

NATIONAL AIRSPACE SYSTEM CAPITAL INVESTMENT PLAN 2003-2007



Federal Aviation Administration

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Federal Aviation Administration Capital Investment Plan for Fiscal Years 2003-2007

1.0 Overview

This section provides an overview of the Federal Aviation Administration's (FAA) Aviation System Capital Investment Plan (CIP) and the relationship of the CIP to performance-based planning and to other agency plans. This CIP identifies the FAA's Facilities and Equipment (F&E) funding plan and the alignment of the capital planning with the Office of the Secretary of Transportation (OST) and the FAA Goals. The plan discusses investments by goal category in Appendix A. Appendix B contains Fiscal Year (FY) 2002 accomplishments and, in terms of output goals, planned activities for FY 2003 through FY 2007. Appendix C provides the budget profiles for FAA capital investments through FY 2007. Appendix D provides a list of acronyms.

The National Airspace System (NAS) is the most technologically advanced and complex aviation system in the world. Comprised of a system of systems, the NAS links pilots, controllers, and support personnel together to deliver the nation's air transportation system. The FAA and the nation's airports provide the supporting infrastructure upon which the NAS services and capabilities are delivered.

The CIP addresses safety, security, efficiency, air traffic control productivity, facilities and equipment, and increasing the capacity of the air transportation system. The plan creates a foundation for the existing NAS to evolve by expanding services to meet the growing demand. New technologies are introduced and current services are sustained.

The FAA has set the following long-term outcomes for the NAS:

SAFETY: By 2007, reduce U.S. aviation fatal accident rates by 80 percent from 1996 levels.

SECURITY: Prevent security incidents in the aviation system.

SYSTEM EFFICIENCY: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

This CIP flows from these outcomes. For example, the FAA Strategic Plan specifies strategies to achieve the safety goal by progressively lowering accident and incident rates. In security, the strategies focus on protecting the traveling public, protecting employees at FAA facilities, and protecting the NAS. For system efficiency, emphasis is placed on NAS modernization, capacity enhancements, free flight, and systems integration. The new Transportation Security Administration (TSA) has assumed responsibility for significant portions of the FAA's security outcomes relating to passenger and cargo security; however, the FAA continues to be responsible for the protection of employees, critical facilities, and NAS information security.

1.1 Purpose of the Capital Investment Plan

The FAA provides air traffic control (ATC), aviation safety, and security services, and establishes the necessary international coordination to provide a seamless global aviation system. In order to achieve this objective, the FAA uses a formal investment planning approach, defined as the Acquisition Management System (AMS.) This system defines how investments are made, provides the analyses to support investment decisions, and establishes the financial and management tracking for FAA acquisitions. The AMS is based on mission analysis and planned capabilities that are further defined in the NAS Architecture. The AMS policies are available at <http://fast.faa.gov/>.

The CIP's purpose is to provide Congress with a summary of activities for budget planning, both in the year of submittal of the President's budget, and funding projections for four years beyond the current budget year. The plan explains how investments are to be planned and made. It ties projects to goals, and shifts toward an outcome- and output-based budget. This plan represents significant progress towards linking the FAA capital budget to performance outcomes and outputs consistent with the President's management initiative to improve budget linkages to performance.

1.2 Relationship of the Capital Investment Plan to Other Plans

The CIP for FY 2003 through 2007 funds capital assets necessary to implement outcomes in more detailed plans. The role of the CIP is to integrate this funding. Readers will find detailed information online through web sites provided in the CIP that point to other plans.

1.2.1 The Federal Aviation Administration Strategic Plan

The FAA Strategic Plan reflects the planning and policy guidance outlined in the Department of Transportation (DOT) Strategic Plan. It provides strategic direction for the organization, and establishes long-term goals for the nation's transportation infrastructure. The CIP translates these goals into outputs, and provides funding planning to accomplish the capital development portions of the FAA and DOT Strategic Plans. The DOT Strategic Plan is available at <http://stratplan.dot.gov/>.

The FAA Strategic Plan may be viewed at <http://www.apo.data.faa.gov/dirplans/docs/SP2001.html>.

1.2.2 The Federal Aviation Administration Annual Performance Plan

The FAA Annual Performance Plan contains annual performance goals that have measurable target levels of performance, in terms of outputs and outcomes, for various programs and projects. The FAA Annual Performance Plan is available at <http://www.apo.data.faa.gov/dirplans/docs>.

1.2.3 The Line-of-Business and Regional Performance Plans

The lines-of-business (LOB) and regional performance plans are developed and used to define the steps to achieve stated goals and objectives. Based on the mission goals of the FAA, as established in the FAA Strategic Plan, individual LOBs establish specific goals and identify contributions to the FAA Strategic Goal. Individual FAA organizations have contributory roles, demonstrated by their development of goals for their programs, that support the achievement of the overall FAA goal.

The degree to which the CIP supports the regional performance plans depends on the extent of the capital development work identified in the NAS Architecture, the FAA Strategic Plan, and the FAA Annual Performance Plan. The LOBs and regional plans can be found at <http://www.apo.data.faa.gov/dirplancs/docs/>.

1.2.4 The National Airspace System Architecture

In January 1999, the FAA Administrator approved the NAS Architecture, which represents the aviation community consensus on modernization. Since 1999, the FAA has made significant progress in implementing the NAS Architecture. The NAS Architecture addresses safety, security, efficiency, capacity, and sustainment of aviation services. Its planning horizon extends through 2015, and it is used as an engineering tool to define NAS modernization implementation steps, interdependencies, and sequences of changes in the NAS. The NAS Architecture may be viewed at <http://www.nas-architecture.faa.gov/>.

1.2.5 The Operational Evolution Plan

The Operational Evolution Plan (OEP) is a joint FAA/industry plan that focuses on implementing capacity and efficiency improvements in the NAS through 2010. It represents the FAA's commitment to the aviation community and integrates capital investments, procedural and airspace changes, operations, and engineering development. Recent revisions to the OEP reflect priority changes relating to security and the economic downturn of the aviation industry. The OEP can be viewed at <http://www.faa.gov/programs/oep>.

1.2.6 The Aviation Capacity Enhancement Plan

This plan reports on the progress toward increasing the capacity of the nation's airports. It focuses on changes at the airports that increase arrivals and departures (throughput). The Aviation Capacity Enhancement Plan looks at developing capacity through airport infrastructure changes, airspace and procedural changes, and introduction of new technology. The Aviation Capacity Enhancement Plan can be viewed at <http://www.faa.gov/ats/asc/pubs.html>.

1.2.7 The Airport Benchmark Report

The Airport Benchmark Report relates to both the Aviation Capacity Enhancement Plan and the OEP. This report defines the current throughput of 31 capacity-constrained airports.

Airport improvements in the OEP focus on these 31 airports. The Airport Benchmark Report can be viewed at <http://www.faa.gov/events/benchmarks>.

1.3 Capital Investment Plan Funding Levels

The CIP aligns the next five years of the NAS Architecture to the Office of Management and Budget's (OMB) five-year budget planning guidance and funding proposed under the Wendell H. Ford Aviation Investment and Reform Act (AIR-21), PL 106-181. Appendix C contains the budget line item (BLI) funding profiles projected through FY 2007.

The CIP balances investments among the aerospace related goals of safety, security, and efficiency. Safety and security will continue to rate as the highest priorities for capital investment spending. Operating improvements will retain their emphasis on sustaining existing core services, which provide traffic separation, navigation, communications, and traffic flow management. Investment in new methods and technologies for managing capacity and demand are included and have evolved from modernization initiatives in partnership with air carriers, general aviation (GA), and the Department of Defense (DoD).

The FAA has identified five goal categories for investments plus the personnel costs to provide capital assets. These investment categories are aligned to the goals and help to group capital investment outputs. These categories define the format of the CIP, and the appendices describe the funding levels expected over the next five years with outputs at the BLI level.

- Category 1: Improve Aviation Safety (Section 2.0)
- Category 2: Improve Efficiency of the Air Traffic Control System (Section 3.0)
- Category 3: Increase Capacity of the National Airspace System (Section 4.0)
- Category 4: Improve Reliability of the National Airspace System (Section 5.0)
- Category 5: Improve Efficiency of Mission Support (Section 6.0)

The distribution of funding for FY 2003 shows continuing emphasis on NAS modernization.

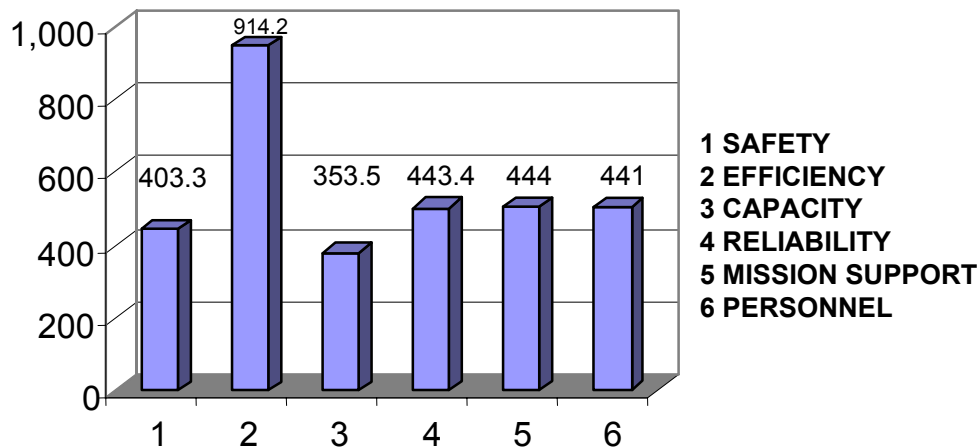


Figure 1 FY 2003 Distribution Among Goal Categories (in \$ millions)

1.4 Changes in Priorities as a Result of the Attacks of September 11, 2001

The use of the NAS and civilian air carriers as weapons of mass destruction has resulted in changes in capital investments. Immediately following the second attack on the World Trade Center, the Secretary of Transportation directed the diversion of all air carrier aircraft and the grounding of all civil aviation. The immediate response required unprecedented communications between the FAA's command elements, air traffic controllers, and the users. Since September 11, 2001, the FAA has been supporting North American Air Defense Command (NORAD) activities for homeland defense, and has been improving the communications infrastructure. Priorities were changed to fund immediate needs and funding in FY 2003 continues security programs accelerated in FY 2002.

1.4.1 Homeland Security Needs for Communications, Navigation, and Surveillance

The TSA, in partnership with DoD and the Office of Homeland Security, are initiating a review of all communications, navigation and surveillance requirements of the NAS. For example, the FAA had planned to decommission obsolete inland long-range primary radar. The DoD has now requested sustained operation of all primary radar for the present time. The Joint DoD/FAA Radar Planning Group has initiated a review of the conversion of radar sites to provide a three-dimensional primary radar capability (adding elevation). This conversion would require a replacement for older radar. The FAA will continue to maintain the existing radar until the DoD determines the replacement. Revisions to strategies for communications, navigation, and surveillance, and therefore current FAA plans, may be required as security needs are assessed and homeland defense measures defined that require capital investment.

1.4.2 Explosive Detection and Passenger Screening Transferred to the New Transportation Security Administration

The Aviation and Transportation Security Act, PL 107-71, passed by Congress and signed by the President on November 19, 2001, transferred major portions of the responsibility for aviation security to the new Transportation Security Administration. While the FAA retains responsibility for aircraft airworthiness, regulation of airmen, and security of FAA facilities, personnel, and the NAS, the TSA has assumed responsibility for most aspects of aviation security, primarily airport security and passenger and cargo screening. For FY 2003, the budget provides \$121.5 million in F&E for security equipment. This funding will be reimbursed to the TSA as it undertakes equipment acquisition activities. The CIP includes out year amounts for display purposes only. The FAA expects this funding to be absorbed into the TSA in the future.

1.4.3 Federal Aviation Administration Facility and Personnel Security

The FAA began improvements to physical security and access control at major FAA facilities in FY 1999 with development of new standards and prioritization facility upgrades. In FY 2000, modifications started at the FAA's largest facilities. As a result of September 11, 2001, revised procedures and the presence of armed guards have increased security at FAA. Capital funding in FY 2003 has increased from an originally planned \$22.5 million to \$37.3 million. Increases have been made in the out years to complete facility and personnel protection.

1.4.4 Communications Upgrades

The events of September 11, 2001 significantly strained the FAA's ability to communicate between facilities, with aviation users, and with the general public. The redirection and landing of all civil aircraft flying in the NAS and flying toward U.S. destinations had to be accomplished safely and promptly. The FAA successfully performed this mission, but the existing communications capabilities approached or became saturated, especially in command and control functions. Funding for command and control communications (C³) has been increased from the FY 2002 CIP under the NAS recovery communications budget line.

On September 13, 2001, the NAS reopened with a significant number of flight restrictions. Currently, the FAA must provide civil users with information on temporary flight restrictions and distribute this information to users through Notices to Airmen (NOTAM). NOTAM distribution is a critical part of restricting flight operations on a temporary basis. All FAA employees involved in air traffic control and those aiding pilots in flight planning must have timely access to information about restrictions. Therefore, the FY 2002 funding was increased and planned work for NOTAM distribution was accelerated. Funding for FY 2003 through 2007 has also increased to progressively improve the distribution of information.

1.4.5 Impact of September 11, 2001 on Capacity and Efficiency

As part of developing the OEP, Version 4.0, the FAA and aviation users conducted extensively discussed the current economic impact on air transportation and the recovery of the airlines. The airlines were already experiencing pressure from the economic recession. The subsequent

loss of public confidence in air transportation, evidenced by declining travel, has caused the airlines and some airports to shift their strategies. The airlines have reduced or terminated services to less profitable markets, retired older aircraft that cost more to maintain and operate, reduced their service schedules between major city pairs, and reduced personnel. However, traffic delays have not disappeared between major markets. There are still delays associated with operating peaks at some airports and during adverse weather conditions.

There is general agreement that the air transportation recovery will take 12 to 18 months before passenger demand returns to pre-September 11, 2001 levels. Less predictable is when the airlines will return to profitability. This return is important because a significant portion of the NAS Modernization is dependent upon the airlines equipping with new technologies, such as data link, digital communications, and improved navigation and surveillance capabilities. Figure 2 illustrates historical recovery from recessions. Note that revenue passenger miles (RPM) are closely linked to the gross domestic product (GDP).

The airlines and high-end GA will not be able to equip with improved avionics as early as previously planned, which means that there is a greater need for procedural and airspace changes to prepare for increased traffic flows. Because the major airlines have pulled back on their schedules, regional airlines are filling gaps in service. As travel increases, delays will increase without the FAA’s continuing efforts to improve efficiency and capacity. Figure 3 shows the expected recovery sequence for FAA and airline investments.

Figure 2 Gross Domestic Product and Revenue Passenger Miles for 1960 through 2000

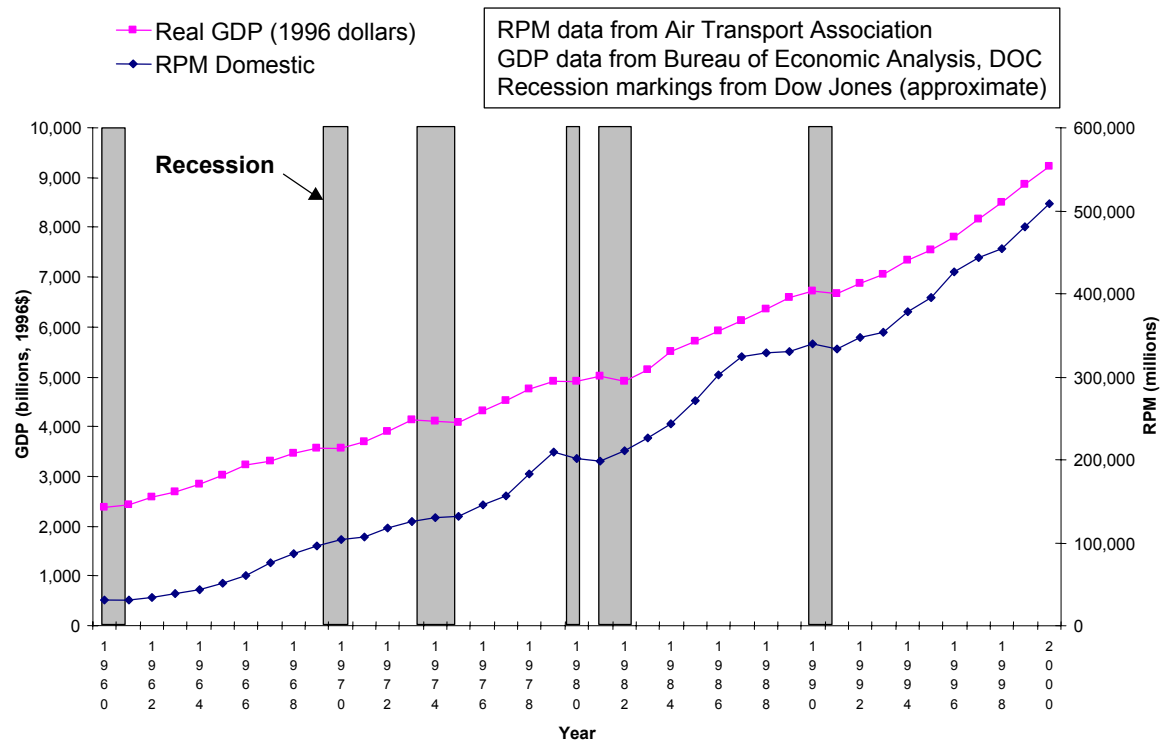
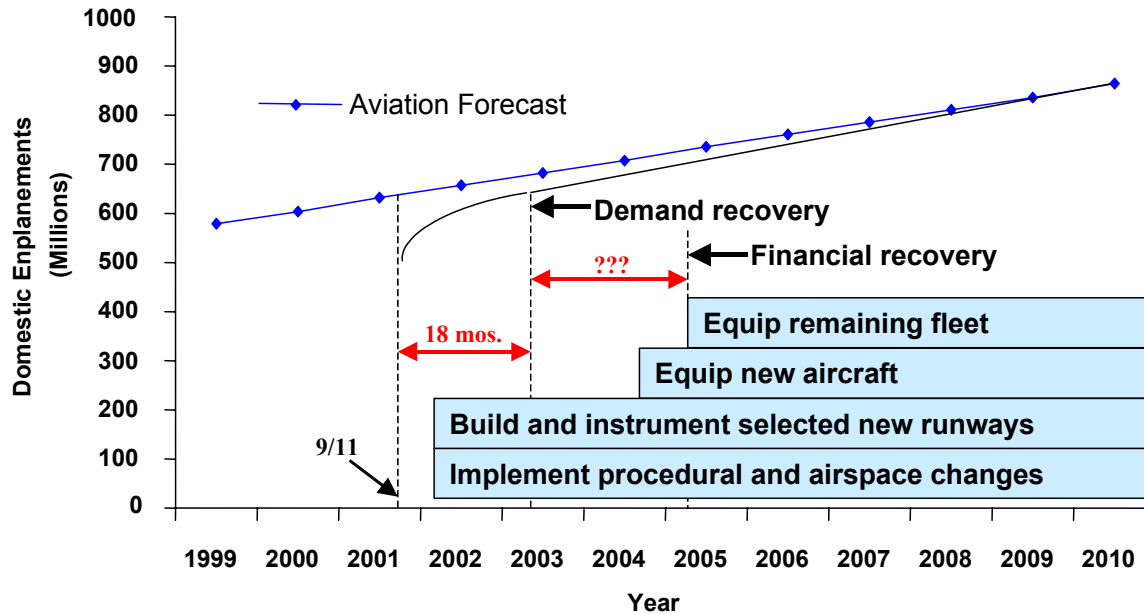


Figure 3 Forecasted Demand and Demand Recovery – Strategy for Airline Equipping for National Airspace System Modernization



The CIP has been adjusted to reflect the changes to Version 4.0 of the OEP. The FAA continues to fund work that defines requirements and continues testing of data link, digital communications, Safe Flight 21, and automated dependent surveillance – broadcast (ADS-B). Satellite-based navigation continues to be a high priority. The FAA will proceed with regulatory changes on domestic reduced vertical separation minima (DRVSM) in the high altitude airspace. The addition of chokepoint sectors to reduce workload that contribute to delay will be completed by June 2002. Airspace and procedural changes will continue. National data link implementation is deferred beyond the Miami Center test site from 2003 until 2005.

The new Detroit runway opened as planned on December 11, 2001. For the benchmarked airports, improvements at Atlanta will likely be delayed, Charlotte’s plans for a new runway are under review, Minneapolis will be delayed one year, but Houston, Miami, and Orlando are moving forward as planned. Wherever a new runway at the 31 benchmarked airports is planned, the FAA capital investments are included in the CIP prior to runway commissioning so that FAA work does not delay full use of these critical new runways.

The user request evaluation tool (URET), proved to be beneficial in managing flight diversions on September 11, 2001. After review of the program, the FAA has decided to deploy URET at all en route centers by the end of 2005. Seven centers will have URET by the end of Free Flight Phase 1 this year, and the remaining 13 centers will receive the tool between 2003 and 2005.

2.0 Reducing Aviation Accidents and Fatalities

This section covers the safety investment category introduced in section 1.3. The CIP covers critical aviation safety activities defined jointly by the FAA and the aviation user community. Included are capital investment support of Safer Skies, safety risk mitigation strategies (Safe Flight 21, reducing controlled flight into terrain, surface movement safety, surveillance, and weather improvements) and information security. The BLIs in Appendices A and B, whose primary outcome or output goal addresses safety, are grouped in this investment category.

The reduction in aviation accidents and fatalities flows from the FAA Strategic Plan's safety performance goals:

- **Fatal Aircraft Accident Rate:** By 2007, reduce the U.S. commercial aviation fatal accident rate per aircraft departure, as measured by a three year moving average, by 80 percent from the three-year average for 1994-1996.
- **Overall Aircraft Accident Rate:** Reduce the rate per aircraft departure.
- **Fatalities and Losses by Type of Accident:** Reduce the number of fatalities and losses from accidents that occur for each major type of accident.
- **Occupant Risk:** Reduce the risk of mortality to a passenger or flight crewmember on a typical flight.

The FAA's strategies for accident prevention strategies have two parts that involve capital investment. The first is Safer Skies—working with the aerospace community to analyze the recurrent causes of accidents and develop and implement interventions to reduce or prevent them. The second is risk mitigation within acquisitions and changes in procedures.

2.1 Safer Skies

Safer Skies uses partnerships between the FAA and the Aviation Industry. Partnerships include ongoing analytical programs with the industry to determine the root causes of accidents and then the application of operational or technological improvements to prevent accidents and fatalities. Information about Safer Skies can be found at http://www.faa.gov/apa/safer_skies/saftoc.htm.

The Safer Skies Agenda places priority on the leading causes of accidents or incidents in three areas—commercial airlines, GA, and cabin safety. Once these root causes are understood, the intervention strategies are evaluated to determine which strategies will impact safety the most. As the interventions are initiated, progress and effectiveness are tracked using metrics. Therefore, Safer Skies uses data in new ways, which allows flight crewmembers, operators, manufacturers, and the FAA to focus on breaking causal chains and take action before an identified chain of events leads to an accident. From these root causes come solution sets that involve capital investments.

The FAA is concentrating on a limited number of specific safety areas:

- The **commercial aviation initiative**— focuses on controlled-flight-into-terrain (CFIT), loss of control, uncontained engine failures, runway incursions, approach and landing, and weather.
- The **GA initiative**— focuses on pilot decision-making, loss of control, weather, CFIT and survivability, and runway incursions.
- The **cabin safety initiative**— focuses on passenger seat belt use, carry-on baggage, child restraints, and passenger interference issues. Work in this area has now been completed.

2.2 Safety Risk Mitigation

A second part of the safety strategy is risk mitigation. Investment in risk analysis and mitigation is a major element of new FAA capital programs. Safety risk mitigation seeks to develop and field systems, technologies, and procedures that target high-risk hazards in the NAS, and develop an integrated safety risk management process that ensures hazards are identified, assessed, and managed to reduce risk. Safety risk management is a proven method to reduce mishaps, and is applicable to the complete spectrum of the NAS, including commercial aviation and general aviation. This method is based on the principle that most, if not all, hazards to an operation or system can be found and controlled before the operation starts. The FAA is developing and deploying tools for defining risk in the acquisition of new systems. Policies are in place to ensure that the new systems adhere to the following requirements:

1. Designed according to requirements derived from data driven safety risk assessments.
2. Integrated with the NAS.
3. Designed by making data driven choices using safety risk as a metric.

The FAA is acquiring proven and, in some instances, leading edge technologies designed to reduce the risk associated with the highest safety hazards in the NAS. The CIP supports work that prevents runway incursions, mid-air collisions, flight into hazardous weather conditions, and CFIT.

2.2.1 Controlled-Flight-into-Terrain

The first mitigation effort for commercial airlines—to reduce uncontained engine failures and instances in which planes are flown into the ground (CFIT)—is nearing formal completion. A directive to order more focused checks of critical engine parts was issued in 2001.

A final rule was issued in March 2001 that required all airplanes with turbine engines and six or more passenger seats to carry a terrain avoidance warning system (TAWS). TAWS uses a computer database to display terrain ahead of an aircraft's path, and warn the aircrew of an impending collision with the ground.

The strategy to reduce CFIT also includes deploying more distance measuring equipment (DME) and visual approach aids at airports. These navigation aids reduce CFIT by increasing pilot situational awareness. Deployment and sustainment of DME is designed to help pilots orient themselves relative to the distance from the airport. This capability can be replaced with the global positioning system (GPS) as equipage grows. Funding increases for ground-based electronic and visual navigation aids in FY 2003 through 2007 directly support the Safer Skies Agenda by providing landing guidance at night and in lower visibility conditions.

