Federal Aviation Administration
National Airspace System

2005 - 2009
Capital Investment Plan

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Federal Aviation Administration National Airspace System Capital Investment Plan for Fiscal Years 2005–2009

1   Introduction

1.1   What Is the Capital Investment Plan?

The Federal Aviation Administration (FAA) Capital Investment Plan (CIP) is a five-year financial plan that allocates funding to National Airspace System (NAS) projects. It is based on a detailed analysis of project funding by FAA functional working groups. It is developed consistent with the technical planning in the NAS Architecture. The CIP includes estimates for the current fiscal year budget and for each of the next four years' expenditures for each line item in the Facilities and Equipment budget. It provides a clear understanding of how much modernization we can do in that five-year timeframe. Consistent with appropriations legislation, the total funding estimates in the CIP equal the Office of Management and Budget's (OMB) estimates for the same timeframe.

In developing the CIP, we analyze our needs for modernization and allocate funding based on how the CIP projects support the FAA strategic goals and performance targets. The five-year plan gives us a broader view of NAS modernization and helps us to:
- Successfully manage projects with a high degree of complexity.
- Focus our investments on strategic goals, such as reducing capacity constraints at the largest airports and improving system efficiency.
- Integrate planning for implementing all the new systems to ensure financial support for interdependent systems.

1.2   The Capital Investment Plan Allocates Funds to Priority Projects

The CIP's detailed financial plan is essential to the FAA for allocating present and future resources to complete capital investment projects. Because it takes several years to implement many of the projects, we must allocate future-year resources in advance. However, future-year estimates for total FAA capital investment funding are limited to the OMB future year estimates for Facilities and Equipment in the President's Budget. This restriction requires us to choose among modernization alternatives. As a result, the CIP only includes projects that most likely will receive funding and that the FAA can complete. These future-year estimates, in many cases, also provide a financial baseline for individual projects, which we can use to manage these projects against cost and schedule targets.

1.3   The Air Traffic Organization and the CIP

The FAA has begun the transition of air traffic control and supporting functions to a performance based organization called the Air Traffic Organization (ATO). Over the next couple of years the ATO will put mechanisms in place to reflect its new

management philosophy and structure. Non-air traffic functions such as safety regulation and airport grants will be managed by existing organizations within the FAA. This year's CIP reflects plans developed prior to the transition to the ATO, but it is aligned with the goals, objectives and performance targets contained in the FAA Flight Plan 2004-2008. Future CIPs will be influenced more heavily by the ATO as it participates in developing future Flight Plan goals and performance targets. These efforts will be translated into the service based capital improvement needs of the ATO and combined with the capital needs of existing FAA organizations outside the ATO.

The ATO has been established to more tightly focus FAA resources on improving the services it provides to aviation customers. Five operating service units are being established to reflect the direct services that allow aviation customers to fly safely in the National Airspace System. These operating units will have a clearly defined mission, a common set of goals and a consistent strategy that reflects the needs of customers. ATO leadership will have access to an information infrastructure that allows them to use accurate, timely data in their decision-making processes to improve air traffic control management and timely delivery of new technologies.

The five operating service units are:
- En Route and Oceanic - provides en route and oceanic services and the capabilities to support those services
- Terminal - provides terminal services and the capabilities to support those services
- Flight Services - provides overall flight planning and advisory services
- System Operations - provides national guidance and policy for air traffic procedures and airspace issues
- Technical Operations - provides maintenance, construction and navigation services to the ATO

These service units will have the authority, responsibility, and accountability for providing their designated services. Their responsibilities will also include:
- Planning for the future
- Developing requirements for equipment to support improved services
- Completing investment analyses on new equipment
- Developing and implementing new equipment and procedures
- Developing performance goals to measure quality of service
- Balancing improvements to service to meet internal and external goals

The operating service units have been established and the vice-presidents to run them have been chosen. They will establish performance metrics to measure their success and provide accountability to management and customers.

2   Other Planning Efforts Complement the CIP

2.1   The FAA Aerospace Forecast Projects Future Workload

The FAA Aerospace Forecast annually projects the level of aviation activity and FAA workload for the next 12 years. This forecast is key to the FAA system engineering efforts that develop the components of the NAS Architecture. The information enables the FAA to develop engineering designs that address anticipated overall growth and changes in the tempo of operations at key airports. The forecast also fosters design of new, larger systems that must accommodate future air travel demand and that deal with the complexities of increased levels of operations at the busiest airports.

Although growth of air travel is in a temporary decline, commercial air travel in the past 20 years has more than doubled. We expect this long-term growth trend to resume as the overall economy improves this year and next. The FAA expects air travel to reach the levels attained in 2000 within the next two or three years and then resume more normal growth rates.

It is important to remember that the high level of activity during 2000 often exceeded the capacity of the airport and airway system, resulting in congestion and delay. During the late 1990s and in 2000, the FAA was falling behind in our attempts to modernize the NAS. Simultaneously, we were providing new airspace capacity to handle the needs of the growing aviation industry. Because of the long lead times for implementing improvements, the CIP must plan for a substantial level of capital investment during the present slowdown in the industry. As demand builds, we will be able to reach and maintain the airspace capacity necessary to serve the growing aviation industry.

Several factors support the projections of continued growth in aviation. The general economy has begun to return to higher growth rates. Demand for leisure travel has increased because of increasing consumer preference for air travel, increasing disposable income, and lower relative fares. The globalization of industry continues leading to greater demand for business air travel. Use of regional jets for service to smaller markets has made air travel more available and appealing for people living in those communities, and the continuing success of low-cost service and falling real fares is generating increased demand. By 2006, both the total number of instrument flight rule (IFR) operations at towers and the number of IFR operations handled by en route centers is forecasted to return to and then exceed past peaks.

2.2   Concept of Operations Describes Future ATC Capabilities

The FAA and the aviation industry jointly developed the RTCA NAS Concept of Operations and Vision for the Future of Aviation (Conops). The Conops details the consensus view of what air traffic control capabilities should be available in the future. This view sees a future air traffic control system that will allow all customers to operate without undue constraint in a system that enhances today's high level of safety while providing equitable access. The Conops is the starting point for determining the shape of

the system of the future. The operating capabilities outlined in the Conops become the conceptual framework for designing the systems and operating procedures that will be implemented over the next several years.

2.3   NAS Architecture and Target System Description detail NAS systems and services

The NAS Architecture is a Web-based information system that describes the systems and services provided for the NAS. It starts by describing the key elements of the services provided to aviation customers and then translates that information into NAS systems and components. The NAS Architecture identifies the current capabilities and how they will evolve over the next 15 years to meet the future needs of the FAA and its customers. It also shows system and component cost and schedule. The NAS Architecture identifies the interactions between systems and serves as the basis for future capital investment.

To provide a view of the NAS Architecture at a specific point in time, the FAA has developed a Target System Description (TSD) to help define what actions need to occur between now and 2015 to satisfy customer concerns and accommodate aviation growth. The TSD sets a target for the system configuration in 2015, and it identifies the new component systems that must be developed to meet that target. By setting a goal for modernization at a specific point in time, the TSD promotes planning efforts to identify the specific steps necessary to reach that configuration by 2015, and it becomes a valuable vehicle for discussing with customers progress toward the system of the future. The TSD has been incorporated into the NAS Architecture.

Many of the projects and concepts developed to support the TSD and NAS Architecture will not be implemented until after 2009.   Budget estimates in the CIP do not extend beyond 2009. However, the vision of the future contained in the NAS Architecture is used to supplement the discussion of current projects supporting the functional areas presented in following sections of the CIP. As with any plan, not every component will be implemented exactly as described in the NAS Architecture, but many of the TSD capabilities will be complete by 2015. The future vision defined in the NAS Architecture, including the TSD, helps shape financial planning for the CIP timeframe.

2.4   Capacity Plans Analyze NAS Issues

The Airport Capacity Enhancement Plan (Capacity Plan) and the Operational Evolution Plan (OEP) are near to mid-term plans that address capacity issues in the NAS. Recommendations in the Capacity Plan and OEP help set priorities for projects in the CIP. These two plans analyze issues related to present operations and recommend near-term changes that will enhance capacity and improve NAS performance. These plans often include recommendations for specific CIP projects and implementation schedules that will yield capacity gains.

3   FAA Strategic Plan Identifies Missions and Goals

3.1   Government Performance and Results Act Requires a Performance Plan

The Government Performance and Results Act (GPRA) of 1993 requires that all Federal agencies develop a strategic plan and a performance plan. These plans identify key agency missions and set goals for improving the outcomes of agency services. Agencies expend substantial effort in developing these plans, which OMB and the Congress use to judge whether or not Federal agencies are accomplishing their stated purposes. The OMB puts a high priority on developing strategic plans, and the President's Management Agenda includes a goal for improving the ties between an agency's performance goals and its budget.

The Flight Plan 2004-2008 is the FAA's new strategic plan. It contains the broad strategic goals that define the fundamental purposes of the agency. Under each of the broader goals is a list of objectives, strategies, and initiatives that articulate the actions the FAA believes are necessary to accomplish those goals. Each objective also has a measurable performance target. These targets set a specific level of achievement in a specific timeframe to meet the objectives.

Consistent with the President's Management Agenda, most of the capital investment projects in the CIP have been linked to a goal and objective. The list of goals, objectives, and the related projects appear in Appendix A. Because of the complexity of the NAS, there are normally several projects that are grouped under a single objective and its related performance targets. This is because the projects all contribute to that objective and its performance targets, and, in many cases, the projects are interdependent. Determining the contribution of each individual project to a performance target would require arbitrary allocation of benefits and would introduce a level of complexity that would detract from the focus on key agency goals and minimize the value of performance management. It is also important to note that some of the objectives are supported by operating and airport grant programs, and these objectives do not have corresponding capital investment projects.

3.2   FAA Strategic Goals, Objectives, and Performance Targets

The FAA strategic goals are:

- **Increased Safety:** Achieve the lowest possible accident rate and constantly improve safety.
- **Greater Capacity:** Work with local governments and airspace customers to provide capacity in the United States airspace system that meets projected demand in an environmentally sound manner.
- **International Leadership:** Increase the safety and capacity of the global civil aerospace system in an environmentally sound manner.

- **Organizational Excellence:** Ensure the success of the FAA's mission through stronger leadership, a better trained workforce, enhanced cost-control measures, and improved decision-making based on reliable data.

3.3 Additional Department of Transportation (DOT) Goals Relate to FAA Goals

The DOT Strategic Plan contains goals for security and environmental stewardship. These goals apply to all DOT modes. The FAA has not explicitly included them in its Strategic Plan, but there are some projects that relate directly to these goals. The related DOT goals and objectives follow.

3.3.1 Environmental Stewardship

Objective: Promote transportation solutions that enhance communities and protect the natural and built environment

3.3.2 Security

Objective: Balance homeland and national security transportation requirements with the mobility needs of the Nation for personal travel and commerce

4 Capital Investment Projects and FAA's Vision for the Future

This section highlights some of the major programs in the FAA's Capital Investment Plan (CIP), and the projects within these programs that form the core of FAA's modernization plans for the next five years. The CIP contains projects that are already under contract, as well as new initiatives. These projects support the FAA Flight Plan 2004-2008, and they, in some cases, are the prelude to completing the longer-term vision of the Target System Description.

4.1 Surface Radar Systems Increase Safety in Airport Operating Areas

Surface radar systems support the safety initiatives described in the FAA Flight Plan to reduce runway incursions. To prevent accidents on airports runways and taxiways, air traffic controllers need to have precise information on the location of aircraft and other vehicles in the airport operating areas. These radars are especially valuable in decreased visibility conditions and in locations where tower controllers cannot see some segments of the runways and taxiways. In the near term, the FAA will complete installation of additional radars. In the intermediate term, the FAA will upgrade the software that provides automated warnings of potential runway incursions. For the longer term, the FAA will develop the capability to data-link displays of ground traffic information and a moving map of the airport surface to pilots in the cockpit.

4.1.1   Runway Incursion Radars

To protect against runway incursions at busy airports that do not already have airport surface radars, the FAA is installing the Airport Surface Detection Equipment – Model X (ASDE-X). This system uses advanced technology to detect aircraft and ground vehicles in the airport operating area. In addition to the ASDE-X radar system that detects location of aircraft on the surface of an airport, advanced technology is used to pinpoint the exact position of aircraft and vehicles. We will deploy ASDE-X at 25 operational and four support sites.

The FAA has installed ASDE-Model 3 at more than 40 locations. This system provides controllers a radar display of aircraft and vehicles in the airport operating area during low-visibility conditions. The ASDE-3 is now enhanced with the Airport Movement Area Safety System, which gives automated runway incursion warnings. Controllers can use these systems to alert pilots and ground-vehicle operators that a runway incursion has occurred, so they can avoid accidents. Funding is requested to modernize these systems so that they continue to operate efficiently over the next ten years. In addition, the advanced technology that uses electronic aids to detect aircraft and ground vehicle location, developed in the ASDE-X program, will initially be added to seven of the ASDE-3 systems and is being considered for all ASDE-3s.

4.2   Aviation Safety Oversight Systems

There are about 20,000 aircraft in commercial service and over 200,000 in general aviation. The FAA has licensed more than 600,000 pilots and over 300,000 mechanics. Due to the large number of commercial and general aviation operators, aviation personnel, and repair facilities, the FAA needs automated tools to track their safety records and to ensure that they adhere to regulations and standards.

Aviation safety systems support safety regulation and monitoring programs by collecting data used to assist in:
- Issuing licenses and certificates to ensure that aviation personnel meet established qualifications and that manufacturing and repair facilities conform to standards for design and modification of aircraft
- Monitoring both the companies and the personnel that provide aviation services to ensure that safety is given the highest priority

In the near term, the FAA will continue developing computer databases that provide safety inspectors the information they need on FAA regulations, operating policies and procedures, and the historical safety and violation records of companies and aircraft they inspect. In the intermediate term, the FAA will enhance those computer systems by standardizing the architecture and adding more sophisticated communication links. For the longer term, the FAA will increase the processing power of the software to assist inspectors in analyzing information and targeting inspection efforts to focus on the most significant problem areas.

4.2.1   Aviation Safety Analysis System

The Aviation Safety Analysis System supports a number of databases used in the safety program. The databases include records of licenses and certificates, violations of FAA regulations, and accident and incident data for individuals and airlines.   These databases support analysis and enforcement activities of FAA safety inspectors and certification staff. Future plans call for modernizing the computer system architecture to ensure compatibility among the diverse databases and increase the number of ways the data can be accessed. Diversity in connecting to the databases needs to be improved to support inspectors who require access to the information from remote locations.

4.2.2   Safety Management System

Consistent with International Civil Aviation Organization (ICAO) recommendations, the FAA is upgrading its capabilities for safety risk assessments. These assessments will apply to introduction of new and modified equipment, operational procedures associated with that new equipment, and airspace redesign to enhance capacity. These new efforts will organize existing processes to coordinate analysis of safety issues, and they will enhance the consistency of safety risk assessments. In addition, the FAA will ensure more rigorous documentation of safety assessments to make certain that future assessments can benefit from work previously done.

4.3   Automation Systems

Automation systems are central to modern air traffic control. They process data from radars and other computers to provide a continuous display of aircraft location and provide air speed and altitude information to the air traffic controller. Having this data on radar displays increases the number of aircraft a controller can safely handle. FAA facilities have used automation systems since the 1970s and must continually upgrade them. Work on the next round of upgrades is progressing and should be substantially completed in the CIP's five-year timeframe. In the mid and long term, the NAS Architecture proposes improving the information flow of air traffic information and merging some automation functions. This will increase air travel efficiency and allow transition to a standardized display system for both en route and terminal control facilities.

As shown in Figure 1, when aircraft proceed from takeoff to landing, three different facilities generally provided air traffic control. The airport traffic control tower directs traffic on the airport surface through takeoff. After the aircraft is in the air and about five miles from the airport, a terminal facility using radar control takes over. Normally, as the aircraft is climbing toward cruise altitude and is less than 30 miles from the airport, the terminal facility transfers control of the aircraft to an en route facility. En route control continues until the aircraft is about 30 miles from its destination airport, where it is handed off to a terminal facility again and then to an airport tower. Both terminal and en

route facilities use radar surveillance and automation systems to assist controllers in providing adequate separation between aircraft.
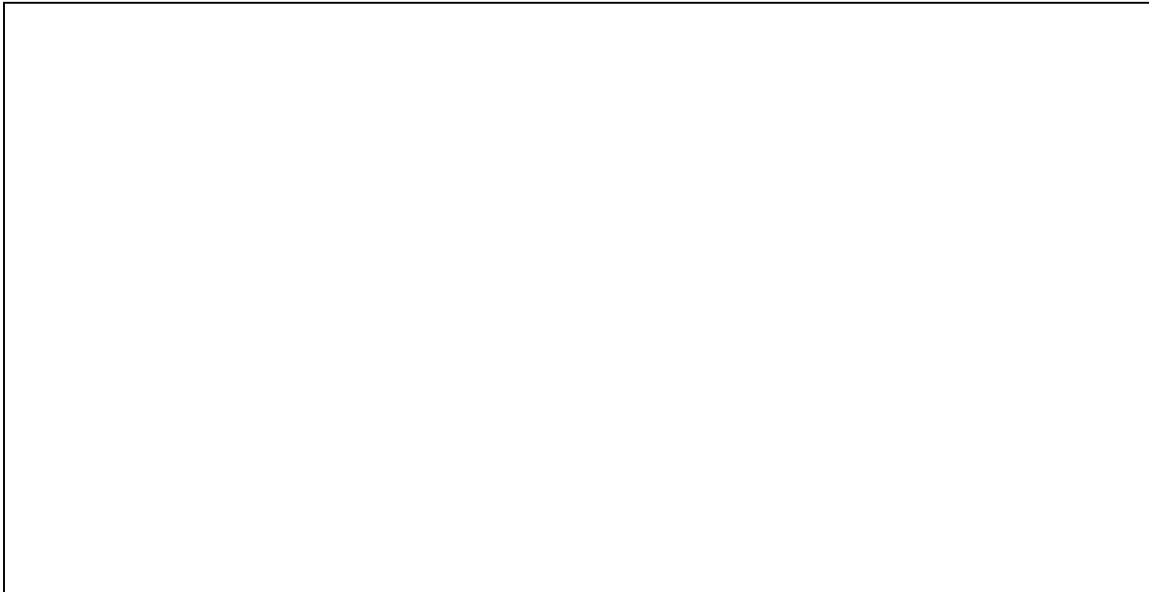
Figure 1. Relationship of Tower, Terminal, and En Route Air Traffic Control

4.3.1   En Route Automation Systems

Currently, en route facilities handle about 44 million aircraft per year at 21 facilities. In ten years, this workload is forecast to grow about 25 percent. To accommodate that growth, the FAA must modernize its en route automation systems. In the near term, the FAA will continue to upgrade the existing en route automation systems by replacing peripheral components and the displays. During this period, the FAA will be planning and designing a replacement system that requires rewriting the software and installing new computers. The replacement is planned for about 2010. The new system will support added capabilities planned for the longer-term such as interactive flight planning, reduced horizontal separation for aircraft, and sharing of air traffic information for collaboration on strategies to decrease delays.

This replacement program, En Route Automation Modernization (ERAM), will modernize the en route environment and infrastructure to provide a modular, expandable, and supportable system. The major new elements ERAM will address are safety logic in the backup system, flexible routing, utilization of surveillance information, and the ability to integrate new capabilities without costly redesigns.

ERAM will replace the existing en route control automation system. A major component of the existing system is the Host Computer. It processes and formats flight plan and aircraft position information for display on the air traffic controller workstations. It also calculates the speed at which the aircraft is moving over the ground and can project the aircraft's position for a short time into the future. The basic software architecture of the

Host Computer is over 30 years old, which is obsolete by modern engineering standards, and it is costly to maintain.

The current backup for the Host Computer is the Direct Access Radar Channel (DARC). This system lacks many of the Host's functions, and when this back up system is used during a Host failure, increased separation between aircraft is necessary which results in a reduction in airspace capacity. With ERAM, primary and backup systems will have the same capabilities and functions will be added to provide end-to-end flight routing across airspace boundaries.

The Peripheral Adapter Module Replacement Item (PAMRI) is another system that supports the Host Computer. The PAMRI receives data from the radars that determine aircraft position, flight plan data from computer tapes, and communications from other air traffic facilities and formats that information for the Host Computer. The FAA is replacing PAMRI with a new system called the En Route Communication Gateway (ECG) beginning in 2004 as part of the en route modernization program. The existing PAMRI needs replacing to remain compatible with Host Computer upgrades.

In addition to the computer systems and software, several outdated Host Computer peripherals need to be replaced. Over the next five years, the FAA will be replacing obsolete and worn-out storage devices, printers, and other input/output devices used with the Host Computer. The new peripherals have more capacity and are more efficient to operate.

As we approach the 2015 timeframe, efforts to standardize the platforms used in en route and terminal systems will be part of the engineering design.

4.3.2 Terminal Automation

Terminal air traffic control facilities handle about 50 million instrument operations at airports per year, and that number is expected to increase by about 20 percent over the next 10 years. Given that travel demand tends to concentrate service at the busiest airports, and that there are constraints on building new runways, this amount of growth will require more sophisticated automation tools to sustain airport capacity during periods when adverse weather currently causes a reduction in the capacity available under Visual Flight Rules (VFR) conditions. Upgraded terminal automation systems will expand the capacity to accommodate aviation growth at airports.

In the near term, the FAA is replacing the existing terminal automation systems with the Standard Terminal Automation Replacement System (STARS). Replacement will take place over several years. These new systems will be able to handle new automation tools that will maximize use of available runway capacity. These tools, coupled with new traffic management tools discussed in paragraph 4.7.2, will improve efficiency of operations at major airports and complement the new capabilities provided by the en route automation modernization program. By 2015, the FAA will be developing a

standardized platform for en route and terminal systems and better integrating the functionality between the two systems.

To date, the FAA has deployed 13 systems, including the first two key sites at Syracuse, New York, and El Paso, Texas, and a fully operational system at Philadelphia. We will be installing the remaining STARS systems with all planned features over the next several years.

4.3.3   Oceanic Automation

The FAA controls traffic over a large part of the North Pacific and about half of the North Atlantic, shown as the white areas in Figure 2. Radar surveillance is not available in the majority of oceanic airspace, and this currently means that aircraft may be required to maintain separation up to 100 miles to ensure safe flight. With the implementation of new technology, we will be able to reduce separation of aircraft on oceanic flights using automatic dependent surveillance and satellite communication links coupled with a system that provides a computer display of oceanic traffic. With demand for international travel growing faster than demand for domestic travel, aircraft currently cannot always be assigned the altitude or route that is either the most fuel efficient or shortest duration during oceanic travel. By reducing separation in oceanic travel, controllers can assign more aircraft to preferred altitudes and routes. The new automation systems are scheduled to be operational at the three oceanic control centers (Oakland, New York, and Anchorage) beginning in 2004.
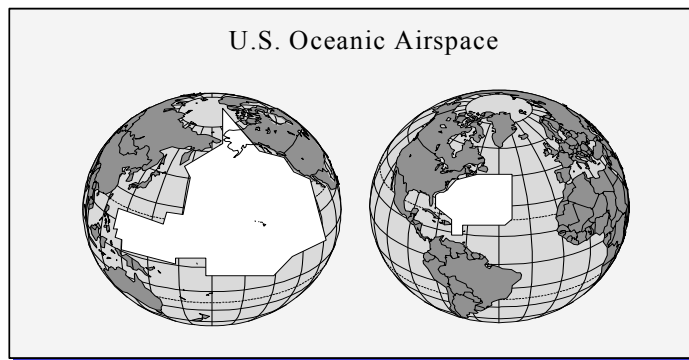
Figure 2. U.S. Oceanic Airspace

4.4   En Route and Terminal Surveillance Systems Improve ATC Efficiency

Surveillance systems significantly improve the efficiency of air traffic control. When air traffic controllers have a precise image of aircraft position, they can safely use reduced separation between aircraft.   Ground-based radars currently provide the majority of surveillance information. Primary radars provide aircraft location information by transmitting a radar signal and then detecting the reflected energy from the surface of the aircraft. Secondary radars transmit a signal, which triggers a transponder in the aircraft to reply with altitude information and a code that identifies the aircraft. This system also

measures the location of the signal to determine aircraft location. The FAA has replaced a portion of the primary and secondary terminal radars in use and will be replacing the remainder over the next several years.

In the near term, the FAA will focus on replacing older systems. For the future as outlined in the NAS Architecture, the FAA is planning to supplement the ground-based radars with a system that reports aircraft location to FAA air traffic facilities by using a satellite-based communication link and the onboard navigation systems in the aircraft. This is called Automatic Dependent Surveillance-Broadcast (ADS-B), and it is in limited use in a few air traffic control facilities. By using multiple sources of location information, controllers can provide reduced separation and accommodate a larger number of aircraft in any given segment of airspace.

4.4.1 Terminal Surveillance

Several projects are underway to replace the surveillance radars and beacon interrogators (secondary radars) that provide position information to controllers. The Airport Surveillance Radar – Model 11 (ASR-11), which has a digital output, will replace ASR-8 and earlier model analog radars. The FAA has already replaced about half of the terminal radars with the Airport Surveillance Radar – Model 9 (ASR-9), which is also a digital radar. The ASR-11 program will replace all older surveillance radars but the ASR-9s, consistent with plans to renovate the existing ASR-9s, to extend their life. The ASR-11 transmits data in a digital format, because the new terminal automation systems called STARS require digital information. The FAA is replacing older Air Traffic Control Beacon Interrogators (ATCBI) with the new ATCBI-6. The FAA has previously replaced the older terminal ATCBI systems with a system known as Mode-S, and the older en route ATCBI systems are now being replaced with ATCBI-6.

4.4.2 New Technology to Improve Safety

In addition to supplementing existing radars to allow reduced separation between aircraft, the automatic dependent surveillance system can help prevent accidents. There have been several fatal aviation accidents involving controlled flight into terrain due to poor awareness of terrain hazards near the route of flight. The Safe Flight 21 Capstone program in Alaska is working with the aviation community to evaluate the benefits of providing additional information to pilots through an affordable terrain database and display. Use of this database coupled with use of Global Positioning System (GPS) navigation capability and the Wide Area Augmentation System can warn pilots about high terrain near the flight path of the aircraft.

4.5 Navigation Systems Define ATC Route Structure

Most current navigation aids are ground based. One of the most important systems from an air traffic control perspective is the network of about 1,000 very high frequency omni-directional range (VOR) aids to navigation that define the route structure. In addition, there are about 1,000 instrument landing systems (ILS) that provide pilots precision

guidance for low-visibility approaches to airports. These systems will remain as the primary navigation aids in the near term. In the intermediate and far term, there will be a partial transition to satellite navigation systems with augmentation.

4.5.1   Sustaining Existing Navigation Systems

There will be a continuing need to sustain existing navigation systems. After the partial transition to augmented satellite navigation systems, the FAA will maintain a minimum number of existing systems to backup the new services. In addition, there will be a short-term demand for new ILSs. As new runways are built at larger airports and other locations qualify for an ILS, they will be installed. Several other CIP projects are necessary to support these new installations. An ILS requires one or more runway visual range sensors to report runway visibility to pilots and controllers. Precision approaches also require approach lights for the runway to help the pilot see the runway while the aircraft descends to the minimum altitude allowed. A minimum system of VOR aids will require renovation. In addition such services as weather broadcasts on the VOR frequency of stations that are eliminated will have to be hosted on other systems.

4.5.2   Satellite Navigation

Global Positioning System (GPS) satellite navigation augmented with the Wide Area Augmentation System is a very accurate system that can provide substantial benefits to pilots. It will allow pilots with properly equipped aircraft the opportunity to fly direct routes using a technique called area navigation (RNAV). The advantage of RNAV is that pilots can request direct routes between geographic points rather than using the current airways which are based on flying between radio navigation aids. This can save both time and distance. The FAA commissioned the Wide Area Augmentation System in July 2003.

4.5.3   Transition to Navigation System of the Future

Planning is underway to determine how to integrate expanded navigation services into the National Airspace System. Detailed studies are in progress to determine the optimal mix of current systems and augmented satellite navigation systems. The FAA anticipates that augmented satellite navigation will replace a portion of existing systems, including the instrument landing systems that provide precision guidance to runways. A transition of this magnitude will require equipment and procedure changes to take advantage of the increased capabilities of these new systems. It may require or allow redesign of the airspace that is based on existing navigation aids.

4.6   Communication Systems Increase Capacity

As the number of aircraft using air traffic control services increases, the radio frequencies used by controllers for communication with pilots become more congested. To ensure enough capacity to handle future demand, we must upgrade the radios used by

controllers. In addition, the introduction of data-link communications can improve efficiency and provide more comprehensive information to the cockpit.

In the near term, capital investment will support renovation and expansion of current systems plus the beginning phase of a transition to a more capable future system. The FAA must replace a limited number of existing and backup systems each year. There is also a need to relocate remote communication sites as airspace is changed to reflect new traffic patterns. In the intermediate term, the FAA is planning a transition to the next generation communication system that effectively provides additional frequencies and a data-link capability. The long-term improvements will introduce more systematic use of data link to support many of the planned efficiencies provided by other programs.

4.6.1   Sustaining the Existing Systems

There are about 3,000 remote communication facilities that enable controllers and flight service specialists to talk to pilots that would otherwise be out of range of their radios. These remote facilities receive the radio transmissions from pilots and transfer them to FAA facilities on telephone lines. In addition, there are backup communication sites that allow contact with pilots, if the primary sites fail. Until the FAA replaces this equipment, the Agency must renovate it.

In addition, airspace changes to accommodate changes in flight patterns often require that these facilities be relocated to ensure radio contact can be maintained. Investment for this purpose will continue after a transition to new radio technology.

4.6.2   The Next Generation Radio Communication (NEXCOM) System

The Next Generation Communication System (NEXCOM) uses digital technology and increases the number of channels per existing assigned frequency to provide more capacity. The NEXCOM uses the radio frequencies assigned to the FAA, but it increases the capacity of these frequencies up to four times. Using a technology that allows four separate channels on one frequency, NEXCOM will increase the voice channels for communication between pilots and controllers and enable one of the new channels to support data link communications. The switch to digital technology will also provide technical advantages over the existing analog technology. We will implement NEXCOM incrementally, switching to digital radios over the next several years and adding enhancements during and after transition.

4.6.3   Data Link Systems

Data-link technology allows facilities on the ground to transmit text messages and, in some applications, graphics to aircraft in flight. The Aeronautical Data Link program is developing a data-link system for text messages. The system can provide controllers and pilots an alternate automated communications path separate from the voice radio communications path, which can become congested in busy terminal areas. Data-link also allows the pilot to save the message and check it as necessary. Currently, flight-plan

clearances are being transmitted from air traffic control facilities to pilots by data-link at 29 airports. The Controller Pilot Data Link Communication (CPDLC) system is in operation at the Miami en route control center, and it is being used to test operational procedures to be used if the system is implemented at additional locations.

Graphics messages on data link can include weather maps and forecasts and displays of nearby air traffic. They will help pilots make more informed decisions. Two key issues in implementing data link are: (1) to ensure that the message being transmitted is not altered or truncated in transit and (2) to assure both the pilots and controllers that the source of the message is legitimate. Many of the service improvements planned for the NAS Architecture will rely on using data link to share airspace status information and help pilots plan for less restricted routes of travel.

4.7   Traffic Flow Management: A Source of Air Traffic Efficiencies

Many of the efficiencies in handling air traffic result from improvements in air traffic management. Using predictive software, the FAA can forecast traffic demand throughout the system and take actions to minimize delays caused by adverse weather or localized system problems. The Air Traffic Control System Command Center coordinates with traffic management units in larger air traffic facilities to manage traffic flows to match capacity and prevent delays.   In the en route phase of flight, controllers use automation software to provide more efficient routing.

4.7.1   Free Flight Phase 2 Implementation

During the Free Flight Phase 1 program, the FAA installed the Traffic Management Advisor (TMA) in seven en route centers. This automation system has increased the average number of aircraft handled during peak hours at an airport within the range of 3 to 5 percent, which can significantly reduce delays. Free Flight Phase 2 installed TMA at Jacksonville, Florida in FY 2003, and it will install TMA at two additional centers.

The FAA will be using the User Request Evaluation Tool (URET) at ten en route centers by the end of FY 2004. We will begin use of the tools at seven additional centers in FY 2005, and we will complete installations in FY 2006. The URET allows an air traffic controller to project an aircraft's flight route into the future and determine whether a change in route will create conflicts with other traffic. Using this information, a controller can approve more direct routing as requested by pilots, which normally saves flight time and fuel. Free Flight Phase 2 will also sustain and improve Collaborative Decision Making tools that we use to communicate with airline operations centers. This allows us to collaborate with customers to determine the best way to manage potential delays due to adverse weather or other airspace congestion problems.

4.7.2   Air Traffic Management

In addition to the Free Flight Phases 1 and 2 automation aids, the FAA is using several other software automation aids at en route centers and towers. These national-scale

management tools balance traffic loads and maximize air traffic flow within the constraints of the national airspace. The automation tools developed for the air traffic management program, coupled with the tools deployed by the Free Flight program, reduce delays and increase our ability to accommodate arriving aircraft by 5 percent. We must replace the software and hardware that support these tools to improve the efficiency of the computer systems that we use for air traffic management. Modernizing this infrastructure will also enable continued development of products and services to more effectively manage the flow of air traffic.

4.7.3   Air Traffic Control System Command Center

The Air Traffic Control System Command Center (Command Center) located at Herndon, Virginia tracks all air traffic in the United States and uses sophisticated software tools to predict problems or delays in the system. These tools support collaborative decision-making between the FAA and airline operations centers. We will make enhancements to the Flight Schedule Monitor, Post Operations Evaluation Tool, and the Route Management Tool to improve the effectiveness of this existing software.

After collaborating with commercial customers, the Command Center can coordinate with FAA field facilities to select the best strategies for regulating traffic flows in the system to prevent large hub airports from being saturated with more traffic than the airport can handle. We must also coordinate with the Department of Defense and international air traffic control facilities when military operations or international traffic are expected to impact operational flows.

4.7.4   Next Generation Traffic Flow Management

The NAS Architecture envisions an enhanced decision support system to provide increased information exchange between service providers and FAA customers via System Wide Information Management (SWIM). This would include exchanges of changes in routing, weather or congestion to permit increased collaboration with external customers. The Next-Generation Traffic Flow Management also provides for real time and post-event analysis, increases predictability of system operation and manages pre and post-flight information.

4.8   Weather Sensing and Display Systems Provide Accurate Information

Accurate information on weather is essential to both the safety and efficiency of flight. Pilots request routes that allow them to avoid hazardous weather. Winds at flight altitudes can significantly affect the speed of travel, and pilots try to take advantage of favorable winds and minimize the impact of unfavorable winds. Improvements to weather reporting and forecasting provide significant benefits.

In the near term, the FAA will upgrade the Weather and Radar Processing System that provides weather data to the en route centers. In the intermediate term, the FAA will implement improved weather products that provide more precise estimates of the location

of weather hazards and the intensity of meteorological events. It is anticipated that commercial sources may also offer data-link weather information to pilots. For the longer term, FAA is working on a new en route weather reporting and display system that will collect data from more sources and provide more accurate predictive information on the future weather.

4.8.1   Improved Weather Information for En Route Facilities

Accurately depicting and forecasting weather is key to increasing efficiency of air traffic control. The Weather and Radar Processor (WARP) provides timely weather radar information to the controllers, traffic management specialists, and the Center Weather Service Unit meteorologists at the en route centers. In addition the Corridor Weather Integrated System, developed in conjunction with the Integrated Terminal Weather System program, provides a display of weather along heavily traveled routes. Controllers use this information to advise pilots of the routes least affected by weather, and air traffic flow managers use it to decide how to apply advanced air traffic management tools. Having better information about the weather and a shared situational awareness, center air traffic controllers can improve the efficiency of traffic flows and minimize delays caused by having to avoid bad weather. We will upgrade WARP to be compatible with the upgraded weather radars operated by the National Weather Service, add software products developed by the weather research program, and start work on developing a more capable future system. The equipment is installed at all the en route centers.

4.8.2   Wind Shear Detection systems

The FAA has installed Terminal Doppler Weather Radars (TDWR) at 45 large airports with the highest wind shear risk. The TDWR displays show areas of wind shear and gust fronts, which enable tower controllers to warn pilots of existing wind shear conditions. The existing TDWR systems have had maintenance problems, and we need to invest capital in a service life extension program to ensure that these vital safety systems operate reliably through 2020.

4.8.3   Future Improvements in Weather Systems

The NAS Architecture contains plans for a comprehensive weather information system that will improve the real-time transfer of weather information to pilots and controllers. Both text information and weather graphics will be available and can be displayed on a color display in the cockpit, as well as on the controller's display, to assist pilots in choosing a route of flight to avoid severe weather problems.

4.9   Infrastructure Replacement: Modernization of the NAS

The FAA has several billion dollars worth of installed infrastructure to support air traffic control and other services. The infrastructure includes buildings to house air traffic control automation, communication, surveillance, and navigation equipment and electrical power systems, and connecting communication infrastructure. These buildings

and related infrastructure require modernization and periodic replacement. Replacing deteriorated facilities and adding more modern infrastructure reduces outages and prevents delays. Modernization also keeps the FAA abreast of changes in aviation technology.

Efforts in this area will continue through and beyond 2015. One major impact of implementing the NAS Architecture will be the need to build new facilities to house new equipment. New equipment and capabilities often require more space than is available in existing facilities. Relocating equipment also often requires additional investment in infrastructure.

4.9.1   En Route Facilities

The Air Route Traffic Control Centers house the en route centers, and modernization is ongoing to keep these facilities in good operating condition and to accommodate growth in workload. We must maintain roofs, update electrical wiring as new equipment is installed, and upgrade the heating and ventilating systems to protect the sensitive electronic equipment housed in the centers. This program is essential for NAS modernization, and we must sustain it well into the future.

4.9.2   Terminal Facilities

The towers and terminal radar control (TRACON) facilities that control traffic in the areas near airports require modernization for a number of reasons. In some cases, new airport construction has restricted visibility of the runways and taxiways; thus, the towers need to be higher so that controllers can clearly see the airport operating area. In other cases, the facility is too small for installation of new automation equipment. Also, existing facilities are old and deteriorating. FAA has over 400 FAA and contract air traffic control towers, and, as towers age, they require new infrastructure or replacement. FAA replaces about 5-10 towers per year and will continue replacing or modernizing towers well into the future.

4.9.3   Unmanned Facilities

The FAA must maintain the permanent buildings that house thousands of remote radios, navigational aids, and radars used for air traffic control to prevent damage to the electronic equipment. Failure of this equipment can cause air traffic delays; therefore, it is crucial that the FAA maintains and modernizes these buildings to ensure continued and reliable operation of the equipment inside.

4.9.4   Voice Switches

Controllers must communicate with other air traffic control facilities either by voice radio or through automation-system-generated messages. A communications switch that serves the entire facility transfers these messages from the telephone lines to the controllers. We must modernize these switches to take advantage of improvements in technology and to

provide more efficient service. We are replacing 10 to 20 voice switches annually at towers and TRACON facilities and will continue to do so until the voice switches have been modernized.

The large voice switches at the en route centers have aging components, and the FAA is beginning engineering work on a program to replace these switches. The current switches were installed under the Voice Switching and Control System program. In the near term, the FAA is performing a service life extension program, which includes replacing the voice switch control units at all the en route facilities. We must make substantial future investment in voice switches to modernize and eventually replace these switches.

4.9.5 Electrical Power Systems

Many FAA facilities have electrical generators and large battery banks that ensure continuity of electrical power during commercial power outages. The air traffic control system requires these backup systems to maintain reliability and to minimize disruptions to air traffic. When complete electrical outages occur, aircraft are separated manually, which is very inefficient and severely restricts capacity. The existing emergency generators are very old, and, in many cases, the manufacturers have gone out of business. We must replace these systems to preserve reliability of the air traffic control facilities.

4.10 Improved Management Tools Accommodate Expansion

Some CIP projects are directed at helping the FAA manage capital investment more efficiently. Improved management requires adoption of best business practices; improvements in information technology systems to automate cost and schedule estimates; automation of engineering design; and support from external contractors. As with private industry, we have benefited from using computer-aided design tools. Contractors also provide expertise in developing specifications and documentation of building and equipment configurations. This has helped us manage the large base of high-technology equipment that comprises the air traffic control system. Other examples of improved management tools are:

4.10.1 NAS Infrastructure Management System (NIMS)

The NIMS program moves toward centralizing management of FAA's maintenance functions and develops the infrastructure for remote monitoring of the operational status of FAA's equipment. Growth in the number and sophistication of FAA facilities has led the FAA to find more efficient ways to maintain all new equipment. We manage our maintenance from a National Operations Control Center and three regional Operational Control Centers. Newer FAA equipment has remote maintenance monitoring built in, and the remote facilities transmit system status data to centralized maintenance management facilities. The regional maintenance centers can then send field technicians to repair outages or take preventative measures when the information transmitted indicates that performance has deteriorated. This reduces the number of technicians at remote locations and allows us to use them more efficiently.

4.10.2 FAA Telecommunications Infrastructure

Communication is an integral part of air traffic control. The FAA needs an efficient and modern telecommunications system both to perform its air traffic functions and to manage our many dispersed facilities. We have contracted with a major telecommunications provider to support communications among the facilities. This new approach will be more efficient than the existing system and provide us with more software tools to measure communications use and allocate the costs to organizations more accurately.

4.11 Protect FAA's Critical Infrastructure

Executive Orders have reinforced the need and stiffened the guiding principles for protecting the critical infrastructure of the United States. The air traffic control system is part of this critical infrastructure. The FAA has two major programs to protect infrastructure: one protects facilities and employees from physical threats; the other protects air traffic control information technology systems.

In the near- and longer term, the need to enhance security will continue. The most immediate steps are to improve security for manned facilities and to protect critical information- technology systems. We are resolving initial shortcomings while working to keep up with predicted threats and advances in detection technology to block sophisticated electronic intruders.

4.11.1 Facility Security Risk Management

The first step in Facility Security Risk Management is to assess FAA's facilities to determine their vulnerabilities and compliance with Department of Justice security standards. We certify buildings when they are in compliance with standards and bring buildings needing additional security measures into compliance. We have developed a prioritized listing of our staffed facilities to identify modifications, procedures, and measures to enhance the security and safety of FAA personnel and facilities. Security systems include surveillance systems, intrusion detection systems, and access control systems.

4.11.2 Information Security

In the past, many air traffic control automation systems were closed systems with proprietary software. These systems were very resistant to unauthorized entry. In modernizing its automation systems, the FAA has incorporated more commercial software, which creates a new vulnerability. We are assessing the vulnerabilities of all our critical systems and determining what protections we must add to prevent unauthorized access and disruption of the air traffic control system. We must also use an intrusion detection system so that we are aware of any efforts, successful or not, to gain access to our information-technology systems. Improving information security will be a growing expense for many years into the future.

5 Conclusion

There are several important reasons for preparing the 5-year CIP in addition to the legislative mandate. Given the challenges of dealing with growth and changes in technology, the FAA must look to the future to ensure that we are addressing capacity and reliability issues. If we do not plan for the system of the future, we will not be able to accommodate predicted travel demand, and NAS performance will deteriorate. The high standards of performance for FAA equipment and automation systems require lengthy testing and implementation schedules. We must plan now for modernization to ensure that new equipment can be installed and operational in time to be ready for the future.

To facilitate decisions on the system of the future, the FAA has developed the Target System Description (TSD) as part of the NAS Architecture. The TSD establishes a benchmark for the structure of the air traffic control system in 2015. This provides the longer-range target for planning and the basis for an estimate of the resources to meet that vision of the future. Our partners in the aviation world are also interested in the structure of the future system, and they are recommending technology change and improved operating procedures. These changes require resources, and we must articulate the need for system improvements in the CIP and the TSD. The CIP provides visibility into the scope and planned schedule for capital expenditures planned for the next 5 years. This information allows an informed dialogue on the pace and content of our near term modernization efforts

6 Appendices to the Capital Investment Plan

The CIP contains four appendices:

Appendix A
- Lists FAA strategic goals, objectives, and performance targets
- Associates CIP projects with strategic objectives and performance targets

Appendix B
- Lists CIP projects with over $5 million in annual expenditures
- Provides description of project and relationship of project to strategic goals
- Lists FY 2003 Program accomplishments
- Lists FY 2004 Output goals
- Lists FY 2005 Output goals
- Lists key events 2006–2009

Appendix C
- Provides estimated expenditures 2005–2009 by Budget Line Item

Appendix D
- Defines acronyms

Federal Aviation Administration

National Airspace System

Capital Investment Plan

Appendix A

Fiscal Years 2005 – 2009

APPENDIX A

GOAL MATRIX

This year's, Capital Investment Plan (CIP) projects have been connected to the goals, objectives and performance targets in the Federal Aviation Administration (FAA) Flight Plan 2004-2008. As such, Appendix A has been revised to reflect the alignment of projects with FAA goals and objectives consistent with the new FAA Flight Plan 2004-2008. In general, many FAA capital investments will contribute to more than one, goal, objective and performance target, Appendix A will reflect an alignment of that project to the goal, objective and performance target(s) where its contribution is most significant. CIP projects with Fiscal Year (FY) 2005 funding are included in this Appendix.

For ease of clarification, the following definitions are provided a general description of the structure of the FAA Flight Plan 2004-2008 and a systematic way to relate the objectives and performance targets to projects in the CIP.

STRATEGIC GOAL

A general statement of the broad agency purpose in carrying out its mission, such as: "Achieve the lowest possible accident rate and constantly improve safety."

OBJECTIVE

A statement of a specific emphasis area that will contribute to the overall goal, such as: "Reduce the commercial airline accident rate."

PERFORMANCE TARGET

A quantifiable measure of the improvement in a goal area that sets a target for specific improvements in outcomes that affect FAA customers, such as: "Reduce airline fatal accident rate by 80 percent from the 1994-1996 baseline by 2007 and maintain the low rate in FY 2008 and beyond."

1. STRATEGIC GOAL: INCREASED SAFETY

FAA Strategic Goal: Achieve the lowest possible accident rate and constantly improve safety.

- **FAA Objective 1:**   Reduce the commercial airline fatal accident rate.

    – **FAA Performance Target:**   Reduce airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008 and beyond.

FY 2005 BLI	CIP #	CIP Name
1A02B	W03.03-01	Terminal Doppler Weather Radar (TDWR) – Service Life Extension Program
1A05A	A17.00-00	Aviation Safety Analysis System (ASAS)
1C01J	M42.01-00	Safer Skies
1C01M	M34.01-00	Airport Technology - ATDP
1C02A	M12.00-00	Aircraft and Related Equipment Program
1C02C	M12.01-02	Aircraft Related Equipment – Simulator Replacement – Airbus Simulator
1C03A	M24.00-00	National Aviation Safety Data Analysis Center (NASDAC)
3A04A	N04.03-00	Visual Navaids – ALSIP Continuation

- **FAA Objective 2:**   Reduce the number of fatal accidents in general aviation.

    – **FAA Performance Target:**   By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

FY 2005 BLI	CIP #	CIP Name
1B01B	M36.02-00	Safe Flight 21 – Ohio Valley Prototype Project
1B01C	S10.02-00	Automatic Dependent Surveillance Broadcast (ADS-B) – ATDP
1C01H	M35.01-00	General Aviation/Vertical Flight Technology – ATDP
2A12A	C20.03-00	Aeronautical Data Link – Flight Information Service (FIS)
TBD	N12.01-00	Wide Area Augmentation System (WAAS)
4C06A	F05.03-00	AFSS Facilities Sustainment
4C07A	A07.00-00	Operational and Supportability Implementation System (OASIS) for Flight Service Automation System (FSAS)
4C08A	C03.01-00	WMSCR Transition
5A11A	A08.01-00	NOTAMS Infrastructure/Distribution

(continued)

- **FAA Objective 3:**   Reduce accidents in Alaska.

  – **FAA Performance Target:**   Reduce accidents in Alaska for general aviation and all Part 135 operations by 20 percent by FY 2008 (from the 2000-2002 average of 130 accidents per year to no more than 104 accidents per year).

FY 2005 BLI	CIP #	CIP Name
1B01A	M36.01-00	Safe Flight 21 – Alaska Capstone Initiative

- **FAA Objective 4:**   Reduce the risk of runway incursions.

  – **FAA Performance Target:**   Reduce the number of most serious runway incursions (Category A and B) at towered airports by at least 48 percent by FY 2008 (from the 2000-2002 baseline average of 52 per year to no more than 27 per year).

FY 2005 BLI	CIP #	CIP Name
1A03A	S09.01-00	Airport Surface Detection Equipment - Model X (ASDE -X)
1A03B	S09.03-01	Airport Surface Detection Equipment - Model 3X (ASDE-3X) – Upgrade ASDE-3 Sites w/Multilateration/ADS-B for Initial 7 sites
1C01B	S09.02-00	Runway Incursion Reduction Program (RIRP) – ATDP

- **FAA Objective 5:**   Reduce cabin injuries caused by turbulence.

