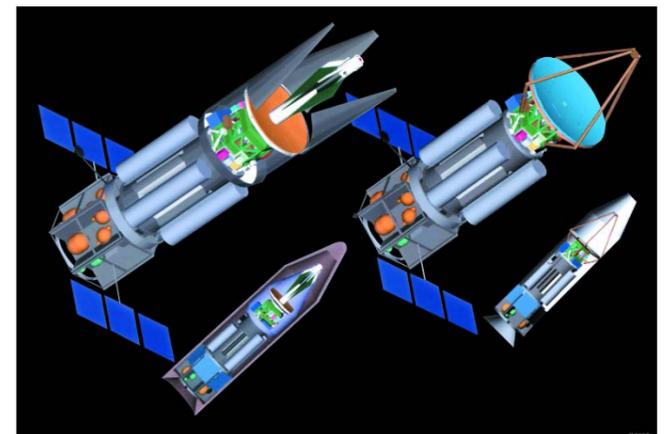


The Space Based Laser (SBL) program is now developing the technology to provide the U.S. with an advanced ballistic missile defense system for both theater and national missile defense. The SBL platform would achieve missile interception by focusing and maintaining a high-powered laser on a target until it achieves catastrophic destruction.

Boeing is leading a joint venture team to advance technology for the SBL concept, through the development of an integrated flight experiment (IFX). The IFX will include Anti-Ballistic Missile Treaty-compliant ground and space experiments, culminating in the demonstration of a missile shutdown by a space-based laser.



The SBL IFX Team is exploring alternative payload and delivery system concepts.



Boeing has developed high resolution real-time compensated imaging capabilities as well as electro-optic remote sensing capabilities. Boeing supports the Air Force with advanced research and development and space surveillance operations at the Starfire Optical Range (SOR) in Albuquerque, New Mexico,

and the Maui Space Surveillance Site (MSSS) in Hawaii.

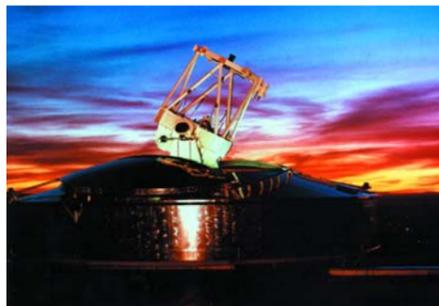
A key mission of these Air Force facilities is to develop and demonstrate optical wavefront control technologies. The facilities include a 3.5-meter telescope, currently the largest telescope in the world equipped with adaptive