A significant element of reducing CFIT is to provide vertical guidance during an approach to the airport. GPS, augmented by either a local area augmentation system (LAAS) or wide area augmentation system (WAAS), will improve lateral navigation (LNAV), vertical navigation (VNAV), and landing. The primary outcome of GPS with WAAS is to provide instrument approach procedures at the majority of the nation's public use airports with vertical course guidance. In August 2001, WAAS passed its one-year anniversary for providing augmentation to GPS. In December 2003, WAAS will attain initial operational capability (IOC) to deliver LNAV and VNAV approaches.

2.2.2 Safe Flight 21 Leading to Deployment Decisions

Two of the current FAA projects under Safe Flight 21 provide increased communications, navigation, and surveillance capabilities. New technology is improving the availability of services to pilots, and is increasing situational awareness for both the controller and pilot. The Capstone Project, an alliance of aviation users and the FAA in Alaska, has provided insights on improved situational awareness through the use of GPS, cockpit display systems that include terrain maps, and air traffic control automation capabilities. The Ohio Valley Project validated the advances made in Capstone, and shows that this technology would provide capacity and efficiency applications for cargo users. Key to the Ohio Valley work is defining the operational concepts for surface movement applications of technology, terminal surveillance requirement development, and integration of surveillance information.

In FY 2003, an investment decision, based on safety improvements, will be made on statewide application of the Capstone technologies in Alaska. An investment decision will also be made on deployment of ground infrastructure for use of ADS-B at selected delay-constrained airports for surface movement safety and efficiency applications. Since ADS-B is dependent upon user equipage, the location of airports and airspace for the use of this new surveillance technology will need to be timed to mutual FAA and user investments.

2.2.3 Surface Movement Safety

An example of surface movement safety is the development of improved airport surveillance detection equipment (ASDE) model X technology. This system is intended to reduce the number and severity of the risk associated with runway incursions. The ASDE-X provides the controller with improved surveillance at 25 airports not currently covered by the ASDE-3 and the airport movement safety system (AMASS). Initial deployment of ASDE-X will not include safety logic. Safety logic (like AMASS) will be added after surveillance performance is established. In FY 2003, the Key Site (Milwaukee) will reach IOC with ASDE-X, and four additional sites

will be installed. Based on performance of ASDE-X a decision will be made in 2003 to retrofit the 34 ASDE-3/AMASS sites by upgrading the ground infrastructure at airports that support both multilateration and ADS-B on the surface terminal airspace.

2.2.4 Surveillance Systems

Surveillance addresses safety outcomes by providing the critical information for separation of aircraft and detection of hazardous weather. The reliability of surveillance systems and continued improvement is important to safety, security, and efficiency goals. Primary radar and secondary beacon surveillance funding supports sustainment through service life extensions and replacement of older terminal radar and en route secondary surveillance beacons. The surface movement radar (ASDE-3) and the airport surveillance radar model 9 (ASR-9)/mode-select (Mode-S) are undergoing service life extensions. The ASR-11 is planned to replace older radar units. The replacement of air traffic control beacon interrogator model 6 (ATCBI-6) will be completed in 2006. The FAA will sustain long range primary radars that were going to be decommissioned and now will be retained. The DoD and the FAA are working jointly to identify the future mix of primary radar and, by June 2002, will have defined radar requirements. It is expected that the DoD will fund the replacement of the radar required for homeland defense.

Multilateration, a new feature of surveillance, measures the time of arrival of signals from aircraft to multiple ground receivers and calculates aircraft position. This technology is first used for ASDE-X. The infrastructure for multilateration also supports ADS-B. By adding ASDE-X infrastructure at additional airports, the NAS gains integration of surveillance, and provides the ability to support ADS-B technology insertion. The decision on locations and the extent of use of ADS-B will be made in 2003, and funding for this future surveillance infrastructure will begin in FY 2004.

2.2.4.1 Terminal Weather Risk Mitigation

The last terminal Doppler weather radar (TDWR) will become operational in 2002; in FY 2004, product enhancements and service life extension support will begin. Upgrades to next generation weather radar (NEXRAD) will be completed in 2006. Both the TDWR and the NEXRAD provide critical weather information to enhance safety and efficiency. Within the NEXRAD program is a new capability that combines NEXRAD data and the safety features of the integrated terminal weather system (ITWS) that is being deployed to larger airports.

In FY 2003, 24 production ITWS units will be delivered, adding to the four scheduled for delivery in FY 2002. By FY 2004, all systems will be operational and product improvements will be initiated to improve prediction time for severe weather. ITWS consolidates terminal weather information at 45 high-activity airports to improve controller situational awareness of severe weather. In FY 2003, a new weather capability, the medium intensity airport weather system (MIAWS), begins production system deployment following prototype testing in FY 2002 at Little Rock, AR, and Springfield, MO. This system is a scaled-down version of ITWS that integrates weather information and alerts controllers to severity, location, movement, and expected duration of hazardous weather. MIAWS will be deployed at 40 airport locations.

2.2.5 Information Security

The consequence of cyber attacks to disrupt NAS operations or insertion of rogue code within automation systems can be a safety hazard. It is not feasible to provide complete cyber protection for the NAS; however, the risk associated with information security failures must be reduced to acceptable levels. Priority systems must be protected against common threats and vulnerabilities. The FAA has the necessary policy for information security presently in place, has defined methods to identify risks, has reviewed many systems in the NAS, and has taken appropriate remedial actions. However, due to the age and diversity of systems, much work must be done. Following the attacks of September 11, 2001, physical security has been the priority, e.g., passenger and baggage screening, airport security, FAA facility security, and personnel security. In FY 2002 and FY 2003, funding focuses on information and communications systems that can create high safety consequences in the case of an attack and subsequent denial of services. Within their programs, new systems will build the necessary information security funding to safeguard services.

3.0 Improving Efficiency of the Air Traffic Control System

This goal category addresses increasing efficiency in the NAS, as defined in the OEP. The OEP is the FAA's commitment to meet the air transportation needs of the United States. Since the OEP supports both the efficiency and capacity goals of the agency, the CIP discusses contributions of the OEP to both goal areas. In this section, arrival and departure rate improvements, reducing en route congestion problems, and dealing with en route severe weather are discussed. In addition, improvements in terminal automation are provided since they represent the precursors to improving efficiency. Radio spectrum efficiency is addressed through the transition to digital air/ground communications.

The goals of the OEP are to:

- Describe the operational evolution of the NAS as it relates to increasing capacity while maintaining safety.
- Derive a set of credible initiatives that focus the aviation community on solutions for the 2002-2010 timeframe.
- Link these initiatives to a timetable and specific activities (e.g., procedure development, avionics packaging, and system acquisition) required of each member of the community.

Key capital programs to improve efficiency include OEP solution sets that increase predictability of services to the users, add flexibility to support their needs, and reduce the workload for the controller and pilot. The OEP focuses on the delivery of capabilities and services, not acquisitions. As a result, integration across LOBs and with the aviation community is necessary.

The FAA has invited the aviation community at large to participate in problem identification and solution validation. Each stakeholder has unique objectives, concerns, and investments in the NAS. Community agreement on the OEP clarifies the responsibilities of individual members of the aviation community and helps to establish a climate of accountability throughout the industry. To that end, the FAA has assigned a single point of accountability (with a support team from across all LOBs) for each solution set in the plan. Figure 4 shows the solution sets for the OEP. Improvements are targeted at increasing the airport arrival and departure rate, sustaining operations in airport weather conditions that degrade capacity and efficiency, responding effectively during severe en route weather conditions, and reducing en route congestion. Details about the solution sets may be found on the OEP web site at <http://www.faa.gov/programs/oep>.

Figure 4 Operational Evolution Plan Solution Sets



3.1 Arrival/Departure Rates

Programs funded in the CIP for terminal airspace and route redesign develop area navigation (RNAV) arrival and departure routes that use airspace more efficiently and reduce communications workload. These RNAV routes increase on-time departures, improve airport throughput, and improve predictability of services. Communications workload will be reduced between 17 and 42 percent, depending on the airport.

Decision support tools, funded in Free Flight Phases 1 and 2 and Air Traffic Management (ATM), are improving the sequencing of arrivals and departures. The Departure Spacing Program (DSP) is installed in New York and will be completed in Washington and Boston Air

Route Traffic Control Centers (ARTCC) in FY 2002. The single-center version of traffic management advisor (TMA) was implemented under Free Flight Phase 1, serving Dallas-Ft. Worth, Minneapolis, Denver, Miami, Oakland, Los Angeles, and Atlanta ARTCCs. These seven sites will be sustained during Free Flight Phase 2.

Airspace redesign and terminal facility improvements are being made to expand radar coverage and improve efficiency through reduced separation. The locations include Philadelphia, Santa Barbara (Central California), Southern California, Northern California, Phoenix, Cincinnati, Seattle, Charlotte, and Chicago. Terminal consolidation work is underway at Potomac (2003), Boston (2004), Atlanta (2005), and Houston is in design. Design work is underway to modify the airspace in the New York area. These measures are being taken to provide greater flexibility and use three-mile separation standards over more congested airspace.

As noted in section 2.2.1, Safe Flight 21 is also involved in increasing efficiency in surface movement, ranging from improved surveillance to cockpit moving maps to improve pilot situational awareness and reduce taxi delays.

3.2 En Route Congestion

Considerable NAS efficiency is lost when severe convective weather obstructs the flow of traffic or demand exceeds available services, leading to en route congestion. The enhanced traffic management system (ETMS) provides the technology that builds on yearly lessons learned and modification of procedures to refine strategic management of traffic. Web-based technologies are being used and developed at the Air Traffic Control System Command Center (ATCSCC) and the airline operations centers (AOC) to improve collaboration on weather reroutes and holding strategies to manage demand when weather reduces NAS capacity and efficiency.

The application of controller-pilot data link communications (CPDLC) will be tested at the Miami ARTCC through September 2002, with American Airlines serving as the launch partner. Development of an expanded message set for CPDLC will first be deployed at Miami in December 2005. National deployment to all centers will follow. Data link reduces controller and pilot workload, voice congestion, and improves the flow of traffic in the en route airspace.

In order to accommodate user preferred routing, the controllers needed a tool to take requests and look ahead at potential traffic conflicts. Thus, URET was developed, and is currently being deployed at seven centers. Funding is provided in this CIP to extend the deployment of URET to all 20 en route centers by the end of 2005. By the end of FY 2002, URET will be in Cleveland, Chicago, Kansas City, Washington, Atlanta, Memphis, and the Indianapolis ARTCCs. Daily use will begin at an additional four centers in FY 2003 and the remaining nine centers in FY 2004.

3.3 En Route Severe Weather

When severe weather restricts access to portions of the en route airspace, efficiency is lost. Funding is provided in the research and development (R&D) appropriation for weather research. The CIP provides funding for implementation of solutions as enhancements to weather products that forecast severe weather and for the dissemination of these products within the FAA and to

pilots and flight operations centers. Funding is provided for traffic flow management infrastructure (TFM-I), ITWS, next generation weather radar (NEXRAD) improvements, and the weather and radar processor (WARP) for product improvements. As part of the Free Flight Phase 2 program, funding is provided as part of the collaborative decision making activities to engineer, develop, and implement capabilities that mitigate the effects of severe weather on capacity.

A new technology, called the corridor integrated weather system (CIWS), will be evaluated during the 2002 convective weather season. The CIWS uses short-term weather forecasts on the time-scale of less than one hour within the corridor of heaviest air traffic between Chicago and the Atlantic coast. CIWS links together information from the ITWS to show a more regional picture of changing weather conditions. The prototype will be sustained through FY 2003. Selected ITWS units must be deployed before operational use of CIWS can be implemented. The CIP provides prototype funding for CIWS is within the NEXRAD budget line.

3.4 Terminal Automation

Improved efficiency in terminal operations is being made through installation of modern displays and automation to better integrate terminal and airport operations. The output for the standard terminal automation replacement system (STARS) is to provide a digital automation system capable of meeting expanding air traffic control needs in terminal airspace. In FY 2003, the FAA will procure 29 FAA and 19 DoD systems, assume delivery of 18 FAA and all 19 DoD systems, and deploy associated color displays to terminal and tower locations. Between FY 2004 and 2007, the FAA will deliver 232 STARS units. The program has experienced significant improvements since the creation of the FAA Terminal Business Service (ATB), the prototype performance-based organization (PBO). The Terminal Business Service is fielding other automation and display systems to both terminals and towers, accommodating service-life extensions and managing the automation transition.

3.5 Air/Ground Communications Infrastructure Changes to Gain Efficiency

The next generation communications system (NEXCOM) will deliver the multi-mode digital radar (MDR) and commission its first site in FY 2003. The contract for national deployment of the MDR is expected in 2005, and transition to digital radios will begin across the NAS in 2007. These radios will operate in analog mode and switch over to a digital mode that is more efficiently manages spectrum use. A significant benefit is the recovery of the much-needed very high frequency (VHF) spectrum. In the transition to digital air/ground voice, this VHF spectrum will be used to support other NAS communications functions, leaving NEXCOM to support data link.

4.0 Increasing Capacity of the National Airspace System

This section describes measures being taken to add capacity through capital investment by the FAA. Increasing airport arrival and departure rates and retaining capacity as weather deteriorates at these airports is part of the airport capacity solution. The FAA is requesting a consolidation of the navigation line items to begin providing a mix of satellite-based and ground-based navigation and landing capabilities. Oceanic and offshore capacity is increased through reductions in separation.

The first outcome for this goal category is to increase airport throughput by either adding new runways or reducing the gap between capacity in visual conditions and capacity in instrument meteorological conditions. Between FY 2003 through FY 2007, there are 12 new runways planned at the 31 benchmarked airports. While the airport operator decides when to construct and commission new runways, it is important for the FAA to invest in airspace and procedural changes, acquire necessary air traffic control systems, and provide necessary infrastructure in a timely manner. The FAA's Regional Administrators now have an effective program scheduling capability to assure accountability and ensure that capital investments are made in time for airport runway commissioning. While the emphasis is on the 31 benchmarked airports in the OEP, other airports will also receive added capacity through improvements to approach procedures.

The second outcome is to increase the capacity of offshore, and oceanic airspace to accommodate increased throughput by improving automation, communications, navigation, and surveillance.

4.1 Increase Arrival/Departure Rate

The OEP aligns the necessary F&E, airspace and procedural changes, and operational personnel to support planned new runways at the benchmarked airports. The new Detroit runway opened on December 11, 2001, adding a 25 percent increase in visual capacity and 17 percent in instrument capacity. In 2003, Denver, Miami, Orlando, and Houston will add new runways, increasing capacity between 10 and 34 percent in visual conditions and four to 37 percent in instrument conditions. All will open with sufficient FAA investment to produce the full benefits defined in the airport's environmental impact statement. Capital requirements vary between instrument approach navigational equipment to additional hardware to support added controller positions and are included in the CIP.

Increasing the airport throughput at delay-constrained airports in marginal visual or full instrument conditions requires investment in GPS, as augmented by WAAS and/or LAAS, and the addition of traditional instrument landing systems (ILS) for improved low-visibility approaches and landing. In FY 2003, approximately 30 ILSs will be installed, GPS/WAAS will be operational for LNAV/VNAV approaches, and GPS/LAAS procurements will be initiated. LAAS has the capability of adding precision approaches to all runway ends for the airport that the system serves.

4.2 Retaining Capacity in Airport Weather Conditions

As weather deteriorates, the airport begins to lose arrival and departure opportunities, causing the capacity of the airport to fall. The outcome of this solution set is to sustain the visual capacities of the airport for a longer period as weather deteriorates and to use existing runways for low-visibility operations. As airport throughput declines, delays accumulate at both the airport and throughout the NAS. Adding new instrument procedures to the existing runways helps to sustain airport visual capacities for a longer period of time as the weather deteriorates.

A significant improvement will be realized as GPS approaches (as augmented by either WAAS or LAAS) are deployed. New capabilities will be realized through the provision of instrument approach procedures that allow airport operations in reduced visibility. The WAAS augmentation will support a large number of new runways that currently have non-precision approaches or lack an approach completely. Satellite-based navigation supports expansion of general aviation capacity and adds safety as discussed in Section 2.2.1.

In FY 2003, WAAS will be operational, LAAS will start deployment, ILS will continue with its installment, and visual navigation aids to support instrument approaches or Safer Skies will be deployed. Funding for navigation aids have been increased. The satellite navigation and landing backup strategy is to be defined in FY 2002, and adjustments will be made in sustainment and replacement for en route navigation aids like the VHF omnidirectional range (VOR) system and DME. Tactical air navigation (TACAN) will continue to serve as the primary navigational aid for the DoD.

4.3 Consolidation of Navigation Line Items

In FY 2003, the FAA is proposing to consolidate all navigation and landing BLIs. This reflects the need to enable management flexibility as the FAA and DOT determines how to best deploy the mix of satellite and ground-based navigation and landing systems. Table 1 shows the changes in BLIs to three line items for ground-based navigation systems. Appendix B shows the goals for individual programs. The funding has been combined into a single line item in Appendix C. Baseline program variances will still be tracked at the project level.

Table 1 Budget Line Item Consolidation for Navigation/Landing Aids

FY 02 BLI	Program Title
1D01/1F01/ 2D12	Local Area Augmentation for Global Positioning System
1D02/1F01/ 2D08	Wide Area Augmentation for Global Positioning System
2D01	Very High Frequency Omni-Directional Range/Distance Measuring Equipment/Tactical Air Navigation Network
2D02	Instrument Landing System Establish/Upgrade
2D05	Approach Lighting System Improvement Program
2D06	Runway Visual Range Establish
2D07	Distance Measuring Equipment – Sustain
2D09	Non-Directional Beacon Facilities – Establish/Sustain
2D10	Visual Navigation Aids Establish/Expand
2D11	Visual Approach Slope Indicator Replacement – Replace with Precision Approach Path Indicator
2D14	Navigation and Landing Aids Service Life Extension Program
2D15	Long-Range Navigation – C System Upgrade/Modernization (LORAN)
2D17	Navigation and Landing Aids – Improve
2D18	Transponder Landing System

4.4 Expanding Offshore and Oceanic Capacity

Improvements in communications and navigation are reducing offshore separation in the Gulf of Mexico (GOM). Communications is being expanded for high altitude use through a combination of long-range VHF ground stations and floating buoys. With improved VHF communications, aircraft separation can be reduced, increasing capacity. The use of RNAV procedures is also reducing separation between aircraft. Funding in the CIP supports both communications and development of RNAV procedures. In 2004, automated flight data transfer will start between Mexico and the United States, reducing controller workload.

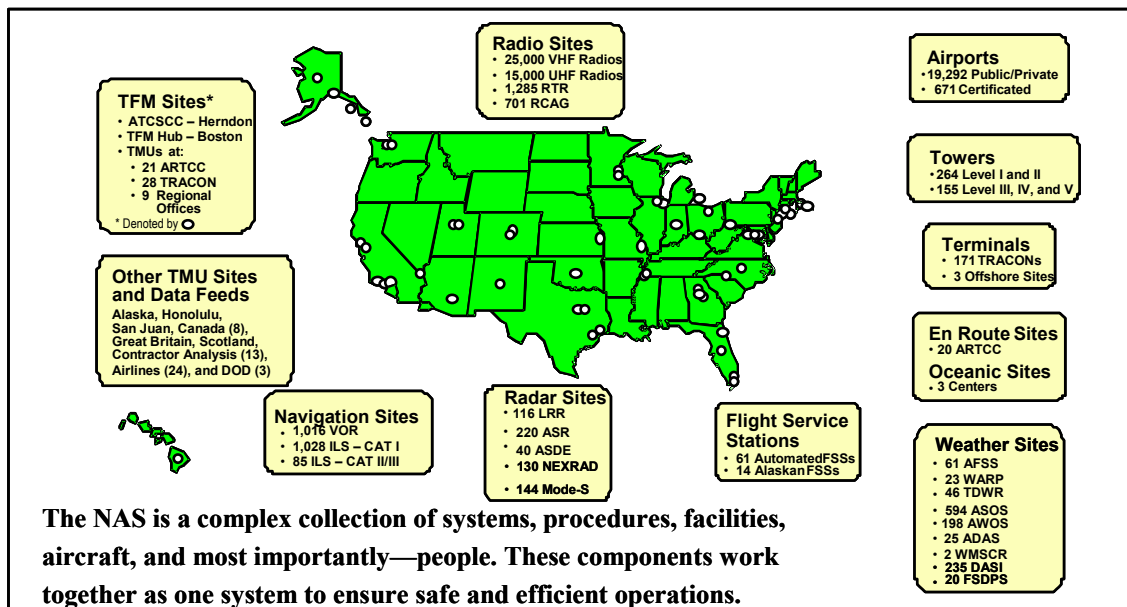
The CIP continues funding of the Advanced Technology and Oceanic Procedures (ATOP) Program. This program modernizes oceanic air traffic control systems, deploying an integrated system in addition to new air traffic control procedures at Oakland, Anchorage, and New York from 2003 to 2006. The outcome enables progressive reduction in separation to 30 miles longitudinal and 30 miles lateral in oceanic airspace, which will significantly increase both capacity and efficiency.

5.0 Improving Reliability of the National Airspace System

Reliability of service is critical to providing safety, efficiency and capacity improvements. The continuing investment in automation changes, communications, facilities, and facility infrastructure like power improvements are necessary.

The modernization of the NAS is on a magnitude not associated with any other aviation system in the world. The variety of equipment (1950s to 21st century technology), over 41,000 NAS operational facilities, and the vast array of users—from air traffic controllers to commercial airlines to the DoD—demands that the NAS delivers capabilities consistent with the expectations of the users. Figure 5 illustrates this diversity and the challenge the FAA faces in improving reliability of services and capabilities.

Figure 5 National Airspace Complexities



Modernization to improve reliability occurs in varied forms. Equipment at an unmanned site may be changed to accommodate new remote maintenance capabilities. Communications may migrate from electrical wire to fiber optics. Buildings may need to be rehabilitated to extend facility life, improve security, and/or accommodate growth. Automation needs to be replaced to increase reliability, avoid obsolescence, and allow additional functionality. Equipment may need to be upgraded to add access, such as is the case with homeland defense. These initiatives share a common outcome—providing a NAS that is more dependable, more efficient to operate and maintain, and more effective in delivery of services to NAS users.



5.1 En Route Automation

Four major activities are underway within en route automation. Each has a common output to provide the NAS users, controllers, and technicians with automation to improve services and reduce workload. En route automation changes address more than supportability of existing hardware and software. Automation changes are needed to build capabilities for growth in air traffic demand, modifications in airspace use, and improved communications, navigation and surveillance capabilities.

The host computer system (HCS) requires continuous software adaptation and modifications to deliver new capabilities such as reduced vertical separation minimums at and above flight level (FL) 290. Changes are being made to incorporate data link capabilities and provide software to support free flight tools. Peripheral equipment such as the flight data input and output (FDIO) devices are being replaced. Funding through FY 2005 completes the host/oceanic computer replacement (HOCSR). Oceanic equipment is being sustained while the FAA transitions to ATOP, as described in section 4.4 of this plan.

A new display processor has been developed for the direct access radar channel (DARC), which provides an independent backup in the event of an HCS or power failure, and a control processor will be completed in FY 2002. In FY 2003, the control processor will be installed, and conflict alert and Mode-C intruder alerts will be added to DARC. Other enhancements will continue to provide a robust backup capability prior to transition of the HCS software modernization.

The en route communications gateway (ECG) is the interface between en route automation and communications entering and leaving the automation systems. A contract was awarded for development in FY 2001. In FY 2002, equipment will be in place for testing and training and at the first Key Site (Seattle) will begin in late FY 2003.

A significant challenge to en route automation is the replacement of the obsolete and difficult to maintain en route automation software. This work extends beyond sustainment and adaptation, and creates the future of en route services and capabilities. The en route automation modernization (ERAM) will provide modular changes in software and added functions through FY 2007. In FY 2002, requirements will be defined and a contract awarded to begin the integration of commercial software and development of new functions. The funding for ERAM will increase substantially in FY 2005 to support production and implementation.

5.2 Telecommunications

Telecommunications includes voice switches, servers, demarcation equipment, and leased/owned communications connectivity between NAS facilities. The outputs include a mix of leased communications services and FAA equipment replacements. In FY 2002, the contract for the future telecommunications infrastructure (FTI) will be awarded. In FY 2003, the FAA will begin the transfer of the existing leased inter-facility NAS communications system (LINCS) and portions of the national airspace data interchange network (NADIN) to the new FTI.

The NAS is evolving into a substantial information system with growing communications

requirements. The movement of information, ranging from target information from surveillance, to airspace flight restrictions, to weather graphics, requires increases in owned and leased circuits, communications switches, servers, routers, and the necessary information security protection that this increased connectivity brings. Telecommunications costs will rise, as more information must be exchanged between more systems and users of the NAS.

5.3 Facilities Modernization

There are over 400 towers, 171 terminal facilities, 21 centers, three oceanic centers, 75 flight service stations (FSS), and thousands of unmanned buildings housing communications, navigation, and surveillance equipment. There are nine regional offices, the FAA Aeronautical Center (FAAAC), and the FAA Technical Center (FAATC). Like any property owner, the FAA must re-capitalize its investment in buildings, replace roofs, sustain heating and air conditioning, maintain access roads, and improve survivability from earthquakes and weather related events. The FAA must increase the security of FAA facilities. Unlike many business enterprises, the FAA must maintain 24-hours, seven days-a-week operations, and conduct facility construction at the same time.