  – **FAA Performance Target:**   Reduce serious injuries from turbulence accidents by 33 percent by FY 2008 (from the FY 1996-2000 average of 18 injuries per year to no more than 12).

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

- **FAA Objective 6:**   Measure the safety of the U.S. civil aviation industry with a composite index.

  – **FAA Performance Target:**   By FY 2006, implement a single, comprehensive index that provides a meaningful measure of the safety performance of the U.S. civil aviation system.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

(continued)

- **FAA Objective 7:**   Ensure the safety of commercial space launches.

  − **FAA Performance Target 1:**   No fatalities or serious injuries to the uninvolved public during the commercial space launch or reentry activities.

  − **FAA Performance Target 2:**   No significant damage to property that is not associated with the flight during commercial space launch or reentry activities.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

- **FAA Objective 8:**   Enhance the safety of FAA's air traffic systems.

  − **FAA Performance Target 1:**   Apply safety risk management to all significant changes in the NAS.

  − **FAA Performance Target 2:**   Reduce the number of most serious air traffic control operational errors (Categories A and B) by 15 percent, to no more than 563 by FY 2008.

FY 2005 BLI	CIP #	CIP Name
1C01L	M08.32-01	Safety Analysis and Assessment - ATDP
1C04A	M08.32-02	Safety Management System

*** END OF INCREASE SAFETY STRATEGIC GOAL***

2. STRATEGIC GOAL: GREATER CAPACITY

FAA Strategic Goal: Work with local governments and airspace users to provide capacity in the U.S. airspace system that meets projected demand in an environmentally sound manner.

- **FAA Objective 1:** Increase airport capacity to meet projected demand.

    - **FAA Performance Target 1:** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

    - **FAA Performance Target 2:** Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008.

    - **FAA Performance Target 3:** Open as many as nine new runways, while increasing the annual service volume (ASV) of the 35 OEP airports by at least one percent annually, measured as a five year moving average, through 2008.

FY 2005 BLI	CIP #	CIP Name
1C01C	M08.28-00	System Capacity, Planning, and Improvements – ATDP
1C01D	M08.29-00	Operations Concept Validation – ATDP
1C01E	M08.27-00	NAS Requirements Development
TBD	A04.01-00	Standard Terminal Automation Replacement System (STARS) – Development and Procurement
2A01B	A03.04-01	Terminal Sustainment
2A01C	C20.04-00	Tower Data Link Services
TBD	A04.05-01	Standard Terminal Automation Replacement System (STARS) – Tech Refresh
2A04A	F01.02-00	ATCT/TRACON Establish/Sustain/Replace – ATCT/TRACON Replacement
2A05A	F01.01-00	ATCT/TRACON Establish/Sustain/Replace – ATCT/TRACON Modernization
2A05B	F01.01-01	ATCT/TRACON Establish/Sustain/Replace – STARS Facility Upgrades
2A05C	F02.10-00	Large TRACONs – Advanced Facility Planning
2A06A	S03.02-01	Terminal Radar (ASR) Program – ASR-11- ASR-7/ASR-8 Replacement, DOD Takeover, New Establishments
2A07A	S03.01-01	Terminal Radar (ASR) Program – ASR-9 SLEP
2A08A	S08.00-00	Precision Runway Monitor (PRM)
2A09A	F02.11-01	Large TRACONs – Houston Area Air Traffic System (HAATS)
2A13B	A24.03-00	Free Flight Phase Two (FFP2) – Traffic Management Advisor (TMA) – Single Center
3A03A	N03.01-00	Instrument Landing Systems (ILS)
3A05A	N08.02-00	Runway Visual Range (RVR) – Replacement/Establishment
3A06A	N09.00-00	Distance Measuring Equipment (DME)
3A07A	N04.01-00	Visual Navaids – Visual Navaids for New Qualifiers
3A08A	N04.04-00	Visual Navaids – Sustain, Replace, Relocate

(continued)

- **FAA Objective 1:**   Increase airport capacity to meet projected demand.

FY 2005 BLI	CIP #	CIP Name
3A11A	A14.00-00	Instrument Approach Procedures Automation (IAPA)
3A11B	A14.01-00	IAPA - National Aeronautical Charting Office (NACO)
4A02A	C05.02-00	Enhanced Terminal Voice Switch (ETVS)
4A03A	F10.00-00	Airport Cable Loop Systems Sustained Support
4C01A	C14.00-00	Critical Telecommunications Support
4C03A	C06.01-00	Communications Facilities Enhancement – Expansion
4C03C	C06.04-00	Communications Facilities Enhancement – UHF Replacement
4C03B	C06.03-00	Communications Facilities Enhancement – Air/Ground Communications RFI Elimination
5A05A	F04.01-00	DOD/FAA ATC Facility Transfer/Modernization – Original Program
5A08A	F12.00-00	FAA Buildings & Equipment Sustain Support – Modernize/Improve

- **FAA Objective 2:**   Make air traffic flow over land and sea more efficient.

    - **FAA Performance Target 1:**   Maintain average en route travel times among the eight major metropolitan areas.

    - **FAA Performance Target 2:**   Beginning in FY 2005, increase to 80 percent the number of oceanic en route altitude change requests that are granted through the end of FY 2008

FY 2005 BLI	CIP #	CIP Name
1A01A	W02.02-00	Weather Radar Program – NEXRAD Open Systems Upgrades
1A01B	W02.03-01	Medium Intensity Airport Weather System (MIAWS)
TBD	W07.01-00	Integrated Terminal Weather System (ITWS) – ITWS Development/Procurement
1A04B	W07.02-00	Corridor Integrated Weather System (CIWS)
1C01A	M08.28-01	Separation Standards – ATDP
1C01I	M08.28-03	Domestic Reduced Vertical Separation Minima (RVSM) – ATDP
2A02A	S02.03-00	Secondary Surveillance – ATC Beacon Interrogator (ATCBI) Replacement
2A03A	S04.02-03	Long Range Radar (LRR) Program – LRR Improvements – Infrastructure Upgrades/Sustain
2A12B	C20.02-01	Aeronautical Data Link – CPDLC Build 1/1A
2A15A	W01.02-02	Automated Surface Observing System (ASOS) – Pre-Planned Product Improvements (P3I)
2A15B	W01.02-03	Automated Surface Observing System (ASOS) – Standalone Weather Systems
2A15C	W01.02-04	Automated Surface Observing System (ASOS) – Data Displays

(continued)

- **FAA Objective 2:**   Make air traffic flow over land and sea more efficient.

FY 2005 BLI	CIP #	CIP Name
2B01A	C21.01-01	Next-Generation VHF A/G Communication System (NEXCOM) – Segment 1a
2B01B	C21.01-02	Next-Generation VHF A/G Communication System (NEXCOM) – Segment 1b
2B02A	A01.10-01	En Route Automation Modernization (eRAM)
2B02B	A01.10-02	En Route Automation Modernization (ERAM) – Radar Position Tech Refresh – R Side Upgrades
2B02C	A01.07-01	En Route Enhancements
2B02D	A01.03-00	HOST/Oceanic Computer System Replacement (HOCSR)
2B02E	A01.12-01	En Route Communications Gateway (ECG)
2B02F	A01.09-01	En Route System Modification
2B02G	A01.13-01	En Route Automation Program – Initial Academy Training System (IATS)
2B03A	W04.02-00	Weather and Radar Processor (WARP) – Stage 3 – Sustain Weather Ops
2B03B	W04.03-00	Weather and Radar Processor (WARP) – Tech Refresh/Product Upgrades - Global Weather Information System (GWIS)
3A02A	N06.00-00	Very High Frequency Omni-directional Radio Tactical Air Navigation (VORTAC)
3A09A	A10.03-00	Advanced Technologies and Oceanic Procedures (ATOP)
3A10A	C01.01-01	Voice Switching and Control System (VSCS) – VSCS Control System Upgrade
3A10B	C01.02-01	Voice Switching and Control System (VSCS) – Tech Refresh
4A01A	F25.00-00	Relocate Guam CERAP
4A02B	C05.02-02	Command Center Conference Control System
4B01A	F06.01-00	ARTCC Plant Modernization/Expansion – ARTCC Modernization
4C04A	C23.00-00	Voice Recorder Replacement Program (VRRP)
4C09A	F11.00-00	Power Systems Sustained Support
4C12A	M15.01-00	NAS Spectrum Engineering Management – NAS Spectrum Engineering Sustained Support
4C12B	M15.02-00	NAS Spectrum Engineering Management – Frequency Interference Support/Resolution
5A13A	M17.00-00	Test Equipment Modernization/Replacement

- **FAA Objective 3:** Increase or improve airspace capacity in the eight major metropolitan areas and corridors that most affect total system delay: New York, Philadelphia, Boston, Chicago, Washington/Baltimore, Atlanta, Los Angeles Basin, and San Francisco.

  – **FAA Performance Target:** Achieve an increase in the Airport Arrival Capacity for the eight major metropolitan areas from 21,290 arrivals per day from the 2000-2002 baseline to at least 22,000 per day by 2008.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

- **FAA Objective 4:** Increase on-time performance of scheduled carriers.

  – **FAA Performance Target:** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by seven percent, as measured from the three year FY 2000-2002 baseline.

FY 2005 BLI	CIP #	CIP Name
2A13A	A24.02-00	Free Flight Phase Two (FFP2) – User Request Evaluation Tool (URET)
2A13C	A24.04-00	Free Flight Phase Two (FFP2) – Collaborative Decision Making (CDM)
2A14A	A05.01-02	Traffic Flow Management Infrastructure – Current Enhanced Traffic Management System Operations
2A14B	A05.01-06	Traffic Flow Management Infrastructure – Infrastructure Modernization
2A14C	A05.03-06	ATM Functionality Development/Deployment – Departure Spacing Program
5A18A	M08.06-00	Program Support Leases
5A24A	M03.02-00	Center for Advanced Aviation System Development

- **FAA Objective 5:** Address environmental issues associated with capacity enhancements.

  – **FAA Performance Target 1:** Reduce the number of people exposed to significant noise through FY 2008, as measured by a three year moving average, from the three-year average for calendar years 2000-2002.

  – **FAA Performance Target 2:** Improve aviation fuel efficiency per revenue plane-mile by one percent per year through FY 2008, as measured by a three year moving average, from the three year average for calendar years 2000-2002.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

END OF GREATER CAPACITY STRATEGIC GOAL

3. STRATEGIC GOAL: INTERNATIONAL LEADERSHIP

FAA Strategic Goal: Increase the safety and capacity of the global civil aerospace system in an environmentally sound manner.

- **FAA Objective 1:**   Promote improved safety and regulatory oversight in cooperation with bilateral, regional, and multilateral aviation partners.

    – **FAA Performance Target 1:**   Provide new or expanded technical assistance and training to 30 key countries or regional authorities.

    – **FAA Performance Target 2:**   Conclude new bilateral agreements recognizing safety certification and approval systems with 10 key countries or regional authorities.

    – **FAA Performance Target 3:**   Secure a 100 percent increase, over FY 2003 levels, in intellectual and financial assistance for international aviation activities from the U.S. and international government organizations, multilateral banks, and industry.

    – **FAA Performance Target 4:**   Support creating at least four new regional aviation authorities or organizations capable of meeting globally accepted safety and efficiency standards.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Targets in the FY 2005 Budget.

- **FAA Objective 2:**   Promote seamless operations around the globe in cooperation with bilateral, regional, and multilateral aviation partners.

    – **FAA Performance Target 1:**   Ensure the U.S., ICAO and other international partners implement new techniques and key operational procedures in a consistent and timely manner.

    – **FAA Performance Target 2:**   Implement RVSM in the North American Region by January 2005.

    – **FAA Performance Target 3:**   Ensure that international environmental standards, recommended practices, and guidance material adopted by ICAO are globally and uniformly applied, reflect the best available technology, provide real environmental benefit and are economically sound.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Targets in the FY 2005 Budget.

*__**END OF INTERNATIONAL LEADERSHIP STRATEGIC GOAL**__*

4. STRATEGIC GOAL: ENVIRONMENTAL STEWARDSHIP

DOT Strategic Goal: Reduce pollution and other adverse effects of transportation and transportation facilities.

- **DOT Objective 1:** Adopt transportation policies and promote technologies that reduce or eliminate environmental degradation.

FY 2005 BLI	CIP #	CIP Name
5B01A	F13.03-00	Tower Fire Life Safety
5B01B	F13.03-00	OSHA/Environmental Standards Compliance
5B01E	F13.03-01	NAS Facilities OSHA Environmental Policy Development – AEE
5B02A	F13.01-00	NAS Facilities OSHA & Environmental Standards Compliance – Fuel Storage Tanks
5B03A	F13.02-00	NAS Facilities OSHA & Environmental Standards Compliance – Environmental Cleanup / HAZMAT

END OF ENVIRONMENTAL STRATEGIC GOAL

5. STRATEGIC GOAL: SECURITY

DOT Strategic Goal: Balance homeland and national security transportation requirements with the mobility needs of the Nation for personal travel and commerce.

- **DOT Objective 1:** Support and implement U.S. security strategies and plans related to transportation.

FY 2005 BLI	CIP #	CIP Name
4C10A	C18.00-00	Command and Control Communications (C3)
5A14A	F24.00-00	Facility Security Risk Management

END OF SECURITY STRATEGIC GOAL

6. STRATEGIC GOAL: ORGANIZATIONAL EXCELLENCE

FAA Strategic Goal: Ensure the success of the FAA's mission through stronger leadership, a better trained workforce, enhanced cost-control, and improved decision-making based on reliable data.

- **FAA Objective 1:**   Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better trained, diverse workforce.

    - **FAA Performance Target 1:**   Increase Employee Attitude Survey scores in the areas of management effectiveness and accountability by at least five percent.

    - **FAA Performance Target 2:**   Directly relate 100 percent of all employee performance plans to FAA strategic goals and their organization's performance plans.

    - **FAA Performance Target 3:**   Reduce the time it takes to hire mission critical positions by 20 percent over the FY 2003 baseline.

FY 2005 BLI	CIP #	CIP Name
2C01A	M29.00-00	ATOMS Local Area/Wide Area Network
2C02A	M26.00-00	NAS Management Automation Program (NASMAP)
5A15A	M31.00-00	NAS Information Security – Information Systems Security
5A16A	M10.00-00	Distance Learning

- **FAA Objective 2:**   Control costs while delivering quality customer service.

    - **FAA Performance Target 1:**   By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded portion of the Flight Plan.

    - **FAA Performance Target 2:**   Complete the closeout of 100 percent (FY 2001 baseline) of cost reimbursable contracts by the end of FY 2004 and maintain timely closure of future contracts.

FY 2005 BLI	CIP #	CIP Name
4C02A	C26.01-00	FAA Telecommunications Infrastructure (FTI)
4C05A	M07.02-00	NAS Infrastructure Management System (NIMS) – Phase 2
4C11A	F18.00-00	Aeronautical Center Infrastructure Modernization
5A01A/5A02A	F14.00-00	System Support Laboratory Sustained Support
5A03A	F16.00-00	William J. Hughes Technical Center Building and Plant Support
5A10A	F17.00-00	Computer Aided Engineering Graphics (CAEG) Replacement
5A12A	M21.03-00	Logistics Support Systems & Facilities – Asset and Supply Chain Management
5A17A	M03.01-00	System Engineering and Development Support

(continued)

- **FAA Objective 2:**   Control costs while delivering quality customer service.

FY 2005 BLI	CIP #	CIP Name
5A19A	M05.00-00	NAS Regional/Center Logistics Support Services
5A20A	F19.00-00	Mike Monroney Aeronautical Center Lease
5A21A	M22.00-00	NAS Implementation Support Contract (NISC)
5A22A	M02.00-00	Technical Support Services Contract
5A23A	M08.14-00	Continued General Support – Resource Tracking Program (RTP)

- **FAA Objective 3:**   Make decisions based on reliable data to improve our overall performance and customer satisfaction.

  - **FAA Performance Target 1:**   Make sure 80 percent of critical acquisition programs are both on schedule and within 10 percent of budget.

  - **FAA Performance Target 2:**   Achieve 90 percent of all performance targets in the Flight Plan.

  - **FAA Performance Target 3:**   Increase agency scores on the America Customer Satisfaction Index.

  - **FAA Performance Target 4:**   Achieve 90 percent of the milestones for the agency information security plan by 2008.

FY 2005 BLI	CIP #	CIP Name
None	None	Currently no Facilities & Equipment project supports this Objective and Performance Target in the FY 2005 Budget.

END OF ORGANIZATIONAL EXCELLENCE STRATEGIC GOAL

Federal Aviation Administration

National Airspace System

Capital Investment Plan

Appendix B

Fiscal Years 2005 – 2009

APPENDIX B

DETAILED PROGRAM PLAN DATA

LINKING FAA CIP PROJECTS TO GOALS

As stated in Appendix A, this year's Capital Investment Plan (CIP) projects are connected to the goals, objectives and performance targets in the FAA Flight Plan 2004-2008. Since projects are linked to a single objective, the data provided in Appendix B describes how these projects contribute to the performance targets under those objectives.

FORMAT

Appendix B is organized by budget line item (BLI) consistent with the President's Budget to Congress for fiscal year (FY) 2005. Several CIP projects may be included in one BLI. In those cases, when all of the CIP projects pertain to one specific purpose, they are grouped. However, when the CIP projects have different purposes, they are described with separate CIP entries.

Programs/projects in Appendix B contain a Program Description and Relationship to Performance Target description. FY 2003 Accomplishments, FY 2004 Performance Output Goals, FY 2006-2009 Performance Output Goals for all Facilities and Equipment (F&E) funded CIP projects are reported as outlined below.

BLI numbers with an X (i.e., 1A06X) are used to designate programs/projects that are not in the FY 2005 President's Budget (Facilities & Equipment). Accordingly, their inputs are reflected as follows:

- Programs/projects reporting only FY 2003 accomplishments and/or FY 2004 Performance Output Goals based on FY 2003/2004 funding received. Operations funding will fund the sustainment of the programs.
- Programs/projects representing new starts or future programs not currently in the President's budget will report future year Performance Output Goals based on projected funding.

Remaining CIP Programs/projects are required to reflect FY 2003 Accomplishments and FY 2004-2009 Performance Output Goals, with the exception of the following:

- Programs/projects that do not exceed $5M annually.
- Programs/projects that fund support contracts (such as CAASD, SETA, NISC) or fund program support leases.

Where, ***Not Applicable***, is reflected in the FY 2003 Accomplishments or 2004-2009 Output Goals sections, it denotes that no funding was allocated for that fiscal year.

EXAMPLE

The following example illustrates how the project data provided is used to support the FAA Flight Plan Goal, Objective, and Performance Target, along with a sample format of CIP project inputs:

PROGRAM DESCRIPTION

Airport Surface Detection Equipment – Model X (ASDE-X) is a modular surface surveillance system capable of processing radar, multilateration, and Automatic Dependent Surveillance-Broadcast (ADS-B)

sensor data that provides seamless airport surface surveillance to air traffic controllers. The ASDE-X system was designed….

RELATIONSHIP OF PROGRAM TO FAA STRATEGIC GOAL, OBJECTIVE, AND PERFORMANCE TARGET

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 4 –** Reduce the risk of runway incursions.
- **FAA Performance Target –** Reduce the number of the most severe (Category A & B) of runway incursions at towered airports by at least 48 percent by FY 2008 (from the 2000-2002 baseline average of 52 per year to no more than 27).

RELATIONSHIP TO PERFORMANCE TARGET

The reduction in runway incursions will be accomplished through the use of a modular surface surveillance system capable of processing radar, multilateration, and automatic dependent surveillance broadcast sensor data. The result will be increased airport safety through enhanced situational awareness.

PROGRAM PLAN FY 2005 – PERFORMANCE OUTPUT GOALS

- Deliver and install 13 out of 29 ASDE-X units and achieve operational readiness on 7 sites.

Table of Contents

ACTIVITY 1: IMPROVE AVIATION SAFETY

1A01, NEXT GENERATION WEATHER RADAR (NEXRAD)
<mark>FY 2005 Request $4.9M</mark>

- Weather Radar Program – NEXRAD Open Systems Upgrades, W02.02-00
- Medium-Intensity Airport Weather System (MIAWS), W02.03-01

Program Description

There are 158 NEXRAD systems in operation. This modern, long-range weather radar detects, analyzes, and displays severe weather information on air traffic controllers' consoles, enabling improved definition of location, timing of arrival, and severity of weather conditions to enhance both flight safety and airspace capacity. The open system upgrades to the radar's processors and receiver extend NEXRADs capabilities in improved data quality and detection ability. The upgrades provide faster update rates for critical air traffic control decision-making with a 6-month software update cycle that allows faster system advancements.

The MIAWS is a weather radar processor display system that provides enhanced six-level weather data to medium-intensity airports. Cost/benefit analysis does not support installation of the more expensive Terminal Doppler Weather Radar or Weather Systems Processor at these airports. MIAWS mainly provides a real-time display of storm positions and estimated storm tracks using NEXRAD products as the primary input to a MIAWS product-generation and display system.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The NEXRAD program contributes to the FAA's aviation goal of improving efficient air traffic flow over land and sea by detecting weather precipitation intensity and providing this data in varied displays to air traffic control facilities. This program incorporates technology upgrades to the existing NEXRAD system to improve its detection capability and update rates.

Fielding 40 MIAWSs contributes to the goal of improving efficient air traffic flow over land by providing information to controllers that enables them to warn pilots of severe weather conditions. The system will be deployed to those airports with limited wind-shear detection capabilities and will provide near real-time weather information to air traffic controllers and increase the number of airports with severe weather-warning capability.

FY 2003 Program Accomplishments
- Completed last of 12 NEXRAD Rotary Uninterruptible Power Supply upgrades.
- Completed last of 12 Open Radar Product Generator upgrades.
- Developed MIAWS Final Requirement Document.
- Generated MIAWS Business case.

Program Plan FY 2004 – Performance Output Goals
- Complete initial NEXRAD radar data acquisition development.
- Start deploying radar acquisition upgrade to beta test sites.
- Start dual-polarization prototyping for production readiness.
- Deliver signed MIAWS Final Requirements Document**.**

- Ensure MIAWS Joint Resources Council 2 Decision is made.
- Award production contract to supply four to six airports with MIAWS.

Program Plan FY 2005 – Performance Output Goals
- Award production contract to supply the remaining 34 to 36 airports with MIAWS.
- Start deploying RDA production upgrades.
- Begin enhancement cycle for NEXRAD RDA upgrades.
- Complete last NEXRAD site with RDA upgrades for operational use.

Key Events FY 2006-2009 – Performance Output Goals
- Continue MIAWS installations at the remaining 34 to 36 airports.
- Initiate technology refresh to MIAWSs.
- Start dual-polarization development.

1A02, TERMINAL DOPPLER WEATHER RADAR (TDWR)
FY 2005 Request $8.0M

- Terminal Doppler Weather Radar – Product Improvements, W03.02-00
- Terminal Doppler Weather Radar – Service Life Extension Program, W03.03-01

Program Description

The primary mission of the TDWR is to enhance the safety of air travel through timely detection and reporting of hazardous windshear in and near an airport's terminal approach and departure zone by detecting microburst and gust fronts. TDWRs are installed at higher-density airports with high occurrences of thunderstorms and provide controllers information on severe weather so that they can issue warnings to pilots.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The TDWR program provides accurate and timely detection of hazardous aviation weather conditions such as windshear and gust fronts. TDWRs are operational at 45 airports and detect and display hazardous wind shear events in and near the airport's approach and departure zones.

The product improvements contribute to safety goals by improving detection of microbursts and gust fronts, and by providing this information graphically on displays used by air traffic controllers in the tower cab with aural alarms. Timely display of this information enables air traffic controllers to issue advisories to both aircraft in flight and on the ground preparing for departure.

The TDWR service life extension program contributes to safety goals by improving TDWR software architecture integration and replacing existing components with more reliable components, enabling the TDWR to continue operation until 2020.

FY 2003 Program Accomplishments
- Commissioned the last of 47 systems at John F. Kennedy International Airport (JFK).
- Completed deployment of the Radar Product Generator re-host.
- Completed backup communication installs at 23 of 43 TDWR sites.

Program Plan FY 2004 – Performance Output Goals
- Start Direct Digital Controller rehost installs.
- Continue backup communication installs.

Program Plan FY 2005 – Performance Output Goals
- Complete implementation of remaining product improvements, including backup communications.
- Initiate deployment of elevation bull gear.
- Continue completing Direct Digital Controller rehost installations.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to implement major elements of the TDWR service life extension program, including elevation bull gear replacement, direct digital controller replacement, antenna motor replacement, and radar data acquisition retrofit.

1A03, AIRPORT SURFACE DETECTION EQUIPMENT – MODEL X (ASDE-X)
FY 2005 Request $51.3M

- Airport Surface Detection Equipment – Model X (ASDE-X), S09.01-00
- Airport Surface Detection Equipment – Model 3X (ASDE-3X) – Upgrade ASDE-3 Sites w/Multilateration/ADS-B for Initial 7 sites, S09.03-01

Program Description

The ASDE-X is a modular surface surveillance system that can process radar, multilateration, and Automatic Dependent Surveillance-Broadcast (ADS-B) sensor data, which provides seamless airport surface surveillance to air traffic controllers. The ASDE-X system is for second-tier airports and a Product Improvement/Upgrade for ASDE-3 Airport Movement Area Safety System airports. The FAA announced in June 2000 that the ASDE-X program would deploy 25 operational systems and 4 support systems. Additionally, the ASDE-X Product Improvement/Upgrade for ASDE-3 sites will be deployed at nine operational ASDE-3 sites, for a total of 34 operational systems and 4 support systems.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 4 –** Reduce the risk of runway incursions.
- **FAA Performance Target –** Reduce the number of the most severe (Category A & B) of runway incursions at towered airports by at least 48 percent by FY 2008 (from the 2000-2002 baseline average of 52 per year to no more than 27).

Relationship to Performance Target

The primary benefit of the ASDE-X is increased airport safety through enhanced air traffic control situational awareness. The ASDE-X conflict-detection alerting equipment (with multilateration) will provide detailed coverage of runways and taxiways, and alert air traffic controllers (visually and aurally) to potential collisions alerts. The ASDE-X depicts aircraft and vehicle position using identification information overlays on a color map showing the surface movement area and arrival corridors. The ASDE-X assists air traffic controllers by identifying the location of surface traffic during Visual Meteorological Conditions, as well as during instrument meteorological conditions when inclement weather impairs visibility from the tower.

FY 2003 Program Accomplishments
- Completed site acceptance testing on March 23, 2003.
- Completed ASDE-3X critical design review on September 24, 2003.
- Completed operational testing on May 2, 2003.
- Completed initial operating capability at key site(s) on June 5, 2003.

- Completed final design review on June 26, 2003.
- Completed in-service decision on October 30, 2003.
- Conducted independent operational test and evaluation on August 29, 2003.
- Delivered ASDE-3X prototype to Louisville, KY, on August 14, 2003.

Program Plan FY 2004 – Performance Output Goals
- Achieve Operational Readiness Date (ORD) at St. Louis.
- Achieve ASDE-3X Interface ORD at key site.
- Achieve safety logic ORD at key Site.
- Deliver and install six ASDE-X Systems.

Program Plan FY 2005 – Performance Output Goals
- Deliver and install two ASDE-3 product improvement upgrades.
- Deliver and install 11 ASDE-X systems.
- Achieve dual ASDE-3 Radar ORD at Dallas/Ft. Worth, TX.
- Achieve ASDE-3 and Surface Movement Radar ORD at Atlanta, GA.
- Achieve remote tower ORD at key site.
- Achieve ORD at three sites.

Key Events FY 2006-2009 – Performance Output Goals
- Deliver and install 18 ASDE-X Systems.
- Achieve ORD at 20 sites.
- Achieve dual Surface Movement Radar ORD at key site.

1A04, AVIATION WEATHER SERVICES IMPROVEMENTS
FY 2005 Request $4.0M for item B

- A, Integrated Terminal Weather System (ITWS) – ITWS Development/Procurement, W07.01-00
- B, Corridor Integrated Weather System (CIWS), W07.02-00

A, INTEGRATED TERMINAL WEATHER SYSTEM (ITWS) – ITWS DEVELOPMENT/PROCUREMENT, W07.01-00

Program Description

ITWS provides full-color graphic displays of essential weather information to promote the safety, efficiency, and capacity of air traffic control operations. ITWS products meet the specific needs of pilots, controllers, and air traffic managers and are immediately usable without further meteorological interpretation. ITWS also predicts weather conditions 20 minutes into the future. ITWS uses inputs from numerous weather radar systems and FAA and National Weather Service sensors located at or near the airport such as; Terminal Doppler Weather Radar, Airport Surveillance Radar, Next Generation Weather Radar, Low Level Windshear Alert System, Airport Surface Observing System and aircraft and other National Weather Service weather information systems. ITWS products include windshear and microburst predictions, storm cell and lightning information, and terminal area winds aloft.

ITWS will be deployed to 34 Terminal Radar Approach Control Facilities and will provide weather information to 49 high-activity airports that have demonstrated a significant convective weather history. The system displays hail, lightning, and tornadoes. Integrating data and products from various FAA and National Weather Service sensors and specially equipped aircraft (via the meteorological data collection and reporting system) provides the accuracy and sophisticated predictions that are essential to ITWS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Beginning in FY 2005, increase to 80 percent the number of oceanic en route altitude change requests that are granted through the end of FY 2008.

Relationship to Performance Target

Traffic managers can use ITWS to plan traffic flow reconfiguration and to coordinate with personnel in the Terminal Radar Approach Control Facilities, Air Traffic Control Towers, Air Route Traffic Control Centers, and the Air Traffic Control System Command Center.

FY 2003 Program Accomplishments
- Procured six production systems, delivered five production systems, and completed six installations.
- Conducted acceptance testing, continued algorithm support, and completed information security certification on production systems.
- Continued prototype operations.

Program Plan FY 2004 – Performance Output Goals
- Procure one, deliver two, and install two production systems.
- Conduct acceptance testing, continue algorithm support, procure, test, and accept delivery of the software engineering environment.
- Continue prototype operations.
- Begin Terminal Convective Weather Forecast effort.
- Begin modest enhancements (pre-planned product improvements).

Program Plan FY 2005 – Performance Output Goals
- ITWS program is being rebaselined.

Key Events FY 2006-2009 – Performance Output Goals
- ITWS program is being rebaselined.

B, CORRIDOR INTEGRATED WEATHER SYSTEM (CIWS), W07.02-00

Program Description

CIWS will improve airspace capacity during adverse weather in congested airspace. The key approach is to provide accurate and timely prediction of hazardous weather activity. This improved weather information will provide common situational awareness across multiple domains.

The CIWS prototype demonstration began in 2001 and is being evaluated at 13 FAA locations in the area encompassing New York, Philadelphia, Boston, Chicago, and Washington/Baltimore. When investment analysis activities are completed, CIWS procurement activities and integration with other NAS systems (Weather and Radar Processor and ITWS, for example) will begin. CIWS operational readiness is planned for 2007.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Improve efficient air traffic flow over land and sea.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The CIWS will improve airspace capacity by providing improved prediction of adverse weather. The CIWS prototype demonstration efforts have shown that finer positional and temporal resolution of storm location can improve airspace capacity in congested airspace. Air routes can be kept open longer before being impacted by weather and can be reopened earlier. Similarly, better knowledge of future storm position enables controllers to reroute pilots around storms more efficiently. Increased information on current and predicted storm heights allows users to identify opportunities to safely fly over storm areas. Finally, increased common situational awareness of expected weather events will improve collaborative decision-making among NAS users and traffic managers in all domains.

FY 2003 Program Accomplishments
- Expanded CIWS sensor input to include selected Airport Surveillance Radars (ASR-9).
- Continued operation and evaluation of CIWS prototypes.

Program Plan FY 2004 – Performance Output Goals
- Continue operation and evaluation of CIWS prototypes.
- Initiate investment analysis activities for integration of CIWS into the NAS.

Program Plan FY 2005 – Performance Output Goals
- Complete investment analysis phase (Joint Resources Council 2b milestone).
- Continue operation and evaluation of CIWS prototypes.
- Begin CIWS procurement activities.

Key Events FY 2006-2009 – Performance Output Goals
- Award contract in FY 2006 to install and integrate CIWS into the NAS.
- Establish CIWS operational capability in FY 2007.

1A05, AVIATION SAFETY ANALYSIS SYSTEM (ASAS)
FY 2005 Request $12.9M

- Aviation Safety Analysis System (ASAS), A17.00-00

Program Description

The ASAS program provides automation hardware, software and communication process updates to support aviation safety information databases. The safety workforce uses these databases to certify and regulate aircrews and airlines, and other licensed companies in aviation. Having information available improves ability of safety personnel to develop safety regulations and oversee the civil aviation industry. The information technology infrastructure and software systems also enhance data and information sharing that promotes safe and secure aviation practices through FAA's partnership with the commercial aviation community.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

Inspection and review of airline safety programs and practices are integral to the FAA safety program. The ASAS provides information on the safety record of an airline and the actions required to meet regulations and directives. Having this information allows the safety inspectors to determine if the airline is in

compliance with good safety practices. This step is essential in the prevention of accidents and reduction of fatal accident rate.

FY 2003 Program Accomplishments
- Performed Document Imaging Workflow Subsystem (DIWS) application enhancements, analysis and design of Airman Medical Examiner Internet data validation; began analysis and preparation for implementing improved telecommunication capabilities in order to deploy native DIWS capabilities Civil Aero Medical Institute to regional offices.
- Performed Compliance and Enforcement Tracking Subsystem (CETS) redesign from client-server to Web-based application.
- Developed Administration and Compliance Tracking in the Integrated Office Network Subsystem (ACTIONS) application enhancements.
- Analyzed and designed Compliance Assessment Reporting System (CARS); integrated CARS data into CETS.
- Performed Covered Position Decision Support Subsystem (CPDSS).
- Performed Clinic Health Awareness Program System (CHAPS) analysis.
- Completed DRS upgrade; initiated National Transportation Safety Board recommendations upgrade.
- Deployed the Integrated Airman Certification and/or Rating Application.
- Completed Joint Resources Council Phase 1, Mission Need Analysis, for the Regulation and Certification Infrastructure for System Safety (RCISS) program.
- Began efforts for Aerospace Safety Information Management (ASIM).
- Implemented enhancements to the Facility Security Reporting System.
- Implemented enhancements to the Crisis Management System.
- Developed and deployed the Web-based Dangerous Good systems.
- Completed documents for the Certificate Management Information System.
- Completed gathering of Project Activity Function Advisory Circular initial requirements.

Program Plan FY 2004 – Performance Output Goals
- Complete the President's Management Plan for performance by integrating Integrated Rulemaking Information System with the mainframe historical Federal Aviation Regulations; migrate the mainframe historical Federal aviation regulations into the Regulatory and Guidance Library.
- Perform DIWS planned deployments, analysis, and design of secure online data entry by airmen.
- Redesign, integrate, and deploy the CETS application.
- Perform ACTIONS planned development.
- Develop CARS manual.
- Perform CPDSS integration into data management systems.
- Perform CHAPS rehost revisions and system integration.
- Deploy Office of Certification Associate Administrator for Certification and Regulation (AVR)-wide software.
- Continue support for the RCISS program.
- Develop the FAA Identification Media System (FIMS).
- Develop and implement the Personnel Access Security System, a national access control and personnel directory.
- Develop and implement the Security and Investigations Information Retrieval System.
- Develop and implement new modules and functionality for the Investigations Tracking System (ITS).
- Develop and implement new modules and functionality for the Facility Security Reporting System (FSRS).
- Prepare Initial Requirements Document for the ASIM program.
- Complete testing, training and deployment of the Certificate Management Information System.
- Release Project Activity Function Advisory Circular.

Program Plan FY 2005 – Performance Output Goals
- Complete systems integration for DIWS, CPDSS, CHAPS, Airman Medical Examiner Information System and Decision Support System; an airmen access to medical status enhancements.

- Initiate CETS maintenance and support.
- Complete the Joint Resources Council 2b, Investment Analysis for the RCISS program.
- Provide support for the RCISS program.
- Procure RCISS Information Technology infrastructure hardware and software.
- Develop and implement FIMS.
- Develop and implement ITS.
- Develop and implement FSRS.
- Obtain approval to proceed with the ASIM program.

Key Events FY 2006-2009 – Performance Output Goals

ASAS consists of three programs: RCISS, Office of Security and Hazardous Materials (ASH) Systems (ASHS), and ASIM. The output goals are as follows:

- RCISS - Upgrade hardware such as servers, routers, circuits, and networked printers will be upgraded to enable efficient network processing.
- RCISS - Continue improvement and refreshment to support safety and business functions and activities, thus enabling access to required data and FAA national systems and support capabilities.
- RCISS - Continue technological modernization and technical refreshment of the Associate Administrator for Certification and Regulation (AVR) automation platform that supports all other AVR automation projects.
- ASHS - Continued development and further enhancements to the ID Media System.
- ASHS - Continue development and further enhancements to the National Access Control and Personnel directory.
- ASHS - Develop and implement a Document Management System for managing all documents that agents use in their work tasks.
- ASHS - Develop and implement an Investigations Tracking System to track the contractor workforce as well as tracking employees of other government agencies that are working of FAA business.
- ASHS - Develop additional enhancements for the ad hoc reporting capability, improve ability to upload photos, upgrading data collection hardware and software, and improve telecommunications access from remote sites. FSRS tracks security assessments, inspections, and recommendations for remediation of FAA facilities.
- ASHS - Redesign and implementation of the replacement for the Aircraft Detection and Processing Terminal system currently in place. El Paso Intelligence Center's Aircraft Detection and Processing Terminal system is used by law enforcement and other organizations to locate and track certain in-flight aircraft.
- ASHS - Develop and implement an automated system for the submission of fingerprints to Office of Personnel Management for checking criminal records.
- ASIM - Continue to develop the Aviation Medical Examiner Information Subsystem.
- ASIM - Continue to enhance capabilities of the CETS.
- ASIM – Continue to develop CETS by establishing clinical care module and develop training materials.
- ASIM - Design and develop new correspondence tools to create and maintain official communication; Expand functionality beyond Part-67 position (i.e., security specialist and non-FAA flight crew positions); Integrate Occupational Medical Surveillance Program; Move airmen medical certification data to electronic media; Instant airman certification under the CPDSS.
- ASIM - Analyze/revise application/user processes; Develop training materials and conduct user training; Analyze and develop web-based interface to replace legacy interface; Re-host client server to web-based; Enable external interfaces to commercial realm; Move airmen medical certification data to electronic media; Instant airman certification under the DIWS.
- Integrate CETS data with Decision Support System.

1A06X, WEATHER SYSTEMS PROCESSOR
FY 2005 Request $0.0M

- ASR Weather Systems Processor (ASR-WSP) – Tech Refresh / Product Improvement, W09.01-00

Program Description

The WSP is a cost effective alternative to the Terminal Doppler Weather Radar (TDWR) and provides weather situational awareness for tower and Terminal Radar Approach Control Air Traffic Control (TRACON) personnel. The Airport Surveillance Radar Model 9 (ASR-9) provides the sensor function. The WSP interfaces directly to the ASR-9 using ASR-9 radar data to generate weather products. The WSP provides prediction data for gust fronts and storm-cell motion that will impact flight operations. To improve flight safety, WSPs are installed at medium- and large-sized airports that do not have a TDWR which can detect and warn pilots of hazardous windshears and micro bursts. All WSPs will be operational by FY 2004, with the technology refresh program starting in FY 2007 to replace obsolete hardware; this will enable the system to operate beyond 2010.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The WSP warns air traffic controllers of windshear and microburst events that they can communicate to pilots in the air or those preparing for departure.

FY 2003 Program Accomplishments
- Operational Suitability Demonstration last key site at Albuquerque, NM.
- Placed 18 WSP systems into operation for a total of 21.
- Delivered the last 10 systems for a total of 39.

Program Plan FY 2004 – Performance Output Goals
- Install the last site at Tucson, AZ.
- Commission the remaining 18 systems for a total of 39.
- Transition Intermediate Contractor Depot Logistic Support to Contractor Depot Logistic Support.

Program Plan FY 2005 – Performance Output Goals
- Put system in operation.

Key Events FY 2006-2009 – Performance Output Goals
- Develop requirements for WSP technology refresh.

1A07X, LOW LEVEL WINDSHEAR ALERT SYSTEM (LLWAS) – UPGRADE
FY 2005 Request $0.0M

- Low Level Windshear Alert System – Disposal/Decommissioning of LLWAS-2, W05.02-02

Program Description

The LLWAS network expansion (NE) program upgrades nine existing LLWAS-2 sites to the LLWAS-NE configuration. LLWAS-NE is in use at airports where the airport radar with a Weather System Processor

(WSP) is not located optimally for providing windshear information. The LLWAS pole relocation project improves current performance by relocating/replacing anemometers and poles. The LLWAS sustainment program upgrades all standalone LLWAS-2 systems to the LLWAS-NE performance level. The relocation and sustainment upgrades result in the LLWAS-relocation/sustain configuration.   The LLWAS Disposal/Decommissioning program dismantles and disposes of LLWAS-2 systems that have been replaced by WSP or Terminal Doppler Weather Radar systems. Disposal of 40 LLWAS-2 systems is scheduled to begin in FY 2004 and will restore the sites to the original condition.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The LLWAS Upgrade program contributes to the FAA safety goal of reducing fatal aviation accident rates by improving the sensors that provide the information to air traffic controllers who issue windshear alerts to pilots.   Windshear conditions are common in areas where thunderstorms are frequent.   Hazardous windshear and microburst conditions can occur at low altitudes near airports and pose a significant threat to aircraft during takeoff or landing. LLWAS provides real-time detection of these weather events that affect flight safety. LLWAS provides coverage at airports with no other windshear detection capability, and it can also effectively complement radar detection of windshear by measuring wind velocity at several points on an airport surface.

FY 2003 Program Accomplishments
- Delivered remaining 32 LLWAS-Relocation/Sustain systems.
- Completed installing 33 LLWAS-RS systems.

Program Plan FY 2004 – Performance Output Goals
- Complete last LLWAS- Relocation/Sustain system installation.
- Establish the FAA Depot as the logistics support organization.
- Install LLWAS-NE++ at Juneau, AK.
- Initiate disposal/decommissioning of LLWAS-2.

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

1A08X, INTEGRATED FLIGHT QUALITY ASSURANCE (IFQA)
FY 2005 Request $0.0M

- Integrated Flight Quality Assurance (IFQA), A20.00-00

Program Description

The IFQA program will develop and implement the electronic capability for collecting and analyzing aggregate digital flight data that airline operations centers collect from the flight data recorders on aircraft. The IFQA system will develop a secure Internet-based FAA electronic data acquisition and information infrastructure. Implementation will enable the FAA to access airline Flight Operational Quality Assurance (FOQA) trend data for NAS oversight purposes, as well as safety improvements in formulating FAA policy and decision-making to improve safety.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The IFQA program contributes to the FAA safety goal by providing the electronic capability to collect and analyze individual aircraft flight data to discover operational safety issues.

FY 2003 Program Accomplishments
- Completed operational evaluation and testing.
- Incorporated expanded open and platform independent industry standards and protocols to support various operating systems and Web-based platforms.
- Reconfigured servers/firewalls to conform to current Information Systems Security requirements.
- Transitioned infrastructure from commercial off-the-shelf (COTS) to open source components to provide no software licensing cost version for airline system installations.
- Completed courseware development of FOQA training materials for Aviation Safety Inspectors.
- Developed standard statistical indices for airline aggregate data submissions.
- Expanded capabilities to provide a data acquisition, information management, and analysis system for incident safety and Aviation Safety Reporting System (ASAP) reports.
- Implemented data to support aeronautical charting for both pilots and Air Traffic Control (ATC) derived from FAA and National Imaging and Mapping Agency sources.
- Developed tools to transform individual airline FOQA, incident safety and ASAP data into the Integrated Flight Quality Assurance system standard formats.
- Developed industry standards, a categorization scheme, and protocols to facilitate airline/industry sharing for both FOQA and ASAP programs.
- Developed and implemented a method to support industry exchange and consolidation of Traffic Alert and Collision Avoidance System (TCAS) FOQA data derived from individual airline programs.
- Implemented analysis & visualization methods for analyzing TCAS events.
- Initiated design of industry standards to facilitate airline and industry information sharing and integration of FOQA and ASAP event data.

Program Plan FY 2004 – Performance Output Goals
- **** Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

1B01, SAFE FLIGHT 21 (SF-21)
FY 2005 Request $40.5M

- A, Safe Flight 21 – Alaska Capstone Initiative, M36.01-00
- B, Safe Flight 21 – Ohio Valley Prototype Project, M36.02.00
- C, Automatic Dependent Surveillance Broadcast (ADS-B) – Advanced Technology Development and Prototyping, S10.02-00

A, SAFE FLIGHT 21 – ALASKA CAPSTONE INITIATIVE, M36.01-00

Program Description

The Safe Flight 21 Alaska Capstone Initiative provides an improved ground and air infrastructure that furnishes pilots better information about the location and severity of hazardous weather, proximity to terrain, improved instrument approaches to small airports, and traffic situations to reduce mid-air collisions. Additionally, the Capstone program provides improved surveillance information to controllers to assist them in sequencing, separation, flight following, and search and rescue activities. A more useable Instrument Flight Rules infrastructure will be provided to enable lower en route and approach/departure routes. The Capstone program is demonstrating use of ADS-B for two-way communication to and from an aircraft. The aircraft position determined from onboard navigation systems is transmitted to an air traffic control facility, and information on weather and other aircraft in the area is transmitted from a ground-based transceiver to the pilot.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 3 –** Reduce accidents in Alaska.
- **FAA Performance Target –** Reduce accidents in Alaska for general aviation and all Part 135 operations by 20 percent by FY 2008 (from the 2000-2002 average of 130 accidents per year to no more than 104 accidents per year).

Relationship to Performance Target

The Alaska Capstone program is contributing to the safety objective through a three-phase approach affecting Bethel, Southeast Alaska, and eventually the entire state. The program will optimize access to minimum en route altitudes along existing routes and add new instrument procedures in Southeast Alaska, initiating enhanced capabilities for pilots to see and avoid other aircraft using ADS-B. With improved information in the cockpit, pilots will be able to avoid the hazards that are the major causes of accidents in Alaska. This information is provided by a terrain database in the aircraft and a moving map to show pilots the proximity of hazardous terrain and broadcast information that fills in the surveillance gaps within a state that has fewer infrastructures than more populous states.

FY 2003 Program Accomplishments
- Purchased ADS-B avionics for participating aircraft in southeast Alaska.
- Began installing enhanced terrain avoidance avionics in participating aircraft in southeast Alaska.
- Selected a wide-area multilateration system for the Juneau area of southeast Alaska based on surveillance requirement and concept of operations.
- Enhanced the Phase I (Bethel) demonstration area by beginning installation and commissioning of additional Automated Weather Sensor Systems (AWSS).
- Began process to upgrade the Phase I ground-based transceivers to provide for simultaneous two-way link for traffic information to the Air Route Traffic Control Center (ARTCC) and weather information to the pilots.
- Began Joint Resources Council decision process to re-baseline Phase I (Bethel) systems and equipment and obtain operations and maintenance funding.

Program Plan FY 2004 – Performance Output Goals
- Begin installing ADS-B avionics in participating aircraft in southeast Alaska.
- Install data-link avionics in participating aircraft in southeast Alaska.
- Install and commission minimum operational performance standards compliant for ADS-B ground-based transceivers in southeast Alaska.
- Begin installing a wide-area multilateration system for Juneau area of southeast Alaska.
- Install and commission additional AWSSs.
- Begin transition process for upgrading ground-based transceivers and avionics to minimum operational performance standards compliance for aircraft and ground systems in the Phase I (Bethel) area.

- Obtain Joint Resources Council decision for re-baselining Phase I (Bethel) systems and equipment and obtain operations and maintenance funding.
- Begin Joint Resources Council decision process to harden Phase II (southeast Alaska) systems and equipment and obtain operations and maintenance funding.
- Prepare Alaska Statewide Strategy Plan by September 2004.

Program Plan FY 2005 – Performance Output Goals
- Begin expansion of ADS-B ground stations, AWSS, and surveillance coverage for the remainder of the state.

Key Events FY 2006-2009 – Performance Output Goals
- Continue expansion of ADS-B ground stations, AWSS, and surveillance approach for statewide Alaska.