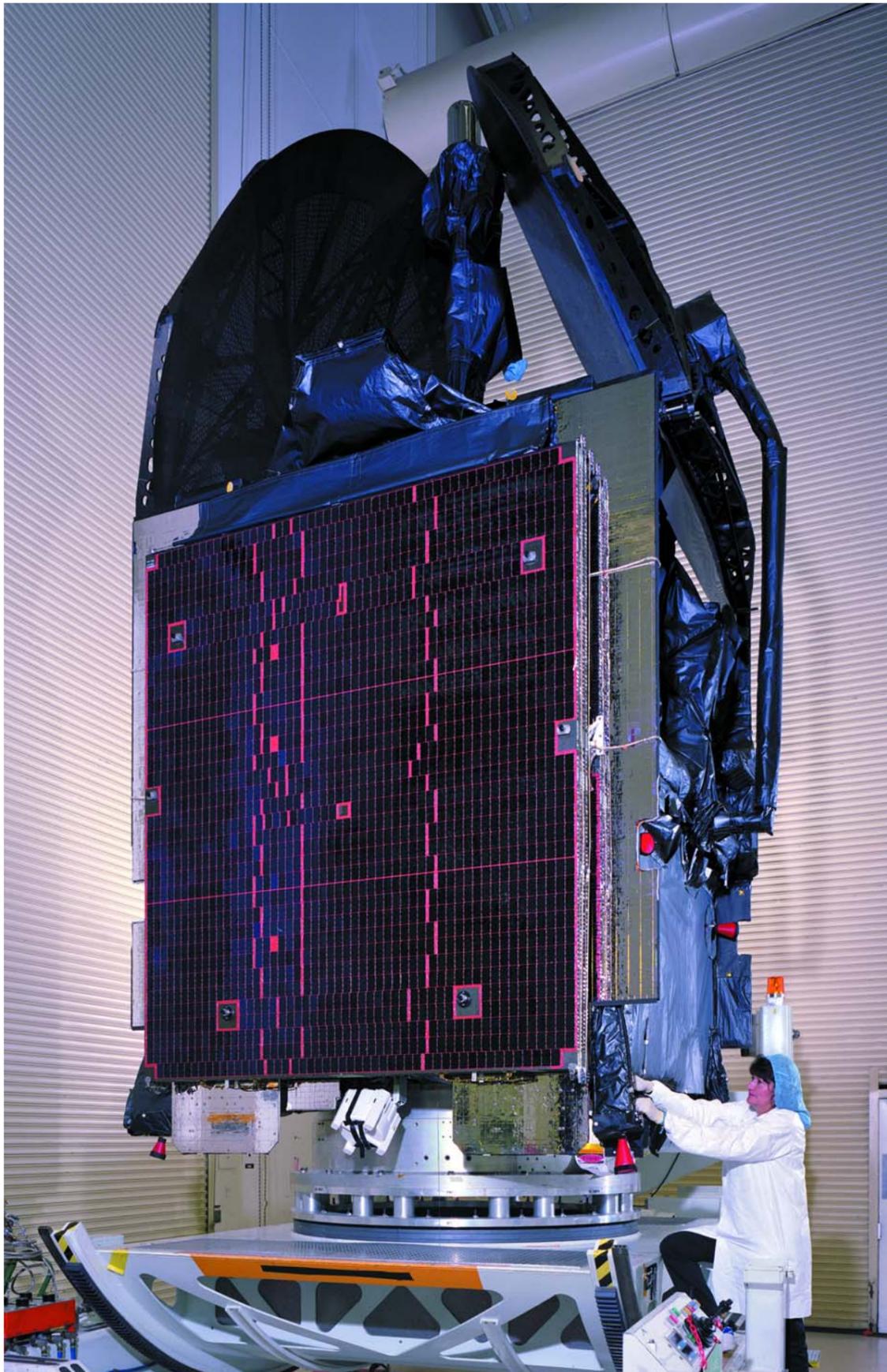
optics designed for satellite tracking as well as smaller telescopes and beam directors.

In addition to its primary research charter, the SOR & MSSS support field experiments by others within the research community.

The Advanced Tactical Laser (ATL) is being developed by Boeing to address a number of tactical warfare applications, including short range theater air and missile defense, and short range precision strike. Plans are underway to package compact high-energy lasers into tactical aircraft and ground vehicles.

Advanced technologies such as chemical lasers with sealed exhaust systems and electro-chemical regeneration, and high-power solid state devices will allow laser weapons to be deployed throughout the theater, providing speed of light force projection to the warfighter. ■





Boeing Satellite Systems (BSS), formerly Hughes Space and Communications Company, is the world's leading satellite manufacturer. No other company has built and launched as many satellites, or made as many technical revolutions. BSS launched the world's first synchronous communications satellite,

Syncom, back in 1963. The company has since built nearly 200 satellites to provide direct-to-home entertainment services, mobile communications, multimedia broadcast, weather data, and even national reconnaissance. Boeing now leads the industry with nearly 1,100 years of on-orbit experience.



“Boeing Satellite Systems has a long history of creating new technologies that enable exciting marketing breakthroughs. The successful direct-to-home satellite television business is just one example of what the expertise in Boeing Satellite Systems can develop.”
*Tig H. Krekel,
President,
Boeing Satellite Systems*



On July 26, 1963, Syncom became the world's first synchronous communications satellite. Two years later Early Bird, the world's first commercial communications satellite, went into orbit. Now, more than 35 years later, 188 of Syncom's descendants have been launched successfully.

The Boeing 601 and 601HP models are the most often purchased satellites in the world, with 81 ordered to date.