Space must be modified to accommodate new equipment, sectors must be added to relieve congestion, and new tower and terminal construction must, in many cases, be timed to other development projects managed by the airport operator. The FY 2003 budget provides over \$313 million for facility modernization and sustainment. By FY 2005, this cost will grow to over \$376 million. Aging infrastructure is one of the consequences of operating in a technologically accelerating air transportation system.

5.4 Power Systems Support

One of the more critical elements of NAS performance is adequate, sustainable power. The quality of commercial power is declining, and sophisticated equipment is more vulnerable to power problems. This issue requires the FAA to provide updated power conditioning and stand-by power to maintain high availability of systems in the NAS. The FAA must install uninterruptible power systems (UPS) at 176 terminal facilities, replace critical power batteries and make power upgrades at 21 centers, improve power cabling at 77 high-activity airports, and replace 2,250 engine generators. The FAA has baselined the power systems sustainment through FY 2003, and will add an additional 100 locations to be upgraded starting in FY 2004. By FY 2007, an estimated \$100 million will be needed to continue sustainment of power systems.

6.0 Improving Efficiency of Mission Support

This goal category focuses on the funding used to provide support to NAS operations and capital development. While some funding for leases are fixed, there are opportunities to leverage technology development to improve FAA efficiency. Basic support services are provided to sustain reliable NAS services.

This category consists of the following:

- Laboratory support for engineering development, test, and evaluation
- Environmental actions
- Occupational safety and health (OSH) and hazardous materials (HAZMAT) work at facilities
- Information technology (IT) development
- Asset supply chain management (ASCM)
- Facility physical security
- Distance learning and training development
- Leases and logistical support

Another aspect is in the engineering support to design the evolution of the NAS. This aspect includes funding for system engineering, the Center for Advanced Aviation Systems Development (CAASD), the NAS implementation support contract (NISC), and the technical support services contract (TSSC). System engineering and CAASD focus on NAS Modernization, Architecture development, planning, and decision-making about the evolution of the NAS. The NISC and TSSC are designated for design and implementation of NAS improvements.

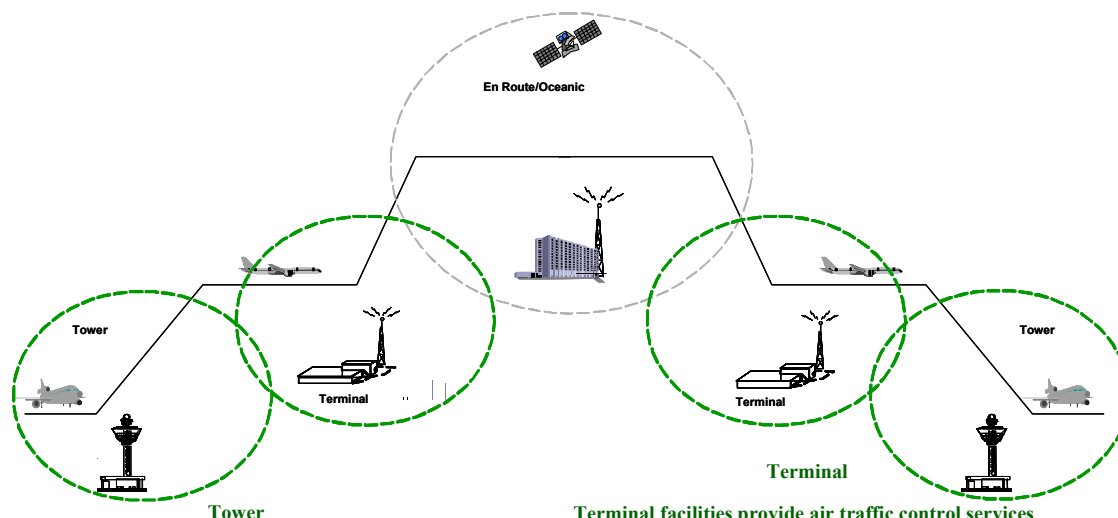
7.0 Air Traffic Organization – Terminal Business Service is Now Operational

The FAA has established a PBO to manage terminal area air traffic control capabilities. The ATB focuses on delivering air traffic control service capabilities, not just on delivering equipment. Managing the capabilities does not end once a piece of equipment is fielded—the responsibility and accountability for providing the service continues—ensuring that air traffic controllers and system specialists are able to provide the service to the flying public.

The FAA has developed this business-oriented organization that focuses on the terminal infrastructure and services. The ATB was designed to implement best business practices to manage the resources used in the movement of air traffic in the terminal environment. The terminal environment consists of the geographic and airspace volume used for the enplanement of passengers, and the departure and approach phases of flight, and is the most densely populated airspace in the NAS. Figure 6 shows the domain responsibility for the ATB.

The business approach also accounts for the tools used in the movement of air traffic. The elements of surveillance, automation, facilities, and personnel were consolidated under one management unit. This grouping of outputs ensures that all facets of the NAS used to move air traffic in the terminal domain will be managed by one organization.

Figure 6 Terminal and Tower Domains under Responsibility of the Terminal Business Service



Tower controllers manage and control airspace within approximately five miles of an airport, including taxiways and runways. Tower controllers control ground operations and departing and landing traffic. Traffic is passed between the tower and terminal controllers. Towers are provided with flight planning information by the en route computer system. Weather information is available from airport sensors and weather processing and distribution through communications links.

Terminal facilities provide air traffic control services for an airspace located approximately 40 miles from an airport and usually below 10,000 feet in altitude. These dimensions are changing to extend more flexibility in using the airspace. The terminal controller establishes and maintains the sequence and separation of aircraft taking off and landing or operating within the terminal airspace. Terminals are interconnected with local towers and provided surveillance and position data of aircraft under terminal control to displays within the tower. Selected terminal facilities are interconnected to the traffic flow management systems at the Air Traffic Control System Command Center. Flight planning information is provided from the en route computer system. Weather data are provided from weather processing and distribution through communications links.

This business approach is inclusive of budgets, projects, and initiatives, and is designed to make the terminal environment cost effective and efficient. The primary mission of ATB is to provide integrated terminal air traffic capabilities in the most operationally efficient and effective means possible, commensurate with the FAA's strategic performance outcome and output goals. The ATB has defined strategic objectives to support the evaluation of competing initiatives. The ATB strategic objectives are comprised of the following:

- Address critical safety and security needs in the terminal air traffic control environment where the impact to the economy and general public is greatest.
- Reduce the risk to service by effectively sustaining existing infrastructure.
- Provide new terminal air traffic control capabilities.

As an example of the business approach, the ATB is focusing its efforts on minimizing risk and meeting needs where the impact to the public may be greatest. The top-level priority of the ATB modernization efforts is to resolve safety and efficiency at the busiest U.S. airports. The NAS requires a combination of modern technology and additional runways. The ATB, in partnership

with airport operators, is helping to plan and develop new runways to accommodate increased aircraft operations, and use new technologies to resolve congestion while meeting environmental requirements.

More specifically, the priority ATB modernization efforts are directed at the following:

- Eight major metropolitan airports (airports that experience a delay of greater than 15 minutes on three percent or more of their operations—prior to September 11, 2001),
- Thirty major metropolitan terminal areas, and
- The remaining terminal/tower areas (approximately 430).

In the FY 2003 budget submittal, there is a consolidation of BLIs under the ATB. This consolidation enables greater management flexibility to address FAA performance goals. Appendix B shows the goals for individual projects, but the funding has been combined into the new categories in Appendix C.

There will be no change in requirements for the ATB to manage projects to baseline cost, schedule, and performance targets. Baseline program variances will therefore still be tracked at the project level. Table 2 shows the FY 2002 programs that have been consolidated into two budget line items. One is the combination of the surveillance programs as a safety output, the other is the balance of the ATB automation and infrastructure work. The combined investments of these programs are approximately \$692 million.

Table 2 Budget Line Item Consolidation for the Terminal Business Service

FY 2002 BLI	Program Title Safety Category as New FY 2003 BLI 1A01
2A02	Next Generation Weather Radar - Provide
2A09	Air Traffic Control Beacon Interrogator Replacement
2A18	Air Traffic Control En Route Radar Facilities
2B01	Terminal Doppler Weather Radar – Provide
2B03	Airport Surface Detection Equipment
2B04	Airport Movement Area Safety System
2B14	Terminal Digital Radar (Airport Surveillance Radar - 11)
2B15	Airport Surveillance Radar – Weather Systems Processor
2B17	Airport Surveillance Radar (Airport Surveillance Radar - 9)
2B18	Mode-Select – Provide
2B20	Precision Runway Monitors
2B21	Airport Surface Detection Equipment Model X
2B23	Terminal Radar (Airport Surveillance Radar) Improve
FY 2002 BLI	Program Title Efficiency Category as New FY 2003 BLI 2A01
1B01	Terminal Automation Program
2B02	Terminal Automation Program
2B05	Terminal Air Traffic Control Facilities - Replace
2B06	Air Traffic Control Tower/Terminal Radar Approach Control Facilities – Improve
2B09	Potomac Terminal Radar Approach Control
2B10	Northern California Terminal Radar Approach Control
2B11	Atlanta Terminal Radar Approach Control
2B19	Terminal Applied Engineering
2B22	Houston Area Air Traffic System
2A01**	En Route Automation
4A08**	Permanent Change of Station Personnel Moves
**	Portions of the funding only

8.0 Measuring Progress

To measure progress, the following approach has been applied: (1) goals establish the overall objective and (2) metrics are employed to measure the progress toward achieving those goals. There are two types of performance-based goals, outcomes and outputs. Both are defined as measurable objectives. Output goals, in the context of the CIP, consist of the delivery of a product that supports the goal. In some instances, a program may support more than one goal. An output goal is narrow in scope and is measurable in terms of commitments within the programs to deliver capabilities that in turn deliver services.

Outcome goals relate to the changes in service performance—safer, more efficient, increased capacity, or reduced security risks. As the FAA implements a performance based organization, this realignment around goals will assist in setting priorities and managing agency performance to achieve the needed outcomes.

Safety improvement metrics and security measures are defined in the FAA Strategic Plan. Metrics are defined for the 31 capacity-constrained benchmark airports. Metrics have been in place for over two years in the Free Flight Phase 1 Program and now with the OEP. Specific performance goals for the performance based organization are under development.

9.0 Organization of the Capital Investment Plan Appendices

This CIP differs in perspective compared to the FY 2002 CIP. The FAA has prepared budgetary requirements for submission to Congress aligned to organizational goals. This CIP is organized to provide insight on the alignment of capital investments to programs supporting the attainment of measurable goals.

Appendix A describes the relationships between the DOT and FAA Strategic Goals and the outputs from capital investments.

Appendix B uses the same program-related performance structure as last year and is a matrix of the funding aligned to BLI and FAA Goals. It details each CIP project output goal by BLI number, FY 2001 accomplishments, and FY 2002 through 2007 performance goals.

Appendix C is the budget spreadsheet for FY 2003 through 2007, and is similar to the FY 2002 CIP with the exception of the consolidation of line items in navigation and the ATB.

Appendix D is an acronym list.

10.0 Conclusion

This FY 2003 through 2007 CIP is submitted to Congress describing a five-year view of the FAA's planned investments. At budget submittal, a key element of capitalization is still under review, the requirements for homeland defense, including surveillance, automation, and communications changes. The FAA will inform Congress of any changes in these areas as planning progresses.

Appendix A

Organization of Categories

Facilities and Equipment (F&E) Fiscal Year (FY) 2003 Budget Line Items (BLI) have been assigned to one of five categories; all costs related to Personnel, Compensation, Benefits, and Travel (PCB&T) are included in Category 6. The categories are:

- Category 1: Improve Aviation Safety
 - Subcategory 1AXX: Reduce Commercial Aviation Fatalities
 - Subcategory 1BXX: Reduce General Aviation Fatalities
 - Subcategory 1CXX: Overall Aviation Safety Improvement
- Category 2: Improve Efficiency of the Air Traffic Control System
 - Subcategory 2AXX: Increase Number of Flights Handled by Airports
 - Subcategory 2BXX: Improve Routing Efficiency for Flights En Route
 - Subcategory 2CXX: Overall National Airspace System Improvement
- Category 3: Increase Capacity of the National Airspace System
 - Subcategory 3AXX: Increase Capability of En Route Systems to Handle Flights
- Category 4: Improve the Reliability of the National Airspace System
 - Subcategory 4AXX: Replace Terminal Equipment to Prevent Decreased Performance
 - Subcategory 4BXX: Replace En Route Equipment to Prevent Decreased Performance
 - Subcategory 4CXX: Replace Supporting Systems that Impact Overall National Airspace System Performance
- Category 5: Improve the Efficiency of Mission Support
 - Subcategory 5AXX: Increase Efficiency of Investment Management
 - Subcategory 5BXX: Minimize Environmental Impact of Aviation Facilities
- Category 6: Personnel, Compensation, Benefits, and Travel Only

Each BLI may contain one or more Capital Investment Plan (CIP) projects, but it is assigned to only one category. In general, many of the Federal Aviation Administration (FAA) capital investments will contribute to more than one goal.

By direction of the Office of Management and Budget (OMB), all projects are aligned to Department of Transportation (DOT) and corresponding FAA Goals. The contributions of each CIP project in meeting DOT/FAA Goals are supplied in the “Narratives for Primary or Secondary Goals” sections.

In this CIP, category assignment for each BLI was accomplished by reviewing all CIP projects and their goals and determining the most significant contribution to one goal in terms of funding and outcome contribution.

The definitions of categories and DOT and FAA Goals are provided at the beginning of each category.

Format of Appendix A

The sections of this appendix present information by F&E projects organized in the following format:

Category Number: BLI Number BLI Name
Project Name #1

Primary Outcome Goal: FAA Goal: The primary goal that the capital investment supports.

Narrative for Primary Outcome Goal:

Description of the outcome or outputs that contribute to changes in capabilities or services.

Category 1

Definition of Category 1: Improve Aviation Safety

This category identifies programs that contribute to the aviation safety and security relationship within the National Airspace System (NAS). It contains the outcome and output goals of safety and security.

1. FAA Goal: Safety: *Reduce fatal aviation accident rates by 80 percent in 10 years.*

2. FAA Goal: National Security: *Prevent security incidents in the aviation system.*

1. Strategies to Achieve FAA Safety Goals:

Accident Prevention: *Prevent accidents before they happen through appropriate, targeted, systematic interventions in the aviation system.*

Safety Information Sharing and Analysis: *Develop partnerships with the aviation community to share data and information, supporting safe, secure aviation.*

Certification and Surveillance: *Develop new approaches to working with others on certification, inspection, and surveillance, and target FAA resources.*

FAA Annual Performance Goals:

Air Carrier Fatal Aircraft Rate – *Reduce the fatal aviation accident rate for commercial air carriers from a 1994-1996 baseline of 0.051 fatal accidents per 100,000 departures. The Fiscal Year (FY) 2003 target is 0.033 per 100,000 departures—with the reduction to be achieved in six key areas outlined in the Safer Skies Agenda.*

General Aviation (GA) Fatal Aircraft Rate – *By 2007, reduce the GA fatal accidents by an amount that results in a 20 percent improvement from the projected total for that year. Assuming a 1.6 percent annual growth in activity, the annual number of GA fatal accidents is projected to grow from the three-year baseline of 379 for 1996 to 1998 to be 437 in 2007. The 2003 target is 374.*

Operational Errors – *Reduce operational errors per one million activities. The FY 2003 goal is no more than 6.5 per million.*

Runway Incursions – *Reduce the number and rate (per 100,000 operations) of runway incursions. The*

FY 2003 goal is no more than 56 runway incursions per 0.08 of 100,000 operations.

2. Strategies to Achieve FAA National Security Goals:

Security Baseline: *Continue to improve the baseline security system for civil aviation and address vulnerabilities that may remain.*

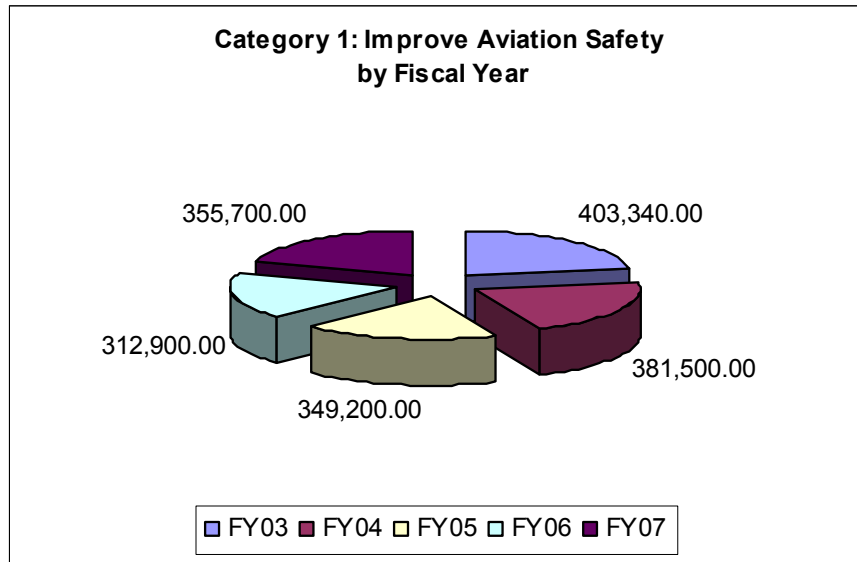
Information Security: *Develop and implement a comprehensive information system security (ISS) program and security activities to protect the national airspace and mission support systems.*

FAA Annual Performance Goals:

Explosive Device and Weapons Detection – Increase the detection rate for explosives and weapons that may be brought aboard an aircraft. The detection rates are sensitive information protected under Code of Federal Regulations (CFR) Part 191.

Information Security – Develop and implement a comprehensive ISS program and security activities to protect the national airspace and mission support systems.

The following graph indicates distribution of funding for F&E programs in Category 1: Improve Aviation Safety for FY 2003 to 2007. Funding in thousands.



Category 1: 1A01 Terminal Business Unit: 1A01A Next Generation Weather Radar – Provide

- **Next Generation Weather Radar – Open Systems Upgrades**
- **Medium-Intensity Airport Weather System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve NAS safety through better detection and characterization of hazardous weather phenomena, which is achieved by technology upgrades to the next generation weather radar (NEXRAD) systems, and implementation of medium intensity airport weather system (MIAWS) to airports with limited wind shear detection capabilities. MIAWS will be used to alert air traffic control to the severity, location, movement, and expected duration of hazardous weather phenomena.

The initial objective of MIAWS, a product improvement under the NEXRAD Program, is to provide a low-cost, real-time weather display of storm positions and estimated storm tracks at airports utilizing NEXRAD product data as its primary input. MIAWS provides enhanced capabilities to medium-intensity air traffic control towers (ATCT) at a significantly lower cost than systems employed at high-intensity airports. MIAWS also provides weather situational awareness information—storm position, estimated storm tracks, and precipitation alerts—and user interfaces with air traffic via situation displays and ribbon terminals to medium-sized airports. MIAWS provides air traffic control with real-time critical hazardous weather information needed to safely and efficiently manage the flow of air traffic. NEXRAD provides a national network of weather radar currently in use that detects, processes, distributes, and displays hazardous and routine weather information.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Reduce weather-related delays through better strategic awareness and communication of weather phenomena. Communication across the NAS will support decisions concerning arrival and departure routes and reconfiguration of airport runways.

Category 1: 1A01 Terminal Business Unit: 1A01B Terminal Doppler Weather Radar – Provide

- **Terminal Doppler Weather Radar – Product Improvements**
- **Terminal Doppler Weather Radar – Service Life Extension Program**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative of Primary Outcome Goal:

Increase aviation safety with the accurate and timely detection of hazardous aviation weather conditions. The primary mission of the terminal doppler weather radar (TDWR) is to enhance the safety of air travel through timely detection and reporting of hazardous wind shear in and near an airport's terminal approach and departure zone by detecting microburst and gust fronts.

Air traffic control radar currently detects the location and intensity of precipitation. The presence, location, and altitude of hazardous weather phenomena, such as microburst and gust fronts producing wind shear conditions, are not adequately determined. The TDWR Program establishes a terminal aviation weather radar capability that provides accurate aviation weather products (microburst, gust fronts, and related hazardous wind shear), and furnishes software algorithms to improve the radar presentation of weather data.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Improve the management of air traffic in the terminal area through TDWR-derived forecasts of gust front-induced wind shifts and precipitation.

The TDWR deployed at commercial airports have reduced weather related arrival and/or departure delays, resulting in savings in aviation fuel consumption. TDWR provides improved runway/airfield management through the detection and display of microburst, gust fronts, precipitation, and the prediction of wind shifts.

Category 1: 1A01 Terminal Business Unit: 1A01C Airport Surface Detection Equipment

Airport Surface Movement Detection Equipment Model 3 Service Life Extension Program

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Extend service life of airport surface detection equipment (ASDE) model 3, which provides air traffic controllers with a video display of aircraft, vehicles, and obstacles on an airport's runways and taxiways, to continue to assist controllers in safely managing terminal traffic. Because the ASDE-3 radar is the primary detection sensor input to the airport movement area safety system (AMASS), extending the service life of the ASDE-3 positively impacts the service life of the AMASS.

The ASDE-3 provides positive ground surveillance and assistance to air traffic controllers in expediting aircraft flow during conditions of restricted visibility. The ASDE-3 radar assists the ground controller to prevent collision situations, and provides orderly movement of aircraft and ground vehicles on the airport surface when visibility restrictions prevent controllers, pilots, or vehicle operators from seeing other ground traffic on the airport surface. The service life extension program (SLEP) addresses obsolete parts and parts that impact the reliability and maintainability; the SLEP activities will ultimately extend the useful life of the ASDE-3 an additional 10 years beyond the original 20-year life cycle to 2015.

**Category 1: 1A01 Terminal Business Unit: 1A01D Airport Movement Area Safety System
Airport Movement Area Safety System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve system safety in the terminal area through the use of surface detection hardware and software that provides air traffic controllers with both a video display of aircraft, vehicles, and obstacles on the airport's runways and taxiways and an automatically generated visual and aural alarm alert to aid in the prevention of loss of life and property as a result of runway incursions and other potential unsafe conditions.

The AMASS adds an automation enhancement to ASDE-3 that provides tower controllers with a visual and aural alarm of potential collisions on the airport's surface. The AMASS is comprised of two subsystems—the AMASS processor and the terminal automation interface unit (TAIU). The TAIU interfaces with the airport surveillance radar (ASR) model 9 and the automated radar terminal system (ARTS) automation equipment to provide airborne aircraft position and runway prediction information to the AMASS for alert processing. The AMASS is used as a safety system by ground controllers at operational ASDE-3 sites.

**Category 1: 1A01 Terminal Business Unit: 1A01E Weather Systems Processor
Airport Surveillance Radar Weather Systems Processor**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

IMPROVE AVIATION SAFETY BY PROVIDING AIR TRAFFIC CONTROLLERS WARNINGS OF WIND SHEAR AND MICROBURST EVENTS FOR IMMEDIATE ISSUE TO PILOTS. THE WEATHER SYSTEMS PROCESSOR (WSP), A LOW COST ALTERNATIVE TO TDWR, PROVIDES HAZARDOUS WEATHER SITUATIONAL AWARENESS BETWEEN TOWER AND TERMINAL RADAR APPROACH CONTROL (TRACON) PERSONNEL, INCLUDING PREDICTIONS OF GUST FRONTS AND STORM CELL MOTION THAT WILL ALLOW IMPROVED RUNWAY RECONFIGURATION IN ADVANCE OF FUTURE WIND SHIFTS.

TO IMPROVE FLIGHT SAFETY, THE FAA INSTALLED WSPS AT MEDIUM- AND LARGE-SIZED AIRPORTS THAT COULD NOT SITE A TDWR TO DETECT AND WARN PILOTS OF HAZARDOUS WIND SHEARS AND MICROBURSTS IN THE VICINITY OF RUNWAYS. THE WSP PROVIDES ADVANCE WARNING TO CONTROLLERS AND PILOTS OF HAZARDOUS WIND SHEAR AND OTHER HAZARDOUS WEATHER CONDITIONS.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Improve system efficiency by significantly increasing aviation fuel savings, improving airport capacity under hazardous weather conditions and reducing hazardous weather flight delays. Operational benefits of the system include real-time detection of hazardous weather and microbursts and increased safety (accident avoidance) and capacity (more runway availability and better efficiency of operation during thunderstorm days).

The WSP Program establishes a terminal aviation weather radar capability at ASR-equipped airports that do not receive the TDWR. These airports have a high exposure to wind shear and conduct medium to high amounts of air traffic operations. Sixty-five percent of annual air traffic control system delays are attributable to weather, and annually account for \$1.7 billion of direct costs to the airline industry.

**Category 1: 1A01 Terminal Business Unit: 1A01F Airport Surface Detection Equipment – Model X
Airport Surface Detection Equipment Model X**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Provide detailed coverage of runways and taxiways and alert air traffic controllers, both aurally

and visually, to potential collisions. Provide controllers with improved situational awareness, which will reduce runway collision risks, ultimately improving the safety of the nation's runways.

The airport surface environment is becoming an increasingly complex place. As air traffic increases, the needs of air traffic control are expanding to fully utilize runways and taxiways, even during low visibility situations and inclement weather. The ASDE-x system's technologies (surveillance, conflict detection and alerting, and controller display) will improve runway safety and prevent runway incursion accidents by increasing airport controller situational awareness.

ASDE-x improves controller situational awareness by providing visual representation of the traffic situation on the airport surface in the form of aircraft position information, flight call signs, and by alerting controllers through aural and visual alarms that a potential accident may occur. The ASDE-x system depicts aircraft vehicle position and identification information overlaid on a color map showing the surface movement area and arrival corridors during all weather conditions.