B, SAFE FLIGHT 21 – OHIO VALLEY PROTOTYPE PROJECT, M36.02-00 AND SURFACE MOVING MAP, M36.02-01

Program Description

The Safe Flight 21 (SF-21) Ohio Valley Prototype Project is evaluating nine high-priority communication/ navigation/surveillance operational enhancements using ADS-B based on the global positioning system as well as other information services. The nine operational enhancements are:

1. Weather and Other Information in the Cockpit;
2. Improvement of Controlled Flight into Terrain Avoidance
3. Improved Terminal Operations in Low Visibility Conditions
4. Enhanced See and Avoid
5. Enhanced En Route Air-to-Air Operations
6. Improved Surface Operations
7. Airport Surface Display for the Controller
8. ADS-B for Surveillance in non-radar airspace
9. ADS-B separation standards establishment

The SF-21 program is establishing pockets of broadcast service technology enhancements to support demonstration of new technology-driven safety and efficiency benefits. In the Ohio Valley, these enhancements are being used to safely increase the flow of air traffic into cargo airports. The expanded and shared information on weather and air traffic allows pilots to safely increase the number of arrivals and departures and reduce the risk of accidents.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The SF-21 program focuses near term on general aviation. The program is evaluating and demonstrating ADS-B and other information service applications that could lead to reducing the number of fatal accidents in the general aviation community. SF-21 is supporting an initiative to provide Visual Flight Rule pilots with Instrument Flight Rule like environments by delivering ADS-B, flight information service broadcast, and traffic information services to key sites in Prescott, AZ, and Daytona Beach, FL. Other pockets of

ADS-B implementation will be deployed to support an expanding user community. Surface-moving map applications will contribute to safer airport surface operations and a reduction in the risk of runway incursions. The program is also evaluating applications to support capacity objectives that will increase airport capacity to meet projected demand, improve bad-weather departures and landing capacity, and improve efficient air traffic flow over land and sea.

FY 2003 Program Accomplishments
- Installed ADS-B avionics on 85 United Parcel Service (UPS) Boeing 757/767 aircraft for enhanced situational awareness applications.
- Obtained signed Memorandum of Agreement from North Carolina State Department of Transportation, Division of Aviation, to install ADS-B Ground Based Transceivers.
- Completed 22 initial site surveys and 10 detailed surveys for ADS-B ground station infrastructure in Prescott, AZ, North Carolina, and Florida.

Program Plan FY 2004 – Performance Output Goals
- Conduct additional ADS-B/ Standard Terminal Automation Replacement System integration testing in the SF-21 test bed in Memphis, TN, and develop software system specifications.
- Complete installation of ADS-B avionics on UPS Boeing 757/767 aircraft (total of 107) for enhanced situational awareness applications and collect metric information at Louisville Airport.
- Install the broadcast support center at the William J. Hughes Technical Center to support general aviation applications for east coast and Prescott, AZ.

Program Plan FY 2005 – Performance Output Goals
- Ensure Joint Resources Council 2A decision on ADS-B deployment (December 2004).
- Procure and install remaining ADS-B ground stations to support east coast broadcast services infrastructure.
- Maintain 34 surface moving maps.
- Procure ADS-B ground station infrastructure for the next pocket of implementation.
- Produce additional digital surface moving maps and maintain the map database.
- Assess applications associated with ADS-B and broadcast service technology.
- Conduct Operational concepts evaluation efforts, operational demonstrations and simulations.

Key Events FY 2006-2009 – Performance Output Goals
- Implement Joint Resources Council 2A decision on ADS-B deployment.
- Assess applications associated with ADS-B and broadcast service technology.
- Conduct Operational concepts evaluation efforts, operational demonstrations and simulations.

C, AUTOMATIC DEPENDENT SURVEILLANCE BROADCAST (ADS-B) – ADVANCED TECHNOLOGY DEVELOPMENT AND PROTOTYPING, S10.02-00

Program Description

Participation on various international committees and working groups that support development and approval of ADS-B standards allows the FAA to maintain international leadership in this important activity. This ADS-B standards program is contributing to the Safe Flight 21 program which is evaluating and demonstrating ADS-B and other information service applications that could lead to reducing the commercial airline fatal accident rate, reducing the number of fatal accidents in the general aviation community, reducing runway incursions, and improving capacity.

The program improves aviation safety by developing system standards for ADS-B technology in terminal, en route, and oceanic airspace, as well as on the airport surface. The program is developing domestic, (RTCA, Inc.), International Civil Aviation Organization (ICAO) ADS-B performance standards, through rigorous testing, simulation, and analysis, which will enhance surveillance for pilots and controllers and the overall system safety.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

These standards provide the basis for implementing ADS-B technology and related applications and are designed to ensure interoperability throughout the aviation community. The ADS-B standards program is contributing to the Safe Flight 21 program, which is evaluating and demonstrating ADS-B and other information service applications that could lead to reducing the commercial airline fatal accident rate and the number of fatal accidents in the general aviation community.

FY 2003 Program Accomplishments
- Obtained RTCA approval of 1090 MHz ADS-B Minimum Operational Performance Standards (MOPS) Rev A: April 2003.
- Obtained RTCA approval of the Traffic Information Service Broadcast (TIS-B) Minimum Aviation System Performance Standards (MASPS): April 2003.
- Obtained RTCA Plenary approval of Airborne Surveillance Applications (ASA) MASPS: September 2003.

Program Plan FY 2004 – Performance Output Goals
- Prepare/coordinate revisions of TIS-B MASPS to include additional applications.
- Obtain RTCA Program Management Council approval of ASA MASPS.
- Prepare/coordinate revisions of Airborne Surveillance Separation Assurance Processing (ASSAP) MOPS for additional ADS-B applications.
- Begin developing Universal Access Transceiver (UAT) ICAO standards and recommended practices (SARP).
- Obtain approval of ICAO SARP validation plan.
- Continue Package 1, ASA applications coordination with EUROCAE/EUROCONTROL.

Program Plan FY 2005 – Performance Output Goals
- Coordinate approval of revisions to UAT ICAO standards and recommended practices.
- Coordinate approval of revisions to TIS-B MASPS.
- Coordinate approval of revisions to ASA MASPS.
- Coordinate approval of revisions to ASSAP MOPS

Key Events FY 2006-2009 – Performance Output Goals
- Monitor and update full suite of ADS-B standards to incorporate additional applications.

1C01, ADVANCED TECHNOLOGY DEVELOPMENT AND PROTOTYPING
FY 2005 Request $37.3M

- A, Separation Standards – ATDP, M08.28-01
- B, Runway Incursion Reduction Program (RIRP) – ATDP, S09.02-00
- C, System Capacity, Planning, and Improvements - ATDP, M08.28-00
- D, Operations Concept Validation – ATDP, M08.29.00
- E, Software Engineering Research Center (SERC) – ATDP, M28.01-00
- F, Airspace Management Laboratory – ATDP, M08.28-02
- G, National Airspace System Requirements Development – ATDP, M08.27-00
- H, General Aviation / Vertical Flight Technology – ATDP, M 35.01-00
- I, Domestic Reduced Vertical Separation Minima – ATDP, M08.28-03
- J, Safer Skies – ATDP, M42.01-00
- K, NAS Development System Assurance – ATDP, M31.01-01
- L, Safety Analysis and Assessment, M08.32-01
- M, Airport Technology – ATDP, M34.01-00

A, SEPARATION STANDARDS – ATDP, M08.28-01

Program Description

The Separation Standards program is the means by which the FAA exercises leadership in the development and implementation of new separation standard values in the high-altitude international airspace within which it provides air traffic services, as delegated by the International Civil Aviation Organization. The program implements the FAA's "Strategic Plan for Oceanic Airspace Enhancements and Separation Reductions" drawing on complementary contributions from three FAA directorates: Air Traffic Services, Certification and Regulation, and Research and Acquisitions. Program contributions result in reduced separation-standard values, which permit aircraft operators to use international airspace in a more fuel-efficient manner, while reducing operational complexity in providing air traffic control through increased airspace capacity. Each separation change undergoes an extensive safety assessment before implementation and ongoing monitoring after the date of the change. Recent accomplishments include conducting a seminar (June 2003) and three task force meetings (January, June, and September 2003) to (1) prepare for introduction of the Reduced Vertical Separation Minimum (RVSM) – or replacement of the existing 2,000-foot vertical separation standard with a 1,000-foot value - in all airspace of ICAO's Caribbean and South American regions under FAA leadership, and (2) prepare for a safety assessment of 30-nautical mile (nm) lateral and longitudinal separation standards introduced into a portion of FAA-administered airspace in the South Pacific. In the longer term, the program will introduce reduced separation-standard values in West Atlantic and Caribbean airspace and introduce further reduced horizontal-plane separation values in the Pacific.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Beginning in FY 2005, increase to 80 percent the number of oceanic en route altitude change requests that are granted through the end of FY 2008.

Relationship to Performance Target

The program plans to implement RVSM in January 2005 in all of the airspace of the ICAO's Caribbean and South American regions. The program also aims to introduce 30-nm lateral and longitudinal separation standards in a portion of FAA-administered Pacific airspace by May 2005.

B, RUNWAY INCURSION REDUCTION PROGRAM (RIRP) – ATDP, S09.02-00

Program Description

The RIRP will continue research, development, and operational evaluation of technologies to improve runway safety. In accordance with standing National Transportation Safety Board (NTSB) recommendations and directions in the FAA Runway Safety Blueprint, research emphasis will continue to focus on technologies that can be applied cost-effectively at small airports that do not have a surface radar and alerting system, as well as on pilot, controller, and vehicle operator situational awareness aids. When appropriate, the program will prototype and test effective solutions in an operational setting to validate their technical performance and operational effectiveness.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 4 –** Reduce the risk of runway incursions.
- **FAA Performance Target –** Reduce the number of the most severe (Category A & B) of runway incursions at towered airports by at least 48 percent by FY 2008 (from the 2000-2002 baseline average of 52 per year to no more than 27).

Relationship to Performance Target

The RIRP contributes to safety objectives that will reduce runway incursions. Actions are underway to support resolution of open NTSB recommendations (A-00-66). These activities include continued research, development, and operational evaluation of technologies to improve runway safety. In the near term, the RIRP will be conducting evaluations of existing and emerging low-cost technologies that enhance pilot and air traffic controller situational awareness using runway status lights and a ground marker system. A proof of concept will be developed that leads to a prototype ground movement safety infrastructure to provide direct warning capability to pilots, drivers, and controllers. The program will also conduct an integrated assessment of emergent runway safety technologies along with a simulation analyses to assess effectiveness, interoperability and level of readiness for operational transition to a NAS ground movement safety infrastructure. These activities will provide vital information on runway safety technologies and their role in reducing fatal accidents and reducing the risk of runway incursions.

FY 2003 Program Accomplishments
- Completed runway status lights (RWSL) shadow operations 1 testing at Dallas Fort Worth International Airport (DFW).
- Installed a ground marker system in an airport equipped with a high runway incursion non-Airport Surface Detection Equipment (ASDE)/Airport Movement Area Safety System.
- Developed performance standards/requirements for selected runway incursion reduction technologies.
- Continued research on potential technology solutions for small to medium-sized airports.

Program Plan FY 2004 – Performance Output Goals
- Continue research on potential technology solutions for small to medium-sized airports.
- Secure approval of construction permit of RWSL airfield lighting equipment at DFW by January 2004.
- Complete the initial phase of ground marker system evaluation at Concord Airport by September 2004.
- Implement system changes to address anomalies identified during FY 2003 tests and complete shadow operations retest at DFW by September 2004.
- Install RWSL prototype at DFW.
- Deliver an interim technology assessment report based on simulations by September 2004.

Program Plan FY 2005 – Performance Output Goals
- Continue research on potential technology solutions for small to medium-sized airports.
- Continue developing performance standards/requirements for selected runway incursion reduction technologies.

- Conduct an operational evaluation of the RWSL prototype system
- Conduct an operational assessment of the enhanced lighting configuration.
- Develop system specifications for approved project(s).

Key Events FY 2006-2009 – Performance Output Goals
- Continue research on potential technology solutions for small to medium-sized airports.
- Continue developing performance standards/requirements for selected runway incursion reduction technologies.
- Execute limited deployment of RWSL at two large airports.
- Transition approved projects to operational status.
- Develop system specifications for approved project(s).

C, SYSTEM CAPACITY, PLANNING, AND IMPROVEMENTS – ATDP, M08.28-00

Program Description

The System Capacity, Planning, and Improvements program identifies, evaluates, and formulates capacity enhancements for the NAS. Program activities provide performance measurement tools that assist air traffic control facility managers; cooperative teams working with airport authorities to analyze alternatives for increasing capacity and reducing delays; and Benchmark Reports that analyze and assess current and future airport capacity. These activities lead to a more efficient airspace system, domestically and internationally, as well as improve the Air Traffic Services Management process to support advancement of the FAA's overall performance. The five major activity areas follow:

1) The Performance Data Analysis and Reporting System (PDARS) is a fully integrated performance measurement tool that helps the FAA to improve the NAS. It will allow for baselining and trend monitoring of various operations, such as travel times, traffic density, and aircraft interval/acceptance rates. The expected date for monitoring all 20 domestic ARTCCs and the 35 Operational Evolution Plan (OEP) airports is FY 2007.
2) Air Traffic Services Balanced Scorecard (BSE) is a management tool for developing, communicating, implementing, and managing strategy by developing and linking strategic objectives, measures, initiatives, and resources from the highest to the lowest levels of the organization. This business tool will be designed, developed, and implemented within the Regional, En Route, and Terminal businesses to improve efficiency and effectiveness of strategy implementation within the Air Traffic Services (ATS) Regional environment.
3) Airport Capacity Enhancement/Design Studies entail investigating capacity and delay issues at the major airports within the NAS. Through computer simulation modeling the FAA works with airports and other aviation industry stakeholders to conduct studies to improve the operating efficiency of the infrastructure. Presently studies are being conducted at Portland International Airport for the purpose of location of an additional terminal and a third parallel runway and its use. At the Philadelphia International Airport modeling consists of investigating possible relocation of the runways and terminals to improve efficiency and reduce delays.
4) International Terminal Benchmarking Study - involves performing a linked series of bilateral comparisons of U. S. terminal facilities with similar facilities worldwide. The process consists of pairing a particular U.S. airport with a participating foreign airport. Through a comparable analysis of staffing, operational, and facility cost data, the FAA can compile a set of measurable performance metrics and gain a firm understanding of the relative performance of the agency's terminal service.
5) New Large Aircraft participation includes modeling, analysis, and procedural development services to assess the potential impact of large aircraft at airports with high traffic volume.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.

- **FAA Performance Target** – Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrival per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008.

Relationship to Performance Target

This program will facilitate design and/or improvements to new runways, air traffic procedures, and other technological implementations to improve airport capacity. It will also modernize the NAS with facilities management tools to create new efficiencies in the operating system to increase system capacity.

FY 2003 Program Accomplishments

- Portland: Collected and verified data inputs and calculation of the model and portions of Phase II (simulation of the potential improvements).
- Philadelphia: Determined the location of the new runways and terminals.
- Completed Memphis Design Team Study final draft, and completed several New Large Airport (NLA) studies/modeling simulations.
- Published and distributed the 2002 Airport Capacity Expansion Plan.
- International Benchmarks: Completed the pairing of airports and received concurrence from all participants and completed the initial collection of staffing, operational, and facility cost data.
- Prototyped En Route BSE tool at Indianapolis, Memphis, and Atlanta ARTCCs.
- Identified and developed new En Route BSE financial metrics for Air Traffic and Airway Facilities management at prototype facilities.
- Developed Air Traffic Services Management Team approved plan for development and prototyping of an ASO region integrated en route/terminal BSE tool.
- Installed and tested PDARS in 12 of the 20 domestic ARTCCs.
- Completed system operator training in eight centers and scheduled training for the rest of the connected facilities.
- Completed installing PDARS at the Jacksonville, Memphis, Atlanta, Miami, and Indianapolis ARTCCs.
- Completed Jacksonville "Q" Route study.

Program Plan FY 2004 – Performance Output Goals

- Complete Portland and Philadelphia Capacity Enhancement Studies.
- Initiate DEN Design Team Study.
- Publish and distribute the 2003 Airport Capacity Expansion Plan.
- Initiate Indianapolis Terminal Design Team study and initiate JFK and LAX NLA ground movement study.
- International Benchmarks: Complete development of the criteria for analyzing the data between matched paired airports.
- International Benchmarks: Present and accept initial data by the matched paired airports.
- Develop and prototype an ATS integrated en route/terminal BSE tool within ASO region.
- Identify cost and performance metrics for ASO region BSE tool.
- Prototype a Web-based software application infrastructure to provide ATS headquarters and ATS Southern Region managers with centralized access to ASO Region BSE cost and performance information.
- Complete installing PDARS at all ARTCCs and begin installation at remaining terminal facilities.

Program Plan FY 2005 – Performance Output Goals

- Using Capacity Benchmark studies, provide data and analysis for LGA, Newark, and JFK.
- Publish and distribute the 2004 ACE Plan.
- Initiate various Design Team and/or NLA studies at the following airports: ATL, HOU, BDL, PHX, LAS, EWR, SLC, and SJU.
- Complete DEN Design Team Study.
- International Benchmarks: Complete and present analysis of all data between matched paired airports.

- Develop Air Traffic Services Management Team approved plan to develop and prototype an AGL region BSE tool.
- Develop and prototype AGL region BSE tool.
- Identify COTS software for BSE cost and performance reporting and initiative tracking.
- Develop an ATS/ Air Traffic Operations BSE tool development and implementation plan for all of ATS.
- Implement PDARS lifecycle management upgrades and maintenance.

Key Events FY 2006-2009 – Performance Output Goals
- Finalize implementation of the ATS/ Air Traffic Operations BSE tool at all headquarters, region and ATS field facilities.
- Complete PDARS terminal facility installations.

D, OPERATIONS CONCEPT VALIDATION – ATDP, M08.29.00

Program Description

The Operations Concept Validation program provides well-defined "validated" operational concepts to support transition to new equipment planned in the NAS Architecture. It provides information to the aviation community in developing new procedures to use with new technology being implemented in the NAS and the changes in aircraft equipment necessary to be compatible with that technology. Information developed includes system specification, roles and responsibilities, procedures, training, and certification requirements. Results also define requirements for future systems and help establish specifications for acquisition (e.g., en route automation modernization). The operational concept development and validation outputs provide for continued development and support of NAS modernization through: (1) concept/scenario development; (2) concept validation; (3) simulation and analysis; (4) system design; (5) metric development; and (6) modeling.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

This program improves capacity by reducing the time to implement new technology into the air traffic control system. Developing the operational procedures early in the design phase of new equipment reduces any adaptations and allows users to prepare in advance for implementing technology that will increase capacity and reduce delays.

FY 2003 Program Accomplishments
- Directly supported development and delivery of the RTCA NAS Concept of Operations and Vision for the future.
- Considered capacity utilization benefits of an expanded high altitude concept including strategies for point-to-point—no verbal exchange of latitude/longitude or inclusion in flight plans (cognitive and situational awareness issues).
- Performed tradeoff analysis of flight deck automation versus data link requirements in a distributed versus central information/flight negotiation and processing (air versus ground).
- Performed analyses of human performance in new en route/terminal decision support tools with recommendation for future builds.
- Conducted initial evaluation of common trajectory modeling, sensitivity, and fidelity requirements to support major automation updates.

Program Plan FY 2004 – Performance Output Goals
- Develop performance-based air traffic management framework, which includes the ICAO requirement to define Required Total System Performance in conjunction with EUROCONTROL.
- Develop initial draft of the arrival/departure (terminal) airspace evolution concept.
- Conduct and coordinate an analysis across research facilities into the en route/operational evolution including changes in operator's role and information needs.
- Develop a capability to model air traffic management influences (strategic simulator).
- Develop criteria for and promote reuse of modernization human-in-the–loop validation exercises, through publishing of best practice guidance and initial release of the Validation Data Repository to capture current validation of associated concepts.
- Continue RTCA support.

Program Plan FY 2005 – Performance Output Goals
- Develop detailed concept of operations for evolution of Traffic Flow Management and Collaborative Decision Making.
- Develop gate-to-gate evolution concept for flight data management and planning including international harmonization of the definition and format for the flight object and new ICAO flight plan.
- Develop guidance document on fast-time modeling criteria for validation exercises of modernization concepts.
- Conduct analysis and develop detailed sub-concept for changes in cross-facility coordination (terminal and en route) to support increased capacity utilization.
- Use the performance framework to set metrics for validation exercises to allow comparability of results across program validation efforts in the United States and Europe.
- Continue RTCA support.

Key Events FY 2006-2009 – Performance Output Goals
- Develop and demonstrate the concept for dynamic resectorization for just-in-time delivery of capability with En Route Automation Modernization deployment.
- Conduct evaluations and demonstrations on the complementary human performance and controller roles and acceptance for increased functionality supported by delivery of En Route Automation Modernization and Traffic Flow Management, in support of capacity enhancements and efficiency.
- Develop criteria for evaluation of the standard controller platform to support reduced maintenance, training, and increased flexibility in establishing and implementing changes to controller roles and responsibilities.
- Continue RTCA support.

E, SOFTWARE ENGINEERING RESEARCH CENTER (SERC) – ATDP, M28.01-00

Program Description

The FAA plans to improve the NAS and reduce NAS and avionics acquisition, development, and maintenance costs by implementing new software processes and procedures. These improvements will directly benefit passengers, as well as all elements of air transportation, and greatly contribute to the NAS safety, security, and efficiency.

The FAA SERC at the William J. Hughes Technical Center was established in 1998 as a focus for applied research on software-intensive systems. The SERC is an agency wide resource addressing strategic software technology problems that impact the mission, performance, and enhancement of in-house software and systems engineering competencies. The SERC's research and development efforts have focused mainly on two areas: (1) automating much of the process for adapting NAS automation systems such as the Standard Terminal Automation Replacement System (STARS); and (2) modeling the impact of COTS on NAS system design, development, and maintenance.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The Program supports the FAA Flight Plan safety goal; however, much of the project effort will also assist the agency in meeting its organizational excellence goal.

FY 2003 Program Accomplishments
- Successfully prototyped the NAS Adaptation Services Environment Domestic RVSM / Adaptation Data Mart, which has demonstrated or accomplished the following:
  - Implemented best engineering practices for selected NAS systems.
  - Enabled adaptation of new and legacy NAS systems more rapidly and correctly and lowered total lifecycle costs.
  - Continued exploring and developing new ways to reduce costs in selected NAS domains through application of technology.

Program Plan FY 2004 – Performance Output Goals
- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

F, AIRSPACE MANAGEMENT LABORATORY – ATDP, M08.28-02

Program Description

Airspace management and its technology support the FAA's plan to improve NAS efficiency and performance while sustaining the current high levels of safety. The NAS design (e.g., sectors and routes) must be continuously reviewed to identify performance improvement alternatives. It is essential that the FAA deploy decision-support tools and aeronautical data that will enable NAS performance improvements to be engineered for enhanced air traffic control flight operations. Therefore, the agency needs the capability to operate an analysis, data collection, modeling, measurement, and simulation tools laboratory that includes development and use of geospatial analysis tools, statistical methods for operations management and decision sciences, and environmental (noise) impact analysis tools.

This initiative will enhance the agency's ability to manage and use aeronautical information to support airspace management goals. Areas of capability will include: data collection, performance measures, analysis, and airspace redesign, as well as the standardization of aeronautical information and processes to support these functions. By focusing on aeronautical information management, data quality, and workflow processes, this program will directly affect the success of current operations, area navigation development, and airspace design alternatives nationally and at local high-density traffic areas such as the New York metropolitan area. Furthermore, the Airspace Management Laboratory is the FAA's primary collection point and repository for traffic information. The centralized collection of post-operational traffic data and metrics is used extensively within airspace management by many FAA organizations and throughout the U.S. Government for decision support. Environmental design tools developed by the laboratory are used as part of an airspace project to mitigate aircraft noise and to reduce aircraft emissions. Finally the

laboratory's analytical and design capabilities facilitate use of advanced air traffic control decision support tools to support agency NAS improvement initiatives.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

This program provides process automation to support management and analysis of aeronautical data; develops and supports airspace tools that allow redesign and analysis of airspace and traffic flows; and collects and manages traffic data used in the analysis of airspace designs and for performance metrics.

Optimizing the NAS core capability is one of the FAA's highest priorities. The agency is investing in core capability air traffic control/air traffic management decision support tools to improve system performance through increased flexibility, predictability and safety. The core tools depend heavily on high-quality data and the structure of the airspace. Supporting this initiative's data quality, modeling, and analysis capability goals will centralize national redesign activities and maximize the effect of implementing capability enhancements. This initiative will benefit the American public economically by improving system efficiency through use of airline-desired flight profiles. In turn, this will reduce airline operating costs and flight delays. Within the domain of system redesign and maturity, savings due to reduced air traffic control operating costs will be realized by better balancing workload demand generated by user-desired flight profiles and by reducing facility operating costs. Lower average costs can be realized across the agency by balancing service delivery through airspace redesign. For this to be successful, the agency should invest in analysis and engineering of airspace configurations for a rational allocation of NAS resources.

FY 2003 Program Accomplishments
- Completed deployment of first-generation obstruction evaluation system.
- Expanded obstruction evaluation system to handle workflow requirements of non-air traffic divisions.
- Enabled public to enter obstruction evaluation airport/airspace analysis case, allowing submission of 7460-1 forms (notice of proposed construction).
- Implemented initial scanning capability to first region for production of obstruction evaluation cases.
- Expanded Sector Design and Tool coverage to include advanced functionality for terminals and Terminal Radar and Approach Control.
- Extended next-day drill-down capabilities of airspace usage metrics to cover FAA points of delivery from terminal to center.
- Developed first generation national system for collecting and archiving high-quality, near-real-time traffic data.

Program Plan FY 2004 – Performance Output Goals
- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

G, NATIONAL AIRSPACE SYSTEM REQUIREMENTS DEVELOPMENT – ATDP, M08.27-00

Program Description

The National Airspace System Requirements Development program provides specifications that are used for identifying and evaluating new technologies to meet the needs of aerospace users and improve system efficiency. The program also develops plans and new procedures to transition from the existing technologies and practices to advanced capabilities that satisfy user needs and impact overall NAS system capacity. Extensive study and analysis are completed before an investment decision is made. Activities such as operational concept development, sustainability analysis, simulation, human factors analysis, procedure development, performance definition, sustainability study, impact analysis, workload analysis, hazard analysis, and NAS architecture development assist in providing the key discriminating factors required for good investment decisions. Specific program examples include requirements development for runway incursion research and development efforts and Capstone initiatives.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 arrivals per day by FY 2008.

Relationship to Performance Target

The requirements development activity is integral to the success of air traffic modernization programs, and therefore, supports programs that increase capacity. This process improves program quality and increases the capacity gains from the pool of investment funds.

H, GENERAL AVIATION / VERTICAL FLIGHT TECHNOLOGY – ATDP, M 35.01-00

Program Description

The GA&VF program conducts research to adapt satellite navigation and automatic dependent surveillance technology for the use of light general aviation aircraft and helicopters in low altitude airspace, develops instrument approach and departure procedures for heliports; and evaluates cockpit technology to enhance pilot situation awareness. Procedures and regulations are developed to separate slower highly maneuverable aircraft from transport aircraft, thereby improving safety while increasing overall system capacity and reducing delays. This program also evaluates techniques that enable aircraft operating under visual flight rules to navigate at a higher level of precision and awareness of the proximity of other aircraft and obstacles.

In FY 2005, the GA&VF program will initiate efforts to develop complex approaches for helicopters to safely avoid obstacles and reduce noise impact on populated areas. Both of these efforts will improve access to hospitals for emergency medical services. Work will continue on the development and implementation of simultaneous and non-interfering procedures in a congested major terminal area using separation and approach standards derived from the Wide Area Augmentation System. Research will be initiated to improve and demonstrate lighting standards for heliports. Both the heliport approach and lighting work also support U.S. positions in ICAO standards negotiations. Research to provide information for guidance materiel for approval and use of enhanced vision equipment will be conducted.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.

- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The GA&VF program contributes to the FAA's general aviation safety goal by expediting implementation of satellite navigation and automatic dependent surveillance technology for use of light general aviation aircraft and helicopters to reduce controlled flight into terrain accidents and midair collisions. Satellite navigation technology also permits development of instrument approaches to heliports, which will reduce landing accidents. The program also addresses the issue related to loss of efficiency within the NAS due to helicopters using the same routes, approaches, and airport runways as transport aircraft.

I, DOMESTIC REDUCED VERTICAL SEPARATION MINIMA (RVSM) – ATDP, M08.28-03

Program Description

The Domestic RVSM program is an ICAO approved concept that allows the 1,000-foot vertical separation standard that is applied below 29,000 feet to be applied between 29,000 and 41,000 feet. On January 20, 2005, the FAA plans to implement Domestic RVSM from 29,000 to 41,000 feet in the domestic airspace of the United States, in the Gulf of Mexico where FAA provides air traffic services, and in San Juan Flight Information Region airspace. Domestic RVSM at these altitudes will add six new altitudes (30,000, 32,000, 34,000, 36,000, 38,000, and 40,000). These new altitudes will significantly increase airspace capacity at the core altitude stratum desired by turbojet aircraft operators and provide more opportunity to air traffic control to grant user-preferred altitudes. For air traffic controllers, Domestic RVSM is expected to decrease workload associated with the vertical and lateral compression of traffic toward preferred flight profiles. The practical outcome for operators is reduced fuel burn on any given flight.

The components of the program are: developing regulations to require aircraft equipage; developing air traffic control automation and procedures to use the new separation standards; and training of 9,000 air traffic controllers, training aviation inspectors, conducting aircraft inspections; and monitoring airspace to ensure system safety.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

Domestic RVSM is predicted to create savings for aircraft operators by reducing airspace congestion through the addition of six available operating altitudes, which allows aircraft to fly at more efficient altitudes.

J, SAFER SKIES – ATDP, M42.01-00

Program Description

Safer Skies stems from a joint effort between the FAA and users to reduce aviation accident rates by analyzing causes of accidents, evaluating pilot actions, and evaluating equipment failures and then developing and implementing intervention strategies to prevent or reduce factors that cause most aviation accidents. The FAA and its partners (industry representatives, other Government agencies, and employee groups) have identified 12 Safer Skies focus areas, many interventions, and numerous safety activities. Commercial accident reduction efforts involve six focus areas; Approach/Landing Accident Reduction

(ALAR), Controlled Flight Into Terrain (CFIT), Uncontained Engine Failure, Runway Incursion, Loss of Control, and Commercial Weather Needs. General aviation focus areas include CFIT, Weather, Runway Incursion, Aeronautical Decision Making, Loss of Control, and Survivability as they pertain to general aviation aircraft. Each focus area contains many interventions. Each intervention in turn may contain many additional specific activities and product deliverables.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The Safer Skies program contributes to the FAA's safety goal by analyzing causes of accidents and developing and implementing intervention strategies to prevent or reduce factors that are the leading causes of aviation accidents. The recommendations support capital investments in the focus areas identified by Safer Skies, and these capital investments are approved based on an economic analysis that shows benefits will exceed the costs.

FY 2003 Program Accomplishments
- Supported the Terminal Area Operations Aviation Rulemaking Committee.
- Supported the Required Navigation Performance (RNP) program in development of policies and to provide guidance to FAA and industry as RNP relates to safety.
- Weather Programs: Assessed existing and emerging weather-related technologies that could affect commercial and general aviation operations.
- Mountain Pass Program: Developed approach chart and text information to allow safe navigation of mountain passes by general aviation.
- CDTI Enhanced Flight Rules program: Evaluated applications of a Cockpit Display of Traffic Information (CDTI) to achieve spacing closer to visual standards.
- Moving Map Integration program: Evaluated a multifunction display (MFD) and an optional highway-in-the-sky display as part of an avionics package.
- Conducted a systematic evaluation of the Capstone Phase II MFD.

Program Plan FY 2004 – Performance Output Goals
- Continue Mountain Pass Program: Develop approach chart and text information to allow safe navigation of mountain passes by General Aviation.
- Continue Weather Programs: Assess existing and emerging weather-related technologies that do or could affect commercial and general aviation operations.
- Controlled Flight Into Terrain (CFIT) - Precision-like Approach Implementation for both commercial and general aviation; Release Advisory Circulars and guidelines for Federal Aviation Regulations for Standard Instrument Approach Procedures (SIAP), develop RNP RNAV guidance.
- Develop operator and inspector guidance on risk assessment tool usage and interactive checklist and smart alerting systems.
- Continue development and implementation of Safer Skies interventions for commercial and general aviation in areas of CFIT, Runway Incursion, ALAR, Loss of Control and Weather focus areas.

Program Plan FY 2005 – Performance Output Goals
- Mountain Pass Program: Develop approach chart and text information to allow safe navigation of mountain passes by general aviation.
- Continue Weather Programs: Assess existing and emerging weather-related technologies that affect commercial and general aviation operations.
- Continue developing and implementing Safer Skies interventions for commercial and general aviation in areas of CFIT, Runway Incursion, ALAR, Loss of Control, and Weather focus areas.

- Conduct modeling scenarios relevant to RNP and Satellite Navigation operations.

Key Events FY 2006-2009 – Performance Output Goals

- Mountain Pass Program: Develop approach chart and text information to allow safe navigation of mountain passes by general aviation.
- Continue Weather Programs: Assess existing and emerging weather-related technologies that affect commercial and general aviation operations.
- Continue developing and implementing Safer Skies interventions for commercial and general aviation in areas of CFIT, Runway Incursion, ALAR, Loss of Control and Weather focus areas.
- Conduct modeling scenarios relevant to RNP and Satellite Navigation operations.

K, NAS DEVELOPMENT SYSTEM ASSURANCE – ATDP, M31.01-01

Program Description

The NAS Development System Assurance program develops tools, techniques, and procedures for ensuring that information systems security (ISS) services and requirements are integrated and interoperable for modernized NAS capabilities. The modernized NAS uses commercially based automated information systems, increased data sharing, and information networking that introduce new vulnerabilities and security risks. Risks to the NAS can result in delay, disruption, and denial of air traffic services. This program creates an integrated security approach for defining effective and suitable NAS-level security requirements and engineering tools/procedures that are used by Integrated Product Teams and NAS system developers to ensure interoperable security solutions for the modernized NAS.

Relationship of Program to DOT Strategic Goal, Objective, and Performance Target

- **DOT Strategic Goal –** Security.
- **DOT Objective 1 –** Support and implement U.S. security strategies and plans related to transportation.

Relationship to Performance Target

This program supports the Security goal by developing tools, techniques and procedures for improving the security of FAA information systems. Additionally, this program implements Executive Orders for the protection of critical transportation infrastructure.

FY 2003 Program Accomplishments

- Initiated first phase of NAS-wide ISS requirements development for more integrated security capability.
- Conducted FAA cross-domain ISS conferences involving 200 FAA technical personnel.
- Prototyped specialized security engineering training for 80 NAS systems engineers.
- Conducted NAS security reviews and reporting to comply with Federal Information System Management Act requirements.

Program Plan FY 2004 – Performance Output Goals

- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals

- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals

- ****Not Applicable****

L, SAFETY ANALYSIS AND ASSESSMENT - ATDP, M08.32-01

Program Description

The Safety Risk Assessment program aims to bring FAA NAS acquisitions into compliance with the Safety Management System (SMS) requirements defined by ICAO. The program will modify the Acquisition Management System (AMS) System Safety Management Program to meet or exceed internal FAA and external ICAO requirements for an SMS. In addition, the program will continue to support NAS modernization efforts by managing the safety assessments required to meet AMS guidance. Part of this effort includes operating the NAS Modernization System Safety Working Group, which ensures the quality of NAS safety products and provides tools and assistance to programs in executing their individual and integrated safety program plans.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 8 –** Enhance the safety of FAA's Air Traffic Systems.
- **FAA Performance Target –** Apply safety risk management to all significant changes to the NAS.

Relationship to Performance Target

This program contributes to the FAA's performance target of applying "SMS to all significant changes to the NAS" by ensuring that the FAA has an operational SMS for Research and Acquisitions that is integrated with and a part of the FAA's overall SMS program. This program will directly affect the FAA's ability to manage the safety risk inherent in operating and modernizing the NAS as required by FAA orders and ICAO requirements.

FY 2003 Program Accomplishments
- **** Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- Develop and deliver SMS training.
- Modify the AMS to comply with FAA and ICAO SMS requirements.
- Modify AMS and Configuration Control Board policy and process to comply with SMS requirements relative to NAS changes.
- Deliver the SMS Manual and implementation strategy.

Program Plan FY 2005 – Performance Output Goals
- Expand the FAA SMS to fully comply with ICAO requirements.

Key Events FY 2006-2009 – Performance Output Goals
- Achieve full implementation of the FAA SMS.

M, AIRPORT TECHNOLOGY – ATDP, M34.01-00

Program Description

The Airport Technology program provides technology solutions that will allow the Nation's airports to accommodate the projected traffic growth and establish an operational environment that is free of accidents and fatalities. Legislation 49 U.S.C. 47105(b) 3, requires the FAA to develop standards, criteria, and guidelines for planning, designing, constructing, operating, and maintaining the massive airport system. The U.S. airport system consists of 6 billion square feet of pavement with a replacement value estimated at $100 billion. There are over 600 million passenger enplanements each year at more than 17,000 landing facilities with terminal buildings and access roads. Current trends indicate that the aircraft fleet will not

only increase in number, but also more importantly, in operating speed, gear loading and configuration, and aircraft size; and traffic demands by the year 2010 could double.

Research is required in the following areas to develop new methods, materials, techniques, and applications to ensure safety and efficiency, while accommodating the increased capacity:

1. Airport Pavements: Support continued operation of the National Airport Pavement Test Facility.
2. Operation of New Large Aircraft (NLA): Support finalizing the development and implementation of NLA related design and planning standards.
3. Runway Incursions and Visual Guidance Systems support the following initiatives:
    a. Develop standards for automated power and control systems to reduce pilot/air traffic controller workload;
    b. Develop and evaluate taxi route and runway holding position markings, signs, and lights; develop a Smart Lighting Operational Handbook to aid in development of standards for automated lighting power and control systems to reduce pilot/air traffic controller workload and increase pilot situational awareness;
    c. Develop a low-cost airport visual guidance infrastructure through researching remote site requirements and utilizing new technologies that provide low-cost, low-maintenance, and minimal power requirements for General Aviation Airport Infrastructure; and
    d. With the implementation of Satellite Navigation, the standards to provide a safe landing environment need to be revised to reap maximum benefit from this alternative to conventional Navigational Aids.
4. Airport Planning: Support modernization of airport planning in four key areas: Terminal Building Planning, Intermodal Access to Airports, Capacity Planning, and Airport Funding Practices.
5. Airport Design: Support continued development of updated guidance in the various areas of airport design standards.
6. Surface Technology: Support three general areas: Runway Friction, Overruns, and Environmental Responsibility.
7. Post-Crash Rescue and Fire Fighting: Support research into development of an Interior Intervention Vehicle.
8. Wildlife Hazards Mitigation: Support development of a real-time national bird strike advisory system that commercial aviation can use.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate FY 2008.

Relationship to Performance Target

The Airport Technology program contributes to the FAA's performance target of reducing the fatal aviation accident rates by developing standards, criteria, and guidelines for planning, designing, constructing, operating, and maintaining the airport system. All of these items improve the safety of operations at airports and reduce the potential for accidents and minimize the possibility of fatalities, in any accidents that might occur.

FY 2003 Program Accomplishments
- Published report # DOT/FAA/AR-02/128, "Paint and Bead Durability Study," May 2003.
- Published report # DOT/FAA/AR-TN03/22, "Development of Methods for Determining Airport Pavement Marking Effectiveness," May 2003.
- Completed investigation and provided preliminary findings to Air Traffic on development of obstruction lighting standards for Wind Turbine Generating Farms.

- Published report # DOT/FAA/AR-03/45, "Test and Evaluation of the Effectiveness of a Small Airport Firefighting System in Extinguishing Two- and Three-Dimensional Hydrocarbon Fuel Fires," May 2003.
- Released beta test version of new airport pavement design program incorporating three-dimensional finite element response models.
- Completed testing on four asphalt pavement test items.

Program Plan FY 2004 – Performance Output Goals
- Conduct Second-Level Fuselage Access Study.
- Complete evaluation of Phoenix Firefighting System.
- Complete full-scale testing of six prospective firefighting agents to replace aqueous film-forming foam.
- Complete data collection of taxiway deviations at JFK.
- Complete installing Anti-Icing Coating Field Demonstration Bed at O'Hare.
- Complete Airport Planning Passenger Survey.
- Complete reconstruction and testing of three concrete pavement test items.
- Initiate post-traffic testing.
- Refine failure models for rigid pavements.
- Complete beta testing of new airport pavement design.

Program Plan FY 2005 – Performance Output Goals
- Issue report on Moisture/Strength relationship of Engineered Materials Arresting Systems.
- Develop frangibility requirements for various aircraft categories.
- Develop lighting standards for Instrument Flight Rules Point-In-Space Operations.
- Complete testing of Interior Intervention Vehicle.
- Complete study on equivalency to 1,000-foot runway safety area.
- Issue conceptual guidance document on terminal planning.
- Continue reconstruction and testing activities on test items.
- Complete evaluation/testing and modification to the new airport pavement design.
- Evaluate technologies for airport pavement maintenance.
- Evaluate use of gyratory test methodology for asphalt specifications.

Key Events FY 2006-2009 – Performance Output Goals
- Continue research to improve airport safety.

1C02, AIRCRAFT RELATED EQUIPMENT PROGRAM
FY 2005 Request $12.0M

- A, Aircraft and Related Equipment (ARE) Program, M12.00-00
- B, Aircraft and Related Equipment Program – Boeing Simulator Replacement, M12.01-01
- C, Aircraft and Related Equipment Program – Airbus Simulator, M12.01-02

A, AIRCRAFT RELATED EQUIPMENT PROGRAM, M12.00-00

Program Description

The ARE Program upgrades FAA aircraft used for safety-related work. Examples of upgrades are: (1) FAA flight inspection aircraft, avionics, and related systems must be updated to ensure capabilities to validate and certify the accuracy and integrity of electronic signals emitted by new or modified navigational aids used in the NAS by commercial and general aviation aircraft; (2) flight inspection aircraft must be equipped to validate and certify new instrument flight procedures based on satellite navigation systems developed for commercial and general aviation pilots to guide aircraft on approach and departure flight paths at airports; and (3) aviation safety inspectors use FAA aircraft to achieve and maintain their currency

and proficiency so that they can regulate and certify pilot instructors and test pilots. The FAA aircraft used for this purpose must be equipped with modern avionics and instrumentation representative of the equipment used by the pilots they are checking.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The FAA improves air safety by ensuring that (1) flight inspection aircraft and systems are equipped and modified to validate and certify the accuracy of navigational aid electronic signals as well as validate and certify the safety of approach/departure flight procedures and terminal routes at all airports in the NAS; (2) research and development aircraft and flight simulators are equipped to test and evaluate new aviation technologies for proof of concept, systems integration, equipment, procedures, and related human factors impacts; and (3) flight-training mission aircraft are equipped to provide meaningful and relevant aviation safety inspector (ASI) pilot currency/proficiency experience and training required for ASI's to regulate and certify all pilot instructors and test pilots and validate all NAS commercial and civil aircraft operations.

FY 2003 Program Accomplishments
- Expanded computerized flight monitoring scheduling system capabilities.
- Continued to develop Wide Area Augmentation System (WASS)/Local Area Augmentation System (LAAS) software.
- Installed Terrain Awareness and Warning System in Flight Inspection Aircraft Fleet.
- Continued Automated Flight Inspection System (AFIS) enhancements in Flight Inspection Aircraft Fleet.
- Acquired/installed low-earth orbit (LEO) satellite communications (SATCOM) in Flight Inspection Aircraft.
- Acquired Cockpit Voice Recorder/Flight Data Recorder (CVR/FDR) upgrade (fleet).
- Acquired and began installation of Radio Frequency Interference/Direction Finder (RFI/DF) equipment in aircraft.
- Began developing Next Generation Flight Inspection System (NAFIS).
- Continued developing/integrating Aviation Systems Information Systems (ASIS) and further developed the Flight Inspection Reporting Procedures System (FIRPS).
- Acquired Advanced Level D Flight Simulator 737-800.
- Issued contract for acquisition/installation of GNS-530 in Flight Standards Aircraft.
- Began initial development of requirements document and investment analysis documentation to replace the current Flight Standards Aircraft Fleet.
- Revised the requirement document for the Research and Development Aircraft.

Program Plan FY 2004 – Performance Output Goals
- Begin Instrument Landing System/Very High Frequency Omni-direction Range receiver installation in the Flight Inspection Aircraft.
- Acquire/install WAAS receivers for the Flight Inspection Aircraft.
- Acquire/install Terrain Awareness and Warning System in remaining Flight Inspection Aircraft.
- Install LEO satellite communication in remaining Flight Inspection Aircraft and two aircraft at Federal Aviation Technical Center and Hangar 6.
- Continue computerized flight monitoring scheduling system expansion.
- Continue AFIS enhancements.
- Continue installation of RFI/DF capability.
- Install CVR/FDR in agency aircraft to comply with Federal Aviation Regulations.
- Continue developing NAFIS.

- Begin acquiring aircraft collision avoidance system (ACAS II) capabilities for international aircraft.
- Begin new technology AFIS development to support Future Air Navigation Systems (FANS), ICAO, and Agencies Free Flight Program.
- Begin cockpit avionics technology refresh for Flight Inspection Aircraft for area navigation (RNAV)/Required Navigation Performance capability.
- Acquire technical and logistics support for the new flight simulator.
- Continue development and implementation of the national database for all flight programs (ASIS).
- Continue developing the Flight Inspection Reporting Procedures System (FIRPS).
- Continue installation of RFI/DF equipment in aircraft.
- Install GNS-530 in Flight Standards Aircraft.
- Continue plans to replace the current Flight Standards Aircraft Fleet.

Program Plan FY 2005 – Performance Output Goals
- Continue acquisition/installation of CVR/FDR upgrade (fleet).
- Continue AFIS enhancements.
- Continue developing NAFIS.
- Begin replacement of Automated Flight Inspection System Printer/Plotter.
- Continue development and implementation of the national database for all flight programs ASIS.
- Initiate an Automated Flight Inspection Scheduling/Performance System to reduce flight crew workload.
- Acquire a High Speed Broad Band Data Link System.
- Complete ACAS II installation in international and domestic aircraft.
- Acquire a Heads Up Display with Synthetic Vision for Flight Inspection Fleet.
- Acquire/equip Joint Precision Approach Landing System navigation system capability for CL-601 Flight Inspection Aircraft.
- Upgrade the Gulfstream G-IV aircraft located in Hangar 6.
- Continue developing the Flight Inspection Reporting Procedures System.
- Complete installation of RFI/DF equipment in aircraft.
- Continue cockpit avionics technology refresh for Flight Inspection Aircraft for RNAV/RNP capability.
- Continue new technology AFIS development to support FANS, ICAO, and Agencies Free Flight Program.
- Acquire/install WAAS receivers for the Flight Inspection Aircraft.
- Acquisition/lease to replace the current Flight Standards Aircraft Fleet.

Key Events FY 2006-2009 – Performance Output Goals
- Acquire/install a Digital Television Positioning System for Flight Inspection Aircraft.
- Acquire/install an Electronic Flight Bag Display System in FAA Lear 60 and CL 601 aircraft.
- Integrate the Flight Inspection Reporting Procedures System.
- Continue new technology AFIS development to support FANS, ICAO, and Agencies Free Flight Program.
- Acquire/install a Multi-Mode Receiver.
- Acquire/replace Flight Inspection Technician Seat on Lear 60 and CL 601 Flight Inspection Aircraft.
- Acquire/install an enhanced Operator Display on all Flight Inspection Aircraft.
- Upgrade the Facility Database to support changes in Security and interface requirements.
- Acquire/install Automatic Dependent Surveillance-Broadcast (ADS-B) equipment in Flight Inspection Aircraft.
- Install and support Joint Precision Approach Landing System navigation system capability for CL-601 Flight Inspection Aircraft.
- Complete installation of CVR/FDR upgrade (fleet).
- Continue development/acquisition/installation of NAFIS.
- Acquire/install WAAS receivers for the Flight Inspection Aircraft.
- Complete replacement of Automated Flight Inspection System Printer/Plotter.

- Integrate the Automated Flight Inspection Scheduling/Performance System to reduce flight crew workload.
- Continue developing and implementing the national database for all flight programs (ASIS).
- Continue acquisition of the Flight Standards Aircraft Fleet.

B, AIRCRAFT RELATED EQUIPMENT PROGRAM – BOEING SIMULATOR REPLACEMENT, M12.01-01

Program Description

The Boeing Simulator Replacement Program is purchasing a Boeing 737 aircraft simulator, which is configured like aircraft used in the airline fleet, enabling the FAA to perform meaningful and relevant evaluations of projects affecting large-transport category aircraft. The simulator can be used for operational evaluation of the latest aviation technologies, equipment, and procedures using flight simulation rather than actual flight hours, which are very costly. Data gathered from flight simulation activities are used to support safety investigations as well as develop regulations. The FAA has awarded a contract for the simulator, and a building is ready for its installation.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The Simulator Replacement program improves air safety by acquiring an advanced technology flight simulator to perform meaningful and relevant R&D operational evaluations for large transport category aircraft representative of the U.S. air carrier industry. These evaluations test performance of new equipment and use of new procedures to ensure that they are safe for commercial aviation. This program also provides capability for Aviation Safety Inspector pilot training and currency/proficiency experience required in regulating/certifying all activities comprising U.S. aircraft operations.

FY 2003 Program Accomplishments
- Obtained and evaluated proposals from qualified vendors.
- Awarded the simulator contract.
- Completed the Preliminary Design Review and the Critical Design Review.
- Met three contract milestones.
- Began preparation to update facilities.
- Developed Memorandum of Understanding with Mike Monroney Aeronautical Center for operation and support of new simulator.