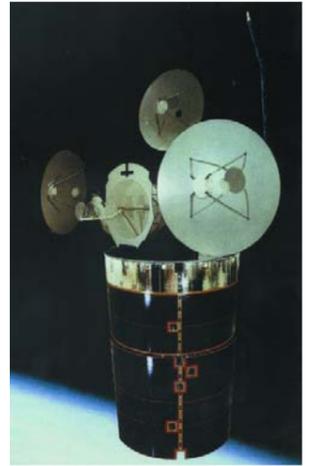
The Boeing 702 satellite was introduced in 1995 in response to commercial customer demands for increased capacity and spacecraft power, up to 20 to 25 kW. The first Boeing 702 was launched on Dec. 21, 1999, and is currently providing video distribution, Internet, and telecommunications services in North America and Brazil. Eleven Boeing 702s are currently in production, and at least two will launch this year. Meanwhile, there continues to be a steady demand for the Boeing 376 model, a medium-size, medium-power spacecraft that can be built in about a year.





When the first astronauts set foot on the moon, a Boeing spacecraft was there to greet them. Boeing developed the Surveyor spacecraft, which made the first soft landings on the moon. Since then, Boeing-built vehicles and satellites have been integral parts of NASA programs of solar system exploration, meteorology, and scientific research. BSS is also deeply involved in scientific observation and research probing the Earth itself.

BSS has been a major supplier of the GOES weather satellites that have transformed weather forecasting, making it both more accurate and more widely available throughout the world.



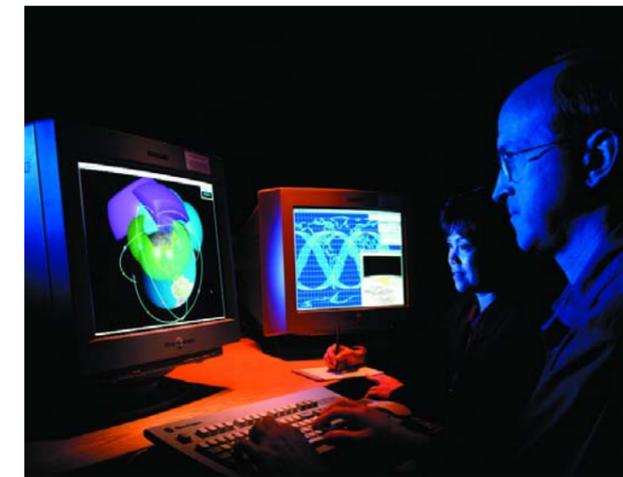
BSS contributes to America's national security in numerous capacities. The company is entering its fourth decade as a major provider of space systems, satellites, and payloads for the Defense Department, such as the Navy's UHF Follow-On series. Boeing is also a major subcontractor on the Air Force's Milstar program, as well as the Milstar follow-on, the Advanced Extremely High Frequency system. Boeing Satellite Systems is also a participant in the NRO's Future Imagery Architecture program.



The great range, convenience, and speed of transactions handled by satellites aid people, businesses, and nations daily. People around the world are healthier and safer because of Boeing Satellite Systems' environmental and defense products. The information BSS helped gather by probing the far reaches of the solar system contributes to scientists' understanding of the universe and of our own planet. The communications satellites that have been

pioneered by Boeing are comparable to the invention of the printing press as a force of freedom of thought, but their influence is even faster and far more universal. Boeing Satellite Systems' products have helped bring about a world without geographical or political boundaries and, as an integral part of Boeing Space and Communications, will expand the legacy of performance far into the future. ■



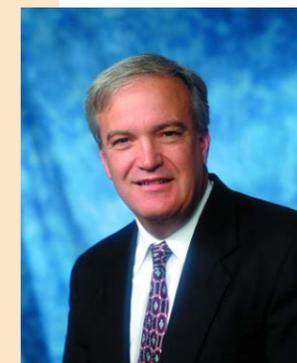


Imagine a future with aircraft and spacecraft capable of what can only be dreamed of today. Imagine also that these amazing systems will be more reliable and take much less time and money to build, operate and maintain than is possible today. At Phantom Works, Boeing's advanced research and development unit, the company's top engineers and scientists not only imagine these possibilities, they develop the breakthrough technologies, processes and systems that will turn them into reality. In this way, Phantom Works is shaping the future of aerospace.