The core ASDE-x system will consist of a primary radar subsystem, multilateration/automatic dependent surveillance broadcast (ADS-B) subsystem, multi-processor/data fusion subsystem, and controller display. System enhancements include safety logic (to provide conflict detection alerting), dual-radar fusion, ASDE-3 fusion, and the remote tower design. These planned enhancements include audible and visual warning of impending conflicts or collisions, and the capability to accept future surveillance sensor inputs. ASDE-x was designed for airports that are not covered by the ASDE-3/AMASS projects. This system, which is modular and scalable, will detect and identify cooperative (transponder equipped) and non-cooperative aircraft/vehicles, provide interface and fusing capability of multiple surveillance sensor inputs, and supply single target display of position and flight identification information to the controller.

Category 1: 1A02 Aviation Weather Service Improvements

- **Integrated Terminal Weather Systems – Development/Procurement**
- **Integrated Terminal Weather Systems – Corridor Integrated Weather System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve safety by detection, forecasting, processing, and delivery of aviation weather information to pilots, airline operations centers (AOC), and controllers. The integrated terminal weather system (ITWS) provides terminal aviation weather data and integrated products from other sensors, including TDWR, NEXRAD, low level wind shear alert system (LLWAS), and automated surface observing system (ASOS). ITWS will cover 45 high-activity airports that have significant convective weather.

ITWS will provide products to terminal aviation system users that characterize the current terminal weather situation in addition to providing a forecast of anticipated weather conditions

for the next 20 minutes. These objectives will be achieved by integrating data and products from various FAA and National Weather Service (NWS) sensors (e.g., TDWR, ASR, NEXRAD, LLWAS, and ASOS), aircraft (via the meteorological data collection and reporting system), and other NWS weather information systems. Products generated by ITWS will include wind shear and microburst predictions, storm cell and lightning information, and terminal area winds aloft. ITWS is to acquire and deploy 37 ITWS systems. A single TRACON can cover multiple airports; therefore, 34 ITWSs at TRACONs will cover 46 airports.

Category 1: 1A03 Low Level Wind Shear Alert System – Upgrade

- **Low Level Wind Shear Alert System – Upgrade Low Level Wind Shear Alert System to Expanded Network Configuration**
 - **Low Level Wind Shear Alert System – Disposal/Decommissioning of Low Level Wind Shear Alert System Model 2**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Monitor the airport area and alert pilots, through the air traffic controllers, when hazardous wind shear conditions are detected. Severe wind shear/microburst conditions that occur at low altitudes near airports can pose a significant threat to aircraft during takeoff or landing. Wind shear conditions are common in the United States, especially in areas where thunderstorms are frequent.

The LLWAS-Relocation/Sustain upgrade will improve accuracy and increase the probability of detection of wind shear events. The LLWAS-Relocation/Sustain upgrade adds additional wind speed and direction remote stations, realigns the remote station poles to new runway configurations, focuses alerts to specific runways, and extends the service life of the equipment with modern technology.

There are three projects running simultaneously within the overall LLWAS-Relocation/Sustain Program:

- **LLWAS Pole Relocation Project:** Improve current performance by relocating/replacing and adding height to remote stations and poles.
- **LLWAS Sustainment Project:** Upgrade 40 stand-alone LLWAS-2 systems to the LLWAS-Network Expansion performance level and address system supportability issues. The LLWAS-2's upgrade to the sustainment configuration will reduce costs by eliminating obsolete equipment. When the ASR-9 associated with the Daytona Beach Airport was relocated, the Daytona Beach site became ineligible for ASR/WSP because the radar was sited outside the range parameter necessary for WSP operation. Therefore, Daytona Beach has become the 40th candidate for the LLWAS sustainment site.
- **The LLWAS-Relocation/Sustain Program:** Also upgrade nine existing LLWAS-Network Expansion sites to the LLWAS-Network Expansion++ configuration. The LLWAS-Network Expansion++ rehosted the LLWAS-Network Expansion algorithm on a modern computer

platform and upgraded much of the hardware to extend its service life. The LLWAS-Network Expansion++ is a separate and more robust configuration from the LLWAS-Relocation/Sustain that is used especially at large and busy airports with multiple runways. The nine LLWAS-Network Expansion sites will be upgraded to LLWAS-Network Expansion++ as part of the sustainment project.

The LLWAS Disposal/Decommissioning project disposes of LLWAS-2 systems that have been replaced by WSP or TDWR systems. Disposal of 40 LLWAS-2 systems is scheduled to begin in FY 2004 in order to restore the sites to their original condition.

Category 1: 1A04 Aviation Safety Analysis System

(A) Aviation Safety Analysis System

(B) System Approach for Safety Oversight

(A) Aviation Safety Analysis System

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve aviation safety and security through enhanced effectiveness in safety and security regulation and oversight of the civil aviation industry by improving the automation safety and security subsystems and tools that are essential for the safety and security work forces to accomplish their responsibilities. Provide information technology (IT) infrastructure and develop systems to facilitate partnerships with the aviation community to share data and information, supporting safe and secure aviation. The infrastructure and systems provide the tools necessary to enhance the effectiveness of the FAA's certification, inspection, and surveillance responsibilities in the safety and security areas in civil aviation.

Enhancements in automation safety and security systems and infrastructure are essential to establish safety and security standards; monitor aviation safety and security performance; conduct aviation safety education; perform safety and security research; issue and maintain certificates for the design and manufacture of aircraft and licenses for air operators and airmen, including medical certificates; designee monitor; maintain aircraft registration records; manage the FAA accident investigation program; and manage the FAA rulemaking program, which is the primary means by which safety and security standards and policies are disseminated.

(B) System Approach for Safety Oversight

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Provide the capability to identify aircraft accident causal factors and mitigate risks within all components of the system through the integration of business processes. The system approach

for safety oversight (SASO) expands oversight analysis by providing tools to use to identify patterns of sub critical individual failures that combine to create an accident. It provides a complete set of analytical tools to allow targeted inspections and identify actions in the areas of highest potential vulnerability and probability of hazard.

**Category 1: 1A05 Integrated Flight Quality Assurance
Integrated Flight Quality Assurance System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Provide an electronic capability for the collection and analysis of flight data from airline operations. Development of a secure Internet-based FAA electronic data acquisition and information infrastructure will allow the FAA to access airline flight operational quality assurance (FOQA) trend data for NAS oversight. It will also be used to develop FAA policy and conduct informed decision-making regarding aviation safety for the airlines.

**Category 1: 1A06 Safety Performance Analysis System
Safety Performance Analysis System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Assist aviation safety inspectors (ASI) by targeting critical areas for inspection. This system provides the capability to target certificate holders that pose a greater safety risk and dynamically modify the surveillance work programs. Additionally, it allows the FAA to monitor the status of aging fleet of aircraft and increases the industry accountability for aviation safety.

**Category 1: 1A07 Performance Enhancement Systems
Portable Performance Support System**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Contribute to improved aviation safety by providing ASIs mobile, transportable electronic tools to identify and track potential violations (based on past performance) and violations of safety standards. Identify the potential for discrepancies and violations for the aircraft fleet. This portable tool provides the ASIs an on the spot tool to use while conducting surveillance within their areas of jurisdiction.

Category 1: 1B01 Safe Flight 21

(A) Safe Flight 21 – Alaska Capstone Initiative

(B) Safe Flight 21 – Ohio Valley Prototype Project

(C) Automatic Dependent Surveillance Broadcast – Advanced Technology Development and Prototyping

(A) Safe Flight 21 – Alaska Capstone Initiative

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Reduce the number and rate of accidents, fatalities, and property damage, and improve aviation safety in Alaska through the integration of interdependent technologies. Capstone provides an improved ground and air infrastructure that furnishes pilots with better information on the location and severity of hazardous weather, proximity to terrain, improved instrument approaches to small airports, and traffic information for the reduction of mid-air collisions. Additionally, Capstone provides improved surveillance information to controllers to assist in sequencing, separation, flight following, and search and rescue (SAR) activities. Capstone will also provide a more useable instrument flight rules (IFR) infrastructure to expand available lower en route and approach/departure routes.

Under Capstone, the Alaskan Region serves as a real-world demonstration of communications, navigation, and surveillance (CNS) technologies, procedures, and certification techniques. Capstone uses avionics and a ground infrastructure that have passed testing, certification, and operational approval for the safe introduction of systems into the existing Alaskan operational environment and the NAS. Capstone implements technology used by small aircraft, and focuses on operational benefits that can result from implementing avionics, ground systems, and operational procedures. Aircraft chosen to participate in the avionics validation are equipped with the following:

- An IFR-certified global positioning system (GPS) receiver for enhanced visual navigation capabilities; augmentation to receive wide area augmentation system (WAAS) signals as WAAS becomes available;
- A universal access transceiver (UAT) data link radio to provide the pilot with current decision-making information via ADS-B, traffic information service-broadcast (TIS-B), and flight information services broadcast (FIS-B);
- A panel-mounted, multiple function color display to present information from the above components, and to present a terrain advisory database (to include a terrain awareness and warning system (TAWS)) to help avoid collisions with terrain.

The major ground system components are as follows:

- Modification to the Anchorage Air Route Traffic Control Center (ARTCC) micro en route automated radar terminal system (MicroEARTS) automation system to incorporate ADS-B

- data for processing and display at the Anchorage ARTCC and Bethel Tower;
- Ground broadcast transceiver (GBT) remote ground stations with communication and router capability to the Anchorage ARTCC;
- Multilateration as a means to supplement ADS-B to provide information on transponder-equipped aircraft to controllers;
- FAA-certified automated weather observation systems (AWOS) model III with radio broadcast capability installed to enable air carrier use of the new non-precision GPS instrument approach procedures;
- Additional voice communications, as needed, to increase communications coverage to lower en route and approach/departure routes.

Increased safety benefits will result from:

- Supplying text and graphical weather to the pilot via data link;
- Increasing pilot situational awareness by providing cost-effective terrain and obstacle information;
- Improving low visibility terminal operations by installing AWOS facilities and designing GPS approaches in remote village airports;
- Providing traffic information to the cockpit using ADS-B, cockpit traffic displays, and TIS-B;
- Using an on-board traffic/navigation display and ADS-B to make needed flight path adjustments;
- Equipping vehicles in the airport movement area with ADS-B to increase pilot and vehicle operation situational awareness on the airport surface;
- Using ADS-B to provide additional surveillance coverage and fill gaps in current radar coverage;
- Integrating ADS-B data with radar and air traffic control automation systems to improve air traffic control capabilities.

(B) Safe Flight 21 – Ohio Valley Prototype Project

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve flight route flexibility and reduce delays through the use of ADS-B technology to achieve user-preferred routes and to maximize airspace and airport resources. ADS-B will serve as enabling technology for the free flight capability in the NAS.

In the oceanic, en route, and terminal environments, the increased flexibility and accessibility through the use of ADS-B technology will allow more aircraft to fly at their optimum altitude, speed, and routing, resulting in improved economic savings to the user. The evaluation of the Safe Flight 21 applications that support ADS-B and other related technologies will address arrival and departure capacity issues in all weather conditions, and provide enhanced

surveillance and improved situational awareness for airspace users.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Secondary Outcome Goal:

Improve aviation safety through the evaluation and validation of Safe Flight 21 applications in the oceanic, en route, terminal, and surface domains. Development of ADS-B and other related technology applications through rigorous testing, simulation, procedures validation, and analysis will result in enhanced situational awareness for air traffic controllers, dispatchers, pilots, and airport vehicle operators, and enhance overall system safety.

The use of ADS-B and other related technologies has significant potential for enhancing surveillance in air-to-air (A/A), air-to-ground (A/G), and ground-to-ground (G/G) operations. Safe Flight 21 applications will enhance the “see and be seen” flight and ground operations environment. The capability to use fast-update and highly accurate information and knowledge about aircraft and vehicle movements will significantly improve safety. Increased safety benefits can result from:

- Expanded and improved situational awareness for air traffic controllers, dispatchers, pilots, and airport vehicle operators in the oceanic, en route, terminal, and surface domains:
 - Improved flight crew situational awareness of other nearby aircraft and ground traffic;
 - Improved air traffic controller situational awareness by providing surveillance information in all airport surface operational areas and in non-radar airspace;
 - Improved management by dispatchers and vehicle operators for movement on the airport surfaces;
 - Enhanced safety functions in air traffic control automation systems through the use of more accurate and timely ADS-B capabilities.

(C) Automatic Dependent Surveillance Broadcast – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve aviation safety through the development of system standards for ADS-B technology in terminal, en route, and oceanic airspace, as well as on the airport surface. Development of domestic (RTCA) and International Civil Aviation Organization (ICAO) ADS-B performance standards through rigorous testing, simulation, and analysis will enhance surveillance for the pilots and controllers and overall system safety.

ADS-B technology has significant potential to enhance surveillance in A/A, airport surface, and A/G applications. ADS-B technological applications enhance the “see and be seen” flight and

ground operations environment. The capability to use fast-update and highly accurate information and knowledge about aircraft and vehicle movements significantly improves safety. Increased safety benefits can result from:

- Expanded and improved situational awareness for air traffic controllers, dispatchers, pilots, and airport vehicle operators in the surface, terminal, and en route domains;
- Improved flight crew situational awareness of other nearby aircraft;
- Provided surveillance information in non-radar airport surfaces and in non-radar airspace;
- Improved visibility and situational awareness of aircraft and vehicles on airport surfaces;
- Enhanced safety functions in air traffic control (air traffic control) automation systems through the use of more accurate and timely ADS-B data.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Improved flight route flexibility and reduced delays through the use of ADS-B technology will help to achieve user-preferred routes and maximize airspace and airport resources. ADS-B will serve as enabling technology for free flight capabilities in the NAS. Development of ADS-B standards will permit more flexible flight routes and international harmonization of ADS-B capabilities.

In the oceanic, en route, and terminal environments, increased flexibility and accessibility through the use of ADS-B technology will allow more aircraft to fly at their optimum altitude, speed, and routing, resulting in improved economic savings to the user. ADS-B technological applications will also support all-weather operations in the air and on the ground. At airports, arrival and departure capacity decreases with inclement weather conditions. Airport capacity may be increased through the use of enhanced surveillance and improved situational awareness.

Category 1: 1C01 Advanced Technology Development and Prototyping

- A) Separation Standards – Advanced Technology Development and Prototyping**
- B) Runway Incursion Reduction – Advanced Technology Development and Prototyping**
- C) System Capacity, Planning, and Improvements – Advanced Technology Development and Prototyping**
- D) Operations Concept Validation – Advanced Technology Development and Prototyping**
- E) Software Engineering Resource Center – Advanced Technology Development and Prototyping**
- F) Wide Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping**
- G) Local Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping**
- H) Airspace Management Laboratory – Advanced Technology Development and Prototyping**
- I) National Airspace System Requirements Development – Advanced Technology Development and Prototyping**
- J) General Aviation/Vertical Flight Technology – Advanced Technology Development and Prototyping**
- K) Domestic Reduced Vertical Separation Minima – Advanced Technology Development and Prototyping**

(A) Separation Standards – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of

FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve oceanic system efficiency while maintaining agreed level of safety through introduction of reduced separation standard values in portions of international airspace where the FAA is partly responsible for the provision of Air Traffic Services (ATS) under delegation from the ICAO. The increase in efficiency comes about as the result of making additional economically attractive routes and flight levels available to airspace users. A by-product of the increase in oceanic system efficiency is a relief of the airport-congestion burden that is traceable to a higher percentage of flights cleared for on-time departures.

This program will improve oceanic system efficiency through introduction of reduced separation standard values in horizontal and vertical planes. Reduced separation standard values permit more aircraft to operate on fuel- and time-optimal routings during oceanic phases of flight. Increased system capacity following from the introduction of reduced separation standard values—as measured by availability of more fuel- and time-efficient routings—reduces delays of oceanic flights at origin airports because increased system capacity allows more on-time departures.

(B) Runway Incursion Reduction Program – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Reduce the number and rate of runway incursions and improve surface safety at NAS airports through research, development, demonstration, and evaluation of new and emerging methods, procedures, and technologies.

New and emerging technologies have significant potential for enhancing situational awareness on the airport surface. These technologies will enhance the “see and be seen” ground operations environment. The capability to use these technologies to enhance situational awareness related to aircraft and vehicle movement on the airport surface will significantly improve safety. Increased safety benefits can result from:

- Expanded and improved surface situational awareness for air traffic controllers, pilots, and airport vehicle operators;
- Surveillance information available in all airport surface operational areas;
- A second line of defense against runway incursions (when technologies are fully implemented).

(C) System Capacity, Planning, and Improvements – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide an aerospace transportation system that meets users’ needs and efficiently governs the increasing level of air traffic by reducing system delays and the time necessary to develop operational criteria and procedures, and significantly reduces implementation risks for the NAS Architecture.

Develop, track, and report on ATS performance measures; provide direction and management support to initiatives that increase airport safety, capacity, and efficiency; and serve as a liaison between the FAA and the industry on capacity issues.

The events of September 11, 2001, resulted in major shifts in the way the NAS is operated and maintained as well as a new emphasis for the planning and implementing near-term and long-term needs. While safety and security have always been primary considerations, the heretofore problem of congestion and efficiency must now be considered in a new light. All venues of public transportation require increased resources to deal with the threat of terrorism. The NAS is now the main area of concern. Reduced air travel has placed many airlines and airports in

jeopardy of collapse. The loss of jobs and revenues across many industries are part of the non-human tragedy.

Economic recovery is more than ever a national priority. As now seen, the impact of temporary loss of the U.S.'s ability to maintain a safe, secure, and efficient NAS was felt worldwide. Improvements in safety and security must be supported by investments in returning the NAS to normal capacity, which means that each dollar invested in supporting the recovery from a capacity perspective must also show how security and safety are also enabled. Ongoing and planned capacity initiatives and activities must be re-evaluated in terms of timing and implications to today's environment.

Beginning in FY 2002, each element of the aviation System Capacity, Planning, and Improvement Program was re-evaluated to reflect current relative value and risks, given recent developments. The Office of System Capacity (ASC) continues to provide analysis necessary to develop an overall strategy to enhance system capacity. This analysis includes both terminal and en route assessments of procedures and capacity related technologies to develop customized solutions for airports and customers. It also includes a performance measurement system for measuring the benefits and cost of airport, airspace, and procedure solutions. This strategy combines program and project performance results with cost accounting information to improve investment decision-making, thereby achieving optimal strategic and operational outcomes. A new airport efficiency metric developed from ASC analysis will support the Operational Evolution Plan (OEP), Government Performance & Results Act (GPRA), and other performance indicators of national importance.

(D) Operations Concept Validation – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide well-defined and well-understood “validated” operational concepts to support the development of the NAS transition steps in the NAS Architecture. Provide integrated guidance to the aviation community for the development and transition to a modernized NAS, including system specification, roles and responsibilities, procedures, training, and certification requirements.

The operational concept development and validation activities provide for the continued development and support of modernization through:

- Concept development
- Lower level concept development
- Scenario development of operational changes to support the establishment of system level requirements
- Concept validation
- Analysis tools development to evaluate impact of proposed concepts

- Fast-time simulation and analysis
- Validation data repository
- System design
- Metrics development
- Information modeling to support scenario-to-requirements translation

These activities provide the basis upon which the NAS Architecture establishes validated, integrated, configuration-managed requirements for the subsystems of the new target system, providing a coherent, comprehensive framework to guide the associated research and development (R&D) activities (e.g., specific requirements for ADS-B capabilities, surface management capabilities, advanced concept probe, etc.). They also support top-level designs for the major new Air Traffic Management (ATM) capabilities and subsystems associated with the operational concept (e.g., the ground-based and airborne information infrastructures required for modernization and the design of a capability to dynamically tailor an air traffic controller's airspace responsibility to more efficiently accommodate traffic demand).

(E) Software Engineering Resource Center – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Address a U.S. Senate recommendation to “conduct an in-depth analysis of the processes within the FAA which are affected by commercial-off-the-shelf (COTS)/non-developmental item (NDI) technologies, identify new methods to test and validate safety-critical systems that are not dependent on source code analysis, [and] investigate ways to reduce cost and time to establish high confidence in a system.” Congress, the Government Accounting Office (GAO), and the Research, Engineering, and Development (RE&D) Advisory Committee have routinely criticized the FAA for its shortcomings in the definition, acquisition, and maintenance of software-intensive systems. These deficiencies have resulted in increased cost, decreased quality, and delayed deployment of software-based capabilities. Because all the systems required to modernize the NAS are dependent on software, the FAA must improve its software engineering capabilities to meet operational objectives.

By improving the process for the acquisition of software intensive systems integrated with COTS/NDI products, higher quality systems will be fielded and operational within the projected schedule and allocated budget. By streamlining the procedures for certifying avionics and ground-based safety-critical software, new aviation system products can be developed faster and cheaper. By modernizing the way the FAA collects, stores, distributes, and manages aeronautical and adaptation data, the FAA can improve access to the data and ensure its safety and quality, reduce costs through standardized data and procedures, and facilitate data and domain analysis.

The primary mission of the FAA's Software Engineering Resource Center (SERC) is to optimize

systems and software engineering practices to design, acquire, develop, and maintain high quality, mission critical systems. The SERC continues to work toward the implementation of an agency-wide adaptation data management program that includes data standardization and supports IT security, enterprise-wide network operations, secure electronic data exchange, and electronic signature capabilities. The SERC evaluates and validates improved software processes, methods, and engineering tools that enhance architecture, systems and software engineering, testing, and certification functions over the life cycle of systems in the NAS. The SERC brings together recognized experts and FAA personnel to solve problems related to the certification of software, COTS/NDI, and next generation architecture. This coordination transfers skills and increases the technical competency of the FAA workforce.

(F) Wide Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

See 3A01B

(G) Local Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

See 3A01A

(H) Airspace Management Laboratory – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve the efficiency of the NAS by providing the data, metrics, and tools to analyze traffic and airspace configuration to optimize traffic flows through sector design and analysis using historical and projected traffic loads.

The Airspace Management Laboratory will increase the efficiency of the NAS by collecting traffic information from the enhanced traffic management system (ETMS) and local facility data points to construct historical traffic and system loading metrics. Traffic specialists and analysts will use this data to analyze, design, and benchmark existing and proposed airspace structures in the en route and terminal areas. The primary tool used by the FAA to perform this function is the sector design and analysis tool (SDAT).

The initial conversion of this legacy application will begin deployment in FY 2002. Further enhancements and support will be made in FY 2003 and beyond to facilitate the FAA's ability to develop and analyze GPS routes for an entire TRACON area and connectivity to en route centers.

In addition, the Airspace Management Laboratory will continue the deployment and enhancement of the FAA's obstruction evaluation system. This system is essential to provide data to analysis services, tools, and systems required to support the development of GPS routes. The deployment of this system will merge multiple databases and processes into a centralized national system. This application is the FAA's mechanism for management of workflow, data, and correspondence required to verify that proposed construction does not present a safety hazard to aviation.

Although not the primary purpose, the above data and tools are used to support analysis of security vulnerabilities and impacts.

Secondary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Secondary Outcome Goal:

Improve the FAA's ability to develop routes and procedures to minimize the number of people exposed to aircraft noise.

The Airspace Management Laboratory is responsible for the development of the noise integrated routing system (NIRS). This FAA-owned tool provides the ability to analyze multi-terminal airspace. NIRS allows the analyst to decompose the noise profiles to determine the traffic sample's profile contribution and alternatives. As National Airspace Redesign and the OEP develop alternatives to enhance terminal capacity, NIRS provides the detailing mechanism for that analysis.

(I) National Airspace System Requirements Development – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Contribute to the system efficiency goal by providing research and evaluation for the purpose of identifying new and existing technologies that will meet the identified needs of aerospace users. Provide funding for independent investigation of technologies and selected programs to transition from existing to new user needs. Such investigations assist in determining and selecting only those programs or technologies best suited to advance overall NAS system efficiency.

(J) General Aviation/Vertical Flight Technology – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Reduce the GA accident rate by integrating new CNS technology, improved avionics, and aircraft performance capability along with airman training requirements to enable a greater number of GA and vertical flight (VF) aircraft to receive IFR services and to enable visual flight rules (VFR) aircraft to navigate with a higher level of precision and awareness of the proximity of other aircraft and obstacles.

The GPS WAAS and Low Area Augmentation System (LAAS) Programs, dependent surveillance programs, Safe Flight 21, the Safer Skies initiative, and National Aeronautics and Space Administration (NASA) efforts are developing and testing new technologies and procedures to improve the safety and efficiency in the NAS. The GA/VF Program integrates the results of these programs and the knowledge of improved aircraft and avionics performance characteristics to facilitate the development and implementation of new airspace and heliport design criteria, operating procedures, and airmen information and training requirements. These new criteria and procedures are primarily directed at GA/VF operations in terminal and low altitude airspace, which are areas with a high probability of accident risk.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Improve route flexibility and reduce delays by using improved CNS systems to enable GA/VF operations in airspace where navigation and air traffic control service is impeded because of current system performance and to enable aircraft to navigate flight paths independent of air carriers and other high performance aircraft routes in terminal and en route airspace.

The GPS WAAS and LAAS Programs, dependent surveillance program, and NASA efforts are developing technology that will enable GA/VF aircraft to navigate precisely on reduced width routes and receive air traffic control services at altitudes below those currently available. This will permit greater flexibility in aircraft routing in low altitude airspace and may also enable simultaneous non-interfering operations between high performance and vertical flight aircraft in terminal areas and at major airports. Providing independent fixed wing and vertical flight operations will enable additional operations of high performance aircraft at congested airports.