Program Plan FY 2004 – Performance Output Goals
- Conduct Test Readiness Review.
- Upgrade facilities for new simulator.
- Conduct formal qualification review.
- Conduct simulator operations/maintenance training.
- Acquire logistics and support equipment.
- Decommission 727 simulator.
- Perform In-House Acceptance.
- Certify simulator to FAA Level D requirements.
- Conduct On-site acceptance.
- Perform first year in-house vendor maintenance and support.

Program Plan FY 2005 – Performance Output Goals
- Implement operational evaluation programs.
- Purchase and implement training courseware for Aviation Safety Inspector training.
- Second year in-house vendor maintenance and support.
- Establish long-term contract supported Maintenance and engineering support contract.

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

C, AIRCRAFT RELATED EQUIPMENT PROGRAM – AIRBUS SIMULATOR, M12.01-02

Program Description

The program will acquire and install a technologically advanced Airbus fly-by-wire flight simulator. The simulator will be used to train flight safety inspectors who flight-check airbus pilots. It will also support research projects involving the technology used for fly-by wire flight controls.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The Fly-By-Wire Simulator program contributes to the FAA's air carrier safety goal by purchasing an aircraft simulator that has the modern configuration of the airline fleet, which enables the FAA to perform meaningful and relevant evaluations of projects affecting large-transport category aircraft.

FY 2003 Program Accomplishments
- **** Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- **** Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- Construct facilities to house new-fly-by-wire simulator

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

1C03, NATIONAL AVIATION SAFETY DATA ANALYSIS CENTER (NASDAC)
FY 2005 Request $1.6M

- National Aviation Safety Data Analysis Center (NASDAC), M24.00-00

Program Description

The NASDAC maintains multiple databases on aviation accidents and other factors including aircraft maintenance. The databases are used to determine the causes of accidents and identify precursors of accidents. With the rapid change in information technology, it is necessary to update both the information

systems that support the databases and the analytical tools used to study the data. System upgrades include adding technology to assist researchers using the Internet to analyze safety data and purchasing new software analytical tools such as pattern recognition technology.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The NASDAC helps reduce accidents by performing data analysis that is used to identify precursors to aviation accidents and analyze actions to avoid situations that could lead to an accident.

1C04, SAFETY MANAGEMENT SYSTEM
FY 2005 Request $1.7M

- Safety Management System, M08.32-02

Program Description

The Safety Management System (SMS) program seeks to bring FAA NAS acquisitions into compliance with ICAO defined safety management requirements. The program will modify the Acquisition Management System (AMS) System Safety Management Program to meet or exceed internal FAA and external ICAO requirements for an SMS. The program will continue to support on-going NAS modernization efforts by managing the safety assessments required to meet AMS guidance. It will also strengthen the process by expanding the scope of safety reviews and providing standardized criteria for making assessments. Part of this effort includes operating the NAS Modernization System Safety Working Group, which ensures the quality of NAS safety products and provides tools and assistance to programs in executing their individual and integrated safety program plans.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 8 –** Enhance the safety of FAA's air traffic systems.
- **FAA Performance Target –** Apply safety risk management to all significant changes in the NAS.

Relationship to Performance Target

The SMS program contributes to the FAA's performance target of applying "SMS to all significant changes to the NAS" by upgrading the process for Research and Acquisitions projects so that it is integrated with and a part of the FAA's overall SMS program. These upgraded safety assessments will allow identification of safety issues early in the acquisition process.

FY 2003 Program Accomplishments
- **** Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- Develop and deliver SMS training.
- Modify the AMS to comply with FAA and ICAO SMS requirements.
- Modify AMS and configuration control board policy and process to comply with SMS requirements relative to NAS changes.
- Deliver the SMS manual and implementation strategy.

Program Plan FY 2005 – Performance Output Goals
- Expand the FAA SMS to fully comply with ICAO requirements.

Key Events FY 2006-2009 – Performance Output Goals
- Achieve full implementation of the FAA SMS.

1C05X, RUNWAY INCURSION REDUCTION PROGRAM – LOUISVILLE TECHNOLOGY DEMONSTRATION
FY 2005 Request $0.0M

- Runway Incursion Reduction Program – Louisville Technology Demonstration, S09.02-01

Program Description

This RIRP program supports air traffic control demonstration activities at Louisville International Airport in Kentucky. Installing infrastructure and conducting evaluation activities will provide valuable insight into the effectiveness of these systems and their impact on improved safety, security, and efficiency in the NAS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The infrastructure put in place under this program and the Safe Flight 21 program allows for the evaluation of technologies and applications that support safety objectives to reduce the risk of runway incursions. These demonstrations offer the FAA the opportunity to collect metrics and analyze data in an operational environment, thereby providing the FAA with accurate information to support business case development and the decision process for further application to other airports in the NAS.

FY 2003 Program Accomplishments
- Initiated installation of vehicle tracking systems.
- Installed Common Automated Radar Terminal System Model IIIE system at Louisville.
- Conducted Automatic Dependent Surveillance-Broadcast/Common ARTS integration testing on a prototype system installed at the FAA William J. Hughes Technical Center.
- Awarded contract for a surface management system.

Program Plan FY 2004 – Performance Output Goals
- Install a surface management system.
- Collect metrics and perform evaluations.
- Complete installation of vehicle tracking systems.

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

ACTIVITY 2. IMPROVE THE EFFICIENCY OF THE
AIR TRAFFIC CONTROL SYSTEM

2A01, TERMINAL AUTOMATION PROGRAM
FY 2005 Request $21.7M for items B and C

- A1, Standard Terminal Automation Replacement System – Development and Procurement, A04.01-00.
- A2, Interim Tower Displays, A03.04-02
- A3, Standard Terminal Automation Replacement System – Technology Refresh, A04.05-01
- B, Terminal Sustainment, A03.04-01
- C, Tower Data Link Services, C20.04-00

A, STANDARD TERMINAL AUTOMATION REPLACEMENT SYSTEM – DEVELOPMENT AND PROCUREMENT, A04.01-00

Program Description

The Standard Terminal Automation Replacement System (STARS) is a new terminal air traffic control system designed to replace the existing Automated Radar Terminal System (ARTS) assisting controllers in separating air traffic during arrivals, departures, and over flights at airports. STARS provides a digital system to meet expanding air traffic control needs through 2031. STARS provides new air traffic control workstations with state-of-the-art computers, high-resolution color displays, and commercially based software to allow the FAA to move toward a standard configuration at all terminal facilities. STARS has several significant advantages over the existing systems, such as improved weather display, increased capacity to accept air traffic control automation improvements, and greater flexibility in allocating air traffic resources. The FAA awarded the STARS contract to Raytheon on September 16, 1996, to develop and deploy 173 new STARS systems. To date, 10 sites have achieved initial operational capability (IOC) with STARS FS-2+, the nationally deployable baseline. Current plans are to completely install and commission STARS by 2011.

The Terminal Sustainment program will maintain the existing FAA terminal automation systems (ARTS IIIA, ARTS IIE, ARTS IIIE, and associated displays) until STARS replaces them.

The interim Tower Display (TD) program gives air traffic controllers in the tower cab (who generally control aircraft visually) more accurate information on arriving and departing flights by providing them a radar display. In effect, Tower Display gives the air traffic controllers "an extension of the eye" in the tower cab environment and allows them to provide radar advisories. The TD program will deploy displays to selected locations to meet user requirements prior to deployment of the more robust STARS Tower Display Workstations. For towers within the coverage of a Terminal Radar Approach Control (TRACON), the TD program will either relocate existing Digital Bright Radar Indicator Equipment (DBRITE) assets or provide Remote ARTS Color Displays to satisfy tower display needs. For towers that do not have the coverage of a TRACON, the TD program will provide a Stand Alone Tower Display System (SATDS). The current acquisition approach for SATDS is to qualify systems from two vendors: Raytheon and Lockheed Martin. The Raytheon program, STARS LITE is currently in the final phase of qualification. The Lockheed Martin program uses the ARTS IE, which is a qualified system.

The STARS Technology Refresh program will keep the STARS hardware and software current as technology evolves through the system lifecycle, thus eliminating another major automation acquisition in the future.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** (1) Achieve an airport arrival efficiency of 96 percent at the 35 OEP airports by FY 2008; (2) Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008; and (3) Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

To date, STARS FS-2+ has not experienced a full outage.   STARS will prevent outages by replacing older terminal automation equipment with more modern equipment. Installation of capacity enhancing software for the airspace near airports will provide additional increases in capacity. STARS also has improved controller data display and data manipulation capabilities, thereby increasing the aircraft density without compromising safety.

Terminal sustainment reduces outages and thus reduces delays until STARS is installed. Tower displays improve the ability of cab controllers to make more efficient use of runway capacity.

FY 2003 Program Accomplishments
- Upgraded El Paso to Full STARS Full Service (FS)-2+ and Syracuse to FS-1.
- Conducted STARS FS-2+ Independent Operational Test and Evaluation (OT&E).
- Received in-service decision (ISD) for STARS FS-2+.
- Achieved Operational Readiness Decision (ORD) with STARS FS-2+ at Philadelphia (PHL).
- Delivered STARS FS-2+ to 14 sites.
- Achieved FS-2+ IOC at three additional sites (Miami, El Paso, and Bradley).
- Initiated 10 Early Deployment Configuration (ECD)-2 upgrades to FS-2+.
- Achieved IOC at the final three EDC sites.
- Continued deploying lifecycle maintenance builds for EDC-2, Initial Systems Configuration (ISC), and FS-2+.
- Completed ISC upgrades to FS-2+ at three DoD sites.

Program Plan FY 2004 – Performance Output Goals
- Procure 12 STARS systems for deployment.
- Deploy 12 STARS systems.
- Continue EDC-2 upgrades to FS-2+.
- Continue deploying lifecycle maintenance builds for FS-2+.
- Reduce terminal automation equipment outages by 20 percent at former ARTS IIIA sites using STARS.

Program Plan FY 2005 – Performance Output Goals
- STARS program is being rebaselined.

Key Events FY 2006-2009 – Performance Output Goals
- STARS program is being rebaselined.
- Deploy Tower Displays.

B, TERMINAL SUSTAINMENT, A03.04-01

Program Description

The Terminal Sustainment program will maintain the existing FAA terminal automation systems (Automated Radar Terminal System (ARTS) IIIA, ARTS IIE, ARTS IIIE, and associated displays) until STARS replaces them.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** (1) Achieve an airport arrival efficiency of 96 percent at the 35 OEP airports by FY 2008; (2) Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008; and (3) Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

Terminal sustainment reduces outages and thus reduces delays until STARS is installed. Tower displays improve the ability of cab controllers to make more efficient use of runway capacity.

FY 2003 Program Accomplishments
- Commissioned ARTS IIIE at Potomac TRACON.
- Commissioned ARTS IIIE at Northern California TRACON (Phase II).
- Delivered and completed transition of ARTS Color Displays at Southern California TRACON.
- Achieved ARTS IE IOC at Prescott, AZ, September 2003.
- Achieved ARTS IE IOC at Vero Beach, CA, July 2003.
- Developed plan and resolved Full Digital ARTS display sites problem.
- Commissioned Digital Bright Radar Indicator Tower Equipment (DBRITE) at Waukesha, WI; Martha's Vineyard, MA; and Chandler, AZ.

Program Plan FY 2004 – Performance Output Goals
- Continue providing software upgrades and hardware maintenance to the Common ARTS systems at New York, Chicago, Potomac, Southern California, and Northern California TRACONs.
- Continue to provide software upgrades and hardware maintenance support to all 140 Common ARTS sites by ensuring that employees are trained and skilled in performing their duties.
- Continue providing software and hardware enhancements to the Common ARTS systems to fix Problem reports, which will enhance the safety of the Common ARTS systems.
- Reduce the Program Trouble Reports database by 10 percent in FY 2004.
- Plan IOC for these DBRITE sites: Lakeland, FL; Stuart-Whitham, FL; Kellogg, MI; and Kissimmee Municipal, FL.
- Plan IOC for these stand alone sites: Key West, FL; Traverse City, MI; Grand Canyon, AZ; Whiteman, CA; and Laredo, TX.

Program Plan FY 2005 – Performance Output Goals
- Continue providing software upgrades and hardware maintenance to the Common ARTS systems at New York, Chicago, Potomac, Southern California and Northern California TRACONs.
- Continue providing software and hardware upgrades and maintenance support to all 140 Common ARTS sites by ensuring employees are trained and skilled in performing duties.
- Continue providing software and hardware enhancements to the Common ARTS systems to fix problem reports, which will enhance the safety of the Common ARTS systems.
- Reduce the Program Trouble Report backlog by 10 percent in FY 2005.

Key Events FY 2006-2009 – Performance Output Goals
- Continue providing software upgrades and hardware maintenance to the Common ARTS systems at New York, Chicago, Potomac, Southern California and Northern California TRACONs.
- Continue to provide software upgrades and hardware maintenance support to all 140 Common ARTS sites by ensuring employees are trained and skilled in performing duties
- Continue providing software and hardware enhancements to the Common ARTS systems to fix problem reports, which will enhance the safety of the Common ARTS systems.
- Reduce the Program Trouble Report backlog by 10 percent in each FY.

C, TOWER DATA LINK SERVICES, C20.04-00

Program Description

The Tower Data Link Services (TDLS) system is an integrated, high-availability workstation that supports applications programs for Air Traffic Control Towers (ATCT). The TDLS system consists of three ATCT applications to reduce airport ground delays. Pre-Departure Clearance displays the clearances received from Air Route Traffic Control Centers (ARTCC) to the tower. The TDLS operator can append local airport departing aircraft operation information and transmit the clearance via a data link to participating airline/user computers. The computers in turn deliver the clearance directly to the aircraft (if equipped with the Aircraft Communications Addressing and Reporting System) or to a departure gate printer. Pre-Departure Clearance relieves voice congestion on the existing clearance delivery frequencies.

Flight Data Input/Output (FDIO) distributes flight plan data, weather information, and general information messages from the ARTCC NAS computer to ARTCC peripheral printers and ATCT remote sites. The FDIO Remote Communications Unit relays messages to and from the Replacement Alphanumeric Keyboard (RANK) at the ATCT to the NAS at the ARTCC. TDLS emulates the RANK and cathode ray tube (monitor).

The Digital Automatic Terminal Information Service (D-ATIS) displays weather information received via ATCT weather interface (Airport Weather Information System, Automated Surface Observing System, and Systems Atlanta Information Display System). The TDLS operator augments the weather information with information specific to the particular airport. D-ATIS automatically generates a synthesized ATIS Voice Message, providing ATIS data link information to aircraft, airlines, and other users upon request; this alleviates the current manual generation requirements. D-ATIS sends a text version of the current ATIS message to ARINC Inc., which can be retrieved via aircraft equipped with the Aircraft Communications Addressing and Reporting System. D-ATIS provides local field and weather conditions via an automated broadcast to en route aircraft in lieu of a controller broadcasting the information.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The TDLS ensures timely delivery of clearances to departing aircraft, thereby reducing ground delays.

FY 2003 Program Accomplishments
- Completed the TDLS technology refresh at all 58 existing TDLS sites.
- Completed update to the Operational Requirements Document.
- Identified semi-annual software upgrade release bundling/schedule.
- Completed development, lab, and initial field-testing of first software release (Build I).

- Produced two TDLS systems for installation.
- Transitioned support from Contractor Maintenance Logistics Support (ARINC) to FAA Organic support.

Program Plan FY 2004 – Performance Output Goals
- Procure materials and produce six additional TDLS systems.
- Deliver site briefing and perform site surveys at seven sites.
- Obtain successful Joint Resources Council decision for TDLS re-baseline.
- Update the TDLS software baseline with Build II and III software enhancements.

Program Plan FY 2005 – Performance Output Goals
- Produce TDLS systems 12 additional airports.
- Develop TDLS upgrades to provide Multiple Pre-Departure Clearances.
- Update the TDLS software baseline with Build IV software enhancements.

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

2A02, AIR TRAFFIC CONTROL BEACON INTERROGATOR - REPLACEMENT
FY 2005 Request $15.1M

- Secondary Surveillance – ATC Beacon Interrogator (ATCBI) Replacement, S02.03-00
- Air Traffic Control Beacon Interrogator Model 6 - Beacon Only Buildings, S02.03-02

Program Description

This secondary surveillance system provides data on aircraft position and altitude that significantly enhances en route air traffic controllers' ability to separate aircraft, while reducing their workload. The Air Traffic Control Beacon Interrogator Model 6 (ATCBI-6) gives air traffic controllers selective interrogation capability, not available in the older systems, that significantly improves accuracy of aircraft position and altitude data provided to ATC automation systems. The ATCBI-6 selectively interrogates individual aircraft and provides precise tracking information to the Host Computer System.

The ATCBI-6, in conjunction with co-located primary long-range radar, also provides back-up Center Radar Approach surveillance service to numerous Terminal Radar Approach Control facilities in the case of lost terminal radar services and/or scheduled maintenance downtime. The ATCBI-6 system is a low-cost, highly reliable, very accurate, and more capable replacement for old, high-cost obsolete beacon interrogators with higher failure rates.

This improved automation tool is designed to support Free Flight and is planned to replace existing surveillance ATCBI-4/5 equipment that have reached the end of their lifecycle. The existing beacon interrogators are costly to maintain, repair, and support and have a higher risk of failure, which could contribute to severe air traffic delays throughout the NAS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The ATCBI program replaces two obsolete systems: the ATCBI-4 and ATCBI-5. The ATCBI-6 Beacon Only Facility Establishment project establishes buildings that will house the new beacon interrogators and

adds new coverage that was not there before. The new buildings will help protect the beacon interrogators from outage caused by severe weather or other causes.

FY 2003 Program Accomplishments
- Placed final order for 42 ATCBI-6 production systems.
- Completed 35 site deliveries.
- Completed monopulse beacon test sets interface.
- Completed developing Occupational Safety and Health Administration (OSHA) ladders.
- Completed developing the Trolley system.
- Began procuring and installing OSHA ladders.
- Completed NAS Infrastructure Management Surveillance (NIMS) interface on beacon on site and began NIMS's interface for Air Route Surveillance Radar (ARSR)-3 and ARSR-4.
- Continued rotary joint, antenna, and mounting kit installation.
- Conducted 85 site surveys to date.
- Continued ARSR-3 and ARSR-4/Mode 4 Interfaces.
- Supported commissioning efforts.

Program Plan FY 2004 – Performance Output Goals
- Continue procuring and installing OSHA ladders.
- Complete ARSR-3 development of OSHA ladders.
- Continue ARSR-4/Mode 4 Interface development.
- Procure site spares for 42 ATCBI-6 systems.
- Complete NIMS interface on ARSR-3 and continue on ARSR-4.
- Continue testing and installing ATCBI-6 systems.
- Continue rotary joint and antenna installations.
- Establish FAA program support facility.
- Complete ARSR-3 rotary joint cutover plan.
- Complete NAS/NAS Operations Manager training course.
- Begin producing and installing Mode-S Antenna Modification/Antenna trolley System.
- Continue conducting site surveys.
- Continue supporting commissioning efforts.

Program Plan FY 2005 – Performance Output Goals
- Continue supporting delivery, installing, and site testing of ATCBI-6 systems and site spares.
- Complete testing and installation of the ARSR-4/Mode 4 Interface.
- Procure and conduct additional maintenance and operational training.
- Continue contractor depot-level support services.
- Complete NIMS interface on ARSR-4.
- Complete the FAA program support facility.
- Continue supporting commissioning efforts.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to support delivery, installation, and site testing of ATCBI-6 systems and site spares.
- Continue contractor depot-level support services.
- Conduct additional maintenance and operational training.
- Continue to support commissioning efforts.
- Complete full transition of FAA depot support in FY 2006.
- Complete ATCBI-6 commissioning efforts in FY 2008.

2A03, AIR TRAFFIC CONTROL EN ROUTE FACILITIES IMPROVEMENTS
FY 2005 Request $3.0M

- Long Range Radar (LRR) Program – LRR Improvements – Infrastructure
  Upgrades/Sustain, S04.02-03

Program Description

The Long Range Radar (LRR) program sustains and improves LRRs that provide aircraft position information to FAA en route control centers. These radars detect the reflected radar energy to locate aircraft and provide information for air traffic controller displays. Many existing en route radars are over 50 years old, and upgrades are necessary to prevent outages and reduce maintenance costs. There is not a single contract to perform the necessary upgrades. Contracts for improvements are specific to the component being repaired and sometimes specific to the site where the improvement is needed. This program finances upgrades to the antenna drive systems and improvements to the facility infrastructure systems, such as power systems, engine generators, environmental control systems, electrical systems, and lightning, grounding, bonding, and shielding systems that house these radars. Without these upgrades, operational problems that occur each year could limit controllers' ability to detect aircraft that do not cooperatively display identification and flight data.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The LRR Program supports the increased capacity goal by decreasing the probability of outages of the primary radar. It also enhances air travel security by providing a means to detect aircraft that do not broadcast position information to air traffic control facilities. Being able to detect and identify aircraft prevents disruption to capacity caused by unknown aircraft.

FY 2003 Program Accomplishments
- Completed infrastructure upgrades at 13 additional en route LRR facilities; completed 62 of 126 facilities (49 percent).
- Refurbished heating, ventilation, and air-conditioning (HVAC) systems and power panels, improved grounding systems, and replaced equipment shelters, where necessary.
- Performed en route radar in-service engineering.
- Awarded contract to redesign obsolete components in the Air Route Surveillance Radar Model 4 (ARSR-4) system.
- Initiated modifications to improve reliability and availability of ARSR-4 systems.

Program Plan FY 2004 – Performance Output Goals
- Complete infrastructure upgrades at 10 additional en route LRR facilities; complete 72 of 126 facilities (57 percent). Infrastructure upgrades include refurbishing HVAC systems and power panels; improving lightning protection and grounding systems; and replacing equipment shelters, where necessary.
- Perform en route radar in-service engineering.
- Complete redesign of obsoletes components in the ARSR-4 systems and begin implementing modifications to improve system reliability and availability.

Program Plan FY 2005 – Performance Output Goals
- Complete infrastructure upgrades at 15 additional en route LRR facilities; complete 87 of 126 facilities (69 percent). Infrastructure upgrades include refurbishing or replacing environmental control systems; upgrading lightning; grounding, bonding; and shielding systems, and power control systems, as well as modifying equipment shelters.
- Perform site surveys to finalize longer-term requirements for sustaining primary and/or secondary radar operations at 126 facilities.
- Perform en route radar in-service engineering.
- Complete installing ARSR-4 system modifications to improve system reliability and availability.

Key Events FY 2006-2009 – Performance Output Goals
- Complete all 126 LRR sites by upgrading en route, beacon-only, ARSR 1, 2, 3, 4, and fixed position surveillance sites receiving ATCBI-6 systems, including refurbishment of HVAC systems and power panels, grounding systems upgrades, and shelter replacements.
- Complete LRR site surveys, finalize engineering solutions, and acquire necessary equipment and components to replace obsolete or unsustainable infrastructure systems.
- Begin primary radar decommissioning activities at 126 sites.
- Perform en route radar in-service engineering in 2006-2009.

2A04, TERMINAL AIR TRAFFIC CONTROL FACILITIES – REPLACE
FY 2005 Request $95.1M

- Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Establish/Sustain/Replace – ATCT/TRACON Replacement, F01.02.00

Program Description

The FAA provides air traffic control services from more than 270 ATCT and TRACON facilities and must continually replace these buildings to ensure an acceptable level of air traffic control services and to meet current and future operational requirements. The average age of control towers is 27 years, and some are 40 years old. As the volume and complexity of terminal air traffic control increases, so does the need to have additional positions in the ATCT/TRACON (i.e., helicopter positions, Visual Flight Rule traffic advisories, runway monitors, etc.). Control towers built 20 years ago do not meet today's operational requirements. In addition, terminal facilities must conform to current building codes and design standards.

The ATCTs/TRACONs that cannot meet present-day operational requirements are to be replaced. The FAA will also determine the cost and operational benefit of combining TRACONs that have common boundaries. New facilities will accommodate future growth, current building codes and design standards. Terminal facility replacement programs will be funded in four phases to provide sound financial management of projects. Phase I includes site selection, and, advanced engineering; Phase II incorporates electronic equipment procurement, environmental studies and site adaptation; Phase III is facility construction; Phase IV continues funding for equipment installation, demolition, and restoration.

Relationship of Program to FAA Strategic Goal, Objective and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

Terminal Air Traffic Control Facility programs contribute to the FAA greater capacity goal, by replacing air traffic control towers to meet current and future operational requirements. Some replacements are required to accommodate growth in air traffic; others are needed to provide added space for new equipment; and, in some cases the tower must be replaced to ensure that controllers have an unobstructed

view of the runways and taxiways. The average control tower is 27 years old, and as volume and complexity of terminal air traffic control increases, so does the requirement for additional positions in the ATCT/TRACON.

New and replacement facilities support the FAA capacity goal, to provide a system that meets or exceeds air traffic demand. Strategic location, adequate height, and cab size of an airport traffic control tower will provide an efficient working environment, enable controllers to achieve an aerial view of the airport, and enable them see aircraft at the outer aircraft movement areas.

FY 2003 Program Accomplishments
- Procured equipment for 12 sites.
- Started construction at four sites.
- Commissioned five sites.

Program Plan FY 2004 – Performance Output Goals
- Start construction at seven sites.
- Commission eight sites.

Program Plan FY 2005 – Performance Output Goals
- Start construction at four sites.
- Commission three sites.

Key Events FY 2006-2009 – Performance Output Goals
- Start construction at 14 sites.
- Commission 23 sites.

2A05, ATCT/TERMINAL RADAR APPROACH CONTROL FACILITIES – IMPROVE
FY 2005 Request $55.2M

- A, ATCT/TRACON Establish/Sustain/Replace – ATCT/TRACON Modernization, F01.01.00
- B, ATCT/TRACON Establish/Sustain/Replace – Standard Terminal Automation Replacement System Facility Upgrades, F01.01-01
- C. Large TRACONs - Advanced Facility Planning, F02.10-00

A, ATCT/TRACON ESTABLISH/SUSTAIN/REPLACE – ATCT/TRACON MODERNIZATION, F01.01.00 AND B, STARS FACILITY UPGRADES, F01.01-01

Program Description

The FAA must continually upgrade and improve various terminal facilities and equipment to provide an acceptable level of service and to meet current and future operational requirements. Upgrades and improvements include replacing obsolete equipment such as tower cab consoles and rehabilitating administrative and equipment space due to facility expansion. Upgrades also include additional operating positions; training space, base building construction, as well as replacement of undersized generators and environmental equipment.

Since their construction, Air Traffic Control Towers (ATCTs)/Terminal Radar Approach Control (TRACONs) had to address additional operational and safety requirements, including upgraded accessibility, hazardous materials, seismic, and security requirements. Facility improvements must incorporate these new requirements and ensure an orderly transition to the new configuration for relocated/replaced equipment with minimal impact on existing operations. The power, heating, ventilation, and air-conditioning systems at many of the terminal facilities must be upgraded to handle both the new and old equipment during the in-service change-out. A successful transition of these projects to the new

configurations is critical. In many towers, there is no room for additional equipment; therefore, base buildings must be provided or expanded. An initial evaluation by the U.S. Army Corps of Engineers indicated that a number of FAA ATCTs/TRACONs do not meet current seismic code criteria. This program has begun scheduled follow-up evaluations to determine the extent and cost of work needed to bring the facilities up to a level to withstand a seismic event.

Relationship of Program to FAA Strategic Goal, Objective and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The ATCT/TRACON Modernization program upgrades and improves facilities to support the NAS modernization strategy for achieving efficient aerospace systems and operations. These projects will enable facilities to meet current operation, environment, and safety needs economically instead of replacing or relocating the entire facility. This effort will result in a smooth and orderly transition of new equipment into FAA's terminal facilities, minimizing disruption of the operating system. This program will also improve the operational efficiency and environmental systems of obsolete and deteriorated ATCT/TRACON facilities. The improvements modernize facility infrastructure such as electrical distribution systems, heating and air-conditioning, and structural problems to minimize outages that would delay air traffic.

FY 2003 Program Accomplishments
- Improved, repaired and sustained 31 ATCT/TRACON facilities.
- Added additional positions at six facilities.

Program Plan FY 2004 – Performance Output Goals
- Improve, repair and sustain 33 ATCT/TRACON facilities
- Fund facility design work in support of FY 2006 STARS installations.
- Add additional positions at three facilities.

Program Plan FY 2005 – Performance Output Goals
- Improve, repair and sustain 74 ATCT/TRACON facilities.
- Add additional positions at five facilities.

Key Events FY 2006-2009 – Performance Output Goals
- Continue facility sustainment, repair, and modernization work within available funding.

C, LARGE TRACONS - ADVANCED FACILITY PLANNING, F02.10-00

Program Description

The Advanced Facility Planning program identifies operational, facility, and environmental deficiencies and provides alternative solutions to correct them. The program funds efforts to bridge the gap between the Operational Evolution Plan and Joint Resources Council Milestone 1 (Mission Need Decision) in the Mission Analysis Process. The program will identify the most cost-effective solutions to ensure that the facility operations, capacity, and infrastructure needs are met. It will also ensure that coordination and planning efforts will be carried out with city, state, industry, and other public agencies to determine alternative evaluations and analyses. Advanced Facility Planning can be completed either before and/or after a decision to impact an Air Traffic Facility.

This program will provide advanced studies that may consist of cost/benefit analyses; cost-effectiveness analyses; environmental, human resource requirement studies; and studies to determine solutions to capacity and delay issues.

Recent projects include: studies in the Southwest Region for five ATCT/TRACON relocations; support to Southern Region to prepare special studies for TRACON consolidation/collocation including airspace analysis; support to the Simulation and Analysis Group for concept validation; support to the Great Lakes Region for airport capacity design study and feasibility studies to determine sites for two new airport control towers.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008.

Relationship to Performance Target

The Advanced Facility Planning program contributes to the FAA's greater capacity goal by allowing a smooth and orderly transition of new equipment into existing or modernized facilities. Conducting studies to identify operational needs and physical details of the infrastructure helps in constructing a transition plan that minimizes transition cost and time. The changing dynamics of the FAA's ATC system infrastructure requires continual planning and assessments to achieve overall system efficiency. This program encompasses advanced studies to identify operational needs and opportunities for modernization, expansion, replacement, or consolidation of air traffic control facilities. It bridges the gap between emerging technologies identified by research facilities (i.e., NASA, MITRE/CAASD Corp., Volpe MIT Lincoln Labs, etc.) and implementation into the NAS.

2A06, TERMINAL DIGITAL RADAR (ASR-11)
FY 2005 Request $107.1M

- Terminal Radar (ASR) Program – ASR-11- ASR-7/ASR-8 Replacement, DoD Takeover, New Establishments, S03.02-01

Program Description

In the Terminal Radar Program, new digital Airport Surveillance Radar Model 11 (ASR-11) radar systems will replace existing ASR Models 7/8 (ASR 7/8) primary radar systems and associated Air Traffic Control Beacon Interrogator Models 4/5 (ATCBI 4/5) secondary radar systems. This will ensure continuation of surveillance service with improved air detection and expanded six-level weather detection/display capability. The digital ASR-11 systems will also provide input required for the Standard Terminal Automation Replacement System (STARS) and eliminate the need and cost to reengineer/replace obsolete parts to sustain existing ASR-7/8 systems, which are past their life expectancy.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1** – Increase airport capacity to meet projected demand.
- **Performance Target** – Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008.

Relationship to FAA Performance Target

The ASR-11 system increases airport capacity to provide a system that meets or exceeds air traffic demand. It improves capacity in the terminal environment around airports by using available resources more

efficiently to land airplanes, which means an increase in overall capacity. It improves bad weather departure and landing capacity significantly through improved aircraft detection technology in clutter, and calibrated six-level weather capabilities. This capability allows for increase of on-time performance of scheduled carriers, which results in an overall increase in capacity at the airports it supports. On-time departures from feeder airports, where most ASR-11 radars are located, will significantly improve capacity at the Operational Evolution Plan airports they feed into.

FY 2003 Program Accomplishments
- Completed Initial Operational Capability at Willow Grove, PA, March 2003.
- Completed Operational Test at Willow Grove, PA, April 2003.
- Completed Operational Test at Stockton, CA, May 2003.
- Completed Initial Operational Capability at West Palm Beach, FL, May 2003.
- Completed Independent Operational Test and Evaluation at West Palm Beach, FL, July 2003.
- Issued In-Service Decision September 2003.
- Procured nine ASR-11 radar systems.
- Constructed eight radar sites and installed ASR-11.
- Purchased 12 parcels of land for ASR-11 radar site installation.
- Conducted 17 site surveys and developed 20 site designs.

Program Plan FY 2004 – Performance Output Goals
- Complete first Operational Readiness Demonstration (ORD) and commission Willow Grove, PA (ASR-11 feed to Philadelphia).
- Complete ORD at seven sites.
- Procure 12 ASR-11 radar systems.
- Conduct 17 site surveys.
- Develop 12 site designs.
- Procure real estate for 12 ASR-11 radar sites.
- Start construction at eight radar sites.
- Dismantle and demolish four radar sites.

Program Plan FY 2005 – Performance Output Goals
- Complete ORD at 15 ASR-11 sites.
- Procure 12 ASR-11 radar systems.
- Conduct seven site surveys.
- Develop 14 site designs.
- Procure real estate for 20 radar sites.
- Start construction for 20 radar sites.
- Dismantle and demolish 10 radar sites.

Key Events FY 2006-2009 – Performance Output Goals
- Complete ORD at 54 ASR-11 sites.
- Procure 48 ASR-11 radar systems.
- Develop 14 site designs.
- Procure real estate for 48 radar sites.
- Start construction for 48 radar sites.
- Dismantle and demolish 44 radar sites.

2A07, AIRPORT SURVEILLANCE RADAR (ASR-9)
FY 2005 Request $20.7M

- Terminal Radar (ASR) Program – ASR-9 SLEP, S-03.01-01
- Terminal Radar (ASR) Program – ASR-9, S-03.01-00

Program Description

The Airport Surveillance Radar (ASR-9) program provides aircraft detection and separation services at congested airports, which reduces aircraft delays and improves safety. The ASR-9 Service Life Extension Program (SLEP) will ensure that this critical service remains available by replacing obsolete components to sustain existing system capabilities. Sustaining the ASR-9/Mode-S systems reduces the risk of outages due to deterioration and parts obsolescence, and ensures continuation of maximum service capabilities.

System failures at ASR-9 sites have indicated the criticality of extending the service life. As a result of these failures, reliability and performance levels have degraded, which adversely affects capacity. The Mode-S beacon system operates with the ASR-9, and it provides secondary surveillance and communications services through the use of selective interrogation and Traffic Information Service. The Mode-S was first deployed in the NAS in 1994. Replacement parts and/or redesign of appropriate assemblies are required to prevent further degradation of the Mode-S. The SLEP will remedy service degradation through the development and implementation of system modifications to replace obsolete components. This will increase reliability, improve performance, and reduce maintenance costs.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to provide a system that meets or exceeds air traffic demand.
- **FAA Performance Target 1–** Achieve an Airport Arrival Efficiency Rate of 96 percent at the 35 OEP airports by 2008.

Relationship to Performance Target

The ASR program contributes to the goal of greater capacity by maintaining existing airport capacity and meeting future air traffic demands. The ASR-9 serves the airports with high activity levels and will not be replaced by the ASR-11. The SLEP will determine those parts that are most prone to fail and replace them with more reliable components. This will improve reliability, preventing delays due to radar outages at the high activity airports.

FY 2003 Program Accomplishments
- Continued Occupational Safety and Health Administration (OSHA) modifications at ASR-9 sites.
- Procured replacement receiver protectors.
- Completed Proof of Design effort.
- Initiated Diminishing Manufacturing Sources study.
- Completed SLEP Preliminary Design Review and working engineering model.

Program Plan FY 2004 – Performance Output Goals
- Commence ASR-9/Mode-S infrastructure modifications.
- Complete Diminishing Manufacturers Sources study.
- Complete OSHA modifications at ASR-9/Mode-S sites.
- Award contract for Remote Monitoring System (RMS) processor replacement.
- Acquire additional Modulator Pulse Assembly assets.
- Award contract to replace transmitter backplane wiring/cable harness.
- Commence replacement of Mode-S beacon antenna.
- Complete modeling and investment analysis activities for ASR-9/Mode-S SLEP.

Program Plan FY 2005 – Performance Output Goals
- Complete OSHA modifications at ASR-9/Mode-S sites.
- Continue ASR-9/Mode-S infrastructure modifications.
- Award contract for replacement of modems.
- Acquire replacement maintenance terminals.
- Continue replacing Mode-S antennae.
- Begin installing replacement RMS processor.
- Obtain Joint Resources Council investment decision 2A for SLEP.
- Release Screening Information Request (SIR) 1 for ASR-9/Mode-S SLEP.

Key Events FY 2006-2009 – Performance Output Goals
- Complete installing replacement components (modems, RMS processors, backplane wiring harnesses, and Mode-S antennas).
- Award contract (s) for ASR-9/ Mode-S SLEP.
- Conduct functional and configuration audits of ASR-9/Mode-S solutions.
- Conduct developmental test and evaluation of ASR-9/Mode-S SLEP solutions.
- Conduct operational test and evaluation of ASR-9/Mode-S solutions.
- Conduct operational readiness demonstration of ASR-9/Mode - solutions.
- Begin deploying ASR-9/Modes solutions.

2A08, PRECISION RUNWAY MONITOR
FY 2005 Request $7.4M

- Precision Runway Monitor (PRM), S08.00-00

Program Description

The PRM system is highly accurate, electronic scan (e-scan) radar that tracks and processes aircraft targets at a 1-second update rate (as opposed to 4.8 seconds with conventional radars). The PRM system provides the controller with automatic alerts and high-resolution displays that, in conjunction with specific procedures, enable pilots to fly simultaneous independent approaches to parallel runways spaced less than 4,300 feet apart. Parallel runways can be used for independent/simultaneous approaches during Visual Meteorological Conditions; however, in Instrument Meteorological Conditions, closely spaced runways cannot be used for independent/simultaneous approaches without PRM technology. The inability of pilots to conduct simultaneous approaches during adverse weather reduces throughput and increases delays.

Initially, five candidate airports with closely spaced (750 feet to 4,300 feet) parallel runways were selected to receive production PRM systems. The contract was awarded in March 1992 for five production PRM systems, associated site and depot spares, and site installations. To date, all the systems have been manufactured and procured under this contract. The City of San Francisco procured a sixth system for the San Francisco International Airport. Three PRM systems have been installed and commissioned, at Minneapolis, St. Louis, and Philadelphia. Commissioning activities are underway at John F. Kennedy, NY, and San Francisco, CA. In FY 2003, Congress mandated installing a PRM system at Cleveland, OH, and procurement of three additional systems for Atlanta, Detroit, and a site to be determined.

Relationship of Program to FAA Strategic Goal, Objective, and Performance

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 -** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Increase the Airport Arrival Capacity at the 35 OEP airports from 50,550 arrivals per day, the 2000-2002 baseline, to at least 53,600 per day by FY 2008.

Relationship to Performance Target

The PRM program supports the FAA greater capacity goal by allowing more aircraft to land during Instrument Meteorological Conditions at airports with closely spaced parallel runways. Normally, the capacity of an airport to handle arriving aircraft is reduced when visibility is restricted, resulting in delays. The PRM provides a high update rate radar which feeds a very accurate display of aircraft position, and this allows controllers to ensure that simultaneous independent approaches to parallel runways, less than 4300 feet apart, are safe during low visibility conditions. Aircraft approaching an airport, without PRM, during low visibility conditions must be alternated along parallel approach paths, and capacity is diminished which results in delays.

2A09, HOUSTON AREA AIR TRAFFIC SYSTEM (HAATS)
FY 2005 Request $12.0M

- Large TRACONs – Houston Area Air Traffic System (HAATS), F02.11-01

Program Description

The FAA Operational Evolution Plan (OEP), dated June 23, 2001, has identified the expansion of George Bush Intercontinental Airport/Houston (IAH) as a mid-term airport surface project and expansion of the airspace and procedures serving the Houston terminal area as part of the national airspace review.

Four airspace studies found that the current terminal/en route airspace and procedures are insufficient to support capacity increases stemming from the city of Houston's airport expansions. The studies are: (1) Houston Intercontinental Airport, Airport and Airspace Capacity Enhancement Plan, September 1993, (2) Airport Capacity Benchmark Report 2001, (3) NAS Operational Evolution Plan – 2001; and (4) MITRE report, Houston Gulf Coast Airspace Project Benefits – 2002.

The HAATS Program will provide the infrastructure, national airspace improvements, and new airspace and procedures that will support and exceed airport capacities created by the Houston area airport expansions. The HAATS program will integrate improvements identified in the National Airspace Review and benefits from the new runways at IAH. The HAATS program implemented interim airspace modifications identified in the Spring 2000 and En Route Choke Point initiatives in calendar year 2002.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase Airport Capacity to meet projected demand.
- **FAA Performance Target –** Open as many as nine new runways while increasing the Annual Service Volume of the 35 OEP airport by at least 1 percent annually, measured as a five-year moving average through FY 2008.

Relationship to Performance Target

The HAATS program will ensure achievement of the OEP and FAA Strategic Goal objectives. The capacity resulting from the IAH Airport expansion projects will provide significant benefits to the NAS. Current IAH Airport expansion projects will provide a 50 percent increase in arrival capacity effectively increasing the current arrival flow rate for IAH of 72 per hour under Visual Flight Rules and 64 per hour under Instrument Flight Rules to 108 per hour Visual Flight Rules and 96 per hour Instrument Flight Rules. Implementing the HAATS airspace and procedures modifications will ensure that the terminal/en route airspace system provides capacity sufficient to meet/exceed the airport capabilities in the Houston area.

FY 2003 Program Accomplishments
- Completed installation activities in preparation for the commissioning of Runway 8L/26R at IAH.
- Submitted terminal airspace modifications for publications.
- Completed installation of new TRACON positions.

Program Plan FY 2004 – Performance Output Goals
- Commission Runway 8L/26R at IAH with Category (CAT) I/II and III instrument approach procedures – October 31, 2003.
- Implement terminal airspace modifications – October 31, 2003.
- Commission TRACON expansion.
- Initiate construction of the new Instrument Landing Systems (ILS) to support implementation of CAT II/III approach procedures for Hobby International Airport.

Program Plan FY 2005 – Performance Output Goals
- Perform site analysis and environmental assessments for new;
  - (a) New airport surveillance radar (ASR) systems,
  - (b) Air route surveillance radar (ARSR) (Beacon only) system,
  - (c) VHF Omni-directional radio range (VORs),
  - (d) Remote Center Air/Ground (RCAGs),
  - (e) Remote Transmitter/Receiver (RTRs),
- Initiate acquisition of two ASR systems and one beacon-only ARSR system.

Key Events FY 2006-2009 – Performance Output Goals
- Design, construct, certify, and commission new facilities to support the expanded airspace and procedures modifications including; ASRs, ARSRs, VORs, RCAGs, RTRs, communications network, and implement new sectors in ARTCC.
- Design, develop, flight inspect, and publish the charts and procedures to support the implementation of the new airspace.
- Develop, install, and certify modifications to various computer automation programs to accommodate the new airspace and procedures.
- Complete airspace modifications identified in the National Airspace Redesign.
- Complete training of ATS personnel on new facilities, equipment, and airspace/procedures.

2A12, AERONAUTICAL DATA LINK (ADL) APPLICATIONS
FY 2005 Request $4.0M

- A, Aeronautical Data Link – Flight Information Service (FIS), C20.03-00
- B, Aeronautical Data Link – CPDLC Build 1/1A, C20.02-01

A, AERONAUTICAL DATA LINK – FLIGHT INFORMATION SERVICE (FIS), C20.03-00

Program Description

ADL – FIS is a new system to provide data link broadcasts of graphic and text FIS data including weather products to the cockpit. This FIS data link (FISDL) system provides pilots timely access to FIS data that is consistent with FIS information available to air traffic controllers and flight service specialists in the NAS.

The FISDL service implementation is through a FAA/Industry agreement based on the FAA Airborne FIS Policy Statement (May 1998) and a supporting FIS Data Link Requirements Document (February 1999). The FAA is providing access to the aeronautical spectrum, and program quality assurance and control. An industry service provider is furnishing the data processing and communications infrastructure. The first FISDL ground transmitter site was delivered and commissioned in June 2001. The last site is to be delivered and commissioned by June 2004. FISDL is a very high frequency broadcast service. As the NAS modernization evolves, the FISDL service will transition to the planned FAA Next Generation Air-to-Ground Communications (NEXCOM) data link or other suitable FAA data link, such as the Automatic Dependent Surveillance-Broadcast Universal Access Transceiver.

The FIS program will also develop implementation strategies for establishing a national system for collecting and disseminating weather reports from low altitude commuter and package carrier operations through on-board automation and data link communications. These automated meteorological reports will provide coverage over data void regions and will supplement similar data collected from airline operations through the Meteorological Data Collection and Reporting System. This task builds on a NASA sponsored Tropospheric Airborne Meteorological Data Reporting (TAMDAR) sensor. Flight evaluations of the TAMDAR sensor are planned during FY 2004. Contract award for establishing a national collection system is targeted for FY 2008.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

Weather is a major factor in general aviation accidents. Timely access to FIS weather data information allows pilots to make early decisions to continue or divert a flight; this leads to improved and safer flight operations. The national collection of TAMDAR data will enable increased resolution and accuracy in the National Weather Service aviation weather forecasts used to support NAS operations in the Integrated Terminal Weather System and the Weather and Radar Processor resulting in improved predictions of hazardous weather conditions that impact the NAS.

FY 2003 Program Accomplishments
- Expanded national coverage and operational FISDL services through activation of 60 more ground stations, resulting in 130 operational out of 180 total (72 percent).
- Achieved more than 1,000 active users of FISDL services; target is 5,000 by FY 2009 (20 percent).
- Added area weather products to FISDL service; completing all required basic text products (100 percent).
- Established specifications to produce prototype TAMDAR sensor.

Program Plan FY 2004 – Performance Output Goals
- Complete activation of 50 remaining FISDL ground stations, resulting in 180 operational sites (100 percent).
- Achieve at least 1,800 active users of FISDL services out of 5,000 planned (36 percent).
- Evaluate solution alternatives for implementing TAMDAR.
- Publish Advisory Circulars and a Technical Standard Order supporting FISDL implementation.

Program Plan FY 2005 – Performance Output Goals
- Achieve at least 2,600 active users of FISDL services out of 5,000 planned (52 percent).
- Expand FISDL products to include additional weather products resulting from the FAA Aviation Weather Research Program.
- Conduct simulation and flight test evaluation of a data link system to collect TAMDAR sensor data.
- Complete system design and operational concept for a national TAMDAR system.

Key Events FY 2006-2009 – Performance Output Goals
- Achieve at least 600 additional active users of FISDL services each year; target at least 5,000 by FY 2009 (100 percent).
- Establish transition strategy by FY 2006 for implementing FAA FIS data link service via NEXCOM and/or Universal Access Transceiver technology.
- Obtain FAA decision to implement TAMDAR in FY 2006.

- Publish standards guidance (RTCA, Inc., Advisory Circulars, Technical Standards Orders) supporting introduction of TAMDAR service in FY 2007.
- Implement initial TAMDAR service in FY 2008; equip at least 10 aircraft of planned 200 aircraft (5 percent).

B, AERONAUTICAL DATA LINK – CPDLC BUILD 1/1A, C20.02-01

Program Description

The aviation industry has identified ADL as a source of significant user benefits and one of the key enabling technologies for "Free Flight." Implementing En Route Controller-Pilot Data Link Communications (CPDLC) will provide a two-way digital exchange of Aircraft Telecommunications Network (ATN)-compliant air traffic control messages between ground and air through a service provider. This will provide a fully integrated digital data link communications capability. CPDLC software development for the Host Computer System and Data Link Applications Processor and Context Management Applications Processor will provide ground end system ATN functionality and compliance. This will enable the transmission of air traffic control clearances and information to ATN-equipped aircraft.

The first implementation, CPDLC Build 1, incorporates limited CPDLC capabilities into controller displays, keyboards, and procedures at the Miami ARTCC. The CPDLC Build 1 ground system development was completed in September 2001 and the Operational Test and Evaluation was completed in February 2002. CPDLC Build 1 Initial Daily Use (IDU) at Miami Center was achieved in October 2002.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The CPDLC Build 1 program contributes to the FAA's greater capacity goal by reducing voice communication frequency congestion. The CPDLC Build 1 prototype allows non-time critical, predefined text messages, as well as free-text messages, to be sent to aircraft equipped with digital radios through service provider's very high frequency data link mode 2 digital network. Using CPDLC, the controller and pilot can exchange messages rapidly while the aircraft is in flight. Potential benefits include increased capacity, reduced voice channel congestion, lowered controller-pilot workload, and fewer misinterpretations of voice delivered messages, all of which will contribute significantly to the capacity of the NAS.

FY 2003 Program Accomplishments
- Completed CPDLC Build 1 prototype IDU at Miami ARTCC.