Dedicated to the task of providing innovative, affordable solutions are approximately 4,000 employees led by David O. Swain, President. They are located across the company, working in small, integrated teams on almost 500 R&D projects for the Boeing business units, NASA and the DoD. These projects focus on providing highly innovative and affordable solutions to Boeing's space, communications, defense and commercial airplane customers around the world.

"At Phantom Works, we have assembled the most brilliant minds to provide and transition product and process technologies to improve the affordability and effectiveness of existing and future Boeing products. The result is a vision of energy and accomplishment in developing innovative system solutions for our customers."

Ron Prosser
Vice President Advanced
Space & Communications
Phantom Works





A Phantom Works team developing 3-D modeling, simulation and virtual reality tools, for instance, has found ways to cut design cycle times and cost in half, eliminate the need to build costly prototype hardware, and produce more efficient and supportable systems with first-time quality.

Manufacturing process teams have pioneered the use of high-speed machining, friction stir joining, automated fiber placement and stitched resin film infusion for producing large, monolithic metallic and composite structures that are stronger and lighter than multi-piece structures, and much faster and cheaper to produce.

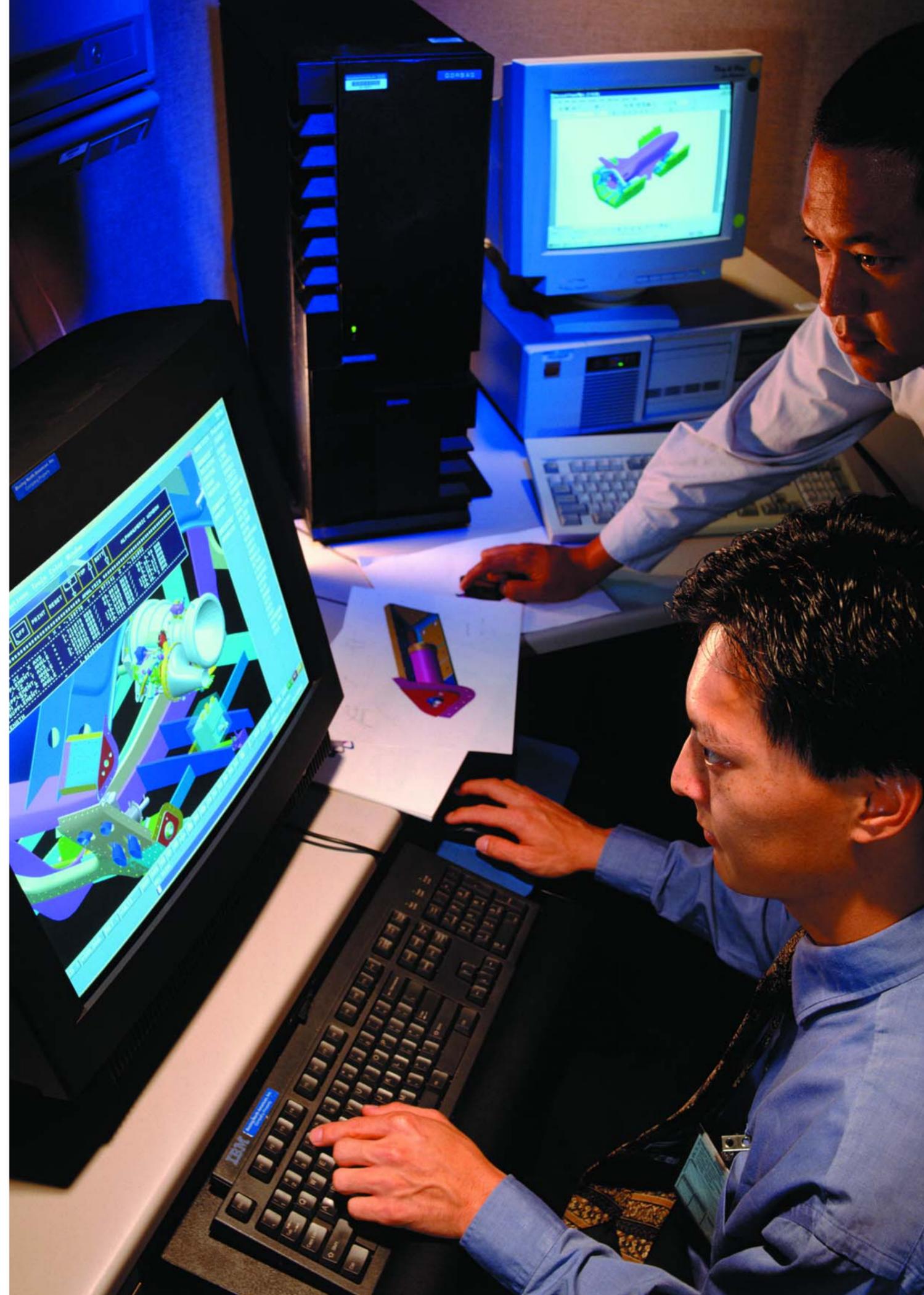
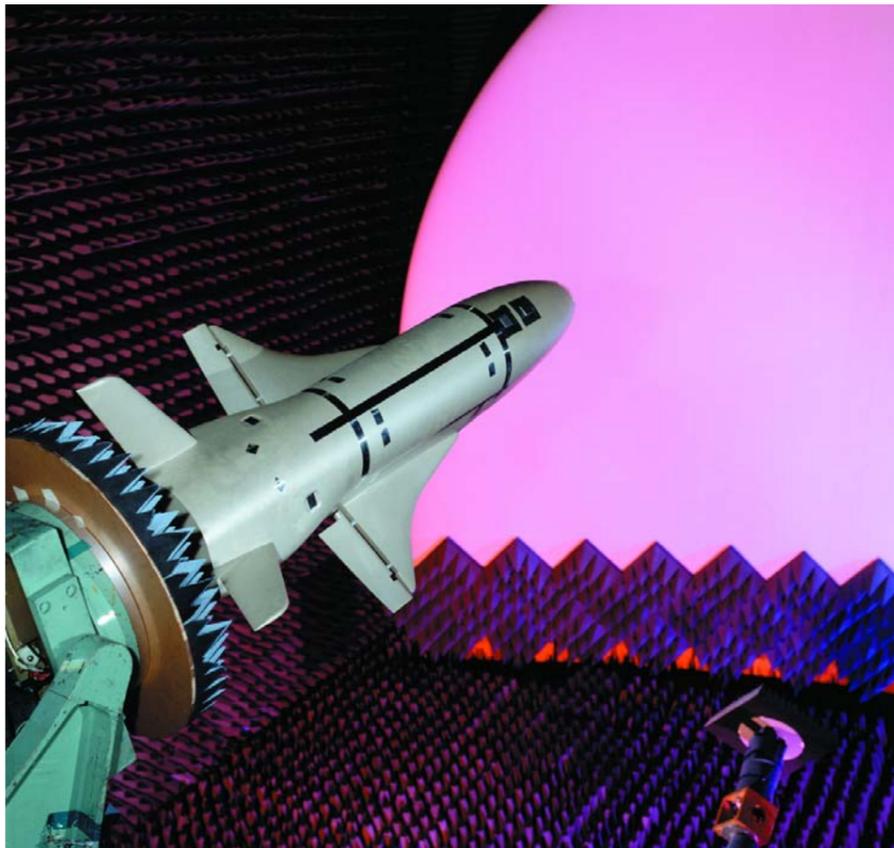
An advanced avionics team, meanwhile, is using commercial computer technology and processes to produce reusable avionics systems for military and commercial aircraft and spacecraft that cost less than half that of current systems to develop and upgrade with faster, more powerful capabilities.