(K) Domestic Reduced Vertical Separation Minima – Advanced Technology Development and Prototyping

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Enhance en route traffic throughput by providing six additional altitudes between flight level (FL) 290-410, resulting in aircraft fuel burn reduction of one percent, saving an estimated \$400 million annually for NAS users. Provide controller greater flexibility and enhance the efficiency of the NAS.

Category 1: 1C02 Aircraft Related Equipment Program

(A) Aircraft Related Equipment Program

(B) Aircraft Related Equipment Program – Simulator Replacement

(A) Aircraft Related Equipment Program

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve air safety by ensuring that (1) flight inspection aircraft/systems are equipped/modified to validate/certify the accuracy of navigational aids' electronic signals and validate/certify the flyability of approach/departure flight at all airports in the NAS; (2) R&D aircraft are equipped to test/evaluate new aviation technologies for proof of concept, systems integration, equipment,

procedures, and related human factors impacts; and (3) support flight/training mission aircraft are equipped to provide meaningful and relevant ASI pilot currency/proficiency experience and training required for ASIs to regulate/certify all pilot instructors and test pilots and validate/certify all NAS commercial and civil aircraft operations. Each of these flight program missions serves to reduce fatal aviation accident rates through the investigation and incorporation of accident prevention techniques, safety information sharing/analysis, and certification/surveillance via in-flight inspection, testing, evaluation, and validation of activities directly serving safety initiatives benefiting all air carrier and GA users of the NAS.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Improve system efficiency by ensuring agency aircraft/systems are equipped/modified to support required in-flight activities associated with new technologies emerging from and advocated by the NAS Architecture, OEP, and the Commercial Air Safety Team (CAST) Plan recommendations. Increased traffic volumes will be accommodated through expanded flight route flexibility afforded by satellite-based navigation capabilities and associated increases in certified approach/departure flight procedures designed for runways where land-based systems, infrastructure, or terrain prohibited them previously. By validating parameters for reduced en route traffic separation and aircraft-to-obstacle separation, the enhanced flight inspection capabilities will help relieve air traffic choke points by multiplying traffic flow rates to and from airports and providing increased all weather access to airports via precise navigation instrument approach/departure procedures that ensure similarly equipped aircraft can fly consistent and repeatable paths safely and expeditiously.

(B) Aircraft Related Equipment Program – Simulator Replacement

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve air safety by performing meaningful and relevant R&D operational evaluations for large transport category aircraft representative of the U.S. air carrier industry through the acquisition of an advanced technology flight simulator. Also provide the capability for ASI pilot training and currency/proficiency experience required in the regulation/certification of all activities comprising U.S. aircraft operations.

This program ensures flight safety by providing the capability to conduct meaningful and relevant R&D operational evaluations of latest aviation technologies, equipment, and procedures utilizing flight simulation when use of aircraft is too risky, too costly, or otherwise impractical. Data gathered from flight simulation activities are incorporated for consideration to assist subsequent in-flight R&D testing and evaluation activities for the OEP, runway incursion reduction, land and hold short procedures, free flight initiatives, and other critical safety issues. The simulator also provides the FAA's ASI pilots a vehicle to achieve currency/proficiency

experience, and pilot/aircrew training critical to execution of all regulatory/certification activities associated with the U.S. air carrier industry. Simulator flight deck avionics are required to be technologically representative of the current and future U.S. large transport category aircraft population.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Ensure NAS efficiency by performing R&D operational evaluations prior to actual in-flight testing and field deployment using aircraft to support/incorporate NAS Modernization initiatives/issues. Examples include validation and certification of (1) land and hold short operations procedures; (2) airport and airways capacity expansion techniques; (3) free flight initiatives; (4) new aviation systems' operations/integration; (5) human factors impacts on pilots/flight crews from new technology equipment, systems integration, and procedures; (6) proof of concept verification of proposed new technology systems/procedures; and (7) all aviation regulatory activities for all U. S. aircraft operations.

**Category 1: 1C03 National Aviation Safety Data Analysis Center
National Aviation Safety Data Analysis Center**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Maximize the potential for data analysis to reduce or prevent fatal commercial accidents by simplifying complicated and difficult data access problems, strengthening questionable data integrity, enabling automated analysis to be performed on an integrated basis across multiple bases, creating integrated data sets, distributing quality data to the FAA and the broader aviation community, and acquiring and sharing analytical tools for identification and analysis of precursors to aviation accidents.

Category 1: 1C04 Explosive Detection Technology
Explosive Detection Technology

Primary Outcome Goal: FAA Goal: National Security: Prevent security incidents in the aviation system.

Narrative for Primary Outcome Goal:

Achieve 100 percent screening of selected checked baggage by certified explosives detection systems, eliminating equivalent technologies and procedures at airports.

Category 2

Definition of Category 2: Improve Efficiency of the Air Traffic Control System

This category contains related programs and projects that improve the systemic utilization of the of the en route airspace structure.

FAA Goal: System Efficiency: *Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.*

Strategies to Achieve FAA Goals:

Free Flight: *Within safety and environmental considerations, work toward giving aircraft the opportunity to fly in a way that gives them the most benefit as they define it.*

NAS Modernization: *Using the NAS Architecture as the guideline, continually refine and update the NAS to achieve efficient aerospace systems and operations.*

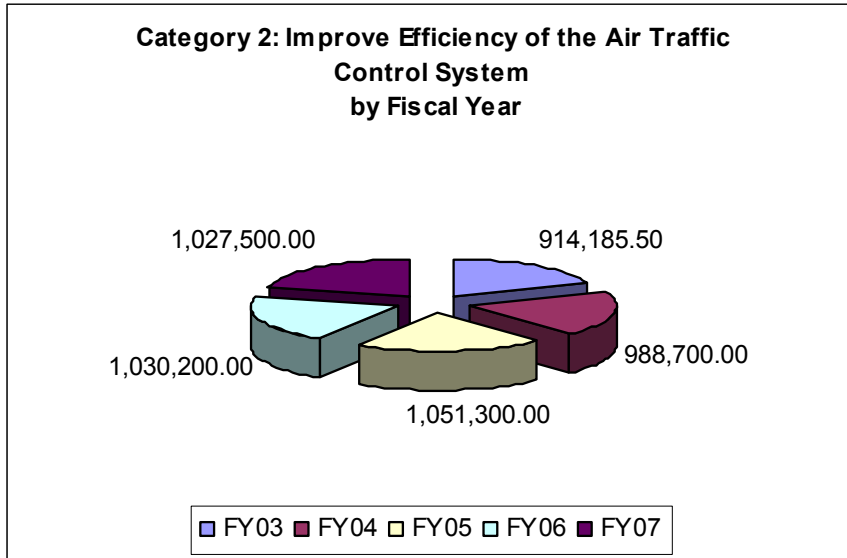
Systems Integration: *Integrate airport and commercial space requirements into NAS planning and architecture.*

FAA Annual Performance Goals:

Aviation Delays – *Reduce aviation delays to no more than 171 per 100,000 activities.*

All Weather Access to Airports – *Increase the number of runways that are accessible in low visibility conditions. FY 2003 goal is at least 1,624 runways.*

The following graph indicates distribution of funding for F&E programs in Category 2: Improve Efficiency of the Air Traffic Control System for FY 2003 to 2007. Funding in thousands.



Category 2: 2A01 Terminal Business Unit: 2A01A Terminal Automation Program

- **Standard Terminal Automation Replacement System – Development & Procurement**
- **Standard Terminal Automation Replacement System – Technology Refresh**
- **Terminal Sustain**
- **Interim Tower Displays**
- **Standard Terminal Automation Replacement System – Automated Radar Terminal System Model IIIE/Automated Radar Terminal System**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide a digital capable system to meet expanding air traffic control needs. The standard terminal automation replacement system (STARS) will provide new computer workstations with high-resolution color displays and commercially-based software to allow the FAA to move toward uniform configuration at all terminal facilities. The terminal automation evolves from an infrastructure composed of various FAA and Department of Defense (DoD) automation systems (e.g., ARTS IIIA, ARTS IIE, ARTS IIIE etc) and associated displays to the STARS.

STARS requires digitized radar data from surveillance systems to process tracking. It will provide multiple radar sensor tracking and mosaic displays. Initially, STARS will provide new color displays using the ARTS backroom equipment. The STARS workstation will display air traffic, weather overlay, and traffic flow management (TFM) information for controllers. STARS can be easily upgraded and will support current and future surveillance technology, traffic and weather information, and sequencing and spacing tools. Future upgrades to STARS tower displays will add a capability to display airport surface traffic and runway incursion alerts in addition to providing an interface for terminal controller-pilot data link communications (CPDLC).

Category 2: 2A01 Terminal Business Unit: 2A01B Air Traffic Control Beacon Interrogator – Replacement

Secondary Surveillance – Air Traffic Control Beacon Interrogator – Replacement

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Reduce the cost growth associated with maintaining older beacon interrogator equipment. This program will ensure that aircraft positional information and identification remain available to support air traffic control services, including separation assurance, traffic management, navigation, and flight information.

Air traffic control beacon interrogator (ATCBI) model 6 replaces existing surveillance ATCBI-4/5 equipment that has reached the end of its life cycle. ATCBI-6 selectively interrogates individual aircraft and provides precise tracking information to the host system. This improved automation tool is designed to support free flight.

The ATCBI-6 Replacement Program will procure 127 monopulse secondary surveillance radar (MSSR) with selective interrogation to replace existing operational beacons, including three support systems for training, testing, logistics, and operational support. This approach will meet the near-term needs while providing a seamless transition for the FAA's use of GPS-based technology.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Secondary Outcome Goal:

Continue to provide the position and identification of aircraft to air traffic control so that aircraft can be separated, the airspace can be managed, and the controller/pilot can maintain airspace awareness.

Category 2: 2A01 Terminal Business Unit: 2A01C Air Traffic Control En Route Radar Facilities Improvements

Long-Range Radar Program – Long-Range Radar Improvements – Infrastructure Upgrades

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency of the NAS by ensuring that aircraft positional information and identification derived from long-range radar (LRR) sites remains available to support air traffic control services, including separation assurance, traffic management, navigation, and flight information.

The planned modifications will improve safety, reduce operating costs, and provide greater efficiency in en route air traffic control and facility maintenance operations by refurbishing en route equipment and facilities. F&E upgrades, particularly the antenna drive system and environmental improvements, are required at nearly all of the 126 en route LRR facilities before the FAA can deploy replacement secondary surveillance radar (SSR) or transition to an en route beacon-only environment. Without these upgrades, operational problems occur each year that have severe and immediate impacts on air traffic control. These radar problems require quick, responsive engineering analysis and systems corrections to ensure the safety of the en route surveillance area.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Secondary Outcome Goal:

Ensure that even in a variety of physical site environments (e.g., temperature, commercial power, and lightning) that the position and identification of aircraft is reliably supplied to air traffic control so that aircraft can be separated, the airspace can be managed, and the controller/pilot can maintain airspace awareness.

Facility upgrades will ensure efficient and safe environments to house primary and secondary radar. Heating, air conditioning, electrical, and all Occupational Safety and Health Administration (OSHA) requirement upgrades allow optimal physical site environments for effective air traffic system utilization.

Category 2: 2A01 Terminal Business Unit: 2A01D Terminal Air Traffic Control Facilities – Replace

Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Air Traffic Control Tower/Terminal Radar Approach Control Replacement

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace

transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency and availability of service in the NAS by replacing existing ATCTs and TRACONs that cannot meet the needs of present day airport operational requirements. The average age of control towers is 27 years and some are as old as 40 years. As the volume and complexity of terminal air traffic control increases so does the need to have additional positions in the ATCT/TRACON. The FAA provides air traffic control services from over 270 ATCT/TRACON facilities and must continually replace these buildings to meet demands.

Category 2: 2A01 Terminal Business Unit: 2A01E Air Traffic Control Tower/Terminal Radar Approach Control Facilities – Improve

(A) Air Traffic Control Tower/Terminal Radar Approach Control

Establish/Sustain/Replace – Air Traffic Control Tower/Terminal Radar Approach Control Modernization

(B) Large Terminal Radar Approach Controls – Advanced Facility Planning

(C) Air Traffic Control Tower/Terminal Radar Approach Control

Establish/Sustain/Replace – Standard Terminal Automation Replacement System Facility Upgrades

(A) Air Traffic Control Tower/Terminal Radar Approach Control

Establish/Sustain/Replace – Air Traffic Control Tower/Terminal Radar Approach Control Modernization

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency and availability of service in the NAS by modernizing and improving terminal facilities to meet current and future operational requirements.

(B) Large Terminal Radar Approach Controls – Advanced Facility Planning

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by conducting studies to identify operational needs and opportunities to consolidate air traffic control facilities.

(C) Air Traffic Control Tower/Terminal Radar Approach Control

Establish/Sustain/Replace – Standard Terminal Automation Replacement System Facility Upgrades

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by completing facility upgrades that are required to provide a stable platform for the deployment of STARS.

Category 2: 2A01 Terminal Business Unit: 2A01F Potomac Terminal Radar Approach

Control

Large Terminal Radar Approach Controls – Potomac Terminal Radar Approach Control

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative of Primary Outcome Goal:

Improve system efficiency through the consolidation of the TRACON facilities serving the Washington-Baltimore Metropolitan and outlying areas and redesign of the associated airspace.

Category 2: 2A01 Terminal Business Unit: 2A01G Northern California Terminal Radar Approach Control

Large Terminal Radar Approach Controls – Northern California Terminal Radar Approach Control

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Support system efficiency and effectiveness by combining four TRACONs (Bay, Sacramento, Stockton, and Monterey) into one facility (i.e., Northern California TRACON (NCT) in Sacramento, CA) by upgrading and improving equipment to provide costs savings to the agency, and by optimizing the use of the airspace.

Category 2: 2A01 Terminal Business Unit: 2A01H Dallas/Fort Worth Terminal Radar Approach Control

Large Terminal Radar Approach Control – Dallas/Fort Worth Terminal Radar Approach Control

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Funding in FY 2003 closes out this project.

Category 2: 2A01 Terminal Business Unit: 2A01I Terminal Digital Radar (Airport Surveillance Radar Model 11)

- Airport Surveillance Radar Model 11 – Airport Surveillance Radar Model 7/Airport Surveillance Radar Model 8 Replacement, Department of Defense Takeover, New Establishments
- **Airport Surveillance Radar Model 11 – Technology Refresh**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency and availability of service in the NAS by replacing existing ASR-7/8 systems and associated ATCBI 4/5. Replacement of existing systems with new digital ASR-11 radar systems will ensure continuation of surveillance service with improved and expanded 6-level weather detection/display capability. New digital ASR-11 systems will also provide the input required for STARS and eliminate the need and cost to re-engineer/replace obsolete parts

required to sustain existing ASR-7/8 systems.

Category 2: 2A01 Terminal Business Unit: 2A01J Airport Surveillance Radar (Airport Surveillance Radar Model 9)

- **Terminal Radar Program – Airport Surveillance Radar Model 9**
- **Terminal Radar Program – Airport Surveillance Radar Model 9 Service Life Extension Program**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Provide digital terminal surveillance coverage, plus six-level weather, at 135 high activity airports and support facilities. Terminal radar of these critical systems through 2020 reduces delays and improves safety at congested airports. A SLEP is needed to ensure continued operation

The ASR-9 SLEP will improve reliability and performance levels, adding to increased safety. Recent failures at ASR-9 sites have indicated the criticality of extending the service life of the ASR-9

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Provide controllers information that permits closer aircraft operations and greater traffic volume during instrument meteorological conditions. Scheduled and unscheduled radar system outages, increased system availability, and air traffic control system delays are attributable to surveillance problems. Extending the service life of the ASR-9 system reduces the risk of outages due to deterioration and parts obsolescence and ensures the continuation of maximum service capabilities during poor visibility, nighttime, and adverse local weather conditions

The ASR-9 system continues to experience overall deterioration and parts obsolescence. Reliability and performance levels suffer, and these factors adversely impact capacity. The SLEP alleviates these concerns by making the system easier to maintain and more reliable than the present system.

Category 2: 2A01 Terminal Business Unit: 2A01K Mode-Select – Provide

- **Secondary Surveillance – Mode-Select**
- **Secondary Surveillance – Mode-Select – Service Life Extension Program**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of

FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS through the commissioning of 144 mode-select (Mode-S) systems. These systems will make traffic information service (TIS) available to those who desire to equip their aircraft (e.g., Cargo Airline Association members); reduce the number of false targets presented to air traffic controllers; and support safety. Commissioned Mode-S systems will reduce the maintenance workload requirements imposed by older, less efficient systems.

Replacement of obsolescence and procurement of spares will provide substantial performance and safety improvements and will improve supportability.

With the current and ongoing concerns regarding air traffic delays, near-term replacement and redesign of Mode-S critical components is a high priority and will result in improved NAS efficiency. Replacement and/or redesign of Mode-S critical components will provide near-term benefits and improvements in reliability and supportability, mitigating air traffic delays.

**Category 2: 2A01 Terminal Business Unit: 2A01L Terminal Applied Engineering
Air Traffic Control Tower/Terminal Radar Approach Control
Establish/Sustain/Replace – Terminal Applied Engineering**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by providing engineering and analysis efforts. The Terminal Applied Engineering Program streamlines the deployment of FAA resources to conduct facility surveys, and provides a benchmark for future terminal facility planning across all terminal programs.

**Category 2: 2A01 Terminal Business Unit: 2A01M Precision Runway Monitors
Precision Runway Monitor**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Allow simultaneous independent approach on runways closer than 4,300 feet by utilizing one-second update radar. Return a portion of lost capacity during adverse weather conditions and thus reduce associated delays.

The precision runway monitor (PRM) system is a highly accurate electronic scan radar that tracks and processes aircraft targets once per second (as opposed to 4.8 seconds with conventional radar). Five production systems and associated site and depot spares have been manufactured and procured by the FAA. Two PRM systems, Minneapolis and St. Louis, have been installed and commissioned. Installation activities are underway at John F. Kennedy International Airport, and the Philadelphia International Airport was commissioned in September 2001.

**Category 2: 2A01 Terminal Business Unit: 2A01N Houston Area Air Traffic System
Large Terminal Radar Approach Controls – Houston Area Air Traffic System**

Primary Outcome Goal: FAA Goal: Increase capacity with addition of two new runways at the George Bush Intercontinental Airport

Narrative for Primary Outcome Goal:

This project expands navigation aids in the Houston metropolitan area and increases air traffic control services and facilities to handle new runways at Houston.

Category 2: 2A02 Aeronautical Data Link Applications

(A) Aeronautical Data Link – Flight Information Service

(B) Aeronautical Data Link – Controller Pilot Data Link Communications Build I/IA

(C) Aeronautical Data Link – Tower Data Link Services

(A) Aeronautical Data Link – Flight Information Service

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve the safety of the NAS by providing new weather hazard graphics directly to pilots via

data link for cockpit display relative to current position and route of flight, and by improving the quality of aviation weather hazard advisories through input of aircraft derived weather data from commuter and low-altitude GA operations.

The Flight Information Service (FIS) Program will increase the level of safety in the NAS through implementation of flight information services data link (FISDL) systems that provide data link broadcasts of graphic and text FIS/weather products to the cockpit. This timely access to FISDL weather data provides better information to pilots, allowing pilots to make earlier decisions to continue or divert a flight, which leads to improved and safer flight operations. Weather is a major factor in GA accidents. FISDL implementation will support the FAA safety goal of reducing fatal accidents by 2007 by an amount that results in a 20 percent improvement from the projected total for that year. FISDL is an FAA sponsored service implemented through FAA/industry agreements established in 1999. The FAA is providing access to the aeronautical spectrum and two industry service providers are providing the necessary data processing and communications infrastructure. FISDL is a very high frequency (VHF) broadcast service.

In addition, the FIS Program will determine the feasibility of establishing a national system for collecting and disseminating weather reports from commuter and low altitude general aviation operations. These automated meteorological (AUTOMET) reports will provide coverage over data void regions and are essential for input to the NWS aviation forecast models and for improved predictions of severe convective weather conditions that impact the NAS.

This program is dependent on industry installation of the FISDL ground infrastructure and aircraft equipage for FISDL service.

(B) Aeronautical Data Link – Controller Pilot Data Link Communications Build I/IA

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Combine reduced voice communications workload and distribute communications responsibility to provide benefits by increasing flight efficiency, which is reflected by less time and fewer miles flown in sector, as well as increased airspace capacity, which is reflected by increased sector traffic throughput (miles in trail restrictions relaxed in an experimental sector based on voice communication reduction) and reduced delay.

The en route CPDLC Program supports the exchange of air traffic control information between FAA controllers and pilots using digital data link applications and technology based on the ICAO standards.

CPDLC Build I will provide early operational use and experience with recurring, routine, and repetitive controller-pilot messages in en route airspace by implementing a subset of ICAO, Aeronautical Telecommunication Network (ATN), standards and recommended practices (SARP), and the CPDLC message set. CPDLC Build I will implement the messages/services

required to perform the transfer of communications, initial contact, altimeter setting, and pre-defined free text messages. These messages will be sent to data link equipped aircraft using a service provider's VHF digital link (VDL) mode 2 A/G communications subnetwork. VDL Mode 2 is an evolutionary step satisfying performance and reliability requirements for situations in which the message is not time-critical. CPDLC Build I will only be implemented at a key site (Miami ARTCC).

CPDLC Build IA will leverage the FAA's investment in the development of CPDLC Build I. CPDLC Build IA will increase the ATN compliant CPDLC message set to accommodate assignment of speeds, headings, and altitudes as well as a route clearance function. A capability to handle pilot-initiated altitude requests will also be implemented.

(C) Aeronautical Data Link – Tower Data Link Services

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve the efficiency of the NAS by replacing aging, obsolete systems and software. Transition all maintenance from contractor furnished to FAA (organic).

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Secondary Outcome Goal:

Enhance safety by decreasing communication errors and increasing communications accuracy.

Category 2: 2A03 Free Flight Phase 2

(A) Free Flight Phase 2 – Integration

(B) Free Flight Phase 2 – User Request Evaluation Tool

(C) Free Flight Phase 2 – Traffic Management Advisor-Single Center

(D) Free Flight Phase 2 – Collaborative-Decision Making

(E) Free Flight Phase 2 – Priority Research Support Efforts

(A) Free Flight Phase 2 – Integration

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by supporting the initial daily use (IDU)/planned capability available activities for the Free Flight Phase 2 tools/capabilities.

Resolve cross product Free Flight Phase 2 issues to include, but not limited to, program controls, performance metrics, risk management, human factors, benefits assessment, systems engineering, operational integration, and airspace analysis in preparation for site implementation.

(B) Free Flight Phase 2 – User Request Evaluation Tool

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal

Provide a tool that identifies conflicts in requested flight paths and allows air traffic controllers to evaluate pilot requests. The user request evaluation tool (URET) contributes to the system efficiency goal by increasing direct routings by 15 percent.

(C) Free Flight Phase 2 – Traffic Management Advisor-Single Center

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Contribute to an increased capacity at selected airports by three percent.

The Center TRACON Automation System (CTAS) En Route Program provides traffic management coordinators with a tool to create metering plans and provides individual controllers with information on the required delays for each aircraft.

(D) Free Flight Phase 2 – Collaborative Decision-Making

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Bring together major users of the NAS in order to employ tools to ease congestion, reduce delays, and promote efficiency by three percent at selected airports.

(E) Free Flight Phase 2 – Priority Research Support Efforts

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Develop new tools, which are RTCA recommended, that yield user benefits within the 2003-2005 timeframe. These include direct-to problem analysis, resolution, and ranking (PARR), traffic management advisor (TMA)–multi center (TMA-MC), and surface management system (SMS). There are other research projects, but they will not mature sufficiently to produce user benefits during this time. The products that are under development are advanced vortex spacing system (AVOSS), active final approach spacing tool (aFAST), en route descent advisor (E/DA), and expedite departure path (EDP).

Category 2: 2A04 Air Traffic Management

Air Traffic Management – Traffic Flow Management Infrastructure – Current Enhanced Traffic Management System Operations

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by utilizing national-scale traffic management. Sustain and upgrade mission essential TFM operations mandated Congressionally 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.

Improve system efficiency by maintaining and upgrading the existing TFM infrastructure to continue mission essential TFM operations in over 80 air traffic control facilities.

Category 2: 2A05 Free Flight Phase 1

Free Flight Phase 1 – Sustain

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by continuing to derive capacity gains realized from Free Flight Phase 1 systems. Within safety and environmental considerations, work toward giving aircraft the opportunity to fly in a way that gives them the most benefit as they define it.

Category 2: 2A06 Automated Surface Observing System

- **Automated Surface Observing System – Base Systems**
- **Automated Surface Observing System – Pre-Planned Product Improvements**
- **Automated Surface Observing System – Data Displays**
- **Automated Surface Observing System – Standalone Weather Systems**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Support system efficiency by automating surface weather observations to meet the needs of pilots, operators, and air traffic personnel. The aviation surface weather observation network (ASWON) includes the AWOS, ASOS, automated weather sensors systems (AWSS), stand-alone weather sensors (SAWS), and ASOS controller equipment information display system (ACE-IDS or Data Displays).

The FAA has developed a long-range equipment strategy for improving automated surface weather observations. The ASOS provides air traffic controllers with critical weather parameters that are vital for continued operation of aircraft landings and take-offs, which thereby reduces delays. AWSSs provide pilots and other users with minute-by-minute weather updates. The SAWS provides wind, temperature, and dew point information as a backup for ASOS at Service Level C sites. ACE-IDS presents required weather and other operational information in the tower and TRACON via a local area network (LAN) or a wide area network (WAN). The primary purpose of ASWON is to support the FAA and NWS 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. In a joint program with NWS, the ASWON Program procured 569 ASOSs from 1991 through 1997; 31 AWSSs in FY 1998; and 270 SAWS and 17 ACE-IDS systems through FY 2001. These systems will be deployed through the year 2006.