Program Plan FY 2004 – Performance Output Goals
- Sustain the CPDLC Build 1 prototype IDU at Miami ARTCC.
- Gather technical, operational, and risk mitigation data at the Miami ARTCC site.

Program Plan FY 2005 – Performance Output Goals
- Shut down CPDLC Build 1 prototype at Miami ARTCC.

Key Events FY 2006-2009 – Performance Output Goals
- ****Program Under Review****

2A13, FREE FLIGHT PHASE 2
FY 2005 Request $92.5M

- A, Free Flight Phase 2 (FFP2) – Integration, A24.01-00
- B, Free Flight Phase 2 (FFP2) – User Request Evaluation Tool (URET), A24.02-00
- C, Free Flight Phase 2 (FFP2) – Traffic Management Advisor (TMA) – Single Center, A24.03-00
- D, Free Flight Phase 2 (FFP2) – Collaborative Decision Making (CDM), A24.04-00

A, FREE FLIGHT PHASE 2 (FFP2) – INTEGRATION, A24.01-00

Program Description

Integration supports the FFP2 program in the areas of information security, risk management, human factors, performance metrics, and national user teams for the FFP2 capabilities. This support ensures that the automation tools installed as part of the FFP2 program are successfully implemented at operational facilities and that the implementations result in improved efficiency for air traffic control.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

This FFP2 Integration program contributes to the FAA's greater capacity goal by ensuring the successful deployment of free flight automation tools through implementation teams working directly with sites, human factors analyses, information security management, and performance measurement. FFP2 improves on-time performance through better use of existing system capacity.

FY 2003 Program Accomplishments
- Reviewed product team risks monthly.
- Performed human factors co-location studies for TMA and CPDLC in Miami.
- Performed human factors studies for CPDLC, URET and TMA at the FAA Tech Center.
- Completed Free Flight human factors evaluation for AAR-100.
- Updated security certification action plans for Center TRACON Automation Systems and Surface Management Systems.
- Published semi-annual performance metrics reports.

Program Plan FY 2004 – Performance Output Goals
- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

B, FREE FLIGHT PHASE 2 (FFP2) – USER REQUEST EVALUATION TOOL (URET), A24.02-00

Program Description

The Conflict Probe capability provided by URET Core Capability Limited Deployment (CCLD) under Free Flight Phase 1 was deployed to six contiguous centers in the middle of the United States in FY 2002. URET provides four key capabilities to the ARTCCs:

- Aircraft-to-aircraft Conflict Detection,
- Aircraft-to-airspace Conflict Detection,
- Evaluation of user or controller request for flight plan amendments or route changes; and
- Enhanced flight data management.

This tool allows controllers to determine whether requests for direct routes can be approved without conflicting with other flights or airspace restrictions. To enhance the benefit of the tool for flights associated with the first six centers (Atlanta was deferred to FFP2) and to provide benefits for flights beyond these centers, the tool needs to able to reach across all 20-center boundaries for the NAS to achieve its full potential. For FFP2, by the end of FY 2005, URET will be deployed at 14 additional ARTCCs.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

The URET program contributes to the FAA's greater capacity goal by providing an automation tool that air traffic controllers in the ARTCC use to provide more direct routes for aircraft. The controllers use the tool to identify future flight path conflicts and to increase direct aircraft routing by 15 percent. Direct routes save flight time and fuel.

FY 2003 Program Accomplishments
- Achieved URET initial daily use (IDU) at one URET site.
- Provided technology refresh of one current URET site.

Program Plan FY 2004 – Performance Output Goals
- Achieve URET IDU at three additional URET sites.
- Provide technology refresh of five current URET sites.

Program Plan FY 2005 – Performance Output Goals
- Achieve URET IDU at seven additional URET sites.

Key Events FY 2006-2009 – Performance Output Goals
- Achieve URET IDU at remaining three URET sites.
- Attain Planned Capability Available on Build VI (the final FFP2 version of URET).
- Transition URET support to the Operations budget during FY 2007.

C, FREE FLIGHT PHASE 2 (FFP2) –
TRAFFIC MANAGEMENT ADVISOR (TMA) – SINGLE CENTER, A24.03-00

Program Description

TMA-SC provides an aircraft arrival schedule in the en route and terminal Traffic Management Unit and produces meter lists for display on en route controllers' displays that estimate optimal arrival times. TMA-SC provides advisories to en route controllers for metering traffic into terminal airspace. During FFP1, six en route centers received this tool. During FFP2, TMA-SC will be sustained at the six sites and deployed at four additional sites.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to provide a system that meets or exceeds air traffic demand.
- **FAA Performance Target 1 –** Achieve an Airport Arrival Efficiency Rate of 96 percent at the 35 OEP airports by 2008.
- **FAA Performance Target 2 –** Achieve an Airport Arrival Capacity at the 35 OEP airports in excess of 50,850 per day by 2008.

Relationship to Performance Target

TMA-SC contributes to the FAA's greater capacity goal by improving capacity utilization at selected airports by an average of 3 percent to 5 percent. The program includes a software tool that traffic management coordinators use to plan traffic flows to major airports. It also helps controllers adjust aircraft spacing to optimize use of runways at major airports. Through time-based metering, TMA provides optimal arrival flows by dynamically feeding an arrival rate consistent with the airport acceptance rate.

FY 2003 Program Accomplishments
- Deployed TMA-SC to one site.

Program Plan FY 2004 – Performance Output Goals
- Continue improving software, using suggestions from controllers, which are prioritized by the National User Team.
- Implement timed-based metering at Atlanta and Houston Centers by September 2004.
- Implement Adjacent Center Metering between ZFW and ZHU by September 2004.

Program Plan FY 2005 – Performance Output Goals
- Implement time-based metering at Miami Center for Miami International Airport by November 2004.
- Continue development and enhancements as prioritized by the National User Team.
- Support existing sites.

Key Events FY 2006-2009 – Performance Output Goals
- Deploy TMA-SC to remaining three FFP2 sites by end of December 2006.
- Transition TMA-SC support to the Operations budget.

D, FREE FLIGHT PHASE 2 (FFP2) – COLLABORATIVE DECISION MAKING (CDM), A24.04-00

Program Description

FFP2 CDM includes:
- Enhanced Data Exchange
- Enhanced Arrival and Departure Management
- Congestion Management
- Performance Assessment, and
- Impact Assessment.

The initial CDM hardware and software was installed during the Free Flight Phase 1 program. The equipment allows information exchange and consultation with airline operations centers to determine the most acceptable strategies for reducing delays.

CDM will increase the information handling capability of the Traffic Flow Management (TFM) infrastructure, assessing and increasing information security as needed. It will provide additional airport and airspace information elements, including actual and predicted data in real-time. CDM will enhance arrival and departure management through the integration of arrival data with departure data to better manage imbalances in demand and capacity at airports and nearby arrival and departure fixes. CDM will also provide an alternate and potentially more equitable means of allocating resources under ground delay program conditions. Additionally, CDM will evaluate and consider integrating data from other arrival and surface decision support systems. Congestion Management involves forecasting airspace congestion, measuring and communicating the uncertainty associated with such forecasts, and developing integrated TFM solutions.

A concept development prototype system, known as the Collaborative Routing and Coordination Tool (CRCT), has provided a platform for evaluating a limited set of the critical functions. Such as designating areas of severe weather or congestion as a flow constrained area, identifying all flights predicted to enter the flow constrained area, and assessing the impact of rerouting any or all of the flights on sector loading within an ARTCC. Technology transfer of those capabilities that are deemed sufficiently mature for operational use will occur from the CRCT platform to the baseline TFM system.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase the on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2003 baseline.

Relationship to Performance Target

The CDM program contributes to the FAA's greater capacity goal by coordinating air traffic information with NAS users (airlines, general aviation, etc.) and FAA users to minimize the number and impact of delays. The FAA coordinates with air carriers to reroute traffic from busy sectors and areas with severe weather; both conditions can reduce delays in subsequent/connecting flights. CDM also provides current information and delay status to all interested parties.

FY 2003 Program Accomplishments
- Implemented new CDM functional enhancements into TFM automation system.
- Slotted Credit Substitutions (May 2003).
- Implemented Reroute Advisory Tool Phase 1 (May 2003).
- Developed National Convective Weather Forecast product display overlays (May 2003).

Program Plan FY 2004 – Performance Output Goals
- Develop and implement CDM functional enhancements in periodic deliveries (enhancement items are prioritized by the National User Team).
    a. Complete operational deployment of Distance Based Ground Delay programs (June 2004).
    b. Create Reroute enhancements (June 2004).
    c. Complete Collaborative Convective Forecast Product Validation and Verification (August 2004).

Program Plan FY 2005 – Performance Output Goals
- Continue to evolve baseline CDM functionalities to address user priorities.
    a. Ground Delay Program and Flight Schedule Monitor enhancements.
    b. Continue to mature CRCT technology transfer.
- Provide documentation for Joint Resources Council approval of initial work package to continue developing and deploying CDM capabilities beyond the FFP2 program.

Key Events FY 2006-2009 – Performance Output Goals
- Obtain Joint Resources Council approval of work packages and inclusion under a new CIP budget line item.

2A14, AIR TRAFFIC MANAGEMENT (ATM)
FY 2005 Request $57.0M

- A, Traffic Flow Management Infrastructure – Current Enhanced Traffic Management System Operations, A05.01-02
- B, Traffic Flow Management Infrastructure – Infrastructure Modernization, A05.01-06
- C, ATM Functionality Development/Deployment – Departure Spacing Program, A05.03-06

A, TRAFFIC FLOW MANAGEMENT INFRASTRUCTURE – CURRENT ENHANCED TRAFFIC MANAGEMENT SYSTEM OPERATIONS, A05.01-02

Program Description

The Traffic Flow Management Infrastructure (TFM-I) is a NAS Architecture component connecting TFM decision support systems and tools that help balance growing flight demands with NAS capacity within a dynamic environment. The present TFM-I has evolved through several hardware and software generations. The TFM-I architecture hosts various programs within TFM such as the Enhanced Traffic Management System (ETMS), Collaborative Decision Management software tools, Enhanced Status Information System, National Traffic Management Log, and Runway Visual Range (RVR). TFM-I provides a platform for essential functional improvements and additional capabilities developed under each of these programs. It also integrates the evolving modernized interface systems of the NAS (i.e. Host ATM Data Distribution Systems, RVR, En Route Communication Gateway, Standard Termination Automation Replacement System and Weather and Radar Processor programs). The benefit of integrating these programs within the TFM Infrastructure contributes to the overall delay reduction in the NAS. Additional enhancements will increase integration and interoperability with the overall air traffic management infrastructure.

TFM-I plans to continue developing functional upgrades to provide national-scale traffic management tools to balance traffic loads through delivery of two complex versions of ETMS software. TFM-I supports continued safe flight operations and maximizes air traffic flow, performing the mission of managing en route air traffic flow through delay reduction at the Air Traffic Control Systems Command Center using data from the TFM hub.

The current TFM hardware is unable to handle increasing complexity of systems integration. Implementation of the TFM Modernization program's technology refresh phase is correcting this deficiency.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

This TFM-I program improves system capacity by using national-scale traffic management. It will sustain and upgrade mission-essential TFM operations (mandated by congress), to handle the expected increase in air traffic and TFM message traffic that will be generated by full implementation of new delay-reduction initiatives and Free Flight.

FY 2003 Program Accomplishments
- Installed ETMS in Boston Consolidated TRACON, Philadelphia TRACON, and Louisville TRACON.
- Completed software upgrades to increase efficiency and functionality for configuration at Traffic Management Units, hub, and lab facilities. (ETMS version 7.5/v7.6 and Java Flight Schedule Monitor (FSM)).
- Completed all scheduled ETMS/RVR interface expansion installations to new runways.
- Completed submission of revised TFM-I Security Certification Authorization Plan (SCAP).
- Initiated network infrastructure upgrades (switches/routers).
- Continued deploying the National Traffic Management Log.

Program Plan FY 2004 – Performance Output Goals
- Continue network infrastructure upgrades (switches/routers).
- Report traffic conditions from local Traffic Management Units and coordinate delay reduction initiatives with the airlines.
- Develop and initiate new software releases and related data integration affecting hub operations at VOLPE Transportation Center.
- Integrate Sector Traffic Management tools, Web-Based Situational Display, Dynamic Sector Realignment, and Monitor Alert-Flight Database restructuring.
- Continue scheduled ETMS/RVR interface expansion installations to new runways.
- Update SCAP to reflect new functionalities as required and submit for final approval.
- Complete deployment of National Traffic Management Log.

Program Plan FY 2005 – Performance Output Goals
- ATM (ETMS) to continue functional upgrades to provide national-scale traffic management tools to balance traffic loads.
- Continue Free Flight integration and utilization of additional Collaborative Decision-Making tools.
- Complete network infrastructure upgrades (switches/routers).
- Update SCAP to reflect new functionalities as required.
- Provide documentation for Joint Resources Council approval of initial work package to provide TFM-I Enhancements and Collaborative Decision Making benefits.

Key Events FY 2006-2009 – Performance Output Goals
- Continue TFM operations at all facilities.
- Integrate Free Flight Phase 2 Collaborative Decision-Making tools for sustainment into the TFM infrastructure.

B, TRAFFIC FLOW MANAGEMENT INFRASTRUCTURE – INFRASTRUCTURE MODERNIZATION, A05.01-06

Program Description

TFM-Infrastructure (TFM-I) Modernization is a component of the NAS Architecture and provides the TFM decision support systems and tools that help balance growing flight demands with NAS capacity within a dynamic environment. The present TFM-I has evolved through several generations of hardware and software. The software has become increasingly difficult to maintain and modify and will not support emerging system requirements. The architecture platform is extremely complicated, congested with multiple communication and network threads and existing hardware systems approaching end of service life. The TFM-I hosts the software tools that are used to manage and meter air traffic to reduce delays and make maximum use of system capacity.

Relationship of Program to FAA Strategic Goal, Objective and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase the on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

This program will increase the integration and interoperability with the overall Air Traffic Management structure. Modernization will establish a robust, commercially available, and standards-compliant TFM-I. It will support current and future TFM requirements for availability, performance, expandability, human-computer interaction, supportability and security.

FY 2003 Program Accomplishments
Initiated planning documents for Acquisition of TFM-M, requirements (definition for platform development, communications efficiency studies, and development of software architecture requirements). Accomplishments include:
- Completed TFM-I Baseline Functional Audit.
- Completed Software Complexity and software lines of code analysis.
- Presented TFM-M Business Case – and received Joint Resources Council (JRC) 2A (approved).
- Updated Mission Needs Statement (MNS-307, approved).
- Completed Initial Requirements Document (approved).
- Finalized Statement of Work.
- Completed System Load Analysis.
- Continued Investment Analysis.
- Completed Needs Assessment.
- Received Joint Resources Council 2A Decision - approved preferred alternate.
- Completed Initial APB – approved.
- Completed Screening Information Request (SIR) 1 evaluation.
- Initiated hardware technology refresh.
- Completed site planning, analysis, and key site implementation to refresh current workstations.

Program Plan FY 2004 – Performance Output Goals
- Award contract for TFM Modernization System Design (June 04).
- Released SIR 2 (Oct 03).
- Conduct SIR 2 evaluation (Feb-Apr 04).
- Prepare Acquisition Documentation for Joint Resources Council 2B decision to proceed with modernized system development & deployment.
- Continue Data Analysis.

- Continue hardware technology refresh.
- Evaluate and determine final design of modernized TFM-I.

Program Plan FY 2005 – Performance Output Goals
- Finalize detailed system design.
- Obtain Joint Resources Council 2B approval for modernized system development and deployment.
- Initiate modernized system development and deployment planning.
- Complete hardware technology refresh.
- Prepare documentation for Joint Resources Council approval of initial work package to provide TFM-I Enhancements and CDM benefits.

Key Events FY 2006-2009 – Performance Output Goals
- Re-Engineer TFM architecture that supports improved access to TFM information and integration of standalone capabilities.
- Began Initial Daily Use (IDU) of modernized system.
- Implement initial work packages that will provide new TFM functionality and NAS-wide benefits.

C, ATM FUNCTIONALITY DEVELOPMENT/DEPLOYMENT – DEPARTURE SPACING PROGRAM, A05.03-06

Program Description

Departure Spacing Program (DSP) will continue sustainment of the DSP prototype and will transition the DSP to a formal NAS system. DSP assists controllers in the more efficient management of departures from multiple airports within the New York and Philadelphia metropolitan areas. This will help to reduce system wide delays and improve aircraft on-time performance.

Relationship of Program to FAA Strategic Goal, Objective and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

DSP will allow more efficient management of departures from multiple airports within the New York and Philadelphia metropolitan areas, which will reduce delays and improve on-time performance for arriving aircraft.

FY 2003 Program Accomplishments
- Continued incremental software enhancements/sustainment at New York metro area facilities.
- Continued benefits analyses/metrics development for New York operational system.
- Performed DSP multi-center simulation and modeling in DSP Integration and Operations Lab.
- Completed hardware retrofit at New York metro area facilities.
- Initiated DSP workgroup to develop DSP multi-center operational concept of use.

Program Plan FY 2004 – Performance Output Goals
- Continue sustainment and limited incremental software enhancements at New York metro area facilities.
- Initiate planning and activities to baseline existing New York system and prepare for transition to a formal NAS system.
- Complete benefits analyses/metrics development for New York metro area operational system.

- Complete DSP multi-center operational concept of use.

Program Plan FY 2005 – Performance Output Goals
- Complete activities and documentation for transition of DSP to formal NAS system.
- Continue to sustain DSP at existing facilities.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to sustain DSP at existing facilities.
- Transition DSP to operations funding and execution.

2A15, AUTOMATED SURFACE OBSERVING SYSTEM (ASOS)
FY 2005 Request $7.3M

- Automated Surface Weather Observation Network (ASWON) – ASOS – Pre-Planned Product Improvements, W01.02-02
- Automated Surface Weather Observation Network (ASWON) – ASOS – Standalone Weather Systems, W01.02-03
- Automated Surface Weather Observation Network (ASWON) – ASOS – Data Displays, W01.02-04

Program Description

ASWON is an umbrella program that consists of the following systems: The Automated Weather Observing System (AWOS), Automated Surface Observing System (ASOS), Automated Weather Sensors Systems (AWSS), Standalone Weather Sensors (SAWS), and ASOS Controller Equipment Information Display System (ACE-IDS). The primary purpose of ASWON is to support FAA and the National Weather Service modernization by automating the surface weather observation to meet the needs of pilots, operators and air traffic personnel without incurring the high costs of labor-intensive manual surface weather observations.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The ASWON program supports the FAA greater capacity goal by supplying automated surface weather observations to meet the needs of pilots, operators, and air traffic personnel. The network includes the AWOS, ASOS, AWSS, SAWS, and ACE-IDS or data displays.

FY 2003 Program Accomplishments
- Implemented product improvements and upgrades to the ASOS.
- Obtained Joint Acceptance Inspection (JAI) of 23 SAWS (21 commissioned).
- Delivered two ACE-IDS systems (114 workstations).

Program Plan FY 2004 – Performance Output Goals
- Implement product improvements and upgrades to the ASOS.
- Obtain JAI of 67 additional SAWS (100 total).
- Deliver two ACE-IDS systems (168 workstations).
- Deliver one ACE-IDS interface to New Tactical Forecast System.

Program Plan FY 2005 – Performance Output Goals
- Implement product improvements and upgrades to the ASOS.
- Deliver one ACE-IDS to Weather and Radar Processor interface.

Key Events FY 2006-2009 – Performance Output Goals
- Complete product improvements and upgrades to the 571 ASOS.
- Deliver one ACE-IDS to Integrated Terminal Weather System interface.

2A16X, TERMINAL APPLIED ENGINEERING
FY 2005 Request $0.0M

- ATCT/TRACON Establish/Sustain/Replace -Terminal Applied Engineering, F01.03-00

Program Description

The Terminal Applied Engineering Program will provide upfront planning, baseline each facility, and determine how best to integrate 40 modernized Air Traffic Control (ATC) systems at over 400 terminal facilities. This program will identify problems with the interoperability of dissimilar ATC systems and integration of equipment, into uniquely configured ATC facilities. The program will also review power, hazardous materials, security, and other facility requirements to ensure their adequacy in anticipation of transition between old and new equipment.

This effort will result in a smooth and orderly implementation of Capital Investment Plan programs into FAA's existing terminal facilities. The program will identify transition and integration requirements as early as 48 months prior to equipment delivery and will allow sufficient time to assess readiness for new equipment. This program will also develop Terminal Facility Master Plans (TFMP) that address equipment deliveries through 2009 and will bring facility drawings under configuration management. The TFMP will be developed for all Terminal Radar Approach Control (TRACONs), all co-located TRACONs and Air Traffic Control Towers (ATCTs), and all Grades 8 and above ACTCs. The TRACON facility's associated remote facilities will have their planning included as appendices. Some Stand-Alone Towers will also receive TFMPs. At least 15 government transition evaluations (FAA Standard 059) and facility condition assessments (FAA Order 6480.17) will be completed each year. The data will be used as input to baseline or re-baseline at least 15 facilities and 15 TFMPs will be created. Also, the program will perform 15 follow-up evaluations annual, from previous evaluations and maintain 30 percent of existing TFMPs continuously on a 2-year life-cycle.

Relationship of Program to FAA Strategic Goal, Objective and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The Terminal Applied Engineering Program contributes to the FAA greater capacity goal by providing an analysis of engineering issues involved in delivering and installing new equipment to ATCTs and TRACONs. Air traffic growth, changes in airspace structure, and equipment modernization require adjustments to air traffic facilities. The engineering analysis minimizes disruptions and delays, thereby decreasing the probability of delays at the affected airport. The TMFP documents the results of the analysis and recommended solutions to known issues.

FY 2003 Program Accomplishments
An additional 13 out of 400 TRACON and ATCT facilities achieved the following outcomes:
- Completed Government Transition Evaluations and Facility Condition Assessments (FAA Order 6480.17), including Initial Cost Estimates for the FY 2005 budget submission.

- Created or redlined facility drawings for Configuration Management.
- Initiated development of nine TFMPs.
- Completed Phase II for the Facilities Information and Analysis Tool (FIAT); Declared Initial Operational Capability.
- Developed initial training and implementation plan for the FIAT.
- Integrated FIAT structure into Facility Evaluation Form (formerly GTE Checklist).

Program Plan FY 2004 – Performance Output Goals
An additional 31 out of 400 TRACON and ATCT facilities will achieve the following outcomes:
- Perform Government Transition Evaluations and Facility Condition Assessments (FAA Order 6480.17) including Initial Cost Estimates for the FY 2006 budget submission.
- Create or redline facility drawings for Configuration Management.
- Develop TFMPs.
- Execute training plan for the FIAT.
- Establish FIAT Maintenance contract.
- Declare Full Operational Capability for FIAT.
- Maintain nine TFMPs including final cost estimates.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

2A17X, NEW YORK INTEGRATED CONTROL COMPLEX (NYICC)
<mark>FY 2005 Request $0.0M</mark>

- New York Integrated Control Complex, F02.12-01

Program Description

The NYICC concept was developed nearly four years ago to solve operational, infrastructure and security issues in the New York area. By integrating the New York Terminal Radar Approach Control and New York Air Traffic Control Center into one new facility, the FAA plans to reap the benefits of improved efficiency through greater workforce productivity, expanded terminal airspace rules, reduced inter-facility coordination, and having the ability to accommodate new technologies. The new facility will have a 40-year lifecycle, accommodate future growth, and meet security requirements.

The NYICC program team has been developing a Concept of Operations Document, Requirements Document, Program Schedule, Acquisition Strategy Paper, Investment Analysis Plan, Life-Cycle Cost Estimates and an Investment Analysis Report. Lawrence Livermore Laboratories began an intensive Vulnerability Assessment in September 2003. Additionally, NASA-Ames conducted a revalidation of the team's Human-in-the-Loop Study (completed by the FAA Technical Center in July 2003). The Volpe National Transportation Center, in conjunction with ASD-100, completed an initial architectural assessment in August 2003. MITRE/CASSD continue to work with the NY/NJ/PHL Airspace Redesign Team to model airspace scenarios and calculate potential program benefits.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 3 –** Increase or improve airspace capacity in the eight major metropolitan areas and corridors that most affect total system delay: New York, Philadelphia, Boston, Chicago, Washington/Baltimore, Atlanta, Los Angeles Basin, and San Francisco.

- **FAA Performance Target** – Achieve an increase in the Airport Arrival Capacity for the 8 major metropolitan areas from 21,290 arrivals per day, the 2000-2002 baseline, to at least 22,000 per day by FY 2008.

Relationship to Performance Target

The NYICC Program supports the FAA Greater Capacity goal by providing a platform for modern automation, communication and power systems. It will also expand terminal airspace rules, facilitate more efficient aircraft spacing and sequencing, increase holding pattern efficiency, provide better weather avoidance, which should result in fewer aircraft delays.

FY 2003 Program Accomplishments
- Developed Concept of Operations Document.
- Updated Requirements Document.
- Developed Investment Analysis Plan.
- Began Investment Analysis.
- Completed Human In-The-Loop Analysis.
- Began Vulnerability Assessment.
- Continued Airspace and Environmental Activities.

Program Plan FY 2004 – Performance Output Goals
- Obtain Joint Resources Council 2A Approval.
- Conduct Joint Resources Council 2B Analysis.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

2A18X, INFORMATION DISPLAY SYSTEM (IDS) FOR TERMINAL FACILITIES
FY 2005 Request $0.0M

- ACE IDS for Terminal Facilities/FAA Data Display System (FAADDS), A08.02-01

Program Description

The IDS for Terminal Facilities/FAADDS will replace the Systems Atlanta Information Display System 4 (SAIDS4) at existing sites and at new locations currently without a display system. It will also replace Automated Weather Observing System Controller Equipment (ACE-IDS) when that system reaches the end of its useful life. Approximately, 1900 SAIDS4 and 700 ACE-IDS workstations installed at over 400 locations will be replaced. Another 400 workstations will be installed at approximately 100 additional locations without a display system. FAADS will help establish and maintain air traffic controller situational awareness by providing timely and accurate information, such as the position of ground and airborne traffic, airport conditions, and weather information.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

FAADDS will promote safety by providing basic information such as weather, visibility, and airport operations data. The system will provide aviation hazard warnings, including hazardous weather and temporary operating restrictions, and will support strategic and tactical planning to support safe takeoff, landing and taxi operations in the Terminal area. The system will provide rapid access to emergency information, procedures, and communications to the numerous organizations involved in emergency response activities. FAADDS will improve information security in the tower/TRACON environment by providing a reduced number of electronic interfaces with improved intruder protection. FAADDS will facilitate data sharing with external (non-FAA) users. This shared situational awareness will help reduce delays and increase efficiencies to support the economic vitality of our industry partners. FAADDS will increase air traffic controller productivity by integrating functionally related information and control systems. The common system interface, rapid access to information, and automation of monitor and control functions afforded by FAADDS will free controllers to focus on their primary task: separating aircraft.

FY 2003 Program Accomplishments
- **** Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- Award the FAADDS contract to replace the SAIDS4 workstations.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

2A19X, SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)
FY 2005 Request $0.0M

- System Wide Information Management (SWIM), A27.01-00

Program Description

The SWIM program provides the technology for precise information sharing among users including a common air surveillance picture, improved data exchange, and situational awareness. This system is a command and response database that draws information from other systems and makes it available to authorized users. This system provides the potential for reduced separation standards for Air Traffic Management and flight conformance monitoring for homeland security.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three – year FY 2000-2002 baseline.

Relationship to Performance Target

The SWIM program will improve utilization of air space by providing users with information on heavily loaded air traffic control sectors and other factors that would impact flight delays. It is part of the future planning to upgrade automation systems and provide more accurate and timely information for all system users. This program will demonstrate the effectiveness of seamless information sharing between Flight Operations Centers and air traffic controllers using SWIM. The SWIM program will also provide important

business case information, technical analysis and documentation to support the decision process for future NAS capacity improvements.

FY 2003 Program Accomplishments
- Performed Concept Demonstration in the Gulf of Mexico to assess capabilities of SWIM to reduce separation standards.
- Initiated development of the Program Management Plan, Mission Need Statement and Initial Requirements Documents.
- Conducted several Technical Interchange Meetings with Systems Engineering, MIT/Lincoln Labs, MITRE/CASSD, and the industry to discuss design of system architecture.

Program Plan FY 2004 – Performance Output Goals
- Initiated development of the Program Management Plan, Mission Need Statement and Initial Requirements Documents.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

2B01, NEXT GENERATION VHF AIR-TO-GROUND COMMUNICATIONS SYSTEM (NEXCOM)
FY 2005 Request $32.0M

- Next-Generation VHF A/G Communications System (NEXCOM) – Segment 1a, C21.01-01
- Next-Generation VHF A/G Communications System (NEXCOM) – Segment 1b, C21.01-02

Program Description

The NEXCOM program replaces and modernizes the aging and obsolete NAS air-to-ground (A/G) analog radio communications infrastructure. Replacement aims to eliminate existing NAS deficiencies that will impact air traffic system capabilities to effectively meet and manage the projected U.S. air traffic requirements of the future. These deficiencies include FAA very high frequency (VHF) radio frequency spectrum saturation, inadequate A/G radio equipment maintainability and reliability, and a lack of A/G information security and communications control. The replacement system communications technology will include use of VHF Digital Link Mode 3 (VDL-3), which is approved by the International Civil Aviation Organization, for future exchange of A/G voice and data information.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

NEXCOM will reduce the number of unplanned outages by replacing existing communications equipment with modern digital communications A/G equipment. It will also increase capacity by expanding the number of communication channels within the spectrum assigned to the FAA. This provides for quicker and more accurate radio communications between the controller and pilot, which enables controllers to respond more quickly to pilot requests. This capability increases the capacity to meet current and near-term air traffic control radio communication demands.

FY 2003 Program Accomplishments
- Provided NEXCOM Notice of Proposed Rulemaking and submitted for internal agency review.
- Completed NEXCOM system demonstration #1.
- Completed source selection activities for the NEXCOM rapid preliminary development effort.
- Produced 327 NEXCOM multimode digital radios.

Program Plan FY 2004 – Performance Output Goals
- Complete NEXCOM system demonstration #2.
- Conduct Investment Analysis for NEXCOM Segment 1b.

Program Plan FY 2005 – Performance Output Goals
- Install 1,177 of 7,410 Multimode Digital Radios.

Key Events FY 2006-2009 – Performance Output Goals
- Install an additional 5,135 of 7,410 Multimode Digital Radios.

2B02, EN ROUTE AUTOMATION PROGRAM
FY 2005 Request $361.2M

- A, En Route Automation Modernization (eRAM), A01.10-01
- B, En Route Automation Modernization (eRAM), Radar Position Tech Refresh – R Side Upgrades, A01.10-02
- C, En Route Enhancements, A01.07-01
- D, Host/Oceanic Computer System Replacement (HOCSR), A01.03-00
- E1, En Route Communications Gateway (ECG), A01.12-01 and E2, En Route Communications Gateway (ECG) – Technical Refresh, A01.12-02
- F, En Route System Modification, A01.09-01
- G, Initial Academy Training System (IATS), A01.13-01
- X, Flight Data Input/Output (FDIO) Replacement, A01.11-01

A, EN ROUTE AUTOMATION MODERNIZATION (ERAM), A01.10-01

Program Description

ERAM system replaces the Host computer system software/hardware, Direct Access Radar Channel (backup) software/hardware, associated interfaces, communications, and support infrastructure. ERAM will provide existing functionality and new capabilities to support the NAS architecture evolution, Air Traffic Services operational requirements, and information security requirements. The Enhanced Backup Surveillance (EBUS) system, scheduled to begin deployment in FY 2005, is the first phase of ERAM replacing the existing Direct Access Radar Channel (backup) system. EBUS provides safety alerts and Next Generation Weather Radar data not available on the current backup system. The second phase of ERAM is the En Route Information Display System (ERIDS), which has three prototype sites deployed and will begin national deployment in FY 2006. ERIDS provides electronically accessible aeronautical and controller operational information. ERAM release 1, which replaces the Host Computer system and provides improved flight data and surveillance data processing, is scheduled to begin deployment in December 2009.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain en route travel times among the eight major metropolitan areas.

Relationship of Performance Target

EBUS will provide safety alerts for the En Route backup system. ERIDS will reduce controller workload in accessing aeronautical and operational information. ERAM will provide safety alerts when using EBUS, enable flexible routing around congestion, weather, and restrictions; provide real-time status and accurate trajectory data that improves quality of Traffic Flow Management initiatives; and provide departure to arrival route conversion, which will improve predictability. ERAM provides full processing backup capabilities to reduce the impact of outages on efficiency.

FY 2003 Program Accomplishments
- Awarded ERAM solution contract.
- Conducted ERAM Investment Decision.
- Completed ERAM System Requirements Review and System Definition Review.
- Completed EBUS System Requirements Review and Design Review.

Program Plan FY 2004 – Performance Output Goals
- Hand-off EBUS Software to FAA for integration.
- Complete ERAM System Software Specification Review.

Program Plan FY 2005 – Performance Output Goals
- Complete EBUS key site Initial Operational Capability (IOC).
- Conduct ERAM System Software Detail Design Review.

Key Events FY 2006-2009 – Performance Output Goals
- Complete EBUS Last Site IOC.
- Complete ERIDS Key Site IOC.
- Completed ERIDS Last Site IOC.
- Complete ERAM Release 1 Systems Integration.
- Obtain ERAM Release 1 William J. Hughes Technical Center Government Acceptance.
- Obtain ERAM Release 1 In Service Decision.
- Obtain ERAM Key Site Government Acceptance.

B, EN ROUTE AUTOMATION MODERNIZATION (ERAM), RADAR POSITION TECH REFRESH – R SIDE UPGRADES, A01.10-02

Program Description

The ERAM, Radar Position Tech Refresh will modify and replace components of the radar controller (R-side) display in the en route centers. It consists of two separate technology refreshes that are needed to progressively transition the existing displays to the new ERAM infrastructure. The first technology refresh, which will be relatively minor in scope, will be to accommodate new functions introduced by the Enhanced Backup Surveillance (EBUS) system when it replaces the Direct Access Radar Channel (DARC) in 2005. The existing DARC and replacement EBUS systems provide a back up path for radar information to be displayed on controller workstations when the primary system has an outage. The second technology refresh will be comprehensive in that it will completely remove the R-side infrastructure so that the R-side displays can function with the entirely new ERAM local area network infrastructure. It will integrate a new application program interface (software), developed under ERAM, into the new display components. It will also incorporate the new ERAM message set, consistent with international (ICAO) standards. These upgrades are necessary to allow the R-side displays to function with modern components of EBUS and ERAM and to make future enhancements to the en route air traffic control system more efficient.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**

- **FAA Objective 2** – Make air traffic flow over land and sea more efficient.
- **FAA Performance Target** – Maintain en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The ERAM radar position technology refresh increases system efficiency at all the en route centers through the use of a modern, open and supportable en route automation system that more readily accepts enhancements and meets the long term requirement for availability and capacity.

FY 2003 Program Accomplishments
- ****Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- Complete ERAM Release 1 Software Development Complete.

Key Events FY 2006-2009 – Performance Output Goals
- Complete technology refresh of R-side displays.

C, EN ROUTE ENHANCEMENTS, A01.07-01

Program Description

The En Route Enhancements program maintains current NAS En Route software systems and supports development, integration, and implementation of upgrades to both Host and Display System Replacement (DSR) software. Upgrades include safety-critical functions and computer-human interface enhancements to support such new initiatives as area navigation, airspace redesign, and International Civil Aviation Organization (ICAO) message formats. These upgrades will enhance capabilities and provide functional improvements for both Air Traffic and Airway Facilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The En Route Enhancements program provides software evolution, as prioritized and approved by Air Traffic (AT) and Airway Facilities (AF). The program improves Host and DSR infrastructure through software releases to AT and AF, which support incremental improvements in their automation tools; this enhances functionality, productivity, and system safety. New capabilities will allow more efficient flight routes and thus increase capacity.

FY 2003 Program Accomplishments
- Supported national Reduced Vertical Separation Minima capability in DSR and Host.
- Supported national equipment-restricted route enhancements.
- Enhanced ICAO-compliant flight plan processing to allow exchange of ICAO-compliant flight plan messages with Canada and Mexico.
- Provided command support enhancements.
- Enhanced target-filtering capability.

- Provided upgrades to computer readout device.
- Enhanced surveillance range settings and enhanced range readout.
- Corrected DSR Problem Trouble Reports.
- Sourced Host national and local patches, reducing the maintenance burden.
- Implemented improvements to facilitate system operations and maintenance.
- Supported Air Traffic DSR Evolution Team requirements definition and future release planning.

Program Plan FY 2004 – Performance Output Goals

- Provide enhancements to ICAO data handling, including improvements in command line data manipulation, ICAO data display, and use of ICAO data for flight plan data exchange with Canada and Mexico.
- Allow controllers to initiate start track on aircraft, using the previous air route traffic control center's assigned beacon code.
- Provide for assignment of beacon codes based on geographic separation of aircraft.
- Reduce round-off errors in Host boundary crossing calculations.
- Increase the allowable length of fixes in Host to Automated Radar Terminal System flight plan messages.
- Upgrade common message set functionality for User Request Evaluation Tool.
- Source enhancements to CPDLC Build 1.
- Correct DSR Problem Trouble Reports.
- Source Host national and local patches, as space allows, reducing maintenance burden.

Program Plan FY 2005 – Performance Output Goals

- The requested funding provides for the basic infrastructure to support the annual build; it provides no new functions or capabilities.

Key Events FY 2006-2009 – Performance Output Goals

- Enhancements are provided through software upgrades under closely managed processes for code development, test, and release of new builds. The requested funding level provides for the basic infrastructure to support annual builds; it provides no new functions or capabilities. It assumes that other programs or initiatives requiring changes will provide funding to implement those changes.

D, HOST AND OCEANIC COMPUTER SYSTEM REPLACEMENT (HOCSR), A01.03-00

Program Description

The HOCSR program replaces the main Air Traffic Control computer processor and peripherals. The HOCSR program has four phases, three of which are complete. Phase 1 replaced the main processors for the Host, the Oceanic Display and Planning System, and the Offshore Flight Data Processing System. Phase 2 upgraded NAS operating system software and provided a common monitor for en route and oceanic operations. Phase 3 replaced the Direct Access Storage Device and provided a minimal monitor and control capability. Phase 4 replaces the Keyboard Video Display Terminals and their printers, and high-speed printers. Remaining peripherals (tapes, switches, and communications controllers and equipment) will be sustained until replaced by En Route Automation Modernization.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The HOCSR program reduces outages and delays by replacing aging and obsolete Host Computer System processors and peripherals.

FY 2003 Program Accomplishments
- Completed Phase 3 Operational Readiness Demonstrations at last three sites.
- Completed Phase 4 printer replacement at 23 sites (Domestic En Route, Oceanic, and Academy).
- Began Phase 4 Keyboard Video Display Terminal replacement at 21 sites (Domestic En Route and Academy).
- Purchased parts for the IBM Model 3814 Switch to sustain through 2008.

Program Plan FY 2004 – Performance Output Goals
- Complete Phase 4 Keyboard Video Display Terminal replacement at 21 sites.
- Complete transition at all sites from the obsolete model 3725 Communications Controller to the existing DSR Frame Relay network.

Program Plan FY 2005 – Performance Output Goals
- Negotiate remaining peripheral maintenance contracts through 2008.
- Complete parts purchase for the Terminal Control Unit for sustainment through 2008.

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

E1, EN ROUTE COMMUNICATIONS GATEWAY (ECG) PROGRAM, A01.12-01 AND E2, EN ROUTE COMMUNICATIONS GATEWAY - TECHNICAL REFRESH, A01.12-02

Program Description

The ECG program will replace the current obsolete system. The program increases NAS system capacity and expandability by enabling integration of new surveillance technology, introduction of new interface standards and data formats, and connection to additional remote equipment. The ECG infrastructure will provide the automation system capacity and expandability to support anticipated increases in air traffic and changes in the operational environment. Because ECG is providing the flexible and expandable architecture to introduce new services, systems, and capabilities, it must be deployed before introducing those new services, systems, and capabilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The ECG program will provide greater availability, enable the integration of new surveillance technology, introduce new interface standards and data formats for compatibility with ICAO standards, and enable connection of additional remote equipment (e.g., radars) to enhance air traffic coverage of areas where primary radar coverage does not currently have a backup.

The ECG infrastructure will provide the automation system capacity and extensibility to support anticipated increases in air traffic and changes in the operational environment. ECG will provide flexible and expandable architecture that will support introduction of new services, systems, and capabilities within the NAS. For example, the En Route Automation Modernization program, which is identified in the FAA's

2001 Strategic Plan as a Corporate Project in the area of System Efficiency, will use ECG for inter-facility and surveillance interfaces.

FY 2003 Program Accomplishments
- Achieved William J. Hughes Technical Center Government Acceptance on August 14, 2003.
- Delivered Federal Aviation Administration Aeronautical Center equipment on June 2, 2003.
- Achieved FAA Aeronautical Center Government Acceptance on August 14, 2003.
- Delivered equipment to key site at Seattle Air Route Traffic Control Center on July 7, 2003.

Program Plan FY 2004 – Performance Output Goals
- Achieve Government Acceptance at ECG key site on November 20, 2003.
- Complete Independent Operational, Test and Evaluation at key site (Seattle Air Route Traffic Control Center).
- Complete In-Service Review and obtain In-Service Decision.
- Achieve Operational Readiness Demonstration at Key Site and next 6 of 20 sites.

Program Plan FY 2005 – Performance Output Goals
- Achieve Operational Readiness Demonstration at next 12 of 20 sites.

Key Events FY 2006-2009 – Performance Output Goals
- Achieve Operational Readiness Demonstration at last of 20 sites.
- Begin technology refresh.

F, EN ROUTE SYSTEM MODIFICATION, A01.09-01

Program Description

The En Route System Modification program will replace obsolete en route Display System components, such as system processors; upgrade the controller's displays and the infrastructure that supports those displays; and configure the consoles to accommodate additional processors. Replacing obsolete equipment will ensure reliability and maintainability of the Display System.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

This modification program replaces obsolete components of the En Route Display System to maintain NAS reliability. It also provides upgraded Display System processors that support the User Request Evaluation Tool and En Route Automation Modernization programs. These upgrades support use of direct routes, which will maintain or reduce travel times between major metropolitan areas.

FY 2003 Program Accomplishments
- Deployed Main Display Monitor (MDM) replacement and associated hardware to accommodate Voice Switching and Control System Electronic Module/Position Electronic Module (VEM/PEM) relocation to 7 of 23 sites.
- Continued developing data-position (D-side) processor technology refresh to support User Request Evaluation Tool functionality.
- Initiated engineering and development of radar-position (R-side) processor technical refresh. (R-side effort moved to En Route Automation Modernization in FY 2004.)

Program Plan FY 2004 – Performance Output Goals
- Continue deploying MDM replacement and associated hardware to accommodate VEM/PEM relocation at next 10 of 23 sites.
- Complete development of D-side processor technical refresh.

Program Plan FY 2005 – Performance Output Goals
- Complete deployment of MDM replacement and associated hardware to accommodate VEM/PEM relocation at last 6 of 23 sites.
- Initiate deployment of D-side processor technology refresh at Key Site.

Key Events FY 2006-2009 – Performance Output Goals
- Complete deployment of D-side processor technology refresh at all 22 sites.
- Initiate engineering activities for console modifications to accommodate additional processors to be deployed concurrently with En Route Automation Modernization deployment.

G, INITIAL ACADEMY TRAINING SYSTEM (IATS), A01.13-01

Program Description

The IATS project provides a training platform to prepare a larger number of certified en route air traffic control specialists to meet the anticipated need based on current retirement projections. The IATS will provide a replica of the en route environment to meet the complex NAS air traffic training requirements. The IATS consists of two 10-sector training laboratories and one two-sector development laboratory equipped with a platform running multiple copies of NAS software, Display System Replacement workstations, ghost pilot workstations, master instructor workstations, a local area network, and Voice Switching and Control System training and backup system communication system.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The IATS project supports training new controllers to replace the increasingly dwindling number of controllers due to retirements. Without the IATS, the FAA will be unable to develop the levels of knowledge and expertise within the air traffic controller workforce to support the increased capacity goals.

FY 2003 Program Accomplishments
- Developed system/segment specification, system architecture design document, bill of materials, Interface Control Document, software requirements document, computer human interface specification, software design document, hardware design document, and a master test plan.
- Conducted FAA Academy site survey; developed FAA Academy training system site activation plan.
- Conducted system requirements review/system design, and preliminary design/critical design review.

Program Plan FY 2004 – Performance Output Goals
- Complete design.
- Develop and produce IATS.
- Conduct product integration test and developmental test.
- Install and check out IATS system at the FAA Academy.
- Achieve Government Acceptance.

Program Plan FY 2005 – Performance Output Goals
- Conduct operational test.
- Conduct field familiarization test and declare Initial Operating Capability.
- Conduct Operational Readiness Demonstration.

Key Events FY 2006-2009 – Performance Output Goals
- Begin training new students.
- Continue maintenance of system.
- Perform technology refresh of servers, ghost pilot personal computers, and master instructor workstations.

X, FLIGHT DATA INPUT/OUTPUT (FDIO) REPLACEMENT, A01.11-01

Program Description

The FDIO Replacement program provides standardized flight plan data to air traffic controllers at the Air Route Traffic Control Centers, the Air Traffic Control Towers, and the Terminal Radar Approach Control facilities. Controllers use a terminal input keyboard and a printer output to interface with this system. FDIO is a technology refresh program only and provides equipment refresh/replacement at about 80 sites per year. The Central Control Units in the Air Route Traffic Control Centers must be sustained until the En Route Automation Modernization program replaces their functionality. Air traffic controllers use the flight data information to anticipate when aircraft will arrive in their sector and to judge how busy their sector will be in the future.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The FDIO program replaces obsolete equipment, thereby reducing potential outages and delays.

2B03, WEATHER AND RADAR PROCESSOR (WARP)
FY 2005 Request $4.7M

- Weather and Radar Processor (WARP) – Stage 3 – Sustain Weather Ops, W04.02-00
- Weather and Radar Processor (WARP) – Tech Refresh/Product Upgrades - Global Weather Information System (GWIS), W04.03-00

Program Description

A next generation WARP is designed to collect, process, and disseminate Next Generation Weather Radar (NEXRAD) data and other weather data to Air Route Traffic Control Center (ARTCC) controllers, Air Traffic Control System Command Center (ATCSCC) personnel, traffic management specialists, and ARTCC weather service unit meteorologists. The WARP system is a computer-based interactive, meteorological data processing system that simultaneously and continuously receives, processes, stores, distributes and displays aviation-related weather information and radar products. Each WARP consists of the Weather Server, the Communications Subsystem, the Meteorologist's Workstation, the Briefing Terminals, the ARTCC Monitor and Control Center workstation, and the Weather Information Network Server. The ATCSCC WARP also includes the FAA Bulk Weather Telecommunications Gateway server. The primary WARP functions are: 1) timely and accurate weather displays to air traffic controllers through

controller display systems; 2) support to the Traffic Management Unit and to air traffic control specialists at the ARTCCs and the ATCSCC; and 3) disseminate weather information to other NAS subsystems.

The WARP program provides processing tools to consolidate weather data from several sources into a single, integrated workstation to support air traffic operations. The WARP program reduces weather-related delays, provides timely weather products and improves collaborative decision-making. By providing enhanced, integrated weather information, the WARP furnishes the most timely and accurate weather forecast products to other NAS subsystems.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The WARP contributes to maintaining the average en route travel times among the eight major metropolitan areas by providing NEXRAD data to controllers' consoles and providing processing tools to consolidate weather data from several sources into a single, integrated workstation to support air traffic operations. As a result of the integrated weather information made available through WARP, air traffic controllers have an enhanced awareness of the weather and can better direct aircraft. Additionally, WARP provides weather on the briefing terminals in the Traffic Management Units, whose enhanced weather awareness allows them to redirect flights better.

FY 2003 Program Accomplishments
- Made quality enhancements to National Mosaics.
- Implemented security enhancements in accordance with Security, Certification, and Authorization Package (SCAP).
- Developed operational changes to accommodate NEXRAD hardware and software upgrades.
- Implemented weather information network system at additional ARTCCs and ATCSCCs to provide critical weather data to Free Flight Phase 1 and 2 programs.

Program Plan FY 2004 – Performance Output Goals
- Implement security enhancements in accordance with SCAP.
- Implement changes to hardware and software to accommodate NEXRAD upgrades.
- Field Weather Information Network Systems Generic Interface at key site.
- Award WARP Maintenance and Sustainment Service bridge contract.
- Complete the plan for integrating Corridor Integrated Weather System (CIWS) into WARP.

Program Plan FY 2005 – Performance Output Goals
- Field Optimum Mosaic at Key Site.
- Initiate integration of CIWS into WARP.

Key Events FY 2006-2009 – Performance Output Goals
- Award WARP Service Life Extension Program (SLEP) contract.
- Implement changes to hardware and software to accommodate replacement of FAA Telecommunication Satellite (FAATSAT) with FTI service.
- Integrate CIWS into WARP.