These and many other innovative technologies and processes are being used to save significant time and cost in the development of such futuristic systems as the X-37

Reusable Space Plane, Space Maneuver Vehicle, Space Transfer Vehicle, Canard Rotor/Wing, Blended Wing/Body transport, Advanced Tactical Transport and the Unmanned Combat Air Vehicle (UCAV). They are also being used to reduce the cycle time and cost of the development of Boeing products such as the Delta

III and Delta IV launch vehicles and Joint Strike Fighter.

By validating technologies and process on new and advanced programs, and transitioning them to programs throughout the company, Phantom Works increases Boeing's competitiveness.





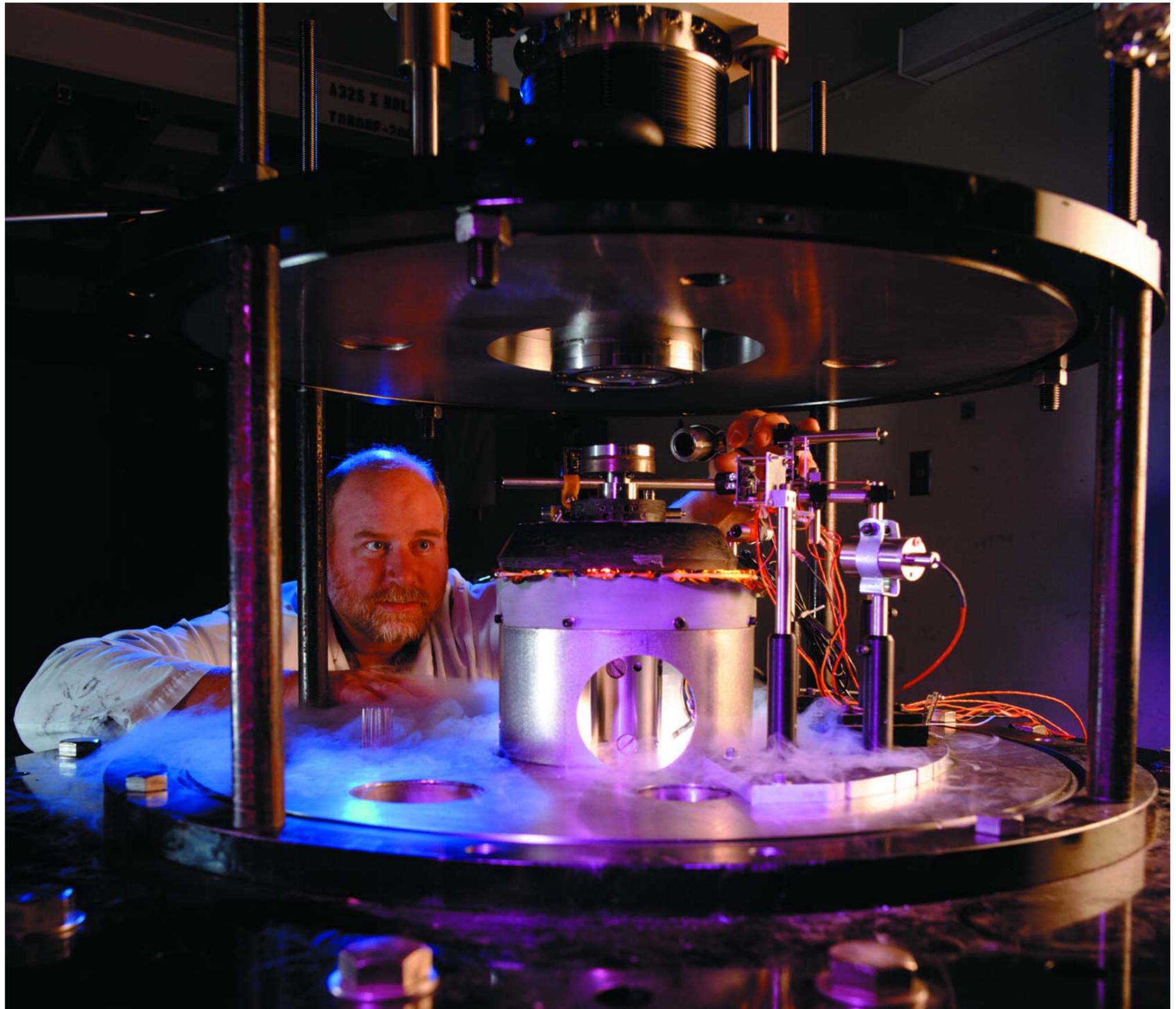
Phantom Works is shaping the future of aerospace through the development of total system and system-of-system solutions. Such solutions are based on Phantom Works' ability to combine the best of all the different products, technologies, processes and intellectual talent that Boeing has into a single, integrated, low-cost approach to meeting customers' needs.