Category 2: 2B01 Next Generation Very High Frequency Air-to-Ground Communications System

- **Next Generation Air-to-Ground Communications System – Segment 1a**
- **Next Generation Air-to-Ground Communications System – Segment 1b**
- **Next Generation Air-to-Ground Communications System – Segments 2/3**
- **Ultra High Frequency Radio Replacement**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Enhance operational efficiency and effectiveness by addressing the need for new digital A/G radios (to replace aging analog radios) and other necessary equipment to provide an end-to-end A/G communications capability to a system that lacks the capacity to meet current and near-term air traffic control communication demands. Specific needs include the following:

- Provide air traffic controllers the capability to accommodate the growing number of sectors and services using the limited spectrum available in the VHF aeronautical frequency band;
- Reduce logistical costs (supplies, maintenance, training, etc.) to maintain VHF and ultra high frequency (UHF) radios that have exceeded their life expectancy by 10 years;
- Procure UHF transmitters and receivers to support the DoD. The UHF radios will be deployed simultaneously with the next generation A/G communications (NEXCOM) segment 1a multi-mode digital radios (MDR) in order to reduce costs;
- Provide new data link communications capability to all classes of users;
- Reduce A/G radio frequency (RF) interference;
- Enhance security through inherent technology, which will reduce the threat from unauthorized users.

The NEXCOM Program will implement a digital system that will relieve the spectrum congestion problem, afford additional channel control and security, and provide the capability for A/G data link.

The program is planned for implementation in three segments. Segment 1 addresses the high and ultra-high sector air traffic control voice channels in the en route environment. Segment 1 is divided into two phases. Segment 1a will test and procure MDR. During Segment 1b, NEXCOM system hardware/software will be deployed after completing an operational demonstration of VDL mode 3. NEXCOM will continue to operate in the present analog mode until users can equip with the new avionics (2008) when a transition to digital voice will begin. Segment 2 will add the interfaces and telecommunications lines necessary to provide data link capability to the en route channels converted to digital voice in Segment 1. Segment 3 will implement both digital voice and data capability in the high-density terminal areas.

**Category 2: 2B02 En Route Automation Program
En Route Automation Modernization**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency at all ARTCCs through the use of a modern, open, and supportable en route automation environment that has the capability to readily adapt to evolving requirements and meet the long-term requirements for availability, capacity, and efficiency.

THE EN ROUTE AUTOMATION MODERNIZATION (ERAM) PROGRAM WILL IMPROVE SYSTEM EFFICIENCY IN THE NAS BY PROVIDING AN OPEN, STANDARDS-BASED EN ROUTE AUTOMATION SYSTEM THAT IMPROVES OVERALL SYSTEM AVAILABILITY, SATISFIES INCREASED NAS CAPACITY DEMANDS AND NEW CAPABILITY REQUIREMENTS, AND INTEGRATES ADVANCED TECHNOLOGIES. ERAM WILL ACCOMPLISH THIS GOAL BY REPLACING THE LEGACY EN ROUTE AUTOMATION HARDWARE/SOFTWARE WITH NEW SUBSYSTEMS AND TOOLS THAT SUPPORT THE OBJECTIVES OF THE FAA'S MODERNIZATION INITIATIVES, INCLUDING THE OEP AND FREE FLIGHT. ERAM WILL ASSIST WITH THE IMPROVED CAPABILITIES TO SUPPORT NAS ARCHITECTURE, VERSION 4.0, FREE FLIGHT INITIATIVES, ATS OPERATIONAL NEEDS, AND INFORMATION SECURITY REQUIREMENTS. THE ERAM SYSTEM DESIGN WILL ALLOW FIELDING PLANNED UPGRADES AND WILL REDUCE LIFE CYCLE COST THROUGH THE USE OF COTS/NDI PRODUCTS. IMPROVED SURVEILLANCE DATA PROCESSING WILL ENHANCE SYSTEM SAFETY BY IMPROVING THE ACCURACY AND INTENT OF AIRCRAFT OPERATING IN EN ROUTE AIRSPACE. IMPROVED FLIGHT DATA PROCESSING WILL ENHANCE FLIGHT REROUTE AND FLIGHT DATA DISTRIBUTION CAPABILITIES, TRAJECTORY MODELING, AND AIRCRAFT FLIGHT PLAN CONFORMANCE ALGORITHMS IN ADDITION TO IMPROVING AIRSPACE MANAGEMENT FLEXIBILITY AND ADAPTABILITY.

ERAM will provide an expandable and scalable automation infrastructure that can meet increasing traffic demands and accommodate the introduction of new automation functions necessary for improved system efficiency. ERAM will establish a new automation processing architecture that eliminates existing architectural constraints for enhancing efficiency, capacity, and flexibility.

ERAM INITIATIVES CAN BE GROUPED INTO THREE AREAS: REPLACEMENT OF THE EN ROUTE AUTOMATION INFRASTRUCTURE, INCLUDING THE HOST AND DIRECT ACCESS RADAR CHANNEL (DARC) SYSTEMS; ENHANCEMENTS TO IMPROVE SYSTEM SERVICES, INCLUDING FLIGHT PLAN PRE-PROCESSING (FPPP) AND AUTOMATION ASSISTED DYNAMIC REROUTING (AADR); AND SEPARATION OF NON-SAFETY CRITICAL SERVICES FROM SAFETY CRITICAL APPLICATIONS, INCLUDING EN ROUTE SUPPORT SOFTWARE OFFLOAD AND EN ROUTE INFORMATION DISPLAY SYSTEM (ERIDS).

**Category 2: 2B03 Weather and Radar Processor
Weather and Radar Processor – Stage 3 – Sustain Weather Operations**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of

FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide timely weather data acquisition and dissemination capability to ensure safe air traffic control. The weather and radar processor (WARP) provides for full FAA usage of NEXRAD doppler weather radar information. WARP will also provide the most timely and accurate forecast weather products to other systems in the NAS, significantly improving NAS capacity. WARP is an automated processing system that continuously acquires, stores, distributes, and displays weather information and radar products from external sources.

The WARP Program consists of Stages 1 and 2—development and implementation of the display system replacement (DSR) interface to provide controllers with NEXRAD weather radar data and other necessary NAS interfaces—and Stage 3—maintain weather operations by making upgrades to accommodate changes made to WARP input sources (data, models, and sensors), provide for cost effective weather data sharing through interfaces to other NAS subsystems, and facilitate a common situational awareness within the en route environment. Stage 1, Phase 1 and 2, will provide improved products for the meteorologist, as well as NEXRAD weather radar data to air traffic controllers on the DSR. WARP Stages 1 and 2 will mosaic the various NEXRAD radar data, and compress NEXRAD’s eight levels of weather into three for FAA air traffic controller use. In Stage 1, the FAA will transition from leased to an FAA-owned hardware system. WARP Stage 3 requirements will be implemented as discrete tasks.

Category 2: 2C04 Aircraft Fleet Modernization Research and Development, Aircraft Replacement

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Acquire a modern jet transport aircraft equipped with a suite of digital cockpit avionics representative of the current and future U.S. airline jet aircraft population to perform required various airborne R&D and test and evaluation functions in support of agency goals.

The FAA is unable to perform critical in-flight jet transport test functions required to serve the U.S. air carrier industry in validating proposed new CNS and landing systems. The agency also is unable to analyze/measure human factors impacts on jet transport pilots and crews induced by new aviation concepts and technologies, systems integration, equipment, and procedures needed for transition to the “new NAS.” The agency’s 32-year-old Boeing Model B-727 jet transport aircraft—historically used for these functions—has become technologically incapable of performing meaningful and relevant testing demanded by the U.S. airlines to expand NAS capacity through free flight and Safer Skies initiatives. A new aircraft will re-establish the agency’s lagging credibility with the airlines by performing timely, aggressive, and effective in-

flight testing with the confidence and integrity of an aircraft representative of the current and future air carrier fleet. Critical tests will be performed as required in the transition from the controller-based air traffic control environment to the ATM environment of pilot/controller shared responsibility. ATM requires the transmission of air traffic control and weather data to a digital cockpit for the pilot's use. A digital cockpit will process and display data received from the ground and from satellite transmissions. As a critical part of the transition from air traffic control to ATM, the FAA will be capable of analyzing the impacts of introducing advanced digital technologies to the cockpit and the additional information processing/decision-making required of the flight crew. Analyses also will consider the coordination of decision-making and procedures in the cockpit and on the ground and the human factors/safety implications.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Secondary Outcome Goal: FAA Goal: FAA Goal: Economic Growth: Support a transportation system that ensures a safe, secure aerospace system that is efficient for users.

Secondary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Secondary Outcome Goal:

Increase significant cost savings over present operating cost and cost avoidance from expected operating expenses for the present 32 year-old aircraft.

Other benefits will be less-frequent scheduled and unscheduled maintenance, improved COTS parts availability and warranties, and lower operating costs made possible by more fuel-efficient engines that also provide increased range. The increased range will allow increased time aloft required for research, test, and evaluation activities, including future CNS systems and procedures.

Category 3

Definition of Category 3: Increase Capacity of the National Airspace System

This category contains programs relevant to increasing the throughput of the NAS.

FAA Goal: System Capacity: *Provide an aerospace transportation system that meets the needs of users for entry and use of FAA, NAS, and other aerospace resources.*

Strategies to Achieve FAA Goals:

FAA Annual Performance Goals:

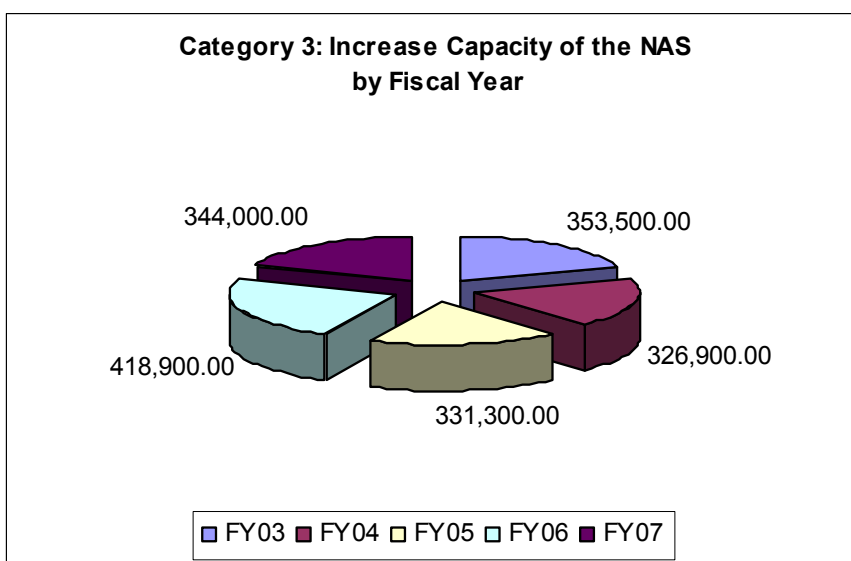
Flight Route Flexibility – Attain a cumulative increase in throughput during peak periods at certain major airports. FY 2002 goal is a 3.8 percent increase from the FY 2000. (FY 2003 goal to be determined)

Attain a cumulative increase in direct routings for the en route flight phase. FY 2002 goal is a 7.6 percent increase over the FY 2000 baseline. (FY 2003 goal)

Aviation Delays – *Reduce aviation delays to no more than 171 per 100,000 activities.*

Runway Pavement Condition – *Maintain the percent of runways in good or fair condition (commercial service and selected GA airports). FY 2002 goal is at least 95 percent of runways. (FY 2003 deletes this goal)*

The following graph indicates distribution of funding for F&E programs in Category 3: Increase the Capacity of the NAS for FY 2003 to 2007. Funding in thousands.



Category 3: 3A01 Navigation and Landing Aids: 3A01A Local Area Augmentation System for Global Positioning System

- **Local Area Augmentation System for Global Positioning System**
- **Local Area Augmentation System – Advanced Technology Development and Prototyping**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Increase system safety and efficiency by providing a satellite-based precision approach capability to the NAS that meets the requirements for all weather approach and landing capability.

Augmentation is required to make the GPS fully usable for all phases of flight since the coverage, accuracy, availability, and integrity provided by GPS will not be sufficient to meet FAA precision landing requirements. The LAAS will complement the WAAS by providing Category (CAT) I and CAT II/III precision approach capabilities. LAAS provides precise correction data to airborne and surface receivers that will supply a navigation accuracy of less than one meter to a minimum distance of 23 miles. LAAS will meet CAT I navigation and landing requirements at locations where WAAS is unavailable due to insufficient satellite coverage or availability, e.g., some sites in Alaska. In addition, LAAS will meet the more stringent CAT II/III precision approach requirements.

Category 3: 3A01 Navigation and Landing Aids: 3A01B Wide Area Augmentation System for Global Positioning System

- **Wide Area Augmentation System for Global Positioning System**
- **Wide Area Augmentation System – Satellite Telecommunications**
- **Wide Area Augmentation System – Advanced Technology Development and Prototyping**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Provide benefits to both aviation users (through efficiencies, safety, and simplification of avionics) and the government through reduced ground-based facility costs. The qualitative benefits include improved safety while operating in reduced weather conditions, improved efficiency at airport operations due to greater runway availability, reduced separation, more direct en route paths, and new precision approach services to the public.

Commission the WAAS, an augmentation to GPS, in December 2003. WAAS will initially provide non-precision lateral navigation (LNAV) and vertical navigation (VNAV) for 75 percent of the Conterminous United States, with an availability of 95 percent or greater. In later implementations, it will provide global navigation satellite system (GNSS) landing system

(GLS) approach services, increasing safety, mobility, system efficiency, and capacity in the application of FAA and aerospace resources.

WAAS is a safety-critical navigation system. Its capability is to provide a quality of positioning information never before available to the aviation community. As the system name implies, WAAS is both a functional and geographically extensive augmentation to the basic GPS service. WAAS improves the accuracy, integrity, continuity, and availability of basic GPS signals. This system, through its augmentation, will permit the FAA to certify WAAS to be used as a means of navigation for en route travel and non-precision approaches in the United States. Ultimately, WAAS will provide precision approach capability to selected airports throughout the nation. The system coverage will include the Conterminous United States, some border areas of Canada and Mexico, and limited service in Hawaii, Alaska, and Puerto Rico. WAAS will improve basic GPS accuracy to 7.6 meters vertically and horizontally, improve system availability using leased geostationary communication satellites carrying navigation payloads, and provide important integrity information about the entire GPS constellation.

WAAS currently consists of a network of 25 ground reference stations, termed Wide Area Reference Stations (WRS). Signals from GPS satellites are received at WRSs. Each of these precisely surveyed reference stations receives GPS signals and, through computational verification and validation, determines whether signal errors exist or not. FAA telecommunications assets link these WRSs to form the U.S. WAAS network. Each WRS in the network relays the data to Wide Area Master Stations (WMS) where network correction information is computed. The WMSs use corrections algorithms to assess the integrity of the system.

A correction message is prepared and uplinked to leased geostationary communications satellites via a dedicated WAAS ground uplink system (GUS). The message is then re-broadcast on the same frequency as GPS (L1, 1575.24 megahertz (MHz)) to receivers aboard aircraft within the WAAS broadcast coverage volume. The geostationary communications satellites also act as additional navigation signal sources for the aircraft, thus providing supplemental navigation signals for position determination.

Secondary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Secondary Outcome Goal:

Support the goal of providing an aerospace transportation system that meets users' needs and is efficient in the application of FAA and aerospace resources. The overall objective of the FAA's program, Augmentation for the GPS, is to meet the highest levels of safety while providing the integrity, availability, continuity, and accuracy necessary for use as the primary means of navigation during all phases of flight from en route through CAT I precision approaches.

Aviation industry leaders recognize the potential of augmented GPS for enhanced safety and operational capabilities, and are committed to a transition to space-based navigation. Therefore, some of the major effects that result from augmented GPS operations are:

- Reduction in approach accidents;
- Recommendation from Safer Skies: eliminate non-precision approaches (NPA);
- Improvement in overall safety for precision approaches;
- Addition of precision approaches to over 3,000 runway ends;
- Reduction in controlled-flight-into-terrain (CFIT) accidents;
- Provision of robust positioning information to support TAWS;
- Reduction in surface accidents;
- Provision of positioning information to help reduce runway incursions (major benefits emerge when coupled with future technologies).

Category 3: 3A01 Navigation and Landing Aids: 3A01C Equipment (Distance Measuring Equipment)

Very High Frequency Omni-Directional Range Collocated with Tactical Air Navigation

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing, relocating, or converting VHF omni-directional range (VOR)/VOR collocated with tactical air navigation (VORTAC) facilities in order to maintain a reliable, safe, and efficient air navigation system used for en route and approach purposes.

VOR/VORTAC will increase the system efficiency of the NAS by providing the necessary enhancements, upgrades, and relocations to VOR/VORTAC facilities that are experiencing signal deterioration due to various environmental factors. This program provides for field installation of low-power tactical air navigation (TACAN) antenna retrofit kits, relocation of VOR facilities, and conversion of existing facilities to a doppler configuration.

Category 3: 3A01 Navigation and Landing Aids: 3A01D Instrument Landing System – Establish/Upgrade Instrument Landing Systems

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by providing the necessary equipment to establish, replace, and maintain the precision approach capability at various airports. This program establishes, replaces, and maintains new, partial, and full CAT I/II/III instrument landing systems (ILS) and associated equipment. ILS can meet increasing traffic demands and is a proven technology that can sustain current operations and can be expanded or retracted as necessary to meet agency direction.

Category 3: 3A01 Navigation and Landing Aids: 3A01E Approach Lighting System Improvement Program Visual Navigation Aids – Approach Lighting System Improvement Program Continuation

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Improve safety in the NAS by replacing rigid, non-frangible lighting support structures with frangible approach lighting equipment.

The Approach Lighting System Improvement Program (ALSIP) will improve safety in the NAS by providing frangible lighting equipment including the high intensity approach lighting system with sequenced flashers (ALSF) model 2 and the medium intensity approach lighting system with runway alignment indicator lights (MALSR).

Category 3: 3A01 Navigation and Landing Aids: 3A01F Runway Visual Range Runway Visual Range – Replacement/Establishment

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.
System

Narrative for Primary Outcome Goal:

Improve safety in the NAS by replacing the older, maintenance intensive and difficult to support legacy systems (runway visual range (RVR), SSR, and Tasker 400s and 500s). RVR systems

provide critical meteorological visibility information that is necessary for takeoff and landings on precision approach equipped runways. These older systems are frequently supported on rigid, steel, non-frangible structures.

RVR replacement will improve safety in the NAS by providing modern RVR equipment. The new generation RVR equipment is mounted on frangible, low impact resistant structures that will break away in the unlikely event an aircraft should strike the equipment during takeoff or landing.

Category 3: 3A01 Navigation and Landing Aids: 3A01G Distance Measuring Equipment – Sustain

Distance Measuring Equipment – Sustain

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing obsolete, tube-type distance measuring equipment (DME) that provides critical distance information to pilots during preparation for landings.

The DME Sustain Program will increase system efficiency by providing current technology electronics that will improve operations and facilities performance. The current technology DME will help reduce maintenance costs by replacing the older DME that is difficult and expensive to maintain because replacement parts are either difficult to obtain or unavailable. The upgraded equipment will also improve system efficiency by reducing the downtime required for the maintenance/repair of the antiquated DME systems.

Category 3: 3A01 Navigation and Landing Aids: 3A01H Non-Directional Beacon Facilities – Sustain

Non-Directional Beacons Sustain

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing obsolete, tube-type non-directional beacons (NDB) with current technology electronics that continue to provide navigational direction information.

NDB Sustain will increase system efficiency by providing current technology electronics that will upgrade equipment, thereby improving operations and facilities performance. The current

technology NDB will help reduce maintenance costs by replacing the older NDB systems that are difficult and expensive to maintain because of parts obsolescence. The upgraded equipment will improve system efficiency by reducing downtime required for the maintenance/repair of the antiquated NDB systems.

Category 3: 3A01 Navigation and Landing Aids: 3A01I Visual Navigation Aids – Establish/Expand

Visual Navigation Aids – Visual Navigation Aids for New Qualifiers

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Increase system efficiency of the NAS by providing the necessary equipment, including precision approach path indicators (PAPI) and runway end identifier lights (REIL), to establish a visual approach capability at various airports. This program establishes the necessary visual equipment to aid pilots to quickly identify the runway threshold and make stabilized descents for clearance over obstructions.

Category 3: 3A01 Navigation and Landing Aids: 3A01J Visual Approach Slope Indicator Replacement – Replace with Precision Approach Path Indicator

Visual Navigation Aids – Replace Visual Approach Slope Indicator Replacement with Precision Approach Path Indicator

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing aging, obsolete visual approach slope indicators (VASI) with new technology, the more standardized PAPI.

The Replace VASI with PAPI Program will add system efficiency to the NAS by providing the necessary equipment to upgrade and standardize visual approach angle capability at various airports. The upgraded equipment will improve system efficiency by reducing the downtime required for the maintenance/repair of the older system and by reducing the technician's time required to adjust the aiming angle on the older, less precise VASI.

Category 3: 3A01 Navigation and Landing Aids: 3A01K Instrument Approach Procedures Automation

Instrument Approach Procedures Automation

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by providing automated tools, including the ability to digitize maps and charts, that allow FAA specialists to develop more timely and accurate instrument approaches for pilots into airports clear of obstacles such as radio towers, buildings, and trees. In addition, the instrument approach procedures automation (IAPA) tool will meet expanding air traffic control needs (e.g., the FAA receives 30,000 annual requests to erect more obstacles near airports. The automated tools help to reduce the time it takes to evaluate, revise, and update the approaches).

Category 3: 3A01 Navigation and Landing Aids: 3A01L Navigational and Landing Aids – Service Life Extension Program (Long-Range Navigation – C)

Long-Range Navigation – C Monitors and Transmitter Enhancements

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Support system efficiency by determining whether long-range navigation – C (LORAN-C) can provide navigation support and other benefits to aviation.

Although the current LORAN-C system can be used for en route navigation, no approaches exist. The goal of the program is to determine whether the accuracy, availability, integrity, and continuity of an enhanced LORAN-C transmitter and receiving system will be able to meet the requirements for LNAV, Required Navigation Performance (RNP) 3. Another ancillary benefit to aviation will be to determine whether LORAN-C can provide an alternative means of transmitting the WAAS correction signal to aircraft where reception from geostationary satellites may be problematic (e.g., high latitudes).

Category 3: 3A01 Navigation and Landing Aids: 3A01M Navigation and Landing Aids – Service Life Extension Program

Visual Navigation Aids – Sustain, Replace, Relocate

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing aging, obsolete visual navigational aids as well as other ground-based navigation and landing aids that are necessary in order to maintain en route, approach, and landing capabilities at various airports throughout the United States.

The upgraded equipment will improve system efficiency by reducing the downtime required for the maintenance/repair of the older system and by reducing the technician's time required to service each of the navigation and landing aids under this program. Equipment under this program includes the following navigation and landing aids: ALSF-2, MALSR, PAPIs, REILs, VORs, DME, and NDBs.

Category 3: 3A02 Oceanic Automation System Advanced Technologies & Oceanic Procedures

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Increase system efficiency in all Oceanic ARTCCs through the modernization of the oceanic air traffic control systems. When in place, the new integrated satellite-based system, combined with new air traffic control procedures, will render a new concept of operations, providing significant benefits to the FAA and its customers. The advanced technologies & oceanic procedures (ATOP) system, which does not rely on paper strips, will provide the following:

- A new platform to deliver customer benefits through increased air traffic control efficiencies and capacity;
- A fully integrated flight data processor, radar data processor, and satellite-based data link communication and surveillance (e.g., automatic dependent surveillance address (ADS-A));
- Controller tools, such as conflict probe.

In addition, the system will enable reduced separation standards – 30/30 longitudinal/latitudinal separation, which will result in the most efficiently managed oceanic airspace in the world.

The FAA manages 80 percent of the world’s controlled oceanic airspace, airspace that is beyond domestic coverage with land-based air traffic control infrastructure, including radar. The FAA provides air traffic control services for oceanic flights within an area of approximately three million square miles in the Atlantic Ocean and 18 million square miles in the Pacific Ocean. This airspace is not sovereign—the ICAO delegated the airspace to the Civil Aviation Authorities, of which the FAA is one, and can reassign the airspace at any time. The Oakland ARTCC, the New York ARTCC, and the Anchorage ARTCC presently manage this airspace.

Oceanic air traffic control differs from domestic air traffic control largely because there is no radar tracking of aircraft and no direct radio communication. Oceanic air traffic controllers must rely on other sources of aircraft position information, including voice position reports from pilots derived from on-board navigation systems that include the GPS and communications satellite information. In turn, this lack of reliable and timely position information requires large aircraft separation standards that severely limit the useable system capacity. As a result, oceanic users are rarely able to obtain maximum fuel efficiency, minimum travel durations, and access to preferred takeoff times and flight paths.

Oceanic air traffic is projected to continue to grow at a higher rate than domestic air traffic, primarily in the highest density areas. In addition, the market demands expanded capacity through improved operational and fuel efficiency. The FAA’s current oceanic system is approaching maximum operating capacity. An integrated, modernized oceanic air traffic control system is required to increase oceanic air traffic capacity and efficiency, without degrading safety, and to enable the introduction of free flight in oceanic airspace.