2C01, AIR TRAFFIC OPERATIONS MANAGEMENT SYSTEM (ATOMS)
FY 2005 Request $1.0M

- ATOMS Local Area/Wide Area Network, M29.00-00

Program Description

The ATOMS is a personal computer-based system that is used to transfer information on performance of the air traffic control system from regional facilities to a central system in Washington headquarters. The system consists of a multi-tiered enterprise architecture called the Corporate Air Traffic Management Information System.   The goal of this architecture is to provide the integrated capability, including infrastructure and common toolset, to support collection, storage, and delivery of business and operational information to the Air Traffic Organization.   The key element of the infrastructure is common data architecture, which supports the data gathering and dissemination from legacy systems, interactive Web products and emerging facility systems such as *Cru-X*/Labor Distribution Reporting (LDR). *Cru-X* is an integrated software suite designed to automate common administrative tasks and improve quality of service. *Cru-X* integrates with both operational and administrative systems to create the first national business system for Air Traffic Services. Additionally, *Cru-X* is the official source within Air Traffic Services to capture LDR information. LDR is an application inside *Cru-X* that makes possible improved control over labor costs, easily the FAA's largest expenditure. By tracking labor hours for projects and activities, LDR gives managers better insight into how resources are used.

Custom designed facility level applications employing techniques that require reengineering of administrative and mandated processes are needed to support the FAA's cost accounting system (CAS) and labor distribution reporting initiatives and reduce the increasing levels of administrative workload. Enhanced Web-based, data-gathering systems and improved methods for moving and managing data will complete the distribution system. Accuracy and standardization will improve significantly by virtue of one-time-only data entry, at the source (field facilities), and then efficiently sharing the data through information delivery tools available within the Corporate Air Traffic Toolset Portal. Once data systems are developed and distributed, the appropriate analytical and reporting tools will be provided to assist Air Traffic in facilitating business based decisions for tomorrow's outcomes.

The FAA procured more than 1,000 workstations to support Air Traffic and its sign-in/sign-out activities via Cru-Ops. The information captured will be used to support the LDR and cost accounting requirements.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence**.
- **FAA Objective 1 –** Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better-trained, diverse workforce.
- **FAA Performance Target –** Directly relate 100 percent of all employee performance plans to FAA Strategic Goals and their organization's performance plans.

Relationship to Performance Target

Employee performance plans can be related to operational performance with data obtained from this system. Executive and management performance plans will be based on implementation of performance-based data structures and matrices in support of the emerging Air Traffic Organization.   Executive Management and staff personnel will have an integrated toolset capable of generating near-real-time reporting and analysis of all major Air Traffic business information related to their performance plan.

2C02, NAS MANAGEMENT AUTOMATION PROGRAM (NASMAP)
FY 2005 Request $1.0M

- NAS Management Automation Program (NASMAP), M26.00-00

Program Description

The NASMAP aims to provide common access to NAS decision support information to all lines of business.

This program will implement and deploy the national data management program, National Data Center (NDC) information source and feed, the new Ashburn Data Center, and the Enterprise Application System (EAS) toolset. The NDC provides the architecture that integrates data from FAA legacy systems used to make decisions to manage the NAS. This program will also continue the development of the NDC and the Ashburn Data Center and national deployment of the EAS standard toolset for the entire Air Traffic Services line of business. The NDC is the FAA's corporate data repository that distills, consolidates, and integrates data from legacy systems into the cost performance management system and NAS Integrated Management System.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 1 –** Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better-trained, diverse workforce.
- **FAA Performance Target –** Directly relate 100 percent of all employee performance plans to FAA Strategic Goals and their organization's performance plans.

Relationship to Performance Target

The NASMAP improves organizational excellence by granting access to decision-support information for all FAA lines of business. The program also creates cost avoidance based on the construction and maintenance of 130 data interfaces. This is because database managers would only require a single interface with NASMAP functions to obtain data; systems being developed or modified to share data will not need additional interfaces. The NASMAP strategy enhances management of information systems by providing integrated data and software applications to support all layers of corporate decision-making. These technology systems include evolving information systems like the FAA cost accounting system and labor distribution reporting.

ACTIVITY 3. INCREASE CAPACITY OF THE NAS

3A01, WIDE AREA AUGMENTATION SYSTEM (WAAS) FOR GPS
Program being rebaselined

- Wide Area Augmentation System (WAAS), N12.01-00

Program Description

WAAS is an extremely accurate navigation system developed by the FAA for civil aviation. The WAAS uses the Global Positioning System, a set of government-maintained satellites, to determine a precise navigation position. Although GPS alone is sufficient for some aviation uses, civil aviation requires an additional level of safety. WAAS technology allows user equipment to augment the computation of the GPS-derived position estimate, increasing its integrity, position accuracy, and reliability to support safe flight operations. Thus, aviation users can use the WAAS for terminal arrivals and departures, en route navigation, and non-precision landing approaches.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The WAAS provides pilots lateral and vertical guidance to a runway. According to the Flight Safety Foundation's October 2001 study, "Safety Benefits of the WAAS During Instrument Approaches," the accident rate is 7.7 times higher when flying an approach without vertical guidance versus a vertically guided approach. The FAA currently publishes and updates more than 4,000 instrument approach procedures. Of that total, about 1,000 are precision approach procedures providing positive vertical guidance, but the remaining 2,900 are non-precision, and vertical guidance is not available. According to the Flight Safety Foundation Report, during the period from 1990–1999, there were 4.87 accidents per 1 million precision approaches flown and 37.25 accidents per 1 million non-precision approaches flown. The Flight Safety Foundation's analysis stated, …"141 accidents could be prevented over a 20-year period and over 250 lives saved through the introduction of WAAS." The WAAS provides the pilot immediate data on position and altitude, giving the pilot exact and timely situational awareness. Also, the positive course guidance provided at all altitudes by the WAAS will allow pilots to select and fly low-altitude routes to protect against icing at higher altitudes in inclement weather. The very precise positioning and navigation capability of the WAAS will allow pilots to fly more safely in areas with significant terrain obstacles and areas near restricted airspace. Finally, pilots using WAAS can fly to a lower approach altitude of 250 feet without additional augmentation in the aircraft or infrastructure installed on the ground, which will provide safer access to all airports in most weather conditions.

FY 2003 Program Accomplishments
- Completed Contractor Acceptance and Inspection for Lateral Navigation/Vertical Navigation system on January 24, 2003.
- Completed WAAS Initial Operational Capability commissioning on July 10, 2003.
- Completed Probability of Hazardously Misleading Information analysis documentation on October 31, 2002.
- Awarded contract for Final Geostationary communications satellite on March 4, 2003.
- Conducted Source Selection Official briefing for the Geostationary communications satellite contract on February 27, 2003.

Program Plan FY 2004 – Performance Output Goals
- Award Definitive Geostationary Control and Communications Segment (GCCS) contract by September 2004.
- Award Definitive Full Operational Capability contract by September 2004.
- Conduct Critical Design Review (CDR) on the GCCS ground system by April 2004.
- Conduct CDR on one of the GCCS satellites by July 2004.
- Complete Alaskan reference station installation.
- Complete site surveys in Canada and Mexico for five additional wide area reference stations by September 2004.

Program Plan FY 2005 – Performance Output Goals
- WAAS program is being rebaselined.

Key Events FY 2006-2009 – Performance Output Goals
- WAAS program is being rebaselined.

3A02, VHF OMNI-DIRECTIONAL RANGE (VOR) WITH DISTANCE MEASURING EQUIPMENT (DME)
FY 2005 Request $2.0M

- Very High Frequency Omni-directional Range (VOR) Collocated with Tactical Air Navigation (VORTAC), N06.00-00

Program Description

The VOR Collocated with Tactical Air Navigation System (VORTAC) program replaces, relocates, or converts VORTAC facilities used for aerial navigation. General aviation, commercial carriers, and other groups use this navigation capability for en route navigation and approach operations into airports.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

Replacing, relocating, or converting VOR and VORTAC facilities increases NAS system efficiency. These facilities are experiencing signal deterioration due to various environmental factors, which negatively impacts system efficiency.

FY 2003 Program Accomplishments
- Completed field installation of nine tactical air navigation antenna retrofit kits.
- Performed VOR relocation.

Program Plan FY 2004 – Performance Output Goals
- Complete field installation of 20 tactical air navigation antenna retrofit kits.
- Commission or return to service one VOR relocation.
- Commission or return to service two VOR Doppler conversion systems.

Program Plan FY 2005 – Performance Output Goals
- Continue field installation of tactical air navigation antenna retrofit kits.
- Perform one VOR relocation.

Key Events FY 2006-2009 – Performance Output Goals
- Continue facility relocations, retrofits, conversions, and upgrades as required.

3A03, INSTRUMENT LANDING SYSTEMS (ILS) – ESTABLISH
<mark>FY 2005 Request $5.8M</mark>

- Instrument Landing Systems (ILS), N03.01-00

Program Description

The ILS program provides new, partial, and full Category I/II/III instrument landing systems and associated precision approach equipment to the large and medium hub airports (and their associated reliever airports) with precision approach needs. The ILS and associated equipment permits a pilot on approach to a runway to access precision guidance (horizontal, vertical, and distance) information. This information, in conjunction with visual navigational aids, helps guide the pilot to the runway. These systems are critical to an all-weather aviation system because they allow aircraft to approach and land in low-visibility conditions and during adverse weather conditions.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

Establishing ILS precision approach capability allows visual minimums to be lowered for landings and helps to maximize NAS use. Lowering visual minimums helps to increase airport capacity and the number of aircraft enplanements during low-visibility conditions.

FY 2003 Program Accomplishments
- Delivered ILS systems to 18 sites.
- Commissioned or returned to service 27 full ILS systems.

Program Plan FY 2004 – Performance Output Goals
- Award Category II/III ILS contract.
- Deliver for installation 26 ILS systems.
- Commission or return to service 26 full or partial ILS systems.

Program Plan FY 2005 – Performance Output Goals
- Deliver Category I/II/III ILS systems for installation.
- Install Category I/II/III ILS systems.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to deliver and install ILS systems and associated equipment.

3A04, APPROACH LIGHTING SYSTEM IMPROVEMENT PROGRAM (ALSIP)
FY 2005 Request $5.0M

- Visual Navaids – Approach Lighting System Improvement Program Continuation, N04.03-00

Program Description

The Approach Lighting System Improvement Continuation Program retrofits non-frangible approach lighting systems with lightweight and low-impact resistant structures that collapse or break apart at impact. This reduces damage to aircraft that may strike these structures during departure or landing. This project was initiated as a result of a National Transportation Safety Board recommendation to improve airport safety. The two approach lighting systems replaced under this program are the High Intensity Approach Lighting System with Sequenced Flashing Lights (ALSF-2) and the Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The ALSF-2 provides high intensity visual information on runway alignment, height perception, and horizontal references for aircraft performing Category II and III precision approaches at selected runways. The current ALSF-2 design enables remote maintenance monitoring. The MALSR design provides medium-intensity visual information on runway alignment, height perception, and horizontal references for aircraft performing Category I precision approaches at selected runways.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

The Approach Lighting System Improvement Continuation Program will replace rigid, non-frangible lighting support structures with frangible approach lighting structures. These structures support the approach lights that help pilots see the runway during limited visibility conditions. If aircraft strike non-frangible lighting structures, they are seriously damaged.

FY 2003 Program Accomplishments
- Commissioned or returned to service 18 MALSR systems.
- Commissioned or returned to service five ALSF-2 systems.

Program Plan FY 2004 – Performance Output Goals
- Commission or return to service 16 MALSR systems at various locations.
- Commissioned or return to service six ALSF-2 systems at various locations.

Program Plan FY 2005 – Performance Output Goals
- Commission one MALSR system at one location.
- Commission three ALSF-2 systems at various locations.

Key Events FY 2006-2009 – Performance Output Goals
- Commission approximately 34 MALSR systems at various locations.
- Commission approximately four ALSF-2 systems at various locations.

3A05, RUNWAY VISUAL RANGE
FY 2005 Request $1.4M

- Runway Visual Range – Replacement/Establishment – N08.02-00

Program Description

The Runway Visual Range (RVR) – Replacement/Establishment program replaces aging, maintenance-intensive and difficult-to-support RVR legacy systems. Pilots receive critical meteorological visibility data that is used to decide whether it is safe to take off or land during limited visibility conditions.

The new-generation RVR equipment is mounted on frangible, low-impact-resistant structures that break away if they are hit by aircraft during takeoff or landing. Replacement equipment also reduces maintenance downtime and service time. This project also provides the equipment for new sites, including new runways and existing runways that have had an Instrument Landing System installed.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

The availability of critical meteorological visibility data serves to lower landing minima, which helps to increase airport capacity.

FY 2003 Program Accomplishments
- Delivered for installation 10 RVR systems.
- Commissioned or returned to service 13 RVR systems.

Program Plan FY 2004 – Performance Output Goals
- Award interim single-source RVR contract.
- Award competitive RVR contract.
- Deliver for installation 10 RVR systems.
- Commission or return to service 10 RVR systems.

Program Plan FY 2005 – Performance Output Goals
- Deliver for installation six RVR systems.
- Install four RVR systems.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to install RVR systems to meet demand for visibility information at precision approach equipped runways.

3A06, DISTANCE MEASURING EQUIPMENT (DME)
FY 2005 Request $1.0M

- Distance Measuring Equipment (DME), N09.00-00

Program Description

The DME program replaces obsolete, tube-type DME with modern technology electronics that will improve operations and facility performance. DME provides the distance component of navigation

information that pilots use to determine aircraft position and that air traffic controllers use to route aircraft. In addition, replacement equipment reduces maintenance and repair downtime required for DME systems.

The DME program also involves procuring and installing about 177 DME systems to support the recommendations of the Commercial Aviation Safety Team. These systems will support the reduction of controlled flight into terrain accidents at the most vulnerable locations in the NAS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

Pilots use critical distance DME information aids during their preparation for landing and the availability of critical distance information helps to increase airport capacity.

FY 2003 Program Accomplishments
- Procured (Government Acceptance) 2 Low Power DME systems.
- Delivered four Low Power DME systems for installation.
- Commissioned or returned to service six Low Power DME systems.

Program Plan FY 2004 – Performance Output Goals
- Procure (Government Acceptance) 25 Low Power DME systems.
- Deliver 16 Low Power DME systems for installation.
- Commission or return to service 16 Low Power DME systems.

Program Plan FY 2005 – Performance Output Goals
- Install 27 Low Power DME systems.
- Sustain nine Low Power DME systems.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to procure and install Low Power DME to replace the legacy, tube-type equipment in the NAS.

3A07, VISUAL NAVAIDS – ESTABLISH/EXPAND
FY 2005 Request $3.2M

- Visual Navaids – Visual Navaids for New Qualifiers, N04.01-00

Program Description

The Visual Navigation Aids program provides the new Precision Approach Path Indicator (PAPI) and Runway End Identifier Lights (REIL) to airports. The PAPI and REIL systems provide a visual reference glide slope as a pilot approaches an airport runway. PAPIs and REILs at various airports help pilots quickly identify the runway threshold and make stabilized descents to airports.

This program also requires procuring and installing about 170 PAPI systems to support the recommendations of the Commercial Aviation Safety Team. The systems provide visual vertical glide slope guidance at the highest-risk runways to reduce controlled flight into terrain accidents.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**

- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

Establishing visual approach slope guidance and runway end identification using PAPIs and REILs supports precision approaches, which allows operations in limited visibility conditions.

FY 2003 Program Accomplishments
- Awarded single source REIL contract.
- Delivered 25 PAPI systems for installation.
- Commissioned 20 PAPI systems.
- Procured (i.e., Government Acceptance) 30 PAPI systems.

Program Plan FY 2004 – Performance Output Goals
- Award single-source PAPI contract.
- Procure 20 (i.e., Government Acceptance) PAPI systems.
- Deliver for installation 19 PAPI systems.
- Commission or return to service 30 PAPI systems.
- Procure (i.e., Government Acceptance) 13 REIL systems.
- Deliver for installation 10 REIL systems.

Program Plan FY 2005 – Performance Output Goals
- Award competitive PAPI contract.
- Install 23 PAPI systems.
- Award competitive REIL contract.
- Install 10 REIL systems.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to install PAPI and REIL systems to meet demand for visual approach guidance at required airports.

3A08, NAVIGATION AND LANDING AIDS – SERVICE LIFE EXTENSION (SLEP)
FY 2005 Request $2.0M

- Visual Navaids – Sustain, Replace, Relocate, N04.04-00

Program Description

The Visual Navaids - Sustain, Replace, Relocate program replaces aging and obsolete ground-based navigation and landing aids that maintain approach and landing capabilities at various U.S. airports. Replacing aging, obsolete visual navigation aids, as well as other ground-based navigation and landing aids, maintains en route, approach, and landing capabilities at various airports. Equipment upgraded under this program includes the Approach Lighting System with Sequenced Flashers model-2; Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights; Precision Approach Path Indicators; Runway End Identifier Lights; Very High Frequency Omni-directional Range systems (VOR); Distance Measuring Equipment (DME); and Non-Directional Beacons.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

The upgraded equipment improves system efficiency by reducing maintenance and repair downtime required for the older systems. Equipment outages reduce the approach capability at airports, which, at a minimum, keeps airport capacity the same.

FY 2003 Program Accomplishments
- Performed VOR relocation.
- Installed and tested three Constant Current Regulator Systems.

Program Plan FY 2004 – Performance Output Goals
- Sustain Instrument Landing Systems.
- Install DME systems.
- Sustain Direction Finders.

Program Plan FY 2005 – Performance Output Goals
- Sustain Instrument Landing Systems.
- Sustain Direction Finders.

Key Events FY 2006-2009 – Performance Output Goals
- Continue procuring and installing various visual navigational aids as well as other ground-based navigation and landing aids.

3A09, OCEANIC AUTOMATION PROGRAM (OAP)
FY 2005 Request $50.9M

- Advanced Technologies and Oceanic Procedures (ATOP), A10.03-00

Program Description

The ATOP program will replace oceanic air traffic control systems and procedures and modernize the Oakland, New York, and Anchorage Air Route Traffic Control Centers. ATOP fully integrates flight and radar data processing, detects conflicts between aircraft, provides data-link and surveillance capabilities, and automates today's manual processes. ATOP will provide a fully modernized oceanic air traffic control automation system, installation, testing, training, common procedures and lifecycle system maintenance. The program office will conduct modeling and simulations to forecast benefits and, once ATOP is operational, will gather and document performance data and metrics to measure services for citizens, productivity and efficiency, and user satisfaction.

Without ATOP, the FAA would continue to use the difficult communications and intensively manual processes that limit the flexibility of controllers to safely handle airline requests for more efficient tracks over long oceanic routes. Without the success of this oceanic and offshore project, the FAA lacks the automation, automatic dependent surveillance and conflict resolution capability to reduce aircraft separation from 100 nautical miles (nm) to 30 nm, which would result in capping the oceanic system capacity at the level of operations predicted for 2006. If the integrated, automated oceanic air traffic services are not delivered, as planned, international commitments will not be met.

The FAA will continue planned airspace enhancements and separation reduction initiatives being implemented to enable immediate benefits in oceanic aircraft operations. The FAA, using oceanic performance modeling and simulations to forecast potential benefits will also use metrics to measure the benefits of these enhancements and initiatives. Airlines and U.S. military aircraft are equipping in anticipation of using advanced communications and surveillance capabilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Beginning in FY 2005, increase to 80 percent the numbers of oceanic en route altitude change requests that are granted through the end of FY 2008.

Relationship to Performance Target

The new oceanic automation system sets the stage for reducing aircraft separation from 100 nm to 30 nm, enabling more planes to safely fly preferred routes and altitudes. The ATOP program will provide a modernized oceanic air traffic control automation system, installation, testing, training, common procedures, and lifecycle system maintenance. The ATOP system will collect, manage, and display oceanic air traffic data, including electronic flight-strip data, on the computer displays used by air traffic controllers and integrate such capabilities as flight data processing, radar data processing, automatic dependent surveillance, controller-pilot data link, and conflict probe. Being able to fly preferred altitudes and routes will save fuel and travel time.

FY 2003 Program Accomplishments
- Obtained Government Acceptance of the first ATOP system at the William J. Hughes Technical Center.
- Completed Facility modernization and ATOP System hardware installations at the three oceanic centers: Oakland, New York, and Anchorage.

Program Plan FY 2004 – Performance Output Goals
- Conduct ATOP System Operational Test and Evaluation.
- Complete Oakland (key site) ARTCC procedural system Initial Operational Capability (IOC).

Program Plan FY 2005 – Performance Output Goals
- Complete New York ARTCC procedural system IOC.

Key Events FY 2006-2009 – Performance Output Goals
- Conduct procedural system Independent Operational Test and Evaluation (IOT&E).
- Complete Anchorage ARTCC radar/procedural system IOC.
- Conduct radar system IOT&E.

3A10, VOICE SWITCHING AND CONTROL SYSTEM (VSCS)
FY 2005 Request $24.1M

- Voice Switching and Control System (VSCS) – VSCS Control System Upgrade, C01.01-01
- Voice Switching and Control System (VSCS) – Tech Refresh, C01.02-01

Program Description

VSCS Control System Upgrade and Tech Refresh are ongoing programs to replace and upgrade the obsolete, non-supportable VSCS hardware and software in all 21 Air Route Traffic Control Centers. These upgrades will ensure that the air-to-ground and ground-to-ground communications capabilities are reliable and available for separating aircraft, coordinating flight plans, and transferring information between air traffic control facilities in the en route environment. To date, this program has replaced nine of twenty-one control systems and procured equipment to replace the Contractor Traffic Simulation Unit test bed located at the FAA William J. Hughes Technical Center, which is used to perform system-loading requirements for all formal baseline verifications of VSCS functions. Future technical refresh activities will ensure that the VSCS continues to provide reliable voice communications to support both current and future en route operations.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The VSCS project supports the greater capacity goal by improving the system reliability of en route voice communications for both current and future operations by replacing and upgrading the obsolete, non-supportable VSCS hardware and software.

FY 2003 Program Accomplishments
- Delivered 9 of 21 VSCS Control System Upgrades to replace obsolete Tandem systems.
- Procured equipment to replace the Contractor Traffic Simulation Unit (CTSU) test bed and completed 40 percent of the software design.
- Initiate development of VSCS Workstation Upgrades.
- Initiated mission analysis for future en route voice switch program.

Program Plan FY 2004 – Performance Output Goals
- Deliver remaining 12 of 21 VSCS Control System Upgrades.
- Complete full system and software design for CTSU replacement.
- Award contract for Video Display Monitor Replacement.
- Continue development and testing of VSCS Workstation Upgrades.
- Complete mission analysis and initiate investment analysis efforts for future en route voice switch program.

Program Plan FY 2005 – Performance Output Goals
- Complete implementation of new CTSU.
- Continue developing and testing Workstation Upgrades.
- Initiate power-supply refurbishment at all 21 Air Route Traffic Control Centers.
- Initiate development and testing of Video Display Monitor Replacement.
- Complete investment analysis on en route voice switch program and receive Joint Resources Council 2 decision to implement.

Key Events FY 2006-2009 – Performance Output Goals
- Complete development and testing of Video Display Monitor Replacement and initiate implementation.
- Initiate and complete Workstation Upgrade implementation.
- Complete power supply refurbishment at all 21 Air Route Traffic Control Centers.
- Initiate procurement activities for new en route switch program per Joint Resources Council recommendation.

3A11, INSTRUMENT APPROACH PROCEDURES AUTOMATION (IAPA)
FY 2005 Request $3.1M

- Instrument Approach Procedures Automation (IAPA), A14.00-00
- IAPA - National Aeronautical Charting Office (NACO), A14.01-00

Program Description

The IAPA, program requires hardware and software improvements and upgrades for IAPA and the National Aeronautical Charting Office. These improvements and upgrades will increase the NAS capacity by (1) providing real-time instrument flight procedure and aeronautical mapping/charting information to

pilots through air traffic control to avoid such hazardous situations as weather conditions in terminal areas; (2) maintaining runway use in reduced visibility; (3) maintaining optimum runway use; (4) reconfiguring airports efficiently; (5) matching airspace design to demand; (6) accommodating user-preferred routings; (7) meeting demand in terminal non-adverse weather conditions; (8) filling gaps in arrival and departure streams; (9) redesigning terminal airspace and routes; and (10) supporting construction of new runways via:

- **Instrument Procedures Automation System.** This system increases the production rate and accuracy of instrument flight procedures by automating many functions, while reducing labor-intensive maintenance and software programming requirements associated with aging IAPA software.
- **Obstacle Evaluation System**. The system's automated tools will enable rapid and accurate production of up-to-date products.
- **Instrument Flight Procedure Development**. These processes provide FAA access to critical navigational data and digital files that improve and support operations.
- **NACO Automated Distribution System.** This system provides database expansion and systems enhancements that are crucial to timely production, distribution, or mapping and charting of products, and that integrated accounting and inventory management processes that improve efficiency and revenue management.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by 2008.

Relationship to Performance Target

The IAPA program allows the FAA to develop or modify approach procedures more rapidly. Pilots use these printed procedures to help them avoid obstacles near the approach path and to ensure that their aircraft is positioned correctly to land safely once they can see the runway. Being able to create and modify instrument approaches more rapidly increases capacity by allowing the FAA to respond more quickly when new systems are available for precision guidance or changes are made in approach paths to accommodate new flight patterns.

3A12X, VISUAL NAVAIDS – REPLACE VISUAL APPROACH SLOPE INDICATOR (VASI) WITH PRECISION APPROACH PATH INDICATOR (PAPI)
FY 2005 Request $0.0M

- Visual Navaids – Replace Visual Approach Slope Indicator (VASI) with Precision Approach Path Indicator (PAPI), N04.02-00

Program Description

The Replace Visual Approach Slope Indicator (VASI) with Precision Approach Path Indicator (PAPI), program provides visual navigational aids that are integral to the landing capability at designated airports throughout the United States. This program addresses visual glide slope indicators, which provide pilots approach slope angle information while they are in final approach, and offers greater system reliability and performance.

Specifically, this program will replace the aging VASIs with PAPIs; that is, replacement at about 170 systems at International Civil Aviation Organization (ICAO) designated runways and then replacement of about 1,150 systems at non-ICAO runways in the NAS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – International Leadership.**
- **FAA Objective 2 –** Promote seamless operations around the globe in cooperation with bilateral, regional, and multilateral aviation partners.
- **FAA Performance Target –** Ensure that international environmental standards, recommended practices, and guidance material adopted by ICAO are globally and uniformly applied, reflect the best available technology, provide real environmental benefit, and are economically sound.

Relationship to Performance Target

The program will replace aging, obsolete VASIs with the ICAO PAPI system.

FY 2003 Program Accomplishments
- Commissioned or returned to service 26 PAPI systems at various locations.

Program Plan FY 2004 – Performance Output Goals
- ***Not Applicable***

Program Plan FY 2005 – Performance Output Goals
- ***Not Applicable***

Key Events FY 2006-2009 – Performance Output Goals
- Procure 40 Non-CAST PAPI systems.
- Commission or return to service nine PAPI systems at various locations.

3A13X, AIRCRAFT FLEET MODERNIZATION
FY 2005 Request $0.0M

- Flight Standards Inspector Aircraft Replacement, M11.02-00

Program Description

The Flight Standards Inspector Aircraft Replacement project involves replacing nine of the existing aircraft in the Flight Standards fleet that are more than 25 years old with nine aircraft that are consistent with the goals in the Federal Aviation Administration Strategic Plan. Current Flight Standards aircraft that support more than 1,500 Aviation Safety Inspectors are nearing the end of their useful and economic life-cycle. The FAA Strategic Plan includes objectives that require new NAS enhancements such as Required Navigation Performance, Reduced Vertical Separation Minima, Free Flight, and Pilot Controller Data Link. The Flight Standards Fleet was last upgraded in the mid 1990s with the Global Positioning System, Traffic Alert and Collision Avoidance System, and Ground Proximity Warning System. New aircraft must support the FAA's need to implement a more rigorous "System Safety Approach" to oversee operators, government, military, and foreign operations into the United States. These new aircraft would serve multi-missions, providing proficiency, training, familiarization aircraft, and support operations in the NAS, as well as provide a platform to install upcoming future technology. The aircraft are necessary to provide Aviation Safety Inspectors the pilot currency/proficiency and training required in the changing aviation technology environment. Replacement aircraft must be technologically and structurally capable of safely and efficiently accomplishing evaluation, certification, and regulatory activities designed to improve the NAS. In FY 2004, we plan to develop aircraft systems training for an initial group of pilots, award the contract, and carry out the remaining work to meet the required schedule.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline accident rate.

- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008.

Relationship to Performance Target

Upgrading FAA aircraft used for safety-related work increases safety by: (1) keeping FAA safety inspectors current with technology used by commercial operators, which enable them to evaluate performance of crews flying more modern aircraft; and (2) providing inspectors aircraft capable of checking the safety of new aircraft technology.

FY 2003 Program Accomplishments
- **** Not Applicable****

Program Plan FY 2004 – Performance Output Goals
- Solicit proposals for bids on new aircraft.
- Award contract for new aircraft.

Program Plan FY 2005 – Performance Output Goals
- Deliver one aircraft.

Key Events FY 2006-2009 – Performance Output Goals
- Award contract for new aircraft.
- Deliver one aircraft.
- Continue to train key check pilots and instructors.
- Provide field office with standard profiles.

3A14X, LOCAL AREA AUGMENTATION SYSTEM (LAAS) FOR GPS
FY 2005 Request $0.0M

- Local Area Augmentation System (LAAS), N12.02-00

Program Description

The FAA is developing the LAAS to provide future precision navigation approach and landing service in the NAS. The LAAS will augment satellite-based navigation data provided by the Global Positioning System (GPS), as the integrity, accuracy, continuity, and availability of the GPS is insufficient to meet the FAA's requirements for precision landing service. The LAAS will provide Category (CAT) II and III precision landing service at designated airports and will supplement the FAA's Wide Area Augmentation System (WAAS) by providing CAT I service at airports where the coverage or availability provided by the WAAS is inadequate for CAT I service.

The LAAS will increase system safety and landing efficiency in the NAS. The LAAS will provide precise, corrected navigation data to airborne receivers to a minimum distance of 23 nautical miles with an accuracy of less than 1 meter. The LAAS design will enable one LAAS to provide precision approach service to all runway ends at an airport. The LAAS will provide a signal that can be used for Required Navigation Performance (RNP) approaches. Using the LAAS in support of RNP permits greater flexibility and standardizes airspace performance requirements. By adopting RNP and leveraging existing and emerging cockpit capabilities, the FAA, in collaboration with the aviation community will be able to improve airspace and procedures design, leading to increased capacity and improved efficiency.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 1 –** Reduce the commercial airline fatal accident rate.
- **FAA Performance Target –** Reduce the airline fatal accident rate by 80 percent from the 1994-1996 baseline by FY 2007 and maintain this low rate in FY 2008 and beyond.

Relationship to Performance Target

The LAAS maintains runway use during reduced visibility and adverse weather conditions due to its greater navigation precision and accurate, repeatable, and reliable guided procedures. The highly accurate LAAS navigation position exceeds those provided by existing ground-based landing aids and enables aircraft spacing closer to visual standards during periods of adverse weather. The LAAS provides the capability to maintain optimum runway use through curved approaches and multiple simultaneous approaches. Because the LAAS glide path is a virtual glide path, the LAAS can provide new approaches to new runways without infrastructure additions or changes. The LAAS supports redesign of terminal airspace and routes by enabling the most demanding Required Navigation Performance/Area Navigation standards at locations where WAAS coverage is not optimum. The LAAS is designed for fault-tolerant, redundant operation and can provide service to all runway ends at an airport with one system.

FY 2003 Program Accomplishments
- Awarded a contract to Honeywell International to design phase (Phase I) of the CAT I LAAS on April 30, 2003.
- Conducted a Systems Requirements Review with the prime contractor in October 2003.
- Continued developing LAAS complex procedures.

Program Plan FY 2004 – Performance Output Goals
- Continue Phase I and associated research and development efforts.
- Capitol Investment Program is under review.

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

3A15X, REQUIRED NAVIGATION PERFORMANCE
FY 2005 Request $0.0M

- Required Navigation Performance, N14.01-00

Program Description

The FAA's goal in implementing Required Navigation Performance (RNP) is to transition the NAS to a performance-based system. The key feature of RNP is that it specifies the level of avionics capability required for a procedure or airspace, but it does not specify a required technology. This gives the user flexibility and enables maximum benefit for a given level of user participation. More direct routings and reduced delays save fuel and decrease emissions. Using RNP permits greater flexibility and standardizes airspace performance requirements. Operators can realize savings associated with crew training by reducing the number of systems that must be trained. RNP will support the FAA's plan to reduce the number of ground-based navigation aids, thereby reducing system operating and maintenance costs.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 Operational Evolution Program airports by FY 2008.

Relationship to Performance Target

The RNP program will contribute to the FAA's greater capacity goal. By adopting RNP and leveraging existing and emerging cockpit capabilities, the FAA, in collaboration with the aviation community, will be able to improve airspace and procedures design, leading to increased capacity and improved efficiency. In the en route phase of flight, flexible and more direct routes increase airspace capacity and, therefore, reduce need for restrictions and delays. In the terminal airspace, new procedures will allow for optimizing airspace, which will increase arrival and departure rates. RNP approaches will allow for increased arrival throughputs as visibility decreases.

FY 2003 Program Accomplishments
- Published basic RNP terminal instrument procedures criteria December 30, 2002.
- Defined requirements for removing Distance Measuring Equipment restriction on current instrument approach procedures.
- Established the RNP Division in April 2003.
- Developed operational concept for RNP Parallel Approach Transition.
- Completed initial inventory of equipage and analysis of aircraft equipage in the NAS.
- Published FAA's Roadmap for Performance-Based Navigation on July 22, 2003.
- Delivered new software for improved area navigation procedure development (Terminal Area Route Generation, Evaluation, and Training System).

Program Plan FY 2004 – Performance Output Goals
- Develop criteria and guidance materials for RNP Standard Terminal Arrivals (STARs) and Standard Instrument Departures.
- Develop and publish Special Aircrew and Aircraft Authorization Required criteria and operational guidance.
- Develop and publish RNP procedures (Standard Terminal Arrivals (STARs) or Standard Instrument Departures) at one airport.
- Conduct and refine and validate RNP benefits analysis.
- Develop U.S. positions on international harmonization issues.
- Enhance existing analysis tools and develop new tools necessary for criteria development and validation.
- Proceed with activities to remove the Distance Measuring Equipment restriction on approach charts.
- Complete initial operational impact analysis of the mixed equipped aircraft in the NAS.
- Update flight inspection aircraft for RNP.
- Conduct flight trials for Flight Management System Offsets to enable tactical passing and other capacity-enhancing benefits.

Program Plan FY 2005 – Performance Output Goals
- ***Continue activities with Operations Funding***

Key Events FY 2006-2009 – Performance Output Goals
- ***Not Applicable***

3A16X, NON-DIRECTIONAL BEACON FACILITIES – SUSTAIN
FY 2005 Request $0.0M

- Non-Directional Beacon (NDB) Sustain, N10.00-00

Program Description

NDBs are components of the FAA's ground-based navigation system that support en route airways and non-precision approach procedures. These systems must be maintained and upgraded until satellite-based navigation is fully implemented. Most NDBs are obsolete tube-type systems, which are expensive and

difficult to maintain and are at the end of normal life expectancy. This program requires procurement and installation of NDBs to satisfy critical requirements as identified by the regions.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by 2008.

Relationship to Performance Target

The program will replace obsolete, tube-type NDB systems with current technology electronics that will upgrade equipment, which will improve operations and facilities performance. NDB systems help general aviation pilots and other users maintain correct position information and prevent controlled flight into terrain.

FY 2003 Program Accomplishments
- Commissioned or returned six NDB systems to service at various locations.

Program Plan FY 2004 – Performance Output Goals
- ****Not Applicable****

Program Plan FY 2005 – Performance Output Goals
- ****Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not Applicable****

ACTIVITY 4. IMPROVE RELIABILITY OF THE NAS

4A01, GUAM CERAP – RELOCATE
FY 2005 Request $2.3M

- Relocate Guam CERAP, F25.00-00

Program Description

The Guam Center Radar Approach Control (CERAP) program is relocating the Guam CERAP from Andersen Air Force Base to the Guam International Airport in Agana because the facility was severely damaged by super typhoon Paka. Replacing the damaged facility will allow updated equipment to be installed, which improves air traffic control efficiency for international service.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Improve efficient air traffic flow over land and sea.
- **FAA Performance Target –** Beginning in FY 2005, increase to 80 percent the number of oceanic en route altitude change requests that are granted through the end of FY 2008.

Relationship to Performance Target

This project supports the FAA's greater capacity goal by replacing the facility and allowing updated equipment to be installed, which improves air traffic control efficiency for international service.

4A02, TERMINAL VOICE SWITCH REPLACEMENT (TVSR)/ENHANCED TERMINAL VOICE SWITCH (ETVS)
FY 2005 Request $10.2M

- A, Voice Switches – Enhanced Terminal Voice Switches (ETVS), C05.02-00
- B, Command Center Conference Control System (CCS) – Replace Operational Telephone System (OTS), C05.02-02

A, VOICE SWITCHES –
ENHANCED TERMINAL VOICE SWITCHES (ETVS), C05.02-00

Program Description

The ongoing TVSR/ETVS program involves replacing the aging, obsolete voice switches in the Air Traffic Control Towers and Terminal Radar Approach Control facilities. Voice switches enable air traffic controllers to communicate with aircraft as well as other air traffic control facilities. The TVSR program ensures that controllers continue to have reliable voice communications in the terminal environment. The program consists of several multiyear equipment contracts for voice switches, including small-tower voice switches, enhanced terminal voice switches, rapid deployment voice switches model IIA, and voice switch bypass systems. To date, this program has replaced 325 (189 small and136 large) of 421 terminal switches throughout the NAS. The program also provides the contract vehicles for the FAA to procure voice switch equipment for new and modernized terminal facilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.

- **FAA Performance Target** – Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

The TVSR program supports the greater capacity goal by improving system reliability of terminal voice communications by replacing aging electronic switches with modern digital equipment.

FY 2003 Program Accomplishments
- Delivered 18 of 421 terminal voice switch systems to various FAA locations.
- Provided six terminal voice switch systems for new facilities.

Program Plan FY 2004 – Performance Output Goals
- Deliver 13 of 421 terminal voice switch systems to various FAA locations.
- Provide five terminal voice switch systems for new facilities.

Program Plan FY 2005 – Performance Output Goals
- Award new contract for terminal voice switches.
- Deliver three previously procured terminal voice switch systems for new facilities.

Key Events FY 2006-2009 – Performance Output Goals
- Deliver four previously procured terminal voice switch systems for new facilities.
- Complete Independent Operational Test and Evaluation on the new terminal switches.
- Deliver about 60 (15 per year) terminal switches under a new contract to various FAA locations.

B, COMMAND CENTER CONFERENCE CONTROL SYSTEM (CCS) – REPLACE OPERATIONAL TELEPHONE SYSTEM (OTS), C05.02-02

Program Description

This ongoing program involves replacing the existing telephone system at the FAA Air Traffic Control System Command Center (ATCSCC) in Herndon, VA. The existing telephone system is becoming unsupportable and no longer meets the capability requirements to perform ATCSCC command functions. To date, this program has funded sustainment of the existing telephone system and completed source-selection activities to procure the replacement system.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Improve efficient air traffic flow over land and sea.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The Command Center Conference Control System program supports the greater capacity goal by improving traffic flow management by replacing the existing telephone system at the ATCSCC with an enhanced conference control system that resolves current limitations in capacity, functionality, reliability, and availability.

FY 2003 Program Accomplishments
- Awarded contract to procure and install new CCS at the ATCSCC in Herndon, VA.

Program Plan FY 2004 – Performance Output Goals
- Complete installation and testing of CCS to achieve Initial Operational Capability.

Program Plan FY 2005 – Performance Output Goals
- Achieve Full Operational Capability (program complete).

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

4A03, AIRPORT CABLE LOOP SYSTEMS – SUSTAINED SUPPORT
FY 2005 Request $4.6M

- Airport Cable Loop Systems – Sustained Support, F10.00-00

Program Description

This program will replace on-airport, copper-based, signal/control cable lines that have deteriorated. The primary focus will be on projects at airports with high traffic counts and enplanements. The obsolete underground telecommunications cable infrastructure systems are vulnerable to failure and could cause outages. These lines feed airport surveillance radar data to the tower and operational and maintenance information to FAA-staffed facilities. Where cost-effective, the program will install fiber-optic cable in a ring formation to replace the existing copper cable; this will provide redundancy and communications diversity. The airport cable loop program takes advantage of opportunities to save cost by coordinating projects with major construction projects (e.g. tower relocations, and runway projects).

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

The Airport Cable Loop Systems Sustained Support Program will prevent potential failures and outages by replacing obsolete underground cable infrastructure systems. The program improves signaling and communications primarily at large airports with high traffic counts and enplanements, which contributes to airport arrival/departure efficiency.

FY 2003 Program Accomplishments
- Completed fiber-optic cable loop installations at Newark, San Francisco, and Lambert St. Louis International Airports.
- Updated FAA Standard STD-057.
- Funded fiber-optic cable loop engineering/design work for LAS, LGA, IAD, DCA, PHL, PIT, BWI, LAS, and PHX International Airports.
- Developed cable loop program database system.

Program Plan FY 2004 – Performance Output Goals
- Complete fiber-optic system upgrades at Los Angeles and Chicago O'Hare International Airports.
- Begin construction at Phoenix Sky Harbor and Las Vegas McCarran International Airports.
- Complete engineering/design packages for LAS, LGA, IAD, DCA, PHL, PIT, BWI, LAS, and PHX International Airports.
- Fund fiber-optic cable loop engineering/design work for George Bush Intercontinental Airport in support of Terminal Radar Approach Control relocation project.
- Develop standardized parts list.

Program Plan FY 2005 – Performance Output Goals
- Complete construction and system installation at Phoenix Sky Harbor and Las Vegas McCarran International Airports.
- Begin construction at George Bush Intercontinental Airport.
- Complete fiber-optic system upgrade at Denver International Airport.

Key Events FY 2006-2009 – Performance Output Goals
- Begin and complete construction and equipment installation at LGA, IAD, DCA, PHL, PIT, and BWI.

4B01, ARTCC BUILDING IMPROVEMENTS/PLANT IMPROVEMENTS
FY 2005 Request $35.0M

- ARTCC Plant Modernization/Expansion – ARTCC modernization, F06.01-00

Program Description

The Air Route Traffic Control Center (ARTCC) Modernization and Expansion program supports En Route Air Traffic operations and service-level availability through facility lifecycle program management of the 21 ARTCCs, two Center Radar Approach Control (CERAP) facilities, the Honolulu Control Facility, and the Air Traffic Control System Command Center. This program expands and modernizes these facilities to accommodate new air traffic control equipment. It also renovates and upgrades en route centers to prevent outages that would delay air traffic.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Improve efficient air traffic flow over land and sea.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The ARTCC Modernization/Expansion program contributes to the FAA's greater capacity goal by ensuring that buildings that house en route control equipment are modified, as necessary, to accept new equipment. The program also maintains these buildings in good condition to avoid air traffic control outages due to failures in such infrastructure systems as electrical distribution systems. The program maintains the integrity of 21 ARTCCs, the Honolulu Control Facility, and two CERAP facilities, as well as upgrades facilities for the integration and transition of new NAS systems. Modernizing ARTCC, the Honolulu Control Facility, and CERAP building infrastructure – with projects, such as electrical wiring, heating and ventilation systems, and structural components – reduces the chances of outages, which cause air traffic delays.

FY 2003 Program Accomplishments
- Initiated M-1 Control Room designs at three sites.
- Began M-1/AWR construction at three sites.
- Conducted seven Facility Condition Assessments (FCA) and initiated update of national FCA database.
- Initiated nine Fire Alarm Upgrade projects and completed construction on two projects.
- Completed En Route Communications Gateway area modernization.
- Completed FAA Telecommunications Infrastructure modernization at 20 sites.
- Re-scoped ARTCC Sustain approach (3-year Admin Wing Mini-mod project).
- Provided $100,000 per ARTCC for miscellaneous repairs and upgrades.
- Conducted 10 end-state site surveys and completed end-state drawings for 12 sites.
- Funded $400,000 per ARTCC for roof or boiler replacements.

- Transition/Integration Management:
  - ➢ Continued end-state, site-specific drawing revisions.
  - ➢ Supported the smooth transition and integration of the NAS systems into en route facilities.

Program Plan FY 2004 – Performance Output Goals
- Initiate Admin Wing Mini-mod projects at three sites.
- Begin construction on M-1 control room renovation projects at two sites.
- Begin construction on Mod 2 at two sites.
- Provide $100,000 per ARTCC for miscellaneous repairs and upgrades.
- Complete Fire Alarm Upgrade projects.
- Conduct facility condition assessments at seven ARTCCs.
- Update the national FCA database.
- Fund equipment relocation as required.
- Fund M-1 Shutdown (12 sites).
- Design five Admin Wing Mini-mod projects.
- Begin construction on Mod 2 project at two sites.

Program Plan FY 2005 – Performance Output Goals
- Fund construction for three Admin Wing Mini-mod projects.
- Begin construction on one M-1 project (tentative).
- Begin construction on Mod 2 at six sites.
- Provide $100,000 per ARTCC for repairs and upgrades.
- Conduct facility condition assessments at seven ARTCCs.
- Update the national FCA database.
- Fund equipment relocation as required.
- Design five Admin Wing Mini-mod projects.

Key Events FY 2006-2009 – Performance Output Goals
- Fund 11 Admin Wing Mini-mod construction projects.
- Begin construction on Mod 2 project at nine sites.
- Begin construction on M-1 project at five sites.
- Begin construction on M-1 project only at four sites.
- Begin construction on San Juan CERAP (ZSU) Admin Wing Rehab project.
- Provide $100,000 per ARTCC for repairs and upgrades.
- Conduct facility condition assessments at seven ARTCCs per year.
- Update the national FCA database annually.
- Fund equipment relocation as required.

4C01, CRITICAL TELECOMMUNICATIONS SUPPORT
FY 2005 Request $1.3M

- Critical Telecommunications Support, C14.00-01

Program Description

The Critical Telecommunication Support (CTS) program enables the FAA to nationally manage telecommunication network requirements for telecommunications systems at more than 5,000 FAA facilities within the NAS. CTS funds engineering studies, implementation of equipment upgrades, and additional telecommunication lines to accommodate frequencies and improve circuit capacity, capability, and redundancy.

As part of CTS, the NAS Inter-facility Communications Systems interconnects the Nation's air traffic control facilities using owned and leased components. CTS also supports the Communications Diversity

Program, which establishes diverse routes for critical NAS services. Also, operational circuits are installed for air traffic mission support.

In prior years, CTS program funds were used for emergency circuit orders to support operations in the Northwest Mountain region after the 2001 earthquake, to replace a wind-damaged Alaska region radome and antenna. Funds were also used for emergency regional telecommunications requirements.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

The CTS program enhances the FAA's goal of greater capacity by responding to changing air traffic services and improving the NAS telecommunications infrastructure. Telecommunication projects enhance NAS operations by improving reliability, availability, and maintainability with greater economic efficiency. The FAA needs the capability to respond quickly to requirements that have no other source of funding and are vital to NAS greater capacity goals.

4C02, FAA TELECOMMUNICATIONS INFRASTRUCTURE (FTI)
FY 2005 Request $71.2M

- FAA Telecommunications Infrastructure (FTI), C-26.01-00

Program Description

The FTI solution is an integrated approach that will improve telecommunications services within the FAA's NAS and non-NAS infrastructures. FTI will replace costly legacy networks that are a combination of separately managed, leased, and owned systems and services. The FTI program aims to provide the FAA commercial telecommunications services that can meet present and future needs of programs requiring inter-facility telecommunications. The telecommunications service environment will use modern, highly reliable, consolidated, network infrastructure incorporating multi-service and multi-media capabilities at the lowest cost. Additional benefits include more efficient bandwidth utilization; improved information security; and state-of-the-art business processes and technology.

The FTI contract award was on July 15, 2002. The FTI transition has two phases that will take about 5 years to complete. Phase I implements a 27-facility backbone at:
- 21 Air Route Traffic Control Centers (ARTCC),
- FAA William J. Hughes Technical Center (WJHTC),
- FAA Mike Monroney Aeronautical Center,
- DOT Volpe National Transportation Systems Center,
- FAA Air Traffic Control System Command Center, and
- FAA National Operations Control Centers (2).

Phase I deployment of FTI service to two pathfinder ARTCC sites (Kansas City and Fort Worth) are nearly complete, and establishing ARTCC-to-ARTCC connectivity at the remaining centers will follow.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.

- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the current unfunded portion of the Flight Plan.

Relationship to Performance Target

FTI eliminates the need to manage and operate multiple sub-networks. The cost of provisioning, operating, and maintaining FTI telecommunications services will be lower than the telecommunications cost of operating and maintaining legacy systems. The prices for access and transport services are competitive and show economies of scale regarding bandwidth. Technological improvements support bandwidth sharing. Combining the bandwidth needs of multiple end-users will increase efficiency of bandwidth usage and decrease the cost. FTI's Integrated Business System interface provides additional efficiencies for ordering, provisioning, and tracking telecommunications services.