This "Best-of-Boeing" approach was used on UCAV and X-37, and is currently being used in the development of a new Boeing 747 AirLaunch system that can provide a near-term, low-cost, launch-on-demand capability for delivering civil and military payloads into space or for conducting a variety of scientific missions.

On a larger scale, Phantom Works is working with the U.S. Coast Guard on its Deep Water program and with the U.S. Army on its Future Combat System program. Both require the development of an integrated set of systems – communication satellites, aircraft, sea- or ground-based systems and more – that will maximize their mission capabilities while minimizing their overall operations and support costs.

By capitalizing on the unparalleled breadth and depth of Boeing's products, processes and intellectual talent, the Phantom Works is also working on identifying new systems solutions that may lead to the creation of entirely new business units within the company.

Among the hundreds of innovative ideas being designed, tested and developed by Boeing Phantom Works is analysis of a perpetual motion energy source. (Opposite) A flywheel made of composite materials that spins at a very high speed in a liquid nitrogen environment may result in a continually running energy source that will be a much lighter and more efficient replacement for batteries.





Examples of Phantom Works' Emerging Affordability Technologies include the friction stir joining process (shown in application with Delta IV manufacturing) and Advanced Performance Coatings (facing page) which drastically reduce the frequency and associated costs of repainting aircraft .

With headquarters in Seattle, Washington, Phantom Works is a virtual organization with the majority of its 4,000 employees working in small, integrated teams in the Puget Sound, Southern California and St. Louis areas.

These teams remain coordinated in their tasks and with their management through a variety of advanced electronic communications techniques that maximize information flow across the organization while minimizing transaction costs.

This approach allows Phantom Works to remain tightly integrated with all the Boeing business units, spreading common technologies and processes among them as well as drawing on their best technologies, processes and people to develop new, more affordable solutions for its customers. ■





“Phantom Works’ integrated project teams have saved our customers millions of dollars. In the process, we’ve introduced innovative solutions and cut cycle-time for such projects as the Space Shuttle, Delta IV, F/A-18E/F Super Hornet, F-15E Strike Eagle, AH-64D Apache Longbow, Boeing 777

and AWACS. In addition, the initiatives being applied to next-generation programs, ensures our commitment to provide even better and more cost effective solutions for the future.”

*George K. Muellner
Vice President & General
Manager, Phantom Works*



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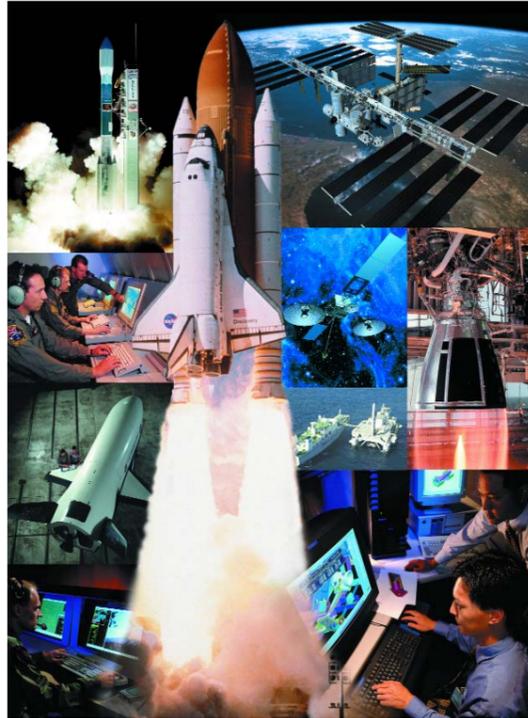
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