The ATOP contract will replace the oceanic systems at the Anchorage, New York, and Oakland ARTCCs. The new oceanic 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 it will integrate capabilities such as flight data processing, radar data processing, automatic dependent surveillance (ADS), controller-pilot data link, and conflict probe. The ATOP system, along with accompanying new oceanic procedures, will increase capacity and efficiency by providing enhanced prediction of aircraft and airspace conflicts, improved communications, automation tools that allow reallocation of sector workloads and eliminate time consuming manual tasks, and support for reduced separation standards through full use of CNS capabilities. As components of the ATOP architecture, sustainment and improvement to the MicroEARTS platform, as well as ongoing upgrades to existing oceanic legacy systems: oceanic display and planning system (ODAPS), interim situation display (ISD), telecommunications processor, oceanic data link (ODL), air traffic services interfacility data communications (AIDC) systems, and dynamic ocean tracking system plus (DOTS+) is required.

Category 3: 3A03 Gulf of Mexico Offshore Program Gulf of Mexico Offshore Program

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Outcome Goal:

Establish two-way voice and data communications that will permit less stringent offshore separation standards (space) and flight route changes over the Gulf of Mexico (GOM), thus increasing capacity and reducing delays.

The GOM Program (GOMP) currently is developing an approach to improve efficiency and capacity while enhancing the currently inadequate communication coverage over the GOM. This project is comprised of two systems: the buoy communications system (BCS) and the VHF extended range network (VERN). These systems are directed at expanding direct controller-pilot VHF radio communications. The combination of the BCS and VERN will improve efficiency and capacity through enhanced communications in the en route portion of the GOM above 18,000 feet. These enhancements offer solutions to current shortfalls as well as proactively address future anticipated growth and user demand for efficient use of the GOM airspace.

Category 3: 3A04 Voice Switching and Control System

- **Voice Switching and Control System – Voice Switching and Control System Control System Upgrade**
- **Voice Switching and Control System – Technology Refresh**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve operational efficiency and effectiveness of the NAS by replacing and upgrading the voice switching and control system (VSCS) equipment at all en route ARTCCs, including the Mike Monroney Aeronautical Center and the William J. Hughes Technical Center (WJHTC).

The VSCS Program provides effective en route air traffic control services to airspace users through A/G and G/G communication systems. The VSCS Program modernizes communications systems through the replacement of obsolete, non-supportable VSCS hardware and software to ensure that all VSCSs within the en route environment continue to provide reliable service to air traffic controllers. The sustainment activities planned under this program include software upgrades, power supply upgrades, position electronic module (PEM) upgrades, display module upgrades, and system expansions. Through the performance of these sustainment activities, the VSCS Program improves air traffic control services within the en route environment.

Category 4

Definition of Category 4: Improve Reliability of the National Airspace System

This category contains the efforts to sustain existing and establish and/or implement new NAS services and capabilities. It includes programs that protect and enhance communities and the natural environment affected by transportation.

FAA Goal: Reliability of the NAS: *Provide an aerospace system infrastructure that is available for aerospace users.*

Strategies to Achieve FAA Reliability of the NAS Goals:

NAS Modernization: *Using the NAS Architecture as the guideline, continually refine and update the NAS to achieve efficient aerospace systems and operations.*

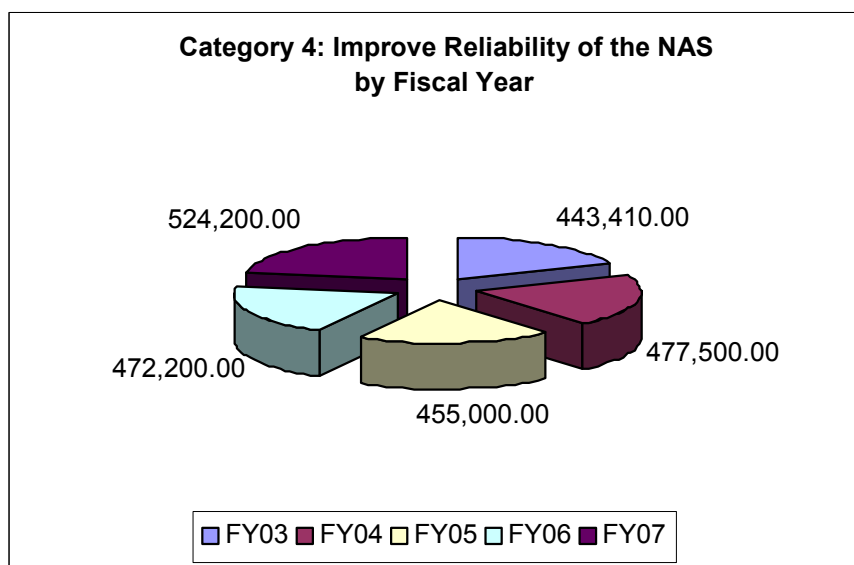
Systems Integration: *Integrate airport and commercial space transportation into NAS requirements.*

FAA Annual Performance Goals:

Service Reliability – *Maintain or increase navigation aid, sensor, and communications systems availability levels commensurate with percentages in the NAS System Requirements 1000 (SR1000).*

Operational Efficiency and Effectiveness – *Provide services at a lower cost without reducing availability of facilities, infrastructure, or equipment (the target level of performance for this goal has not been defined by Office of the Secretary of Transportation (OST)/FAA).*

The following graph indicates distribution of funding for F&E programs in Category 4: Improve the Reliability of the NAS for Fiscal Years 2003 to 2007. Funding in thousands.



Category 4: 4A01 Guam Center Radar Approach Control – Relocate
Relocate Guam Center Radar Approach Control

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency at the Guam Center Radar Approach Control (CERAP) by relocating operations from the existing CERAP at Andersen Air Force Base (AFB) to the FAA Base Building at the Agana International Airport. The existing base building at the Agana International Airport will be renovated and expanded to accommodate CERAP operations, NAS equipment, and associated environmental support equipment.

The existing Guam CERAP facility was constructed in 1960 on Andersen AFB. This facility incurred significant damage from Super Typhoon Paka in 1997. Minimal stopgap repairs were made following the typhoon. Facility maintenance and modernization projects are difficult to program, as the DoD owns the building. Additionally, when military operations are underway, access to the facility is restricted. Working conditions within the CERAP are presently unacceptable. In 1998, a decision was made to relocate the existing CERAP to an FAA-owned base building at the Agana International Airport.

Category 4: 4A02 Terminal Voice Switch Replacement/Enhancement Terminal Voice Switch

Enhanced Terminal Voice Switch

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency of the NAS by replacing the electromechanical and aging electronic switches in all ATCTs and TRACON facilities with modern reliable voice-switching systems.

The Terminal Voice Switch Replacement (TVSR) Program enables effective air traffic operations at all terminal facilities by replacing older, non-supportable electronic and electromechanical voice switches. The TVSR Program consists of several multi-year equipment contracts, including small tower voice switch (STVS) systems, operational support telephone systems (OSTS), enhanced terminal voice switch (ETVS) systems, rapid deployment voice switch (RDVS) model IIA systems, and voice switch by-pass (VSBP) systems. Modern voice switches, like ETVS and RDVS IIA, meet the needs of the air traffic controllers and enable more effective air traffic operations.

Category 4: 4A03 Airport Cable Loop Systems – Sustained Support

Airport Cable Loop Systems Sustained Support

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by enhancing communications outages and increasing system performance from multiple pathways.

By implementing this program, the agency will now have a standard design and method to install fiber optic transmission systems (FOTS) throughout the NAS. Standardizing the design requirements will simplify logistics, configuration management, training, and depot support.

Category 4: 4B01 En Route Automation Program

(A) En Route Automation Program – En Route Enhancements

(B) En Route Automation Program – Flight Data Input/Output Replacement

(C) En Route Automation Program – Direct Access Radar Channel

(D) En Route Automation Program – Host/Oceanic Computer System Replacement

(E) En Route Automation Program – En Route Communications Gateway

(F) En Route Automation Program – En Route System Modification and Voice Switching and Control System Electronic Module/Position Electronic Module Relocation

(A) En Route Automation Program – En Route Enhancements

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide software evolution, as prioritized and approved by air traffic and airway facilities, to add new capabilities and enhancements to the host and DSR software and to address critical software problems. The host and DSR are the primary processor and display system used to control air traffic. While the level of effort maintained is not sufficient to incorporate all air traffic and airway facilities operational needs, current funding levels have been adequate to incorporate high priority changes

The En Route Enhancements Program supports the FAA system efficiency goal by maintaining and enhancing host and DSR system software at the ARTCCs.

(B) En Route Automation Program – Flight Data Input/Output Replacement

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Support the FAA system efficiency goal by maintaining and replacing obsolete flight data input/output (FDIO) equipment.

(C) En Route Automation Program – Direct Access Radar Channel

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Maintain an enhanced independent back-up radar automation system capable of continuously improving the functionality. This program will eliminate legacy hardware and interfaces and

replace the current software architecture with one that provides hardware independence.

(D) En Route Automation Program – Host/Oceanic Computer System Replacement

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Maintain the reliability and performance of the host and oceanic computer systems within the NAS to prevent future major outages of air traffic control services. The host/oceanic computer system replacement (HOCSR) provides operational air traffic control capabilities in the mission areas of safety and capacity, and provides secondary benefits in the mission area of productivity/business practices.

HOCSR will increase the system efficiency of the NAS by providing mobility through the replacement of the primary en route computer system hardware (host) in the 20 en route centers, the oceanic systems (ODAPS) in two centers, and the offshore flight data processing system in Honolulu, HI. The HOCSR Program is a key component of the ongoing modernization of the FAA NAS infrastructure. HOCSR extends the life of the many hardware components that have reached their end of life service. The host and oceanic computers are the foundation of the FAA's automated air traffic control environment. The computers receive, process, coordinate, distribute, and track information on aircraft movement throughout the nation's airspace as well as the borders of oceanic airspace. The computers connect to all types of FAA services— ATCTs, TRACON facilities, flight service stations (FSS), adjacent flight information regions, host and oceanic computers at other centers, and external organizations such as the U.S. Customs Service and the U.S. Military. The computers are key to the FAA's ability to implement new services, concepts, and traffic flows for the airline industry and the flying public. The availability of these computers is critical to maintaining the nation's commerce.

(E) En Route Automation Program – En Route Communications Gateway

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Increase system capacity and expandability by minimizing the time that full operational services are not available, and by enabling the integration of new surveillance technology, the introduction of new interface standards and formats, and connectivity to additional remote equipment (e.g., radar). The en route communications gateway (ECG) infrastructure will provide the automation system capacity and expandability required to support anticipated increases in air traffic and changes to the operational environment. By providing a flexible and expandable architecture, ECG must be deployed prior to the introduction of new services, systems, and capabilities.

ECG, a replacement system, is a combination of new functionality and capability. ECG will replace the current peripheral adapter module replacement item (PAMRI) functions deployed at the ARTCCs, subsume certain legacy functions, and provide the foundation for new radar/surveillance sources and new communications sources. In addition to supporting external legacy interfaces, ECG will provide an initial set of external Internet Protocol (IP) interfaces. The ECG architecture will include the capability for adding modern interfaces to the host computer system (HCS) and DARC platforms and support future applications that require ECG data processing. ECG software development will be minimal. Overall, the ECG Program will meet the En Route Integrated Product Team (IPT) objectives to evolve from legacy systems to an open system architecture and modern protocols. All hardware to be fielded in support of ECG will be COTS.

(F) En Route Automation Program – En Route System Modification and Voice Switching and Control System Electronic Module/Position Electronic Module Relocation

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide product modifications and upgrades to replace aging or obsolete components while ensuring that national, agency, and customer requirements are met through cost effective methods that capitalize on the technology evolution, supporting growth in NAS functionality and providing system flexibility.

The En Route System Modifications (ERSM) Program will provide modifications to aging or obsolete components of the display system. This program will provide an incremental transition to newer components to ensure that the system infrastructure is supportable, that enhanced user functionality can be supported, that system growth is not curtailed by product obsolescence or shortages, that planned system functionality enhancements can be supported, and that integration of advanced technologies is possible.

Category 4: 4B02 Air Route Traffic Control Center Building Improvements/Plant Improvements

Air Route Traffic Control Center Plant Modernization/Expansion – Air Route Traffic Control Center Modernization

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Continue improvements to re-capitalize facilities providing new services.

Support operational efficiency and effectiveness by maintaining the integrity of 21 ARTCCs, three CERAP facilities, and the Air Traffic Control System Command Center (ATCSCC), and ensure facility sustainment, modernization, and expansion to support air traffic control operations. This will aid in the integration and transition of new NAS systems within ARTCCs, CERAPs, and the ATCSCC and the management of the life cycle of these facilities.

Category 4: 4B03 Air Traffic Management

(A) Air Traffic Management – Air Traffic Management Functionality Development/Deployment – Departure Spacing Program

(B) Air Traffic Management – Traffic Flow Management Infrastructure – Infrastructure Modernization

(A) Air Traffic Management – Air Traffic Management Functionality Development/Deployment – Departure Spacing Program

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Continue the development of the departure spacing program (DSP) prototype and the eventual integration of the DSP functionality into a modernized TFM infrastructure that will result in a reduction of system-wide delays while facilitating achievement of collaborative decision-making (CDM) and free flight operating concepts.

The current TFM infrastructure requires modernization to allow full traffic system integration. The DSP prototype system is being expanded into additional Northeast U.S. Corridor facilities in the Boston, MA, and Washington, D.C., metropolitan areas and will eventually require integration into the TFM infrastructure and further evaluation for consideration of NAS-wide implementation. DSP provides more efficient departure management tools to decrease the amount of delays and lower associated costs of imposed delays, thus providing greater economic benefit to the user community.

(B) Air Traffic Management – Traffic Flow Management Infrastructure – Infrastructure

Modernization

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Serve as a primary source of information to be used by the FAA and NAS users to manage irregular operations as a result of congestion, avoidance of severe weather, and/or other disruptive events. The current infrastructure has been successfully expanded to support Free Flight Phase 1 initiatives. However, limitations in both the existing software architecture and the aging hardware on which it resides will restrict the level of integration with the en route domain and AOC flight planning systems that is desired by the operational community. In addition, TFM modernization will supply the hardware/software required for the assimilation of the standalone functionality provided by DSP, collaborative routing and coordination tools (CRCT), and other new traffic flow initiatives.

**Category 4: 4C01 Critical Telecommunications Support
Critical Telecommunications Support**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency and effectiveness by providing modifications to existing telecommunications systems at over 5,000 facilities within the NAS. Critical telecommunications support (CTS) provides funds for air traffic communications diversity, un-programmed telecommunications additions, moves, modifications, and emergency requirements.

**Category 4: 4C02 Federal Aviation Administration Telecommunications Infrastructure
Federal Aviation Administration Telecommunications Infrastructure**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve telecommunications services within the NAS infrastructure through an integrated approach. The FAA Telecommunications Infrastructure (FTI) will acquire a wide range of contractor-provided service delivery points (SDP) to SDP telecommunications services with integrated network management and provisioning capabilities. Over the next decade, FTI will incrementally replace existing NAS telecommunications systems. FTI will reduce unit costs for telecommunications services, increase bandwidth utilization, and improve efficiency and effectiveness by using modern business practices. FTI centralizes management and security functions and improves flexibility to support new and emerging air traffic systems.

Category 4: 4C03 Air-to-Ground Communications Infrastructure

- **Communications Facilities Enhancement – Expansion**
- **Communications Facilities Enhancement – Limited Radio Replacement Program**
- **Communications Facilities Enhancement Air-to-Ground Communications Radio Frequency Interference Elimination**
- **Backup Emergency Communication – Replacement**
- **Radio Control Equipment**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Enhance operational efficiency and effectiveness through planned improvements to the A/G communications infrastructure that involve replacing aging and increasingly unreliable equipment and improving associated sites and facilities, including the establishment of new facilities intended to broaden communications coverage. The A/G Communications Infrastructure Program is the combination of the following CIP projects:

- Communications Facilities Enhancements (CFE): Provide new radio control facilities and/or modify existing facilities to enhance the A/G communications between air traffic control and aircraft;
- CFE Limited Radio Replacement: Procure high-low VHF transmitters and receivers;
- Radio Frequency Interference Elimination (RFI) Elimination: Provide modern communication and ancillary equipment to improve operational performance at select remote communication facilities;
- Back-up Emergency Communications (BUEC): Provide a dedicated channel/sector in place of a priority based, shared outlet system. Replace current 1970s system that is logistically unsupportable;
- Radio Control Equipment (RCE): Provide equipment used to control A/G radios from a remote location. Replace vacuum-tube equipment that is maintenance intensive and logistically unsupportable.

Category 4: 4C04 Voice Recorder Replacement Program **Voice Recorder Replacement Program**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency of the NAS by replacing aging, analog voice recording systems with modern digital voice recording systems (DVRS). DVRSs enable air traffic controllers to effectively record all voice communications between the controllers, pilots, and other ground-based air traffic control facilities, which meets the statutory requirement.

The Voice Recorder Replacement Program (VRRP) enables effective air traffic operations through the replacement of aging, analog voice recorders with DVRSs. The VRRP will replace a total of 530 voice recorders systems at various ATCTs, TRACON facilities, automated flight service stations (AFSS), and ARTCCs. Through the deployment of DVRS, the VRRP will enable reliable and legal recording services, while reducing maintenance staffing requirements and life cycle maintenance costs.

Category 4: 4C05 National Airspace System Infrastructure Management System **National Airspace System Infrastructure Management System – Phase 2**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of the users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Establish a National Operations Center (NOCC) and three strategically located operations

control centers (OCC) to centralize information and technical expertise. Field a COTS-based information system that consists of distributed computers, integrated software and database applications, remote monitoring, and control capabilities. The NAS infrastructure management system (NIMS) will provide the necessary tools to FAA maintenance personnel to support ATS in meeting demand for increasing services with diminished resources while maintaining safety.

To maintain the increasing numbers of new systems and facilities being added to the NAS as part of the modernization program, increased field maintenance staff of about 2,000 is required to maintain the system availability at the level necessary for the FAA to perform its mission. The NIMS Phase 2 project provides the capability necessary to avoid the costs associated with increasing staff levels, and employs a centralized maintenance concept along with associated infrastructure management tools.

Secondary Outcome Goal: FAA Goal: National Security: Prevent security incidents in the aviation system.

Narrative for Secondary Outcome Goal:

Establish an NOCC and three strategically located OCCs to centralize information and technical expertise. Field a COTS-based information system that consists of distributed computers, integrated software and database applications, remote monitoring, and control capabilities. NIMS will provide the necessary tools to establish NAS capacity for disaster recovery contingency planning and execution.

NIMS will provide the capability to execute an appropriate national response to local threats or disasters. NIMS will provide the capability to consider availability profiles at all levels ranging from national to local in execution of the disaster recovery plan. NIMS will provide OCC redundancy using integrated fail-over capability and interconnectivity to eliminate the single-point failure mode present in the current NAS organizational infrastructure.

Category 4: 4C06 Flight Service Station Modernization

Flight Services Facilities – Automated Flight Service Stations Facilities Sustainment

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by procuring power conditioning systems for the AFSS to alleviate power problems and accommodate any new load requirement from future systems, including upgrading and sustaining leased and owned FSSs, continuing the replacement of uninterruptible power supplies (UPS) in the FSS to provide reliable power for existing systems and to accommodate the stringent power requirements of new equipment as it is installed to modernize the NAS, and continuing the other infrastructure repairs necessary to maintain the facilities heating, ventilation, and air conditioning (HVAC) systems to ensure the proper environmental control in operations, equipment, and administrative areas.

Secondary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Secondary Outcome Goal:

Optimize customer satisfaction with the safety, security, and efficiency of the air transportation system in the United States. This objective requires planning, evaluating, and controlling the system in such a manner as to enable optimizing customer satisfaction, providing funding options together with advantages and disadvantages, then accomplishing modifications, sustainment actions, and expansions that address customer satisfaction.

Category 4: 4C07 Flight Services Automation System Operational and Supportability Implementation System

Flight Services Automation System Operational and Supportability Implementation System

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide on-going operational support, enabling flight service specialists to more efficiently provide weather and flight information for GA pilots. The existing flight services automation system (FSAS) equipment is 1980s technology and is difficult to maintain and support. The operational and supportability implementation system (OASIS) will provide significant improvement in the computer-human interface (CHI) by replacing the existing FSAS display with a graphical user interface. Additionally, new ergonomic equipment consoles will be installed.

The OASIS Program will provide a modified COTS/NDI-based software and COTS hardware leased service. OASIS will replace all existing FSAS hardware and software, enhance the current FSAS operational capabilities, and incorporate the interim graphic weather display system (IGWDS) and the direct user access terminal (DUAT) functionality. Modifying the COTS/NDI-based service has become necessary to meet operational requirements for the system. The AFSS specialists and technicians have identified deficiencies with the current equipment consoles. The FSAS equipment console replacement program will provide ergonomically designed COTS workstation consoles in conjunction with each OASIS installation.

**Category 4: 4C09 Flight Service Station Switch Modernization
Automated Flight Service Station Voice Switches**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by replacing the aging, non-supportable FSS voice switches with modern digital voice switches to enhance preflight and in-flight services.

The Automated Flight Service Station Voice Switch Replacement (AFSSVSR) Program will provide pilots with significantly improved access to flight planning, weather, communications, and emergency services deemed essential to the conduct of safe and efficient flight. This modernization program will replace the aging, non-supportable voice switches at 61 AFSSs throughout the NAS and at 14 non-automated FSSs located in Alaska. The principle enhancement of this program is a call transfer capability, which enables the AFSSs to transfer A/G calls to other AFSSs during periods of low demand. When fully implemented, the call transfer capability will significantly reduce operational costs. Through the deployment of modern digital voice switches, the AFSSVSR Program will significantly improve the operational and maintenance aspects of flight service operations.

**Category 4: 4C10 Alaskan National Airspace System Interfacility Communications System
Alaskan National Airspace System Interfacility Communications System Satellite
Network – Phase II**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve the system efficiency in the NAS by installing a new satellite telecommunications facility at locations where the FAA has experienced poor telecommunications performance. The increase of telecommunications availability provided by the implementation of the Alaskan NAS Interfacility Communications System (ANICS) sites corresponds to a direct increase in the availability of the NAS and improves air safety in Alaska.

ANICS will add system availability to the NAS by providing more reliable telecommunications in several rural areas throughout Alaska. The ANICS Phase II design will increase the availability of communications at these sites from 98 percent commercially available to 99.9 percent available via ANICS. On average, this improvement will decrease outages due to telecommunications from over eight days per year to less than nine hours per year.

At each ANICS Phase II installation site, the FAA will realize cost savings in the monthly recurring telecommunications costs. The average is \$340,000.00 net present value (NPV)

savings per site over the 20-year life cycle of ANICS, which equates to \$17,000.00 NPV cost savings per year on each of the 18 phase II ANICS sites that the JRC has approved to build.

Because the design is based on a completely digital communications stream, it will be easy to take advantage of new technologies that are just now being introduced (e.g., IP networks that include voice over IP). These technologies will allow for an even more reliable cost saving network.

**Category 4: 4C11 Electrical Power Systems – Sustain/Support
Power Systems Sustained Support**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by providing reliable quality power for the NAS. These power system sustainment activities will provide a more reliable standby source of quality power to support the continuous delivery of critical and essential air traffic control services within the NAS.

By implementing this program, the agency is merely beginning to impact “the big picture” of several years of power systems deficiencies. This program is expected to achieve cost savings through improved business practices, enhanced training of power maintenance personnel, improved systems efficiency of the airways facilities workforce, and increased safety for FAA employees.

**Category 4: 4C12 National Airspace System Recovery Communications
National Airspace System Recovery Communications**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Provide system efficiency to the NAS by ensuring that during emergencies the FAA’s command and control communications (C3) will be able to provide time critical public safety and NAS information between the Administrator, the Administrator’s staff, key regional managers, the DOT, and other national level executive personnel.

The NAS Recovery Communications (RCOM) Program will add system efficiency to the NAS by providing and enhancing a variety of fixed position, portable, and transportable C3 systems for use in support of emergency operations. Such C3 systems include the automatic digital network (AUTODIN)/defense messaging system, secure telephone unit (STU) third generation/secure telephone equipment (STE), secure facsimile, VHF/frequency modulated (FM), high frequency single side band (HFSSB), satellite telephone network (AMSC), automated notification system (ANS), secure conferencing system (SCS), and communications support teams (CST).

**Category 4: 4C13 Aeronautical Center Infrastructure Modernization
Aeronautical Center Infrastructure Modernization**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve operational efficiency and effectiveness by providing up-to-date facilities and supporting infrastructure that meets the needs of FAA mission support organizations located at the Aeronautical Center.

The Aeronautical Center lease provides more than 1090 acres of land, over 90 buildings, towers, streets, and infrastructure for the purpose of housing FAA mission support services. Services include training for over 30,000 FAA and international students per year in resident and distance learning formats (Academy, Transportation Safety Institute, and U.S. Coast Guard); logistics and supply support to all FAA locations and approximately 70 DoD and international organizations; cost accounting and payroll services for the FAA and other DOT organizations; engineering services for NAS modification and repair; flight check for calibration/certification of radar/navigation aids at all nation-wide locations; Airmen and Aircraft Records and Registry; aviation medical research and human factors research; maintenance, administrative, and other support services for the FAA; and support to critical air navigation systems throughout the NAS.

Secondary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Secondary Outcome Goal:

Provide adequate facilities and infrastructure for organizations that support the agency's model work environment initiatives.

Continue to build model work environments through the improvement of facilities and infrastructure, supporting employee services such as child care, wellness centers, employee credit union, food services, parking, Americans with Disabilities Act (ADA), equal employment opportunities, postal services, employee training and development opportunities, and physical security.