FY 2003 Program Accomplishments
- Installed and checked out Phase I services.
- Completed site surveys for 96 percent of Phase I sites.
- Approved power NAS Change Proposals for En Route Terminal and Flight Service Station facilities.
- Began Kansas City ARTCC site implementation.
- Began Fort Worth ARTCC site implementation.

Program Plan FY 2004 – Performance Output Goals
- Begin Phase I transition ARTCC-to-ARTCC connectivity at 27 centers.
- Achieve Phase I and Phase II In-Service Decision for FTI.
- Initiate Phase II transition (325 sites).
- Complete development of integrated business system interface.
- Complete Security Certification Authorization Process (SCAP) for Phase I.
- Establish two Network Operations Control Centers.
- Complete factory test for Phase I baseline.
- Complete Phase I integration test at WJHTC.
- Complete Phase I Operational Test at WJHTC.
- Complete development of a Network Monitoring and Operations user interface.

Program Plan FY 2005 – Performance Output Goals
- Complete Phase I transition.
- Continue Phase II transition (325 sites).
- Complete SCAP for Phase II.
- Complete factory test for Phase II.
- Complete Phase I integration test at WJHTC.
- Complete Phase II Operational Test at WJHTC.

Key Events FY 2006-2009 – Performance Output Goals
- Complete Phase II transition (about 5,000 sites).

4C03, AIR/GROUND COMMUNICATIONS INFRASTRUCTURE
FY 2005 Request $13.5M

- Communications Facilities Enhancement – Expansion, C06.01.00
- Communications Facilities Enhancement – Air-to-Ground Communications Radio Frequency Interference Elimination, C06.03.00
- Backup Emergency Communications Replacement, C09.00.00
- Communications Facilities Enhancement – Ultra High Frequency Radio Replacement, C06.04.00

Program Description

The Air-to-Ground (A/G) Communications Infrastructure Sustainment program enhances operational efficiency and effectiveness through planned improvements to the A/G communications infrastructure (in all NAS environments, both en route and terminal). The improvements encompass replacing old and increasingly unreliable equipment, associated sites, and facility improvements, including establishing new facilities intended to broaden communications coverage. The Communications Facilities Enhancements (CFE) program provides new radio control facilities and/or modifies existing facilities to enhance the A/G communications between air traffic control and aircraft. The radio frequency interference elimination program provides modern communication and ancillary equipment to improve operational performance at select remote communication facilities and eliminate interference from commercial or other radio frequency emissions. The ultra high frequency (UHF) radio replacement project replaces aging equipment used to communicate with Department of Defense aircraft. The FAA maintains the UHF A/G communications service for air traffic control of military operations in the United States. The Backup Emergency Communications (BUEC) replacement program provides a dedicated channel/sector in place of a priority-based, shared outlet system and replaces a 1970s technology system that is logistically unsupportable.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet arrival demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

This CFE program supports the FAA initiative to provide communications infrastructure to make airspace restructuring feasible. It will reduce the number of outages and enhance communications capacity by replacing aging and increasingly unreliable communications equipment with modern equipment. This program improves and upgrades associated sites and facilities. In addition, it enables additional capacity by providing new communications sites to conform to new air traffic patterns.

FY 2003 Program Accomplishments
- Completed BUEC implementation at two FAA Air Route Traffic Control Centers (ARTCCs).
- Completed source-selection activities for UHF replacement program.

Program Plan FY 2004 – Performance Output Goals
- Complete BUEC implementation at three ARTCCs.
- Deliver UHF Radios to Key Site.
- Provide support to Communications Facilities Enhancement (CFE) critical sites.

Program Plan FY 2005 – Performance Output Goals
- Complete BUEC implementation at seven ARTCCs.
- Install 978 UHF Radios at communications facilities sites.
- Provide support to CFE critical sites.

Key Events FY 2006-2009 – Performance Output Goals
- Install 3,600 UHF Radios.
- Provide support to CFE critical sites.

4C04, VOICE RECORDER REPLACEMENT PROGRAM (VRRP)
FY 2005 Request $5.1M

- Voice Recorder Replacement Program (VRRP), C23.00-00

Program Description

The ongoing VRRP is replacing the aging analog recording systems in all air traffic control facilities throughout the NAS with modern digital recording systems. The FAA uses voice-recording systems to record all voice communications between air traffic controllers and pilots or various ground-based air traffic control facilities. To date, this program has replaced 453 voice recorders at various locations in the NAS. The program also serves as the contract vehicle for the FAA to procure voice recorders for new or modernized facilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Improve efficient air traffic flow over land and sea.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

This VRRP project supports the greater capacity goal by improving system reliability and reducing operational costs by replacing the aging analog recording systems throughout the NAS. It is part of the initiative to provide communications infrastructure to make airspace restructuring possible.

FY 2003 Program Accomplishments
- Delivered 63 of 530 voice-recording systems to FAA locations throughout the NAS.
- Provided eight voice recorders to new terminal facilities.

Program Plan FY 2004 – Performance Output Goals
- Deliver 50 of 530 recording systems to FAA locations throughout the NAS.
- Provide nine voice recorders to new terminal facilities.
- Provide one voice recorder to a new en route facility.

Program Plan FY 2005 – Performance Output Goals
- Initiate new procurement for voice recorders in the NAS.
- Deliver remaining 27 of 530 voice recorders to complete original VRRP mission; future replacement requirements are under review by the sponsor.

Key Events FY 2006-2009 – Performance Output Goals
- Continue replacing aging recorders at a rate of about 75 per year under a new contract.

4C05, NAS INFRASTRUCTURE MANAGEMENT SYSTEM (NIMS)
FY 2005 Request $16.0M

- NAS Infrastructure Management System (NIMS) - Phase 2, M-07.02-00

Program Description

The NIMS supports the FAA's plan for modernizing operations and maintaining the NAS infrastructure. NIMS capabilities facilitate implementation of new business practices by improving information collection and sharing, which ensures continued efficiency and effective NAS operation. NIMS open-system architecture replaces the Maintenance Processor Subsystem to provide monitor and control of legacy NAS

subsystems. NIMS will also monitor and control ongoing NAS acquisitions as well as provide a NAS-wide Resource Manager and Event Management (including Logging) Tool.

NIMS will reduce the time required per maintenance action by both improving equipment maintenance history data and increasing capability for remote monitoring and control. The improved equipment maintenance history not only provides the individual maintenance technician valuable insight for troubleshooting and effective preventative and corrective maintenance, but also provides the technician a more robust basis for making informed lifecycle decisions regarding equipment.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the current unfunded portion of the Flight Plan.

Relationship to Performance Target

NIMS will reduce equipment downtime due to both improved equipment maintenance history and an increased utility remote monitor and control capability.

FY 2003 Program Accomplishments
- Completed high-level design of Event Management Tool.
- Completed consolidation of the General National Airspace System Maintenance Control Center into the Operations Control Center.

Program Plan FY 2004 – Performance Output Goals
- Deploy Event Management Tool to key sites (National Operations Control Center, Midstate Operations Control Center, Great Plains System Maintenance Office (SMO) and the nine Service Centers in the Great Plains SMO line-of-reporting).
- Complete technology refresh of Maintenance Data Terminals currently operating on SIN 95 operating system with known inherent security vulnerabilities.

Program Plan FY 2005 – Performance Output Goals
- Complete NAS-wide deployment of Event Management Tool to all of the 8,000 personnel in the field specialist workforce.

Key Events FY 2006-2009 – Performance Output Goals
- Connect to 16 NAS legacy systems totaling 3,047 distinct pieces of equipment and sites.
- Connect to new NAS systems per their waterfall schedules.

4C06, FLIGHT SERVICE STATION (FSS) MODERNIZATION
FY 2005 Request $1.3M

- Flight Service Facilities – AFSS Facilities Sustainment, F05.03-00

Program Description

The Automation Flight Service Station (AFSS)/FSS Modernization program improves and modernizes flight service facilities to ensure timely and efficient service, as well as a safe working environment for flight service specialists, technicians, and other personnel. Projects funded include, but are not limited to:

- Ceilings, floors, and walls
- Doors
- Electrical and power systems
- Fire alarm and detection systems
- Heating, ventilation, and air-conditioning (HVAC) systems
- Lightning Protection
- Grounding, bonding, and shielding
- Parking lots
- Fencing
- Plumbing
- Roofs

Future plans for FY05 and beyond for this project will be funding renovations of Flight Service Stations only in Alaska.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The AFSS/FSS Modernization program contributes to the FAA's increased safety goal by upgrading and modernizing AFSS/FSS infrastructure, which includes, but is not limited to, Uninterruptible Power Systems (UPS), HVAC systems, roofs, structural improvements, and fire/life/safety, etc. These upgrades ensure continued safety for flight service personnel as well as reliable and efficient service. The flight service stations accept flight plans and provide weather briefings for pilots. These two services are key safety efforts that have a significant role in preventing general aviation accidents.

FY 2003 Program Accomplishments
- Completed UPS installations at four sites.
- Completed HVAC upgrades at seven sites.
- Completed roof replacements at two sites.
- Performed minor infrastructure improvements at 43 sites, including lighting upgrades, carpet replacements and Americans with Disabilities Act (ADA) improvements.
- Procured power-conditioning systems for the AFSS to alleviate power problems, accommodate any new load requirements from future systems, and ensure reliable service.

Program Plan FY 2004 – Performance Output Goals
- Complete UPS installations at five sites.
- Complete HVAC upgrades at four sites.
- Complete roof replacements at three sites.
- Perform minor improvements at 20 sites, including carpet replacements, lighting upgrades, and ADA improvements.
- Procure power-conditioning systems for the AFSS to alleviate power problems, accommodate any new load requirements from future systems, and ensure reliable service.

Program Plan FY 2005 – Performance Output Goals
- Complete facility rehabilitation at one Alaska FSS.

Key Events FY 2006-2009 – Performance Output Goals
- Complete UPS installations at Alaska sites.

- Complete HVAC upgrades at Alaska sites.
- Complete roof replacements at Alaska sites.
- Perform minor improvements at Alaska sites, including carpet replacements, lighting upgrades, and ADA improvements.
- Procure power-conditioning systems for the AFSS to alleviate power problems, accommodate any new load requirements from future systems, and ensure reliable service.

4C07, FSAS OPERATIONAL AND SUPPORTABILITY IMPLEMENTATION SYSTEM (OASIS)
FY 2005 Request $10.2M

- Operational and Supportability Implementation System (OASIS) for Flight Service Automation System (FSAS), A07.00-00

Program Description

The OASIS replaces the existing Flight Service Station Automation system (FSAS). It enables flight service specialists to provide weather and flight information more efficiently to general aviation pilots. The existing FSAS equipment is 1970s technology and is difficult to maintain and support. OASIS will provide software based on modified commercial-off-the shelf (COTS) products/non-development items and leased COTS hardware service that replaces all FSAS hardware and software. This will enhance the current FSAS operational capabilities and incorporate the Integrated Graphic Weather Display System. New ergonomic equipment consoles will also be installed.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The FSAS OASIS program contributes to the FAA safety goal by enabling flight service specialists to provide improved weather and flight planning information to pilots by using enhanced functional capabilities, integrated graphic weather displays, and direct user access.

FY 2003 Program Accomplishments
- Installed OASIS systems at 11 new AFSS, for a total of 13 AFSSs and three support sites.
- Completed software upgrades to increase efficiency and functionality for configuration at Traffic Management Units hub, and lab facilities.

Program Plan FY 2004 – Performance Output Goals
- Install OASIS systems at five new AFSSs, for a total of 18 AFSSs.
- Install new replacement consoles at up to eight AFSSs.

Program Plan FY 2005 – Performance Output Goals
- Sustain OASIS lease service at 26 AFSSs.

Key Events FY 2006-2009 – Performance Output Goals
- Procure and install remaining OASIS systems.
- Procure and install remaining new replacement consoles.

4C08, WEATHER MESSAGE SWITCHING CENTER REPLACEMENT (WMSCR)
FY 2005 Request $1.0M

- WMSCR Transition, C03.01-00

Program Description

The WMSCR equipment is becoming obsolete and cannot provide weather products beyond 2005 to the NAS. This technology from the mid-1980s is beyond lifecycle support. Spare parts are virtually exhausted, and there are no substitutable parts beyond the two spare units held in inventory. FAA regulations require pilots to obtain current and forecast destination weather before departure. A WMSCR failure will result in nationwide air carrier delays. The upgrade will ensure WMSCR system availability and maintainability through 2010 and will also provide a 200 percent increase in system capacity.

The WMSCR transition program will upgrade processors, output devices, display screens, and backup systems. Software will also be upgraded to commercially supportable versions. This will allow pilots quick and accurate access to weather data and Notices to Airmen (NOTAMS), which they require. A contract was awarded in July of FY 2002 for four new systems. Three systems will be installed in FY 2004, and the final installation will be in FY 2005.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The WMSCR upgrade delivers weather products and services to the NAS. These services include weather product retrieval, processing, and distribution. Also included is NOTAM retrieval and distribution. These services are critical to safe operation of the NAS.

4C09, ELECTRICAL POWER SYSTEMS – SUSTAIN/SUPPORT
FY 2005 Request $45.0M

- Power Systems Sustained Support, F11.00-00

Program Description

The continuous Power Systems Sustained Support program sustains and replaces the existing power system structure to improve overall electrical power quality, reliability, and availability. The program fully supports NAS operational requirements. The program achieves improvements through integrated efforts involving requirements definition, new technology evaluation, cost-benefit analyses, system design, acquisition, transition/integration, and sustainment activities. Particular focus is on power system designs that support cost-effective lifecycle maintainability. Major program elements include: replacement of obsolete engine generators, replacement of power-conditioning systems, replacement of deteriorated batteries associated with existing emergency power and power-conditioning systems, replacement of underground power cable, and replacement and upgrades to lightning protection and grounding. Reliability and availability of the power system infrastructure are not keeping pace with the accelerating demand for crucial NAS services and deployment of power-sensitive, new technology-based equipment. Of about 3,000 engine generators, more than 80 percent exceed their 20-year estimated service life. Also, 285 of 587 power-conditioning systems exceed their estimated service life of 10 years. Modern air traffic control systems, such as the Standard Terminal Automation Replacement System and other systems identified in the Operational Evolution Plan (OEP), require more stringent lightning protection and grounding.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

The Power Systems Sustained Support program contributes to the FAA greater capacity goal of improving efficient air traffic flow over land and sea by significantly improving standby power systems and reducing NAS equipment outage delays (en route and terminal) due to primary power outages. This program will also enhance training of power-system maintenance personnel, improve efficiency, and increase the safety of FAA employees working on power projects.

FY 2003 Program Accomplishments
- Sustained existing NAS power systems at about 100 facilities by replacing engine generators; replacing power cable; installing a direct current bus system; replacing batteries; and upgrading lightning protection, grounding, bonding, and shielding.

Program Plan FY 2004 – Performance Output Goals
- Develop a scalable and national standard NAS power system design.
- Complete battery replacement at three Large Terminal Radar Approach Control facilities.
- Complete Uninterrupted Power Supply replacement at three OEP sites.
- Sustain existing NAS power systems at about 100 facilities by replacing engine generators; replacing power cable; installing a direct current bus system; replacing batteries; and upgrading lightning protection, grounding, bonding, and shielding.

Program Plan FY 2005 – Performance Output Goals
- Complete Training/Operational Support Facility at Oklahoma City, OK.
- Sustain existing NAS power systems at about 100 facilities by replacing engine generators; replacing power cable; installing a direct current bus system; replacing batteries; and upgrading lightning protection, grounding, bonding, and shielding.

Key Events FY 2006-2009 – Performance Output Goals
- Sustain existing NAS power systems at about 400 facilities by replacing engine generators; replacing power cable; installing a direct current bus system; replacing batteries; and upgrading lightning protection, grounding, bonding, and shielding.

4C10, NATIONAL AIRSPACE SYSTEM RECOVERY COMMUNICATIONS (RCOM)
FY 2005 Request $10.0M

- Command and Control Communications (C3), C18.00-00

Program Description

The RCOM program provides the FAA the command and control communications capability to directly manage and operate the NAS during regional or local emergencies when normal common-carrier communications are interrupted. The NAS Command Control Communications (C3) program provides and enhances a variety of fixed-position, portable, and transportable C3 systems to support emergency operations. Such C3 systems include the automatic digital network/defense messaging system; secure telephone unit third generation/secure telephone equipment; secure facsimile; very high frequency (VHF)/Frequency Modulated (FM), high-frequency single-side band; satellite telephone network; wireless notification system; secure conferencing system; and communications support teams. These systems can

operate independently of commercial communications in emergency situations. C3 also modernizes several "continuity of operations" sites, which ensures FAA executives command and communication during times of crisis.

Relationship of Program to DOT Strategic Goal, Objective, and Performance Target

- **DOT Strategic Goal –** Security.
- **DOT Objective 1 –** Support and implement U.S. security strategies and plans related to transportation.

Relationship to Performance Target

The RCOM program contributes to the FAA's security goal by ensuring that during emergencies the FAA's C3 structure can provide time-critical public and NAS information for the Administrator. The Administrator shares this information with staff, key regional managers, the Secretary of Transportation, and other national-level executive personnel.

FY 2003 Program Accomplishments
- Awarded the VHF/FM contract to Motorola.
- Completed VHF/FM Key Site testing and facility Joint Acceptance Inspection.
- Accomplished VHF/FM In-Service Decision Milestone.
- Developed VHF/FM operational test network.
- Developed VHF/FM Interim Maintenance Notice and Memorandum of Agreement with Professional Airways Systems Specialists.
- Procured VHF/FM equipment for Pacific Desert System Maintenance Office (SMO), Desert to the Sea SMO, Liberty SMO, and Miami SMOs.
- Modernized the Washington Operations Command Complex.
- Tested and implemented wireless notification system equipment at three of more than 30 sites.
- Procured wireless notification system software for 30 sites.
- Implemented 105 of 174 Secure Telephone Equipment (STE) systems.
- Modernized classified facilities as required.
- Implemented two automated message-handling systems.

Program Plan FY 2004 – Performance Output Goals
- Continue engineering and procurement of VHF/FM requirements.
- Implement the following VHF/FM equipment.
  1. 90 repeaters
  2. 14 high-powered base stations
  3. 105 low-powered base stations
  4. 500 mobile units
  5. 175 Antennas
  6. More than 1,000 handheld radios
- Complete development of FAA VHF/FM training curriculum at FAA Aeronautical Center.
- Design and install defense messaging system network.
- Enhance and upgrade the communications support team capabilities.
- Complete implementation of 69 STE systems.
- Complete current modernization plans of the Remote Transmitter Receiver (RTR).

Program Plan FY 2005 – Performance Output Goals
- Procure and implement additional VHF/FM radio equipment.
- Upgrade and enhance satellite telephone network phones.
- Deliver additional secure conferencing systems as required.
- Continue the modernization of classified facilities.

- Implement remaining portable and fixed satellite systems.

Key Events FY 2006-2009 – Performance Output Goals
- Implement Pre-Planned Product Improvement.
- Continue modernization of classified facilities.
- Support communication support teams as required.
- Complete deployment of VHF/FM network.
- Complete procurement of C3 high-frequency systems.

4C11, AERONAUTICAL CENTER INFRASTRUCTURE MODERNIZATION
FY 2005 Request $8.5M

- Aeronautical Center Infrastructure Modernization, F18.00-00

Program Description

The Aeronautical Center Infrastructure Modernization program supports FAA Training, Logistics, Engineering, Research, and Regulation and Certification programs. This program upgrades and/or renovates aging facilities and infrastructure at the Mike Monroney Aeronautical Center (MMAC). The addition of new equipment to the FAA's inventory, coupled with existing NAS support requirements, increases the need to maintain suitable space at the Aeronautical Center to house NAS support functions. In addition to facilities, the related infrastructure – such as storm sewers, water lines, and telecommunications equipment – must be upgraded. The center has 81 buildings (49 owned by the FAA, 32 leased to the FAA by the Oklahoma City Airport Trust, and 31 other structures, with approximately three million square feet under roof.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the Agency expects to fund at least 75 percent of the current unfunded portion of the Flight Plan.

Relationship to Performance Target

The Aeronautical Center Infrastructure Modernization program improves efficiency and effectiveness by updating facilities and support infrastructure to meet the need of mission support organizations located at the Aeronautical Center. Efficiencies in logistics support translate to the right part in the right place to support the NAS. Efficiencies in aviation training infrastructure translate to more effective student training. Efficiencies in aviation research translate to improved understanding of the impact of human factors on aviation personnel and safer skies.

FY 2003 Program Accomplishments
- Submitted to procurement for public bid and award the construction of third phase of the Logistics Support Facility (LSF) structural upgrade.
- Began design for fourth phase of LSF construction; completed industrial engineering study for final units.
- Installed telecommunications equipment, telephone system cabling, network equipment, and NORTEL telephone switch upgrade.
- Designed second through fourth construction phase of Building 13 renovation; submitted project to procurement for public bid and award for construction.

Program Plan FY 2004 – Performance Output Goals
- Complete third phase of the LSF structural upgrade; complete design for final phase and begin fourth phase of construction.
- Provide telecommunications upgrades; install telecommunications equipment.
- Design and award third construction phase of Building 13 renovation.
- Design Aviation Records building renovation.
- Design storm-sewer expansion.

Program Plan FY 2005 – Performance Output Goals
- Complete design and construction of remaining phase of LSF structural upgrade.
- Award construction contract for last phase of Building 13 renovation.
- Accomplish upgrades to telecommunications systems and equipment.
- Begin first phase of storm-sewer construction upgrades.
- Design first floor of Air Navigation Facility #2 renovation.
- Design Flight Inspection building renovation.

Key Events FY 2006-2009 – Performance Output Goals
- Complete Building 13 final phase of renovation construction.
- Complete first floor renovation of Air Navigation Facility #2.
- Complete telecommunications upgrades.
- Complete first phase of storm-sewer expansion.
- Design and complete Multipurpose Building phased renovation.

4C12, FREQUENCY AND SPECTRUM ENGINEERING
FY 2005 Request $3.6M

- NAS Spectrum Engineering Management – NAS Spectrum Engineering Sustained Support, M15.01-00
- NAS Spectrum Engineering Management – Frequency Interference Support/Resolution, M15.02-00.

Program Description

These NAS Spectrum Engineering Management projects provide spectrum engineering and frequency management under the Capital Investment Plan for all FAA projects and facilities using radio frequencies. Prominent projects include advancing civil aviation interests in developing and coordinating the U.S. position for the 2007 World Radio Communication Conference; ensuring protection of aeronautical safety service radio spectrum; conducting frequency and spectrum studies for the International Civil Aviation Organization to protect frequency bands of the Global Navigation Satellite System; and supporting efforts to modernize and develop equipment for more efficient radio frequency engineering capabilities that focus on reducing air traffic delays. Also, this funding maintains the frequency database management program model and provides spectrum management guidance to FAA personnel in national and international forums.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en route travel times among the eight major metropolitan areas.

Relationship to Performance Target

This NAS Spectrum Engineering Management program will improve capacity by providing information on availability of radio frequencies to implement high-altitude airspace redesign to reduce congestion; modify

separation standards and procedures to allow more efficient use of congested airspace; implement real-time use of special use airspace; and redesign oceanic airspace to improve capacity.

4C13X, ALASKAN NAS INTERFACILITY COMMUNICATIONS SYSTEM (ANICS)
FY 2005 Request $0.0M

- Establish Alaskan NAS Interfacility Communications System (ANICS) Satellite Network - Phase II, C17.01-01

Program Description

The Alaskan NAS Interfacility Communications System (ANICS) program replaces leased commercial communications circuits in Alaska with FAA-owned satellite earth stations and leased satellite transponders to provide reliable telecommunications services at locations where the FAA has historically experienced poor telecommunications performance. The increase of telecommunications availability through ANICS implementation corresponds to a direct increase in availability of the NAS and improves air safety in Alaska.

ANICS Phase I facilities provide communications that are available 99.99 percent of the time (no more than 53 minutes of service outage a year) by using two sets of equipment and two satellites in parallel. This level of service is used for communicating with en route aircraft and for transporting radar data showing aircraft location and separation. The service is critical for successful control of airspace and aircraft.

ANICS Phase II facilities provide communications available 99.9 percent of the time (less than 8 hours of outage per facility per year) by using one set of equipment and one satellite. This level of service is used for aircraft pilot-to-Flight Service Station communications, for transmission of weather information, and for remote maintenance monitoring and control of air navigation aids. These services are considered essential for the successful control of airspace and aircraft.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 3 –** Reduce accidents in Alaska.
- **FAA Performance Target –** Reduce accidents in Alaska for general aviation and all Part 135 operations by 20 percent by FY 2008 (from the 2000-2002 average of 130 accidents per year to no more that 104 accidents per year).

Relationship to Performance Target

ANICS supports FAA's strategic goal of increased safety and the objective of reducing accidents rates in Alaska by improving communications availability.

- ANICS Phase I has successfully improved regional en route remote air-ground communications. Communications line outages were reduced from 1,639 hours in 1996 (commercial circuits) to less than 70 hours for all facilities in FY 2002 (ANICS circuits).
- ANICS Phase II facilities will provide 99.9 percent circuit availability, improving availability of essential telecommunications by more than 20 times compared to the existing commercial service.

This dramatic increase in telecommunications availability corresponds to a direct increase in availability of NAS services in Alaska. Air safety is improved by minimizing outages for critical and essential communications between pilots and air traffic controllers. Reliable communications between FAA facilities improve dissemination of air traffic movement and weather information, provide higher-quality radar data, and allow maintenance personnel to monitor and control FAA air navigation equipment. This equipment is spread out across the 570,370 square miles of the largest state in the union, one-fifth the size of the contiguous 48 states.

FY 2003 Program Accomplishments
- Readied two Phase II ANICS facilities for acceptance.
- Began construction of three new Phase II ANICS facilities.
- Resolved Occupational Safety and Health Administration discrepancies on radome climbing system and radome top-cap configuration.
- Reduced the cost of ANICS space segment services by almost 50 percent through competitive contracting; the new contract will be awarded in October 2003.

Program Plan FY 2004 – Performance Output Goals
- Install four new Phase II ANICS facilities.
- Accept and bring seven Phase II ANICS facilities online.
- Correct Joint Acceptance Inspection discrepancies.
- Cut over existing circuits to new ANICS facilities.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

ACTIVITY 5. IMPROVE THE EFFICIENCY OF MISSION SUPPORT

5A01, NAS IMPROVEMENT OF SYSTEM SUPPORT LABORATORY
5A02, WILLIAM J. HUGHES TECHNICAL CENTER FACILITIES
FY 2005 Request $13M

- System Support Laboratory Sustained Support, F14.00-00

Program Description

The William J. Hughes Technical Center (WJHTC) System Support Laboratory provides the environment to implement, test, and integrate new systems into the NAS. Once accepted, the systems become part of the FAA's test bed and are used to support the operational field sites over the lifecycle of the operational systems. This program provides the Facilities & Equipment funding to sustain the Agency's centralized test bed infrastructure. These test beds consist of the En Route System Support Facility; Terminal System Support Facility; Oceanic System Support Facility; Flight Service Station and Weather Systems; Communications Systems; Radar Systems; Navigation and Tracking Systems; Target Generator Facility; Cockpit Simulation Facility; Human Factors Laboratory; and the fleet of specially instrumented aircraft. The test beds are also used for field support to the Operational Sites and for developmental activities associated with Research and Development programs. Maintaining a centralized core of test beds reduces the overall cost to the FAA and increases the efficiency of all phases of program activities. Centralized test beds ensure that the highly capable services of the WJHTC are available when needed by the individual programs.

The Improvement of the System Support Laboratory Program upgrades and enhances the test beds. It also procures unique equipment and systems with the flexibility to interface and switch the various systems into multiple test and field support configurations. Without this flexibility, numerous separate system configurations would need to be created, which would undermine the cost-efficient concept of centralized test beds.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded Flight Plan.

Relationship to Performance Target

This centralized set of systems and equipment forms the FAA's research, development, testing, and field support infrastructure. With this system centralization, there is no need for each Integrated Product Team/Business Unit to establish and maintain the infrastructure to support their individual programs and fielded systems. It also provides the FAA the ability to evaluate concepts and programs that span more than one domain of the NAS (e.g., Operational Evaluation Plan (OEP), Free Flight, Y2K). The overall cost to the FAA is therefore kept to a minimum. A centralized knowledge base can also integrate across program lines and move easily among concept exploration, development, implementation, and field support activities.

FY 2003 Program Accomplishments
- Sustained the facilities that comprise the FAA's System Support Laboratories.
- Provided the test beds needed by FAA programs in meeting their goals.

Program Plan FY 2004 – Performance Output Goals
- Sustain the facilities that comprise the FAA's System Support Laboratories.
- Provide the test beds needed for FAA programs in meeting their goals.

Program Plan FY 2005 – Performance Output Goals
- Sustain the facilities that comprise the FAA's System Support Laboratories.
- Provide the test beds for FAA programs in meeting their goals.

Key Events FY 2006-2009 – Performance Output Goals
- Sustain the facilities that comprise the FAA's System Support Laboratories.
- Provide the test beds for FAA programs in meeting their goals.

5A03, WILLIAM J. HUGHES TECHNICAL CENTER INFRASTRUCTURE SUSTAINMENT
<mark>**FY 2005 Request $4.3M**</mark>

- William J. Hughes Technical Center Building and Plant Support, F16.00-00

Program Description

The FAA William J. Hughes Technical Center owns and operates about 1.58 million square feet of test and evaluation, research and development, and administrative facilities, plus numerous project test sites. The value of the buildings and infrastructure is estimated to be about $186.5 million. The FAA must have an annual program for capital improvements and modernization of these buildings and supporting infrastructure. Example projects include: (1) replacing old heating, ventilation, and air-conditioning systems; (2) upgrading the water distribution systems; and (3) upgrading fire-suppression systems to modern standards. The average annual expenditure to sustain the Technical Center is about 2.6 percent of the Center's value.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded Flight Plan.

Relationship to Performance Target

Infrastructure Sustainment at the William J. Hughes Technical Center will improve operational efficiency and effectiveness by replacing old systems and equipment before serious problems occur. This line item will update facilities and facility support systems to ensure that the laboratories and other facilities operate properly and can handle utility loads of the systems being tested. It will also reduce energy consumption on a per square foot basis. Since the Technical Center plays a key role in developing and testing new equipment that will be used in the NAS, it is critical that the facilities operate efficiently. Technical Center effectiveness in testing and approving equipment reduces delays in implementation and the costs of delays.

FY 2003 Program Accomplishments
- Completed Building 300 interior upgrade design.
- Completed Building 301 exterior glazing replacement design.
- Completed Building 301 heating, ventilation, and air-conditioning (HVAC) replacement design.
- Completed Building 214 (R&D Area) Expansion project.

Program Plan FY 2004 – Performance Output Goals
- Replace primary mechanical equipment in Building 300 (Phase 1).
- Make water distribution system improvements.

- Perform Building 303 fire-suppression upgrades.
- Replace Building 300 primary electrical cables.

Program Plan FY 2005 – Performance Output Goals
- Expand existing energy management system.
- Replace one chiller in the Central Utilities Plant.
- Complete repaving design of Amelia Earhart Blvd.
- Upgrade Building 301 elevators and heating system.
- Upgrade primary electrical distribution system.

Key Events FY 2006-2009 – Performance Output Goals
- Complete Phase 2 of the Building 300 mechanical equipment replacement program.
- Renovate Building 275 and expand Building 277.
- Replace motor control centers in the Technical Building.
- Complete roadway improvements at the Technical Center.
- Remediate the Technical Center's storm-water system.
- Replace electrical transformers at various Technical Center facilities.
- Replace radio communications system.
- Renovate Building 316.

5A04, EN ROUTE COMMUNICATIONS AND CONTROL FACILITIES IMPROVEMENTS
FY 2005 Request $1.0M

- Continued General Support – Regional Projects, M08.05-00

Program Description

The En Route Communications and Control Facilities Improvements program upgrades and/or refurbishes operating positions in airport control towers; upgrades flight service station consoles; installs additional operating positions; replaces broken cab glass; replaces remote air/ground communications systems; renovates navigational aids, such as runway end identifier lights; and upgrades outer marker facilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the number of flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the 3-year FY 2000-2002 baseline.

Relationship to Performance Target

The Regional Projects program contributes to the FAA's greater capacity goal by maintaining NAS equipment to minimize outages that would result in delays and, correspondingly, decreased capacity. It also funds projects such as adding new air traffic control positions, which enables increased capacity.

FY 2003 Program Accomplishments
- Installed Air Traffic Control Beacon Interrogator (ATCBI) at Kona International Airport, Hawaii.
- Purchased and installed a constant voltage transformer at Nogales, CA, to correct power sags, fluctuations, and outages.
- Installed six additional airport traffic control tower (ATCT) operating positions.
- Replaced/improved two heating, ventilation, and air-conditioning (HVAC) systems.
- Refurbished/improved 34 ATCT facilities.

- Relocated/upgraded various localizers, Instrument Landing Systems (ILS), Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), Runway End Identifier Lights (REIL), and Glide Slope facilities.
- Established/improved en route communications operating positions.
- Established Air Route Traffic Control Center (ARTCC) Sectorization.
- Installed two Remote center air/ground (RCAG) antenna towers.
- Installed Occupational Safety and Health Administration (OSHA)-approved safety devices on ATCBI-6 antennas.
- Provided Automatic Terminal Information Service to five locations.
- Provided Terminal Radar improvements for two locations.

Program Plan FY 2004 – Performance Output Goals
- Install additional ATCT operating positions.
- Replace/improve HVAC systems.
- Refurbish/improve 39 ATCT facilities.
- Relocate/upgrade various localizers, ILS, MALSR, REIL, and Glide Slope facilities.
- Establish/improve en route communications operating positions.
- Establish ARTCC Sectorization.
- Install RCAG antenna towers.
- Install OSHA-approved safety devices on ATCBI-6 antennas.
- Provide Automatic Terminal Information Service to several locations.
- Provide Terminal Radar improvements for two locations.

Program Plan FY 2005 – Performance Output Goals
- Install additional ATCT operating positions.
- Replace/improve HVAC systems.
- Refurbish/improve 39 ATCT facilities.
- Relocate/upgrade various localizers, ILS, MALSR, REIL, and Glide Slope facilities.
- Establish/improve en route communications operating positions.
- Establish ARTCC Sectorization.
- Install RCAG antenna towers.
- Install OSHA-approved safety devices on ATCBI-6 antennas.
- Provide Automatic Terminal Information Service to several locations.
- Provide Terminal Radar improvements for two locations.

Key Events FY 2006-2009 – Performance Output Goals
- Install additional ATCT operating positions.
- Replace/improve HVAC systems.
- Refurbish/improve 39 ATCT facilities.
- Relocate/upgrade various localizers, ILS, MALSR, REIL, and Glide Slope facilities.
- Establish/improve en route communications operating positions.
- Establish ARTCC Sectorization.
- Install RCAG antenna towers.
- Install OSHA-approved safety devices on ATCBI-6 antennas.
- Provide Automatic Terminal Information Service to several locations.
- Provide Terminal Radar improvements for two locations.

5A05, DOD/FAA FACILITIES TRANSFER
FY 2005 Request $1.2M

- DoD/FAA ATC Facility Transfer/Modernization – Original Program, F04.01-00

Program Description

The Department of Defense (DoD) Facility Transfer program involves transitioning DoD land and facilities used for air traffic control to FAA, when DoD bases are closed. In some cases, the DoD facilities were functioning as part of the national air traffic control system; in other cases, FAA facilities are located on land that was under DoD control. The FAA must renovate DoD air traffic facilities to make them function properly as an FAA facility, and the FAA must request transfer of land or purchase a new site when bases are closed and the land is given to local communities. Examples of project activities include:

- Engineered, constructed, and certified multiple digital, fiber optics, and/or microwave systems supporting the Los Angeles International Airport, including:
  - Paso Robes, CA, air route surveillance radar (ARSR-4)
  - Vandenburg, CA (ARSR-4)
  - Vandenburg, CA, Next Generation Weather Radar
- Provided support for transfer of air traffic operations at the Fort Sill, OK, Army Radar Approach Control.
- Engineered, constructed, and certified multiple digital and/or fiber-optics systems supporting the Anchorage airport, including:
  - Pt. Lay, AK, automated weather observing system
  - Pt. Lay, AK, non-directional radio beacon
  - Pt. Lay, AK, remote communications outlet

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Achieve an airport arrival efficiency rate of 96 percent at the 35 OEP airports by FY 2008.

Relationship to Performance Target

This program increases the reliability of equipment and ensures that it remains in operation after DoD base closures. Improved operational availability prevents aviation delays.

5A06, TERMINAL COMMUNICATIONS – IMPROVE
FY 2005 Request $1.1M

- Terminal Communications – Improve, M08.05-00

Program Description

The FAA must continually upgrade and improve various terminal communications facilities and equipment. Communications facilities, such as remote transmitter/receiver sites, enable continuous, reliable air-to-ground communication between controllers and pilots. When new air traffic control sectors are established to handle increased traffic and airspace realignment, new communications equipment and additional flight data input/output devices must be installed. In addition, existing communications facilities must be improved, modernized, and relocated to ensure the reliability of communications.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.

- **FAA Performance Target** – Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the 3-year FY 2000-2002 baseline.

Relationship to Performance Target

The Terminal Communications project improves communications links for air traffic control into and out of airports. Preventing problems with communications systems can prevent delays at airports, which affect on-time performance of air carriers.

5A07, NAVIGATION AND LANDING AIDS – IMPROVE
FY 2005 Request $4.4M

- Navigation and Landing Aids – Improve, M08.05-00

Program Description

This program upgrades and replaces navigational and landing aids that are destroyed or that do not function with acceptable reliability. Every year, a few navigation and landing aids are destroyed, such as the Very High Frequency Omnidirectional Range system recently destroyed by the wildfires in Southern California. In addition, airspace redesign and other operational changes can require relocation of a navigation aid or installation of a new one.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.
- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The Navigation and Landing Aids – Improve project provides the funding to continually upgrade and improve existing systems that pilots use for navigation and landing. Ensuring that damaged navigation and landing aids are repaired and that some aids are relocated to accommodate traffic demands prevents delays and improves system capacity.

5A08, FEDERAL AVIATION ADMINISTRATION BUILDINGS AND EQUIPMENT
FY 2005 Request $11.0M

- A, Modernize/Improve FAA Buildings and Equipment Sustain Support, F12.00-00
- B, Seismic Safety Risk Mitigation, F12.01-01

A, MODERNIZE/IMPROVE FAA BUILDINGS AND EQUIPMENT SUSTAIN SUPPORT, F12.00-00

Program Description

This program extends the service life of FAA buildings and equipment, which reduces maintenance costs and energy consumption. Through timely building and equipment maintenance, the FAA will avoid increased operations funding for future repair or replacement of damaged equipment.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.

- **FAA Performance Target** – Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The FAA Buildings and Equipment project contributes to the FAA's greater capacity goal by refurbishing and upgrading existing FAA-owned facilities. The facilities house electronic equipment that must be protected from weather hazards, radio interference, and unauthorized entry. Thus, buildings require routine maintenance and upgrading to prevent equipment failures, which can create air traffic delays.

FY 2003 Program Accomplishments
- Supported the OEP to sustain navigation aids (Navaids) and General NAS facilities at the benchmark airports.
- Completely refurbished five unstaffed facilities.
- Installed 10 engine generators.
- Replaced 10 shelters.

Program Plan FY 2004 – Performance Output Goals
- Support the OEP to sustain Navaids and General NAS facilities at the benchmark airports.
- Completely refurbish at least five unstaffed facilities.
- Install a minimum of 10 engine generators.
- Replace a minimum of 10 shelters.

Program Plan FY 2005 – Performance Output Goals
- Support the OEP to sustain Navaids and General NAS facilities at the benchmark airports.
- Completely refurbish at least five unstaffed facilities.
- Install a minimum of 10 engine generators.
- Replace a minimum of 10 shelters.

Key Events FY 2006-2009 – Performance Output Goals
- Continue to upgrade the most in-need/critical facilities.
- Support the OEP to sustain Navaids and General NAS facilities at the benchmark airports.
- Completely refurbish at least five unstaffed facilities annually.
- Install a minimum of 10 engine generators annually.
- Install a minimum of 10 shelters annually.
- Continue power and heating, ventilation, and air-conditioning upgrades/replacements to facilitate installation of new equipment, as appropriate.
- Reduce the deferred maintenance backlog.

B, SEISMIC SAFETY RISK MITIGATION, F12.01-01

Program Description

The Seismic Safety Risk mitigation program identifies unacceptable seismic safety hazards at FAA- owned and -leased buildings and seeks to have the risks mitigated under Executive Order 12941, DOT Seismic Policy SS-98-01, and seismic safety standards published by the Federal Emergency Management Administration and the National Institute of Standards and Technology. The program also seeks to inform FAA Product Teams, facility managers, building engineers, and real-estate contracting officers of required seismic safety standards and provide subject-matter expertise.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 1 –** Increase airport capacity to meet projected demand.

- **FAA Performance Target –** Sustain operational availability at 99 percent for the reportable facilities that support the 35 OEP airports.

Relationship to Performance Target

The benefits of the Seismic Safety Risk Mitigation program include safeguarding FAA personnel who operate and maintain the Air Traffic Control system and preventing catastrophic failure of the NAS infrastructure.

FY 2003 Program Accomplishments
- Conducted seismic evaluations at four Air Route Traffic Control Centers (ARTCC).
- Briefed six product teams regarding required seismic standards for equipment design and installation.
- Prepared seismic safety resource material for distribution to building occupants and management.
- Participated in resolution of National Air Controllers Association safety inspection issue resolution for three NAS equipment installation programs.
- Submitted seismic safety requirements for inclusion in Acquisition Management System (AMS) /FAA Acquisition System Toolset.
- Maintained required liaison with DOT Seismic Safety Office and responded to requests for technical information regarding FAA seismic safety concerns and issues.

Program Plan FY 2004 – Performance Output Goals
- Conduct evaluations at three ARTCCs and one Combined Center and Radar Approach Control Facility to determine whether unacceptable seismic risks exist at those facilities.
- Brief product teams regarding required seismic standards for equipment design and installation.
- Provide subject-matter expert support to real-estate contracting officers.
- Conduct detailed technical training at each Regional Office, the FAA Academy, William J. Hughes Technical Center, Engineering Center, and FAA Headquarters.
- Incorporate findings of seismic evaluations into facility maintenance and modernization plans wherever possible.
- Maintain required liaison with DOT Seismic Safety Office.
- Distribute seismic safety materials to building occupants and management.

Program Plan FY 2005 – Performance Output Goals
- **** Not Applicable****

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

5A09, AIR NAVIGATIONAL AIDS AND ATC FACILITIES (LOCAL PROJECTS)
FY 2005 Request $2.3M

- Continued General Support - Air Navigation Aids Facilities – Local Projects, M08.04-00

Program Description

The Local Projects program funds minor site-specific adjustments and unplanned emergencies that demand immediate action. Local emergency actions are crucial to restore air traffic control equipment, communications, surveillance, and weather operational facilities that have been damaged or destroyed. In addition, the FAA must modify facilities and equipment to accommodate engineering changes to commissioned air navigation and air traffic control facilities. The local modifications include reconfiguring air traffic control positions in control towers and Air Route Traffic Control Centers; raising or relocating air/ground communications antennas to reduce frequency interference; correcting fire hazards; improving security; and restoring lost service caused by major storms that do not qualify as disasters.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the 3-year FY 2000-2002 baseline.

Relationship to Performance Target

Local projects contribute to the FAA's greater capacity goal by quickly allowing emergency adjustments to the NAS and facilities, which mitigates equipment outages that would result in delays and decreased capacity.

5A10, COMPUTER-AIDED ENGINEERING GRAPHICS (CAEG) MODERNIZATION
FY 2005 Request $0.8M

- Computer-Aided Engineering Graphics (CAEG) Replacement, F-17.00-00

Program Description

The CAEG Modernization program contributes to the success of the FAA's mission by providing reliable computer-aided engineering graphics tools and quality customer service while controlling costs. The tools used to generate, manipulate, store, and retrieve engineering drawings are critical to successfully manage change in a fluid environment. Every program in the FAA's CIP utilizes the CAEG to analyze, manage, and integrate its products into the NAS. The CAEG analytical capabilities and the underlying repository of information provide an indispensable means to conduct spatial analyses. This capability aids in determining the effects of restructuring the NAS architecture to help expedite implementation of the Capital Investment Plan. By overlaying radio frequency coverage patterns, political boundaries, sector boundaries, flight trajectories, etc., the service and political ramifications of the redesign of the NAS Architecture can be played out as part of the planning process within minutes.

The analytical features of the CAEG system make it a key requirement to quickly isolate radio frequency interference sources that impede air traffic services. Analysis of the airspace and radio communications environment permits the FAA to avoid cost. These tools and services serve as a screening tool to isolate the cause of interference reported by the flying community and allow for its mitigation.

The CAEG program drawing management repositories mitigate implementation errors and expedite joint acceptance inspection, which allows the FAA to accept and operate the installed NAS equipment. This is accomplished by providing a solid base of information and engineering drawings that the national program offices and local implementation engineers can use.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Deliver quality customer service while controlling costs.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded Flight Plan.

Relationship to Performance Target

The CAEG program contributes to the FAA organizational excellence goal by providing the engineering tools, data, and technical support to the existing FAA and contractor workforce to plan, implement, and maintain NAS modernization efforts. Various vintages of hardware and software deployed nationally provide this support. The CAEG program continues to sustain existing hardware and provide technical

refresh of hardware and specialized/commercial-off-the-shelf (COTS) software. These products are critical to support the engineering requirements of various FAA program offices involved in the NAS modernization effort, including spectrum management, safety enhancement, and improved air traffic throughput. The CAEG program also provides analytical engineering decision support tools to support facility power management, site selection and planning, radio frequency coverage, and interference analysis as well as the repository of engineering designs.

FY 2003 Program Accomplishments
- Partially implemented the next generation of Microsoft operating system (Windows 2000) and CAEG servers.
- Provided national training to the nine regions for the Radio Coverage Analysis System v11.
- Began implementing the CAEG backup and recovery plan.
- Applied all Windows security patches, resulting in no viruses or security breaches.
- Replaced the Citrix servers at the primary site and began deploying a secondary backup site.
- Deployed the national CAEG system maintenance vehicle to ensure optimum system availability.
- Completed a feasibility study for adoption of COTS spatial analysis tools; used the CAEG system to complement software developed in house.
- Added 5,200 engineering drawing file images and corresponding metadata to the electronic database, which leaves 14,450 drawings to be done.
- Instituted performance metrics to measure use of CAEG specialized applications.
- Introduced terrain data (partial implementation) and publication of CAEG Web Services for distribution throughout the FAA.
- Introduced harmonics data to the online Facility Power Panel System (FPPS) used to manage power.
- Continued to provide access to a suite of CAEG COTS software to support the various engineering disciplines per the Memorandum of Agreement.

Program Plan FY 2004 – Performance Output Goals
- Complete the CAEG Security Certification and Accreditation Process (SCAP) for the development sites and begin the SCAP for the production sites.
- Upgrade the underlying operating system and database management system software to the latest revision (Microsoft XP and Oracle 9i).
- Upgrade 16 low-production plotters with more modern and versatile plotters.
- Replace outdated 200 megahertz NT servers with modern servers for improved performance.
- Further develop the engineering database with 3,000 engineering drawing file images and corresponding metadata for use via the intranet with 11,450 drawings remaining to be done.
- Monitor and enhance CAEG performance metrics.
- Update/Replace existing COTS spatial analysis tools consistent with the recommendation of the feasibility study.
- Upgrade the Facility Power Panel System to include process improvements.
- Provide access to a suite of CAEG COTS software to support the various engineering disciplines per the Memorandum of Agreement.

Program Plan FY 2005 – Performance Output Goals
- Complete the SCAP for CAEG production sites.
- Phase in next generation of CAEG hardware and software systems.
- Provide rapid application of all Windows security patches to prevent breach of CAEG system.
- Sustain national CAEG system maintenance vehicle to ensure optimum system availability.
- Investigate Virtual Public Network solution for the CAEG system and develop study.
- Update engineering library with 3,000 engineering drawing file images and metadata, leaving 8,450 to be done.
- Provide enhancements to the Radio Coverage Analysis System and Airports System as needed through sustainment of the Technical Development and Support contract for specialist application support and national training.

- Provide access to a suite of CAEG COTS software to support the various engineering disciplines per the Memorandum of Agreement.

Key Events FY 2006-2009 – Performance Output Goals
- **** Not Applicable****

5A11, NAS AERONAUTICAL INFORMATION MANAGEMENT ENTERPRISE SYSTEM (NAIMES)
FY 2005 Request $13.7M

- NOTAMS Infrastructure/Distribution, A08.01-01

Program Description

The Notices to Airmen (NOTAM) Infrastructure/Distribution project provides an automated NOTAMS distribution system that is standardized within the NAS, improves timeliness of delivery across the NAS, and is a centralized NOTAMS source for state-of-the-art entry and delivery of critical safety information using a dedicated telecommunications network. NOTAMS inform pilots of changes in conditions at airports and changes to airspace. One important example of the information in NOTAMS is notification that a runway is out of service and cannot be used. This project originated from a June 2001 FAA memorandum identifying weaknesses in the current NOTAMS system. It emphasized the urgent need for a replacement system to help ensure that critical safety information reaches the pilot and other system users. The NOTAMS automated distribution system provides the data to towers/Terminal Radar Approach Control facilities, Automated Flight Service Stations (AFSS), and Air Route Traffic Control Centers using the U. S. NOTAM system database at the Air Traffic Control System Command Center in Herndon, VA. NOTAMS distribution will be provided to more than 600 facilities in the NAS.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Safety.**
- **FAA Objective 2 –** Reduce the number of fatal accidents in general aviation.
- **FAA Performance Target –** By FY 2008, reduce the number of general aviation and nonscheduled Part 135 fatal accidents to no more than 325 (from 385, which represents the average number of fatal accidents for the baseline period of 1996-1998).

Relationship to Performance Target

The NOTAMS automated distribution system modernizes the processing and distribution of critical NOTAMS safety information to FAA ATC facilities and other end users in a timely and standardized format. The automated distribution solution will provide standardization within the NAS, timeliness of delivery across the NAS, a centralized NOTAMS source, and state-of-the-art entry and delivery of critical safety information using a dedicated telecommunications network.

FY 2003 Program Accomplishments
- Conducted Operational Capability Tests at the William J. Hughes Technical Center.
- Installed NOTAMS equipment at 17 Proof of Concept operational sites to test the automated distribution capability.
- Conducted a Proof of Concept assessment at 17 operational sites.

Program Plan FY 2004 – Performance Output Goals
- Conclude Proof of Concept assessment.
- Update NOTAMS Distribution solution in all domains with finding from Proof of Concept assessment.
- Test NOTAMS Distribution solution for national deployment.
- Baseline the program for national deployment.

Program Plan FY 2005 – Performance Output Goals
- Install NOTAMS Distribution systems at up to 26 AFSS.
- Continue developing Terminal and En Route NOTAMS Distribution solutions and install NOTAMS Distribution Systems at key sites.
- Upgrade NOTAMS Distribution Server at the Air Traffic Control System Command Center.

Key Events FY 2006-2009 – Performance Output Goals
- Install NOTAMS Distribution systems at nine additional AFSSs, for a total of 35 AFSSs.
- Provide NOTAMS Distribution solution capability at all (21) En Route facilities.
- Provide NOTAMS Distribution solution capability at 350 terminals of 650 terminal facilities (the remaining facilities to be done after 2009).

5A12, LOGISTICS SUPPORT SYSTEMS AND FACILITIES (LSSF)
FY 2005 Request $6.0M

- Logistics Support Systems & Facilities – Asset Supply Chain Management, M21.03-00

Program Description

To accomplish its mission goals, the FAA must exercise effective control and provide full lifecycle management for all its assets worldwide. Existing asset and inventory systems and their supporting processes were not designed to effectively manage FAA assets in today's business environment or in the future environment shown in the NAS Architecture. The Asset Supply Chain Management (ASCM) program will replace more than 12 existing legacy information systems. They will be replaced by a "national" ASCM system and the Logistics Center Support System (LCSS), which will be two tightly integrated information systems that support the FAA's needs and requirements.

The Enterprise Asset Management enables the FAA to forecast, catalogue, acquire, receive, record, document, construct, use, maintain, reuse, replace, transfer, store, and retire assets while providing asset visibility throughout the asset lifecycle as a whole. Linkages with financial management and cost accounting provide subsidiary records to support financial statements.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded portion of the Flight Plan.

Relationship to Performance Target

The ASCM program will support enhanced cost-control measures and improved decision-making based on reliable data for all FAA assets. Assets include both real property and personal property.

The FAA manages assets worth more than $17 billion that, under the law, must be properly accounted for and managed. Numerous reports and audit findings from the General Accounting Office and the DOT Office of the Inspector General have documented FAA asset management shortfalls. With every accountable asset tagged in the FAA's inventory records, the FAA will significantly reduce costs related to clean audit opinions. Further, the information from the ASCM solution will be used to improve cost and performance management within the FAA. The ASCM program also supports the push within the Federal Government for e-Government. The support includes increased automation of data exchanges and electronic forms processing within the FAA as well as with external government and private enterprises.

FY 2003 Program Accomplishments
- Achieved approval of JRC 2b Final Investment Decision.

- Awarded ASCM contract.
- Began ASCM and LCSS solution development.
- Continued technology refreshment and data cleanup activities of legacy systems; acquired and deployed additional scanners.
- Deployed industry-standard asset identification tags and established FAA policy.
- Used interim systems and handheld scanners to improve triennial personal property inventory.
- Fielded handheld scanners and automated systems to improve Field Spares Inventory.

Program Plan FY 2004 – Performance Output Goals
- Begin identifying, tagging, and improving data about personal property assets.
- Initiate technology refreshment and data cleanup activities to prepare for the transition from legacy systems.
- Complete Union negotiations for fielding personal property handheld scanners.
- Deploy 500 handheld scanners around the agency.
- Achieve JRC 2a Initial Investment Decision.
- Release ASCM competitive proposal.
- Incorporate ASCM EAM structure into FAA Chief Information Officer's Enterprise Architecture.
- Complete LCSS business scenarios and develop methodology for integrating LCSS with Delphi.

Program Plan FY 2005 – Performance Output Goals
- Continue asset identification and inventory of personal property; acquire and deploy additional scanners.
- Complete Initial Operational Capability of ASCM and LCSS solutions.
- Develop implementation and deployment plans.
- Complete transition plan and data migration plans for legacy systems.
- Continue using interim systems and handheld scanners for triennial personal property inventory.

Key Events FY 2006-2009 – Performance Output Goals
- Continue asset identification and inventory of personal property.
- Incorporate real property data into ASCM systems.
- Acquire and deploy additional scanners.
- Implement ASCM Full Operational Capability.
- Implement LCSS Full Operational Capability.

5A13, TEST EQUIPMENT – MAINTENANCE SUPPORT FOR REPLACEMENT
FY 2005 Request $3.0M

- Test Equipment Modernization / Replacement, M17.00-00

Program Description

The Test Equipment Modernization/Replacement project will replace older test equipment. This project purchases new test equipment, which is compatible with the new air traffic and other equipment installed in the NAS. As technology changes, the FAA must upgrade the test equipment in order to provide information needed by maintenance personnel to repair equipment and prevent outages. Also, a percentage of test equipment must be replaced regularly due to wear.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 2 –** Make air traffic flow over land and sea more efficient.
- **FAA Performance Target –** Maintain average en-route travel times among the eight major metropolitan areas.

Relationship to Performance Target

Acquiring new test equipment will prevent prolonged restoration time for both scheduled and unscheduled outages. Further, technicians using the new test equipment obtain accurate results when they test, repair, and certify NAS systems. As test equipment availability increases, NAS system callbacks and recertifications stemming from misalignments due to test equipment failures will be reduced.

FY 2003 Program Accomplishments
- The Test Equipment National Office purchased attenuators, 50 oscilloscopes, and 10 Frequency Counters.

Program Plan FY 2004 – Performance Output Goals
- The National Test Equipment Program Office will work with the Regional Test Equipment Program Managers to develop and fund the National Test Equipment Calibration Contract.
- Formulate a Memorandum of Agreement with the Alaskan region to modernize its entire test equipment platform.
- Initiate efforts by the Test Equipment Program for "selling" calibration services to other Federal Government agencies.
- Continue replacing lines of obsolete test equipment.
- Commence bar coding all test equipment.

Program Plan FY 2005 – Performance Output Goals
- The National Test Equipment Program Office will work with the Regional Test Equipment Program Managers to develop and fund the National Test Equipment Calibration Contract.
- Continue efforts by the Test Equipment Program for "selling" calibration services to other Federal Government agencies.
- Continue replacing lines of obsolete test equipment.
- Continue bar coding all test equipment.

Key Events FY 2006-2009 – Performance Output Goals
- Continue expanding the National Test Equipment Calibration Contract business with other Federal Government agencies.
- Monitor Test Equipment Program database results and commence training field-level employees.
- Complete Alaskan region test equipment platform modernization; review lessons learned.
- Initiate 50-50 program with eight regions.

5A14, FACILITY SECURITY RISK MANAGEMENT
FY 2005 Request $40.0M

- Facility Security Risk Management, F24.00-00

Program Description

The Facility Security Risk Management program seeks to improve and/or enhance physical security at all FAA-staffed facilities under FAA Order 1600.69a. This order includes requirements for physical security protective measures and establishes standards, objectives, procedures, and techniques to protect FAA employees, property, facilities, and contractors, as well as the public. The order clarifies and updates facility security procedures for all FAA facilities and establishes standards for facility security management, control, and safeguarding of assets and facilities.

Relationship of Program to DOT Strategic Goal, Objective, and Performance Target

- **DOT Strategic Goal –** Security.

- **DOT Objective 1** – Support and implement U.S. security strategies and plans related to transportation.

Relationship to Performance Target

The Facility Security Risk Management program provides physical security that conforms to FAA Order 1600.69a for all FAA-staffed facilities. This protects the critical infrastructure of the air traffic control system and prevents disruptions and economic loss that would result from any damage to that system.

FY 2003 Program Accomplishments
- Upgraded and accredited 97 facilities that comply with security guidelines.
- Completed impact assessment and implementation with bargaining units.
- Completed engineering design at 11 en route centers (ARTCCs).
- Started Phase II construction at four ARTCCs.

Program Plan FY 2004 – Performance Output Goals
- Award maintenance contract for security equipment.
- Upgrade and accredit 34 Security Level I and II facilities.
- Begin Phase II construction on seven ARTCCs.
- Complete engineering design on six ARTCCs.

Program Plan FY 2005 – Performance Output Goals
- Upgrade and accredit 32 Security Level I and II facilities.
- Begin Phase II construction on six ARTCCs.

Key Events FY 2006-2009 – Performance Output Goals
- Complete upgrades and accredit remaining staffed facilities.

5A15, INFORMATION SECURITY
FY 2005 Request $8.0M

- NAS Information Security – Information Systems Security, M31.00-00

Program Description

Under Presidential Decision Document 63 (now Executive Order 13231) and the Federal Information Security Management Act, the FAA established an Information Systems Security program in the Office of the Chief Information Officer (AIO) in 1999. AIO gathered corporate FAA cyber funding requirements and distributed funds to Lines of Businesses so that they can conduct their cyber security programs. Since then, the FAA has made great strides in detecting and preventing malicious cyber activity, certifying and authorizing mission-critical systems and conducting cyber training and awareness. The FY 2005–2009 work plan reflects the FAA's Android Cyber Defense Strategy, which is a comprehensive, proactive approach to preventing and removing intrusions in the agency's computer networks. This cyber defense strategy, which strives to emulate the defenses and resiliency of the human body against attack by infection and disease, involves hardening individual system and network elements, isolating those elements to avoid "viral" spread, and backing up those elements to avoid service disruption. There are six reinforcing layers of protection: architecture simplification, element hardening, boundary protection, informed recovery, systemic monitoring, and orderly quarantine.

The project primarily supports the organizational excellence Flight Plan goal; however, much of the project effort will also support FAA goals for greater capacity, and international leadership:

Greater Capacity: Information Systems Security initiatives will result in increasing security of key elements of the NAS infrastructure, fixing vulnerabilities discovered through ongoing certification and authorization efforts, and implementing strategies for recovery of Information Technology (IT) assets

during cyber attacks. These efforts will ensure that the NAS and supporting administrative systems are protected and available on a continuous basis.

International Leadership: Information Systems Security initiatives ensure that the FAA continues to work with cyber security professionals in global aviation partnerships to share ideas and strategies on implementing an information systems security program. Cyber attacks launched in one nation could impact air traffic control operations in other nations. The FAA must continue the global dialogue on techniques to protect aviation IT infrastructure and the data that is shared among countries to provide a safe and efficient global aviation system. The FAA expects to sign additional bilateral agreements to build on the trust to share strategies and information.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 1 –** Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better-trained, diverse workforce.
- **FAA Performance Target –** Directly relate 100 percent of all employee performance plans to FAA strategic goals and their organizations performance plan.

Relationship to Performance Target

The FAA has three objectives in this area: (1) ensure effective preparedness, detection, response, and recovery regarding cyber attacks; (2) integrate information security efforts into all acquisition and operation phases to protect FAA people, buildings, and information; and (3) support the nation's efforts to safeguard homeland security, in particular the aviation infrastructure and industry.

FY 2003 Program Accomplishments
- Operated and enhanced the Computer Security Incident Response Center (CSIRC), which operates at all times.
- Continued updating the detection tools used by cyber security professionals to keep pace with hackers who have become increasingly sophisticated.
- Implemented cost-effective countermeasures based on risk assessment reports and intrusion detection analysis of CSIRC data to protect against cyber vulnerabilities.
- Developed policy, plans, and standards to support an agency's public key infrastructure approach.

Program Plan FY 2004 – Performance Output Goals
- Enhance analytical tools for the CSIRC.
- Complete FAA's commitment to the Office of Management and Budget, the DOT Office of the Inspector General, and the DOT Office of the Chief Information Officer to certify and authorize 90 percent of Facilities and Equipment systems in the IT inventory.
- Continue work on the FAA's information systems security architecture that maps the relationships among systems and applications in providing cyber security.
- Implement secure applications and data within the boundary of key NAS information systems that exchange air traffic control data.
- Improve intrusion detection and analysis capability at the CSIRC, which monitors FAA-wide area networks.
- Develop architecture and engineering efforts for alternative solutions to secure the local area network from external and internal cyber threats.
- Prototype alternatives to assist the FAA in determining which designs meet NAS needs.

Program Plan FY 2005 – Performance Output Goals
- Continue providing specialized cyber training to more than 600 key personnel and awareness training to the entire FAA population.

- Monitor and take all appropriate actions to ensure that NAS information technology systems are uninterrupted in their availability.
- Address vulnerabilities discovered through Security Certification and Authorization Packages completed in prior years.
- Evaluate and acquire enhanced tools used by the CSIRC to address complex and rapidly changing cyber threats and vulnerabilities.

Key Events FY 2006-2009 – Performance Output Goals
- Develop architecture and engineering efforts for alternative solutions to secure new NAS systems.
- Implement adaptive quarantine, which involves instituting procedures and processes to ensure that systems affected by a virus are properly identified and isolated from non-affected systems.
- Complete concept of operation and implement strategy for automated recovery, which involves isolating those systems that have been affected by a virus, instituting the fix, and making sure that affected systems get back online as soon as possible.

5A16, DISTANCE LEARNING
FY 2005 Request $1.5M

- Distance Learning, M10.00-00

Program Description

The Distance Learning program will replace Computer-Based Instruction (CBI) Delivery Platforms at all CBI Learning Centers, increase connectivity, and upgrade network multimedia support and services. The system consists of about 1,400 Learning Centers located at virtually every FAA facility around the world. The FAA is replacing the platforms for two reasons: (1) to support high-performance media and simulations required in many lessons; and (2) because replacement parts for current platforms are becoming obsolete and hard to obtain.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 1 –** Make the organization more effective with stronger leadership, increased commitment of individual workers to fulfill organization-wide goals, and a better prepared, better-trained, diverse workforce.
- **FAA Performance Target –** Increase Employee Attitude scores in the areas of management effectiveness and accountability by at least 5 percent.

Relationship to Performance Target

The major benefit of distance learning is the substantial reduction in student travel and per diem costs associated with resident-based training. In addition, distance learning delivery methods increase training effectiveness, increase training opportunities for all FAA employees, provide flexibility in training schedules through local management control, and decrease the time employees spend away from their worksite. The FAA CBI system must deliver initial operator, transition, and maintenance training for many NAS programs.

5A17, SYSTEM ENGINEERING AND DEVELOPMENT SUPPORT
FY 2005 Request $30.4M

- System Engineering and Development Support, M03.01-00

Program Description

This System Engineering and Development Support project allows the FAA to contract for critical expertise to assist in system engineering and other technical areas used to develop the NAS Architecture

and key modernization projects. System engineering and integration are key to the NAS Architecture's success and to maintaining interface control between current systems and new systems. Engineering support includes disciplines ranging from computer science to electrical, civil, industrial, and environmental engineering. Other disciplines used include air traffic modeling, software programming, and acquisition support. Besides system engineering, the contracts under this program support integrated product teams for automation systems, communications, navigation and landing aids, surveillance, and weather. Also provided is program management support to assist with planning, coordination, and oversight of the activities involved in implementing newly acquired systems, components, and equipment in existing operational NAS facilities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded portion of the Flight Plan.

Relationship to Performance Target

The System Engineering and Development Support project contributes to organizational excellence by providing support for designing and managing NAS modernization. With contractor assistance, the FAA is able to plan, analyze, and manage NAS system improvements more effectively.

5A18, PROGRAM SUPPORT LEASES
FY 2005 Request $42.6M

- Program Support Leases, M08.06-00

Program Description

The Program Support Leases project funds purchase of land and payment of land and space leases that directly support air traffic control facilities. Currently, there are about 3,000 land leases and 600 space leases for operational facilities. In future years, this project will continue to fund the real estate and associated costs to secure the land and space rights required for air traffic control.

The program funds the annual rents for about 3,600 leases and other real estate requirements and includes:
- Costs associated with rental of land and/or space that directly support air traffic control facilities;
- Costs associated with rental and management of land and/or space for service/maintenance centers, deployment/development centers, laboratories, test beds, and other types of facilities that support deployment and operation of technical facilities;
- Lease costs for construction-leaseback projects and other related agreements;
- Funds for conversion of existing leases to fee ownership;
- Payments for condemnation of real property interests;
- Costs for real estate appraisals, market surveys, title reports, and other costs associated with acquisition and management of real property assets; and
- Funds for management and administration costs for establishing and maintaining a database of leases and owned facilities, for developing business tools to enhance real estate acquisition and related activities, and for implementing program efficiency practices.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Greater Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.

- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year FY 2000-2002 baseline.

Relationship to Performance Target

The FAA Program Support Leases project pays for existing leases for land and space that directly support NAS operational facilities for air traffic control, communications, air navigation, weather reporting and landing, and such critical NAS components as towers, approach control and en route systems, radars, landing systems, and navigational aids. The leases are contractual commitments and provide the legal right to locate, operate, and maintain the air traffic control facilities essential for maximum achievement of flight arrival schedules.

5A19, LOGISTICS SUPPORT SERVICES (LSS)
FY 2005 Request $7.9M

- NAS Regional/Center Logistics Support Services, M05.00-00

Program Description

Through the Logistics Support Services program, the FAA uses contractor-supplied services to perform real property acquisition, materiel management, and contracting activities to support Capital Investment Plan projects. Contract services also support accounting activities that require capitalization of facilities and equipment and other property control related activities.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded portion of the Flight Plan.

Relationship to the Performance Target:

The contractors maintain adequate documentation, suitable for independent audit, to provide a basis for the accounting system entries for capital cost of facilities throughout the FAA. Having accurate accounting records and improving cost controls for real property management allow efficiencies in purchasing, leasing, and managing property.

5A20, MIKE MONRONEY AERONAUTICAL CENTER LEASES
FY 2005 Request $14.2M

- Mike Monroney Aeronautical Center – Leases, F19.00-00

Program Description

The FAA and the Oklahoma City Airport Trust have a fixed-term lease agreement through 2012 for about 1,100 acres of land and 32 leased buildings, which comprise the Aeronautical Center. The Center requires large parcels of land as NAS test sites for surveillance radar, communications, weather, and navigation/landing systems. The Center also supports air traffic training, aviation research, engineering support of NAS equipment, logistics supply and repair, and other important aviation regulation and certification functions.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the currently unfunded portion of the Flight Plan.

Relationship to Performance Target

The Aeronautical Center operations result in efficiencies in logistics support, aviation training, second-level engineering support to the NAS, regulation and certification, and aviation research that translate into improved cost control and more effective support services to the FAA.

5A21, TRANSITION ENGINEERING SUPPORT
FY 2005 Request $35.0M

- NAS Implementation Support Contract (NISC), M22.00-00

Program Description

The NAS Implementation Support Contract (NISC) provides support to organizations responsible for deploying, implementing, and integrating many different NAS components and equipment.

Work products that support transition, implementation, and integration activities include: transition plans and timelines, equipment waterfall schedules, engineering site preparation packages, site implementation plans, analysis of environmental impacts, test procedures, site test monitoring, corporate work planning, and configuration management.

NISC supplements the agency's technical workforce in integrating CIP projects into the NAS. The pace of ATC modernization requires technical staffing that is not available in the FAA workforce. A highly skilled, experienced workforce is provided at cost-effective rates that support over 80 CIP projects within the NAS, including STARS, Capstone, En Route Automation, ATCT/TRACON Replacement, and Occupational Safety, Health, and Environmental projects.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the current unfunded portion of the Flight Plan.

Relationship to Performance Target

The FAA's transition, implementation and integration engineering contract provides an experienced workforce at cost effective rates to support regional and headquarters offices with coordination of NAS programs. This project helps ensure a sound and well-functioning NAS and provides safe, efficient, and cost effective air traffic services.

5A22, TECHNICAL SUPPORT SERVICES CONTRACT (TSSC)
FY 2005 Request $43.3M

- Technical Support Services Contract, M02.00-00

Program Description

The TSSC allows timely installation of equipment for NAS modernization. Engineers and technicians, hired under this contract, both oversee prime contractors and perform contract work themselves. They perform site surveys, site preparation, and equipment installation. In their oversight role, they function like consulting engineers, who ensure that a prime contractor delivers, installs, and tests new equipment consistent with contract provisions. Without this supplemental source of engineers, installation of modernized equipment would be delayed.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control Costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the unfunded portion of the Flight Plan.

Relationship to Performance Target

The TSSC contributes to cost control by installing new equipment on a timely basis. This avoids costs of holding and storing equipment and also allows the FAA to receive the benefits of more modern equipment sooner. In a typical year, 3,763 separate projects are completed.

5A23, RESOURCE TRACKING PROGRAM (RTP)
FY 2005 Request $1.5M

- Continued General Support – Resource Tracking Program (RTP), M08.14-00

Program Description

The RTP provides the primary management software system used by the FAA regions, Implementation Centers, the Aeronautical Center, and FAA Headquarters for requirements identification, internal budget preparation, implementation planning, resource estimating, project tracking, performance measuring, and upward reporting on Facilities and Equipment (F&E) projects from beginning to end.

The regional RTP system supports the daily collection of F&E project information, including: project cost estimates, project materiel lists, regional priorities, budget-cycle tracking, funding distribution, monitoring of project funds, active and planned project schedules, F&E financial planning, and control tools and Congressional reporting tools.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Organizational Excellence.**
- **FAA Objective 2 –** Control costs while delivering quality customer service.
- **FAA Performance Target –** By putting cost controls in place, and having a more efficient, effective workforce, the agency expects to fund at least 75 percent of the current unfunded portion of the Flight Plan.

Relationship to Performance Target

The RTP supports the FAA organizational excellence goal by providing requirements information for all F&E projects to headquarters program offices/Integrated Product Teams that they will use to identify and prioritize projects to fund. This information is used to develop the Corporate Work Plan and to allocate resources. In addition, RTP provides a single source for all project status information, including financial data that is extracted from DELPHI. All of this information is used to make sound decisions on what work should be done and where to allocate resources more efficiently, thus increasing the FAA's ability to fund more projects while controlling costs.

5A24, CENTER FOR ADVANCED AVIATION SYSTEM DEVELOPMENT (CAASD)
FY 2005 Request $84.6M

- Center for Advanced Aviation System Development, M03.02-00

Program Description

The CAASD, a Federally Funded Research and Development Center (FFRDC), operates under a long-term Sponsoring Agreement with the MITRE Corporation to support a continuing program of research, development, and complex system engineering to support continued growth of the NAS. Research assignments are formulated annually in a Product Based Work Plan and are approved by the FFRDC Executive Board. Areas of analysis include: Free Flight Enhancements; Research in Airspace Design and Analysis; Improvements in Communications, Navigation, and Broadcast Services; and Studies in the area of ATM Modernization. The required development of system architecture and comprehensive research, development, and system engineering services can only be provided by a FFRDC whose charter permits special access to agency information and data, not normally available to support contractors.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Increased Capacity.**
- **FAA Objective 4 –** Increase on-time performance of scheduled carriers.
- **FAA Performance Target –** Through FY 2008, increase the percentage of all flights arriving within 15 minutes of schedule at the 35 OEP airports by 7 percent, as measured from the three-year 2000-2002 baseline.

Relationship to Performance Target

The CAASD assists the FAA in analyzing and designing new systems to increase the efficiency and effectiveness of NAS systems. The center performs analytical research, develops operational concepts, and tests new concepts. FAA adoption of these new systems and procedures for use in the NAS improves on-time performance and increases capacity.

5B01, NAS FACILITIES OSHA AND ENVIRONMENTAL STANDARDS COMPLIANCE
FY 2005 Request $25.5M

- A1, Fire Life Safety for Air Traffic Control Tower, F13.03-00
- A2, Environmental and Occupational Safety and Health Compliance, F13.03-00
- A3, Energy Conservation/Efficiency, F13.03-00
- B, NAS Facilities OSHA Environmental Policy Development, F-13.03-01

A, NAS FACILITIES OSHA AND ENVIRONMENTAL STANDARDS COMPLIANCE

Program Description

Since 2000, the Occupational Safety and Health Administration (OSHA) has conducted 43 inspections of FAA facilities and issued 167 citations, including 96 citations listed as "serious." For example, OSHA inspected the Memphis System Management Office in February 2001 and issued 20 citations, 16 of which were serious. One of the violations involved improper storage of oxygen cylinders, which created an explosion hazard. Environmental regulators from New Mexico conducted four inspections at the Albuquerque Air Route Traffic Control Center between November 2001 and September 2002 and levied a $1,800 fine. The Administrator signed an agreement with OSHA to upgrade 385 control towers by FY 2009 to meet OSHA standards of fire life safety. The estimated cost is $121 million from FY 1997 to FY 2009.

This program implements Executive Orders 12088 and 12196; 32 public laws; and negotiated labor agreements in occupational safety and health, environmental issues, and fire life safety. Energy conservation requirements are in Executive Order 12902 and the 1992 Energy Policy Act. The result will be a safe, healthful, and environmentally sound workplace.

Relationship of Program to DOT Strategic Goal, Objective, and Performance Target

- **DOT Strategic Goal – Environmental Stewardship.**
- **DOT Objective 1 –** Adopt transportation policies and promote technologies that reduce or eliminate environmental degradation.

Relationship to Performance Target

This program implements Executive Orders 12088 and 12196, 32 public laws, and negotiated labor agreements that address occupational safety and health, environmental issues, and fire life safety. Energy conservation requirements are in Executive Order 12902 and the 1992 Energy Policy Act. The project promotes a safe, healthful, and environmentally sound workplace that will reduce agency costs associated with worker's compensation claims and environmental cleanup, as well as reduce adverse impacts on the NAS.

FY 2003 Program Accomplishments
- Issued Fall Protection Implementation Guidance to ensure the continued safety and efficiency of NAS operations.
- Supported more than 40 acquisition management organizations by providing Occupational Safety and Health (OSH) and environmental technical assistance throughout the acquisition process.
- Performed Environmental Compliance Program follow up reviews in three regions/centers.
- Instituted program requiring use of energy-efficient Light Emitting Diode (LED) obstruction lights throughout the NAS.
- Installed six energy-efficient fuel cells at FAA facility in Northwest Mountain region.
- Continued to promote use of Energy Saving performance contracts throughout the regions.
- Conducted five fire alarm maintenance courses and one sprinkler system course in towers and en route centers.
- Completed 23 tower fire life safety (FLS) upgrades.

Program Plan FY 2004 – Performance Output Goals
- Support acquisition management organization by providing OSH and environmental technical assistance throughout the acquisition process.
- Perform Environmental Compliance Program followup reviews in two regions/centers.
- Implement FLS upgrades for 18 towers.
- Continue implementing agencywide fall protection program to protect employees working at heights.

- Continue implementing electrical safety program to protect employees working on electrical systems.
- Continue implementing lockout/tagout program for energy-isolating devices to protect employees working on machines or equipment.
- Continue implementing confined-space safety program.
- Provide thousands of LED red obstruction lights for installation across the NAS that will result in an estimated annual savings of $1.25 million.

Program Plan FY 2005 – Performance Output Goals
- Implement energy-efficient conservation efforts.
- Continue performing Safety Hazard Analysis on NAS in-service equipment.
- Continue developing Environmental and Occupational Safety and Health (EOSH) Training Standards.
- Implement FLS upgrades for 14 towers.
- Develop Indoor Air Quality Implementation Guidance for NAS facilities.
- Perform three onsite EOSH Program Reviews.
- Support the acquisition management organization by providing OSH and environmental technical assistance throughout the acquisition process.

Key Events FY 2006-2009 – Performance Output Goals
- Continue implementing FLS upgrades for towers.
- Continue implementing energy-efficient/conservation efforts.
- Support acquisition management organizations by providing OSH and environmental technical assistance throughout the acquisition process.
- Complete Engineering Change Proposal followup reviews in all regions/centers.
- Continue implementing written safety programs.

B, NAS FACILITIES OSHA ENVIRONMENTAL POLICY DEVELOPMENT, F-13.03-01

Program Description

The NAS Facilities OSHA/Environmental Policy Development project provides policy, oversight, reporting, and liaison activities to ensure that the FAA develops and implements cost-effective employee Occupational Safety and Health (OSH) management systems and Environmental Management Systems. Required by Executive Order 13148 and Office of Management and Budget Circular A-11, these systems are consistent with the President's Management Agenda and this Administration's commitment to sound management of government and environmental stewardship. The systems will help the FAA comply with OSHA, environmental, and energy regulations; promote a safe and healthful workplace for FAA employees; and protect the environment through sound environmental and energy-efficient practices. It will reduce both adverse operational impacts to the NAS and the FAA's large liability costs associated with workers' compensation claims and environmental cleanup. These liabilities are described below.

In 2002, more than 1,700 FAA employees filed reports of on-the-job injuries or work-related illnesses. During this same period, 4,600 claims, both old and new, received some form of payment. These work-related injuries and illnesses affect all our employees — both those injured and those having to fill in for them. The annual direct costs to FAA are more than $90 million.

Environmental cleanup costs have exceeded $100 million over the past 10 years and are projected to exceed $132 million over the next 6 years. Groundwater contamination at the Technical Center threatens the Atlantic City drinking water supply and cleanup will take more than 10 years. In addition, the FAA risks stiff regulatory fines and penalties if the agency violates Environmental Protection Agency waste management requirements. Also, the FAA's annual energy cost exceeds $83 million.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Environmental Stewardship.**

- **FAA Objective 1** – Adopt transportation policies and promote technologies that reduce or eliminate environmental degradation.

Relationship to Performance Target

The NAS Facilities OSHA/Environmental Policy Development project provides FAA policies for environmental protection and FAA employee safety. It also promotes energy-conservation technologies, which reduce fuel consumption and environmental emissions. Environmental Management Systems (EMS) will document that the FAA is meeting its environmental responsibilities, help the FAA to achieve its aviation safety mission, and provide cost savings. Other benefits of the project include reduced implementation delays for NAS modernization programs, reduced liability for civil and criminal penalties, and reduced energy costs.

FY 2003 Program Accomplishments
- Provided FAA environmental, energy, and employee safety policy.
- Implemented Safety Management Information System to identify root causes of the prevalent injuries.
- Completed two EMS pilot projects.

Program Plan FY 2004 – Performance Output Goals
- Update FAA policy to meet new environmental, energy, and OSH requirements in legislation, regulations, and Executive Orders.
- Review FAA OSH implementation.
- Coordinate Lines of Business development of EMS for all appropriate facilities.

Program Plan FY 2005 – Performance Output Goals
- ****Not applicable****

Key Events FY 2006-2009 – Performance Output Goals
- ****Not applicable****

5B02, FUEL STORAGE TANK REPLACEMENT AND MONITORING
FY 2005 Request $3.0M

- NAS Facilities OSHA & Environmental Standards Compliance – Fuel Storage Tanks, F13.01-00

Program Description

The fuel storage tank (FST) systems replaced and upgraded in the mid-1980s have reached the end of their lifecycle. The 2,741 tank systems under lifecycle maintenance guidelines must be replaced or upgraded with a cost of about $60,000 per tank site. About 90 percent of former FST have leaked in the past. If the sites are not cleaned up, fuel will contaminate drinking water, destroy wetlands, and damage the environment. An additional part of the FST program is the Air Route Traffic Control Center (ARTCC) lifecycle compliance initiative. The pipelines connecting the FST systems to the engine generators are being redesigned to achieve compliance with state and Federal underground regulations. Leaking FST systems will be abated immediately to minimize any adverse impact to personal and environmental safety, restore availability of the systems for NAS operations, and preclude regulatory fines. Also, at formerly owned FST sites, if tanks are found, they will be removed and the sites tested and remediated to bring the sites into regulatory compliance.

FST systems must comply with state and Federal regulations, which range from tank installation standards to site-closure requirements. The Resource Conservation and Recovery Act, Subtitle 1, and delegated State programs prescribe standards and management practices for underground storage tanks. The Clean Water Act, Section 311, establishes specific planning and prevention requirements for spill prevention, and control and countermeasures plans for underground storage tanks and above-ground storage tanks exceeding certain storage capacity thresholds. Individual states also regulate FST systems.

Relationship of Program to DOT Strategic Goal, Objective, and Performance Target

- **DOT Strategic Goal – Environmental Stewardship.**
- **DOT Objective 1 –** Reduce pollution and other adverse effects of transportation and transportation facilities.

Relationship to Performance Target

The FST Replacement and Monitoring project executes a lifecycle maintenance program that reduces the risk of leaking FST systems, minimizes adverse impacts to personal and environmental safety, and restores availability of the systems for NAS operations.

FY 2003 Program Accomplishments
- Continued lifecycle replacement/sustainment of FST systems.
- Initiated the ARTCC lifecycle compliance initiative.
- Assessed program impacts of new Environmental Protection Agency (EPA) FST system regulations.
- Assessed program impacts of new California and Alaska FST system regulations.
- Continued NAS hand off of maintenance activities.

Program Plan FY 2004 – Performance Output Goals
- Continue lifecycle replacement/sustainment of FST systems.
- Initiate the ARTCC lifecycle compliance initiative.
- Assess program impacts of new EPA FST system regulations.
- Assess program impacts of new California and Alaska FST system regulations.
- Continue NAS hand off of maintenance activities.

Program Plan FY 2005 – Performance Output Goals
- Continue lifecycle replacement/sustainment of FST systems.
- Complete closure of formerly owned FST sites.
- Continue remediation efforts due to FST systems spills and leaks.

Key Events FY 2006-2009 – Performance Output Goals
- Continue lifecycle replacement/sustainment of FST systems.
- Continue the ARTCC lifecycle compliance initiative.
- Continue remediation efforts due to FST systems spills and leaks.

5B03, HAZARDOUS MATERIALS MANAGEMENT
FY 2005 Request $17.0M

- NAS Facilities OSHA & Environmental Standards Compliance – Environmental Cleanup/HAZMAT, F13.02-00

Program Description

The FAA has identified more than 709 contaminated sites at 244 locations nationwide that require investigation, remediation, and closure activities. Environmental Cleanup site investigations have indicated that toxic contamination resulted from a variety of hazardous substances: cleaning solvents, fuels, pesticides, asbestos, polychlorinated biphenyls (PCBs), and heavy metals. FAA organizations, including the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center, have mandatory remediation and monitoring schedules in place as part of negotiated agreements with regulatory agencies. These agreements require the FAA to remediate contaminated soil and groundwater. Extensive contamination at the Technical Center prompted the Environmental Protection Agency (EPA to place the site on the EPA National Priorities List, indicating its status as one of the Nation's most environmentally dangerous sites (i.e., Superfund site). In addition, contaminated sites and requirements of the Hazardous

Materials Management program account for a large portion of the unfunded environmental liabilities documented in the FAA's Financial Statement.

To clean up these contaminated sites and comply with applicable environmental regulations, the FAA developed the Hazardous Materials Management program. The FAA must continue mandated program activities to achieve compliance with all Federal, state, and local environmental cleanup regulations, including the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980. FAA program activities include: conducting site investigations; managing hazardous materials, including hazardous waste accumulation, handling, and disposal; installing groundwater monitoring wells, remediating site contamination, and operating air pollution controls. The FAA performs assessment, remediation, and closure activities as aggressively and proactively as funding will allow. Future planned efforts include conducting contaminant investigations, implementing site remediation projects, and completing required regulatory closures; and attaining 95 percent "No Further Remedial Action Planned" closure documentation for FAA sites listed on EPA's Federal Hazardous Waste Compliance Docket.

Relationship of Program to FAA Strategic Goal, Objective, and Performance Target

- **FAA Strategic Goal – Environmental Stewardship.**
- **FAA Objective 1 –** Adopt transportation policies and promote technologies that reduce or eliminate environmental degradation.

Relationship to Performance Target

The Hazardous Materials Management program conducts required cleanup activities for contaminated sites within existing NAS land and structures. The program achieves this objective through assessment, remediation, and closure activities for contaminated sites. These activities result in a safe and environmentally sound workplace, and protection of the natural resources of surrounding communities. The program also ensures that the FAA complies with the Department of Transportation's performance goal of achieving "No Further Remedial Actions Planned" for 95 percent of all FAA sites listed on the EPA's Federal Hazardous Waste Compliance Docket.

FY 2003 Program Accomplishments
- Identified environmental contamination at 24 sites.
- Conducted environmental assessments and performed remediation activities at 30 additional contaminated sites.
- Completed final regulatory closure at eight previously contaminated sites.

Program Plan FY 2004 – Performance Output Goals
- Continue remedial actions for environmentally contaminated sites.
- Perform remediation activities for contaminated areas at Federal Aviation Administration Technical Center (FAATC), Atlantic City, NJ.
- Conduct environmental assessments for 10 Air Route Surveillance Radar (ARSR) sites.

Program Plan FY 2005 – Performance Output Goals
- Treat and dispose of hazardous contamination at Annette Island, AK.
- Treat and dispose of PCB and fuel-contaminated soil at Farewell, AK.
- Perform remediation activities for contaminated areas at FAATC, Atlantic City, NJ.
- Perform remediation activities for PCB and fuel-contamination at Mount Santa Rosa, Guam, ARSR.

Key Events FY 2006-2009 – Performance Output Goals
- Treat and dispose of hazardous contamination at Annette Island, AK.
- Treat and dispose of fuel-contaminated soil at Tanana, AK.
- Treat and dispose of PCB and fuel-contaminated soil at McGrath, AK.
- Perform remediation activities for contaminated areas at FAATC, Atlantic City, NJ.

Federal Aviation Administration

National Airspace System

Capital Investment Plan

Appendix C

Fiscal Years 2005 – 2009

APPENDIX C

FACILITIES AND EQUIPMENT ESTIMATED EXPENDITURES

FAA future budget projections are not released to the public due to the requirement for the FAA budget to be approved by the Office of the Secretary of Transportation and Office of Management and Budget and submitted as part of the President's budget to Congress.

Federal Aviation Administration

National Airspace System

Capital Investment Plan

Appendix D

Fiscal Years 2005 – 2009

LIST OF ACRONYMS AND ABBREVIATIONS

A

ACAS	aircraft collision avoidance system
ACE	aviation capacity enhancement
ACE-IDS	automated surface observing system controller equipment information display system
ACSI	american customer satisfaction index
ACTIONS	administration and compliance tracking in an integrated office network subsystem
ADS	automatic dependent surveillance
ADS-B	automatic dependent surveillance broadcast
AF	Airway Facilities
AFIS	automated flight inspection system
AFSS	automated flight service station
A/G	air-to-ground
ALAR	approach/landing accident reduction
ALSF	approach lighting system with sequence flasher
ALSIP	approach lighting system improvement program
AMS	acquisition management system
ANICS	alaskan national airspace system interfacility communications system
ARE	aircraft and related equipment
ARSR	air route surveillance radar
ARSR-4	air route surveillance radar model 4
ARTCC	air route traffic control center
ARTS	automated radar terminal system
ASA	airborne surveillance applications
ASAP	aviation safety reporting system
ASAS	aviation safety analysis system
ASCM	asset supply chain management
ASDE	airport surface detection equipment
ASDE-3X	airport surface detection equipment – model 3x
ASDE-X	airport surface detection equipment – model x
ASHS	Office of Security and Hazardous Materials Systems
ASI	aviation safety inspector
ASIM	aerospace safety information management
ASIS	aviation systems information systems
ASOS	automated surface observing system
ASR	airport surveillance radar
ASR-9	airport surveillance radar model 9
ASWON	automated surface weather observation network
AT	Air Traffic
ATC	air traffic control
ATCBI	air traffic control beacon interrogator
ATCBI-6	air traffic control beacon interrogator model 6
ATCSCC	air traffic control system command center
ATCT	airport traffic control tower
ATDP	advanced technology development prototyping
ATIS	automatic terminal information service
ATM	air traffic management
ATN	aeronautical telecommunication network
ATO	Air Traffic Operations
ATOMS	air traffic operations management system
ATOP	advanced technologies and oceanic procedures

ATS	Air Traffic Services
AWOS	automated weather observing system
AWSS	automated weather sensor systems

B

BLI	budget line item
BSE	balanced scorecard
BUEC	backup emergency communications

C

C3	command, control, and communications
CAEG	computer-aided engineering graphics
CARS	compliance assessment reporting system
CASSD	Center for Advanced Aviation System Development
CAT	category
CBI	computer-based instruction
CCS	command center conference control system
CDM	collaborative decision making
CDR	critical design review
CDTI	cockpit display of traffic information
CERAP	center radar approach control
CETS	compliance and enforcement tracking subsystem
CFIT	controlled flight into terrain
CHAPS	clinic health awareness program support
CIP	Capital Investment Plan
CIWS	corridor integrated weather system
COTS	commercial off-the-shelf
CPDLC	controller-pilot data link communications
CPDSS	covered position decision support subsystem
CSIRC	Computer Security Incident Response Center
CTSU	contractor traffic simulation unit
CTS	critical telecommunications support
CVR	cockpit voice recorder

D

D-ATIS	digital automatic terminal information service
DARC	direct access radar channel
DBRITE	digital bright radar indicator equipment
DCA	Ronald Reagan Washington National Airport
DF	direction finder
DFW	Dallas Fort Worth International Airport
DIWS	document imaging workflow subsystem
DME	distance measuring equipment
DoD	Department of Defense
DOT	Department of Transportation
DRVSM	domestic reduced vertical separation minima
D-side	data-position
DSP	departure spacing program
DSR	display system replacement

E

EAM	enterprise asset management
EAS	Enterprise Application System
EBUS	enhanced backup surveillance
ECG	en route communication gateway

EDC	early display configuration
EMS	environmental management systems
EOSH	Environmental & Occupational Safety and Health
EPA	Environmental Protection Agency
ERAM	en route automation modernization
ERIDS	en route information display system
ETMS	enhanced traffic management system
ETVS	enhanced terminal voice switches

F

FAA	Federal Aviation Administration
FAADDS	FAA Data Display System
FAATC	Federal Aviation Administration Technical Center
FANS	future air navigation system
FCA	facility condition assessments
FCA	flow constrained area
FDIO	flight data input/output
FDR	flight data recorder
F&E	facilities and equipment
FFP1	Free Flight Phase 1
FFP2	Free Flight Phase 2
FPPS	facility power panel system
FIAT	facilities information and analysis tool
FIMS	FAA ID media system
FIRPS	flight inspection reporting procedures system
FIS	flight information service
FISDL	flight information services data link
FLS	fire life safety
FM	frequency modulated
FOQA	flight operational quality assurance
FS	full service
FSAS	flight services automation system
FSM	flight schedule monitor
FSRS	facility security reporting system
FSS	flight service station
FST	fuel storage tank
FTI	Federal Aviation Administration Telecommunications Infrastructure
FY	fiscal year

G

GA	general aviation
GA&VF	general aviation and vertical flight technology
GCCS	geostationary control and communications segment
GDP	ground delay program
GPS	global positioning system
GTE	government transition evaluations

H

HAATS	Houston Area Air Traffic System
HOCSR	host/oceanic computer system replacement
HVAC	heating, ventilating, and air-conditioning

I

IAH	George Bush Intercontinental Airport/Houston
IAPA	instrument approach procedures automation

IATS	initial academy training system
ICAO	International Civil Aviation Organization
IDS	integrated display system
IDU	initial daily use
IFQA	integrated flight quality assurance
ILS	instrument landing system
IMC	instrument meteorological conditions
IOC	initial operating capability
IOT&E	independent operational test and evaluation
ISC	initial systems configuration
ISD	in-service decision
ISS	information systems security
IT	information technology
ITS	investigations tracking system
ITWS	integrated terminal weather system

J

JAI	joint acceptance inspection
JFK	John F. Kennedy International Airport
JRC	Joint Resources Council
JRC-2B	Joint Resources Council-Phase 2B

L

LAAS	local area augmentation system
LCSS	logistical center support system
LEO	low-earth orbit
LLWAS	low-level wind shear alert system
LLWAS-2	low level wind shear alert system model 2
LLWAS-NE	low-level wind shear alert system network expansion
LLWAS-RS	low level wind shear alert system relocation/sustainment
LRR	long-range radar
LSF	logistics support facility

M

MALSR	medium-intensity approach light system with runway alignment indicator lights
MASPS	minimum aviation system performance standard
MDM	main display monitor
MFD	multifunction display
MIAWS	medium intensity airport weather system
MOPS	minimum operational performance standard

N

NACO	National Aeronautical Charting Office
NAFIS	next generation flight inspection system
NAS	National Airspace System
NASDAC	national aviation safety data analysis center
NASMAP	national airspace system management automation program
NAVAID	navigation aid
NDB	non-directional beacon
NDC	national data center
NEXCOM	next generation air/ground communications
NEXRAD	next generation weather radar
NIMS	national airspace system infrastructure management system
NISC	National Airspace System implementation support contract

NLA   new large aircraft
nm   nautical mile
NOTAM   notice to airmen
NTSB   National Transportation Safety Board
NYICC   New York Integrated Control Complex

O
OASIS   operational and supportability implementation system
OEP   Operational Evolution Plan
ORD   operational readiness date
OSHA   occupational safety and health administration
OSH   occupational safety and health
OT   operational test
OT&E   operational test and evaluation
OTS   operational telephone system

P
PAPI   precision approach path indicator
PCB   polychlorinated biphenyl
PDARS   performance data analysis and reporting system
PEM   position electronic module
PHL   Philadelphia International Airport
PRM   precision runway monitor
PWS   performance work statement

R
R-side   radar-position
RANK   replacement alphanumeric keyboard
RCAG   remote center air/ground
RCAS   radio coverage analysis system
RCISS   regulation and certification infrastructure for system safety
RCOM   recovery communications
RD   requirement document
R&D   research and development
REIL   runway end identifier lights
RFI   radio frequency interference
RIRP   runway incursion reduction program
RMS   remote monitoring system
RNAV   area navigation
RNP   required navigation performance
RPAT   required navigation performance parallel approach transition
RTEPM   Regional Test Equipment Program Managers
RTP   resource tracking program
RTR   remote transmitter receiver
RVR   runway visual range
RVSM   reduced vertical separation minima
RWSL   runway status lights

S
SAIDS4   systems atlanta information display system 4
SARP   standards and recommended practices
SATCOM   satellite communications
SATDS   stand alone tower display system
SAWS   standalone weather sensors
SCAP   security certification authorization plan

SERC   software engineering resource center
SF-21   Safe Flight 21
SIR   screening information request
SIDs   standard instrument departures
SLEP   service life extension program
SMO   System Maintenance Office
SMS   surface management system
STARS   standard terminal automation replacement system
STARs   standard terminal arrivals
STE   secure telephone equipment
SWIM   system wide information network

T
TAMDAR   tropospheric airborne meteorological data reporting
TCAS   traffic alert and collision avoidance system
TD   tower display
TDLS   tower data link services
TDWR   terminal Doppler weather radar
TFM   traffic flow management
TFM-I   traffic flow management-infrastructure
TFMP   terminal facility master plans
TIS   traffic information service
TIS-B   traffic information service-broadcast
TMA   traffic management advisor
TMA-SC   traffic management advisor-single center
TRACON   terminal radar approach control
TVSR   terminal voice switch replacement

U
UAT   universal access transceiver
UHF   ultra high frequency
UPS   uninterruptible power supply
UPS   United Parcel Service
URET   user request evaluation tool

V
VASI   visual approach slope indicator
VEM   voice switching and control system electronic module
VHF   very high frequency
VOR   very high frequency omni-directional range
VORTAC   very high frequency omni-directional range collocated with tactical air navigation
VRRP   voice recorder replacement program
VSCS   voice switching and control system

W
WAAS   wide area augmentation system
WARP   weather and radar processor
WJHTC   William J. Hughes Technical Center
WMSCR   weather message switching center replacement
WSP   weather systems processor