Category 4: 4C14 Frequency and Spectrum Engineering

- **National Airspace System Spectrum Engineering Management – National Airspace System Spectrum Engineering Sustained Support**
- National Airspace System Spectrum Engineering Management – Frequency Interference Support/Resolution

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS with careful and detailed frequency planning necessary to ensure that current and future aeronautical safety systems are provided adequate radio spectrum in which to operate. In addition, spectrum management support must be provided to both government and non-government offices involved in the operation of current systems and to organizations planning new aeronautical systems.

Frequency and Spectrum Engineering will add system efficiency to the NAS through frequency and spectrum engineering studies for the ICAO to protect frequency bands of the GNSS; to support test planning and to develop frequency assignment and airspace evaluation criteria for the ICAO approved ground-based augmentation system (GBAS); and to finalize the NEXCOM transition plan. Other elements of this program will seek to advance civil aviation interests in the development and coordination of the U.S. position for the 2003 World Radiocommunication Conference (WRC), ensuring protection of aeronautical safety service radio spectrum; to analyze radio spectrum technical and capacity issues associated with selecting the best link for ADS-B implementation; and to ensure radio spectrum support to the FAA's runway incursion program. Other activities include efforts to modernize and develop equipment for more efficient radio frequency engineering and to upgrade existing radio frequency investigation capabilities throughout the NAS, including fixed direction finding equipment to support radio frequency interference to GNSS and configuration management support for all regional radio frequency interference vans. These activities are aimed at reducing air traffic delays. Another critical element of this program is the study and electromagnetic compatibility analysis of the impact of proposed new technologies on NAS aeronautical safety systems.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.**Narrative for Secondary Outcome Goal:**

Improve safety in the NAS with careful and detailed frequency planning necessary to ensure that current and future aeronautical safety systems are provided adequate radio spectrum in which to operate. In addition, spectrum management support must be provided to both government and non-government offices involved in the operation of current systems and to organizations planning new aeronautical systems.

Category 5

Definition of Category 5: Improve Efficiency of Mission Support

This category contains projects and programs that contribute to the mission of the agency and assist in delivering primary services and meeting strategic and performance goals.

1. FAA Goal: Human and Natural Environment: *Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.*

2. FAA Goal: Organizational Excellence:

People: *Prepare the workforce for the demands of the 21st century.*

Reform: *Become more businesslike while increasing customer responsiveness.*

1. Strategies to Achieve FAA Human and Natural Environment Goals:

Understanding Aerospace Environmental Impacts: *Participate in research to understand more fully the effect of aerospace on the atmosphere and the degree of regulation necessary to minimize those impacts.*

Reducing Aerospace Environmental Impacts: *Use combinations of regulations, research, technology, and procedures to reduce and mitigate adverse impacts from the aerospace.*

Quantify and Mitigate Environmental Impacts of FAA activities: *Assess compliance with environmental regulations; honor the mandates to clean up contamination in accordance with existing agreements; reduce the use of hazardous materials at its facilities; and promote recycling.*

FAA Annual Performance Goals:

Aircraft Noise Exposure – *Number of people in the U.S. exposed to significant noise levels 65 decibels or more. The FY 2003 target is no more than a to be determined number of people.*

2. Strategies to Achieve FAA Organizational Excellence Goals:

People: *Implement a model work environment, a productive and hospitable work environment, where employees can develop to their potential and contribute fully to the organization. Contributions of all employees are supported and encouraged; discrimination and harassment have been eliminated; and the nation's diversity is reflected.*

Acquisition Reform: *Reform acquisition processes to make them faster, simpler, and more mission-based.*

Personnel Reform: *Reform personnel systems to provide increased flexibility in hiring, pay, and placement; protect employee rights; increase productivity; promote high standards of accountability; enhance the agency's intellectual capital; and create incentives for change.*

Financial Reform: *Reform financial systems to enable a more performance-based management approach.*

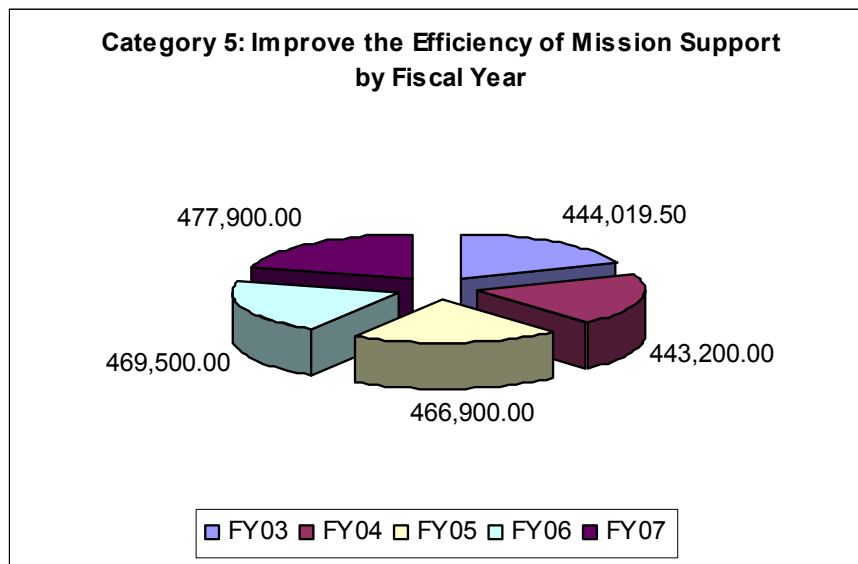
FAA Annual Performance Goals:

Customer satisfaction – Gain positive feedback from stakeholders.

People – Continue to build a model work environment.

Financial Responsibility – Achieve a clean audit and further improve agency accountability by implementing core financial systems.

The following graph indicates distribution of funding for F&E programs in Category 5: Improve the Efficiency of Mission Support for FY 2003 to 2007. Funding in thousands.



Category 5: 5A01/5A02 National Airspace System Improvement of System Support Laboratory/Technical Center Facilities

- **National Airspace System Improvement of System Support Laboratory**
- **Technical Center Facilities**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by upgrading and improving the agency's laboratory infrastructure at the WJHTC for the development, testing, upgrades, and second level field support for CIP programs. Each CIP program supported by these laboratories contributes to one or more of the FAA and DOT Goals.

This program improves system efficiency in the NAS by upgrading and improving the agency's infrastructure of test beds that duplicate the NAS environment in a unique, non-operational mode. The WJHTC's System Support Laboratory provides the environment to test, evaluate, and integrate new NAS systems prior to field deployment. These laboratories provide around the clock operations support to all en route and terminal air traffic control facilities throughout the nation.

The WJHTC's multi-user laboratories are engaged in support of virtually all the F&E programs in the CIP. Laboratory groupings include the en route and terminal test beds; navigational, scan radar, and automated tracking sites; communications switching equipment; aircraft simulation systems; and the human factors laboratory. This program funds the operation, maintenance, and enhancements to these test beds and pays for hardware and software maintenance, operations, software licensing fees, and other costs associated with operating the laboratories. The NAS Modernization portion funds enhancements and reconfigurations of the laboratory's electronic data distribution systems, communications systems, climate control system, and power distribution system. This program ensures that the WJHTC's laboratories provide state-of-the-art laboratory environments that support the implementation, testing, and integration of new NAS systems prior to their delivery to the various FAA field sites.

**Category 5: 5A03 Technical Center Building and Plant Support
William J. Hughes Technical Center Infrastructure Sustainment**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency in the NAS by refurbishing and replacing aging, obsolete facilities, systems, and equipment. These activities will ensure the WJHTC's ability to sustain its physical structures in its efforts to develop and support a safe, secure, and efficient global aviation

system.

Infrastructure sustainment at the WJHTC will improve operational efficiency and effectiveness by replacing aged systems and equipment before serious problems occur. This BLI will also update facilities and facility support systems and reduce energy consumption on a per square foot basis.

The WJHTC owns and operates approximately 1.54 million square feet of test and evaluation facilities, R&D facilities, administrative facilities, and numerous project test sites. The capitalization value of the buildings is estimated at approximately \$162.2 million, while the capitalized value of the infrastructure (roads, exterior utilities, etc.) is estimated at approximately \$21 million. These values do not include the approximately \$65.4 million dollars of environmental funding, received via a national program, that has been expanded to clean up environmentally hazardous sites at the WJHTC as well as replace aged underground storage tanks. Additionally, the values do not include the worth of the land itself, estimated at approximately three million.

This CIP program is the only available funding stream to sustain the 1.54 million square feet of space with the required utility and roadway support systems, which translates to an annual expenditure of approximately 2.4 percent of the WJHTC's capitalization value (including the land) to sustain the investment that the FAA has made in the WJHTC. From another perspective, this expenditure would equate to a sustainment value of approximately \$2.90 per square foot. It would seem prudent that with the magnitude of monetary investment at the WJHTC, a sustainment mechanism would exist.

Category 5: 5A05 Department of Defense/Federal Aviation Administration Facilities Transfer

Department of Defense/Federal Aviation Administration Air Traffic Control Facility
Transfer/Modernization – Original Program

Primary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Primary Outcome Goal:

Optimize customer satisfaction with the safety, security, and efficiency of the air transportation system in the United States. This goal requires planning, evaluating, and controlling the system in such a manner as to enable optimizing customer satisfaction, providing funding options together with advantages and disadvantages, then acquiring new systems (e.g., telecommunications, microwave, power supply, short-term emergency power, security, etc.) that are most effective in addressing customer satisfaction. These tasks require providing essential air traffic data to FAA air traffic controllers covering previously controlled DoD airspace in addition to maintaining the safety of the NAS by modernizing facilities and creating communication connections at DoD transferred locations. The DoD identifies sites at the

beginning of each FY to transfer to the FAA.

Category 5: 5A09 Federal Aviation Administration Buildings and Equipment

Federal Aviation Administration Buildings and Equipment Sustain Support – Modernize/Improve

Primary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Primary Outcome Goal:

Optimize customer satisfaction with the safety, security, and efficiency of the air transportation system in the United States. This goal requires planning, evaluating, and controlling the system in such a manner as to enable optimizing customer satisfaction, providing funding options together with advantages and disadvantages, then accomplishing the modifications, sustainment actions, and expansions that are most effective in addressing customer satisfaction. This task involves refurbishing and upgrading existing FAA owned facilities to meet the requirements of new NAS equipment installation and extend the facilities service life to the year 2010. As such, this program improves NAS efficiency through the upgrade and maintenance of existing FAA unstaffed facilities.

The FAA owns thousands of structures, built during the 1940s and 1950s, that have suffered from the effects of exposure to the elements, decay, and inattention and subsequently are in unsatisfactory condition. Problems include leaking roofs, deteriorated foundations, and inadequate air conditioning systems. A majority of these structures are not able to meet current seismic and safety standards. Despite the problems, these facilities house and support critical NAS weather, communication, surveillance, and navigational aids. Most of these facilities require upgrades and expansion to accommodate installation of new NAS equipment. This program will continue to improve NAS efficiency by repairing and upgrading the most in-need/critical facilities.

**Category 5: 5A10 Air Navigational Aids and Air Traffic Control Facilities (Local Projects)
Continued General Support – Air Navigation Aids Facilities – Local Projects**

Primary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Primary Outcome Goal:

Ensure F&E failures do not jeopardize the safety and efficiency of the air traffic control facilities. Capabilities include communications, surveillance, weather information, and air traffic control facilities.

Examples of completed F&E projects include the following:

- Instituted a second ground control position at the General Edward Lawrence Logan International Airport and the General Edward Lawrence Logan International ATCT;
- Replaced sections of cab glass at the Fayetteville ATCT, which lost pressurization, causing visibility problems and creating a safety hazard;
- Replaced batteries at the VOR navigation aid on Blorka Island, AK, that unexpectedly died.

Local F&E project funds are used for various local minor modifications and alterations that must be made to over 30,000 commissioned air navigation and air traffic control facilities throughout the United States.

**Category 5: 5A11 Computer-Aided Engineering Graphics Modernization
Computer-Aided Engineering Graphics Replacement**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency at all regions and centers through the use of enhanced computer-aided design and drafting (CADD) systems coupled with a web-based document management system to improve the FAA's ability to implement capital improvements. The enhanced system will meet increasing user access needs by expanding the system and by providing a flexible system interface to a suite of state-of-the-art graphical modeling and analysis tools and to an underlying secure and reliable engineering library to augment the decision-making process.

The computer aided engineering graphics (CAEG) system will add system efficiency to the NAS by providing mainstream CADD software to reduce file conversion costs, provide secured access via a web browser to specialized applications with an improved user interface needed for equipment siting studies, provide radio coverage, supply electromagnetic interference predictions, conduct aeronautical case study evaluations, and provide a host of other analysis capabilities. A highly scalable and adaptable electronic document management system (eDMS) with a robust workflow engine will be finalized and implemented across the regions and centers

to automate and standardize a largely manual and unreliable drawing management process. The overall goal is to deliver system upgrades to enhance user productivity, increase system availability, and improve system reliability and security.

Category 5: 5A12 Information Technology Integration

Federal Aviation Administration Corporate System Architecture – Information Technology Integration

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve operational efficiency and effectiveness by reducing the cost of delivering IT services without reducing service quality, and by optimizing IT decisions and resources across the agency.

The FAA spends in excess of two billion annually on IT, making it a high-volume buyer of IT services, such as voice and data communications, desktops, and database management systems. The agency will significantly improve the cost-effectiveness of IT by standardizing what it buys, by leveraging its position with vendors as a high-volume buyer, by coordinating the purchase and operation of related IT services, by creating the right management processes and incentives, and by adhering to an agency-wide IT architecture. Reducing costs rather than just reducing the rate at which costs rise is necessary given projected agency budgets. The FAA will improve its understanding of the total cost of ownership from conception through implementation, operation, and eventual retirement of major systems. Better insight into total cost of ownership will enable lower overall systems costs.

The FAA is acquiring, developing, and operating over 400 IT services and information systems that enable the agency to carry out virtually all of its mission and business functions. New management techniques will be implemented to improve critical investment decisions and to more effectively carry them out. Related IT systems will be grouped into portfolios and managed to optimize the performance of the whole portfolio to support agency business objectives. Key processes on which execution depends will be re-engineered and systematically improved.

Category 5: 5A14 Logistics Support Systems and Facilities

Logistics Support Systems and Facilities – Asset and Supply Chain Management

Primary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Primary Outcome Goal:

Improve operational efficiency and effectiveness throughout the agency by exercising effective

control of assets and providing full life cycle management.

The Asset and Supply Chain Management (ASCM) Program improves operational efficiency and effectiveness by providing a single, integrated planning, inventory, and asset management solution capable of producing effective performance, financial, and logistics information. ASCM's automated data collection capability will supply complete logistics information to all lines-of-business (LOB) engaged in strategic decision-making. It will aid FAA users in managing perpetual inventories in the field and support enhanced requisitioning capabilities by matching live data to the requisition process. ASCM will enhance staff productivity and decrease operational costs by cutting massive paperwork activities. It will facilitate accurate inventory planning by reducing on-hand inventory levels, shrink supply support delays associated with mistaken or insufficient information, and improve field technician effectiveness by aiding in the rapid deployment of assets.

Currently, the FAA has no single, integrated system to accurately and completely account for agency assets valued at over \$15 billion. Incomplete, conflicting, or missing financial and logistics information is being used as the basis for agency decision-making and financial reporting, thereby jeopardizing efforts to maintain standards for financial management, cost accounting, and a clean financial statement. By centralizing asset data, the ASCM Program will provide full life cycle cost and performance data, support the FAA's new cost accounting system, and provide asset information for capitalization, work-in-process, and depreciation calculations. ASCM will encompass functionality to replace multiple legacy systems in whole or in part, including the logistics and inventory system.

Category 5: 5A16 Facility Security Risk Management Facility Security Risk Management

Primary Outcome Goal: FAA Goal: National Security: Prevent security incidents in the aviation system.

Narrative for Primary Outcome Goal:

Improve and/or enhance physical security at all FAA staffed facilities in accordance with FAA Order 1600.69a. This order delineates requirements for physical security protective measures, and establishes standards, objectives, procedures, and techniques for the protection of FAA employees, agency property, facilities, contractors, and the public. This 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.

The Facility Security Risk Management (FSRM) Program will continue to upgrade and accredit staffed facilities and procure additional security systems to enhance the protection of FAA employees, facilities, and assets. Various measures will be implemented to enhance physical security at all FAA staffed facilities. These measures include, but are not limited to, installation of surveillance, intrusion detection, and access control systems; addition or repair of fences, locks, and doors; and at some of the more critical facilities, addition of guard services. Other facility improvements include parking control, lighting, occupant emergency plans, intelligence

sharing, physical barriers, shipping/receiving upgrades, employee/visitor identification, and blast hardening, where applicable.

Category 5: 5A17 Information Security

National Airspace System Information Security – Information Systems Security

Primary Outcome Goal: FAA Goal: National Security: Prevent security incidents in the aviation system.

Narrative for Primary Outcome Goal:

Safeguard information assets.

The increasing growth of cyber attacks and terrorism on critical infrastructures such as the NAS calls for a national effort to protect the increasingly vulnerable and interconnected U.S. computer and communications infrastructure. Vulnerability assessments and reviews of critical systems have identified protection requirements. A June 2000 GAO review of information security on computer systems cited progress the FAA is making, but it also identified key vulnerabilities that the FAA needs to address to detect and prevent information security breakdowns and denial of service attacks. In addition, the FAA must continue to comply with requirements of OMB Circular A-130, the Computer Security Act of 1987, as well as other Federal laws, Executive Orders, and policies.

The mission of the FAA's ISS Program is to protect the FAA's information infrastructure and help the aviation industry reduce security risks through leadership in innovative information assurance initiatives.

The increasing number of network-based attacks, the reliance on the Internet (which is susceptible to attacks) for quickly communicating information, and the vulnerability of cyber terrorists exploiting information systems require a rigorous information security approach to protect FAA information systems. The ISS Program requires substantial investment over several years to certify and authorize the more than 100 systems in the FAA's response to Presidential Decision Directive (PDD) 63 and the more than 600 agency mission support systems. In addition to national security, disruption of the modernized NAS would pose significant threats to safety, and could have considerable impact on the national economy. The FAA must address issues associated with ISS to ensure that its computer and communication systems will continue to support the FAA mission.

Category 5: 5A18 Distance Learning

Distance Learning

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Maintain operational efficiency and effectiveness in training delivery to the FAA workforce throughout the world by keeping a highly reliable and easy to use distance learning infrastructure available at every location. This program will design and provide a standard state-of-the-art computer-based instruction (CBI) delivery system for all CIP programs to support rollout and initial operational and maintenance training.

Also, this program will improve operational efficiency and effectiveness in air traffic control, airway facilities, and regulatory standards training through the following:

- Advanced simulation and training delivery capability at all field learning centers;
- NAS equipment sub-system mock-ups interfaced to CBI.

The Distance Learning Program is required to deliver technical training across the FAA to include air traffic, airway facilities, regulatory standards, IT, and other general topics. Given the ever-increasing cost of maintaining a well-trained FAA workforce, it is imperative to achieve training efficiencies wherever possible. This program continues to provide and maintain a distance learning infrastructure through upgrades of the learning centers around the world and the network to support them. Special simulators for new NAS systems are supported as required through standard interfaces to the CBI platforms at all learning centers.

The overall payback of the Distance Learning Program (FY 2003 through FY 2007) is over \$50 million with an overall benefit to cost ratio of better than 2.8.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.**Narrative for Secondary Outcome Goal:**

Improve safety by reducing operational errors and runway incursions through improved and more accessible training and state-of-the-art simulation techniques.

There is a clear link between the training of FAA personnel and aviation safety. The Distance Learning Program's main concern relating to this goal is for safer skies through proper training. Proper training is strengthened by the use of simulation and other "hands on" methods of delivery. Through CBI simulations, a student can make the mistakes necessary to learn without jeopardizing human life or air safety. CBI training is individual training; each student must experience the training and master it by him/herself, which improves safety. Whether it is an air traffic controller in an en route center or a maintenance technician repairing a radar site, safety is enhanced through training. This program improves FAA training by making it more realistic and more accessible. The training is delivered at the job site rather than a single centralized location, thus making training available when needed and without travel. The training remains available for immediate use for refresher and remediation, which also greatly enhances safety.

**Category 5: 5A19 National Airspace System Training Facilities
National Airspace System Training – Modernization**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Maintain operational efficiency and effectiveness in air traffic control training through the replacement of the FAA's outdated ATCT cab training simulator with one that is far more versatile and up-to-date than those currently used by aviation organizations throughout the world.

Also, improve operational efficiency and effectiveness in air traffic control, airway facilities, airports, and regulatory standards training by:

- Upgrading classrooms to provide a more effective, efficient presentation and reducing course delivery costs;
- Replacing outdated laboratory equipment with actual current field test equipment;
- Improving communications between Academy and student and administrative customers, resulting in significant operational timesavings.

This program is expected to perform technical training across the FAA to include air traffic, airway facilities, regulatory standards, and airports. Given the ever-increasing cost of maintaining a well-trained FAA complement, it is imperative to achieve training efficiencies wherever possible. This program is poised for upgrades of the tower cab simulators at the FAA Academy, as well as the balance of classroom upgrades and implementation of related training systems.

The FAA's only ATCT simulator, the agency's best method to improve runway incursion training for new hires, is 10 years old, equipped with antiquated technology, and in certain areas, lacking spares. The tower cab simulator retrofit will allow the FAA to continue to avoid the cost and time required to train air traffic controllers in the tower cab environment. This program also accesses the technology available to improve efficiencies in the resident training environment. Extensive actual experience in the private sector has repeatedly proven that the introduction of interactive classrooms will decrease the amount of time required to complete training. In the FAA environment, the introduction of interactive classrooms will result in lower per diem and student/instructor salary costs during training. This program's classroom upgrades will include interactive student computers, overhead projection systems, and networking to central servers to enhance the training system. Although the efficiency resulting from the following two initiatives cannot be specifically measured, it is self-evident. The FAA Information Superhighway for Training (FIST) will create an efficient electronic network that seamlessly combines field and resident training into an easily accessible entity. Finally, the Academy's Airway Facilities Training Division has been hampered by the unavailability of adequate current test equipment, which has resulted in students being forced to wait for equipment and Academy graduates not being familiar with the equipment they will use in the field daily. This program's lab/simulation upgrades will remove this concern.

The overall payback of this program (FY 2001 through FY 2011) is over \$67 million with an overall benefit to cost ratio of 3.13.

Secondary Outcome Goal: FAA Goal: Safety: Reduce fatal aviation accident rates by 80 percent in 10 years.

Narrative for Secondary Outcome Goal:

Improve safety by reducing operational errors and runway incursions through improved and more accessible training and state-of-the-art simulation techniques.

There is a clear link between the training of FAA personnel and aviation safety. It is a question rarely asked until a catastrophe occurs. This program's main concern is for safer skies through proper training. This proper training is strengthened by the use of simulation and other "hands on" methods of delivery. In this realm, a student can make the mistakes necessary to learn without jeopardizing human life or air safety. Whether it is an air traffic controller in an en route center or a maintenance technician repairing a radar site, safety is enhanced through training. This program will improve FAA training by making it more realistic. Of course, without expensive, long-term studies, the link between training and aviation safety will remain largely undefined. However, improved realism increases training quality, and increased training quality leads inevitably to an increase in safety.

**Category 5: 5A21 Program Support Leases
Continued General Support – Program Support Leases**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Assure efficient application of FAA and aerospace resources by providing payment for existing leases for land and space that directly support NAS operational facilities and critical components of an aerospace transportation system that meet the needs of users.

Category 5: 5A22 Logistics Support Services
National Airspace System Regional/Center Logistics Support Services

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by providing real estate, acquisition, and material management functions at regions and centers, as required, to field modernized NAS equipment, systems, and facilities within the timeframes established by the programs included in the CIP. Compile and maintain adequate documentation, suitable for independent audit, to establish the capital cost of facilities throughout the FAA.

Category 5: 5A23 Mike Monroney Aeronautical Center – Leases
Aeronautical Center Lease

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve operational efficiency and effectiveness by providing up-to-date facilities and supporting infrastructure that meets the needs of FAA mission support organizations located at the Aeronautical Center.

The Aeronautical Center lease provides more than 1090 acres of land, over 90 buildings, towers, streets, and infrastructure for the purpose of housing FAA mission support services. Services include training for over 30,000 FAA and international students per year in resident and distance learning formats (Academy, Transportation Safety Institute, and U.S. Coast Guard); logistics and supply support to all FAA airway facilities locations, air traffic, and approximately 70 DoD and international organizations; cost accounting and payroll services for the FAA and other DOT organizations; engineering services for NAS systems modification and repair; flight check for calibration/certification of radar/navigation aids at all nation-wide locations; Airmen and Aircraft Records and Registry; aviation medical research and human factors research; maintenance, administrative, and other support services for the FAA; and support to critical air navigation systems throughout the NAS.

Secondary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Secondary Outcome Goal:

Provide adequate facilities and infrastructure for organizations supporting the agency's model

work environment initiatives.

Continue to build model work environments through the improvement of facilities and infrastructure supporting employee services, such as child care, wellness centers, employee credit unions, food services, parking, the ADA, equal employment opportunities, postal services, employee training and development opportunities, and physical security.

**Category 5: 5A25 Transition Engineering Support
National Airspace System Implementation Support Contract**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency by providing professional and technical support services to the FAA in over 13 functional areas, including implementation and integration planning, engineering, automation, air traffic systems requirements, project management, environment, and other technical specialties. The primary function of the NAS Implementation Support Contract (NISC) is to assist the FAA in ensuring that over 80 CIP projects are completed on schedule and within budget and meet specifications and quality standards. NISC is a contract support CIP project.

**Category 5: 5A26 Federal Aviation Administration Corporate System Architecture
Federal Aviation Administration Corporate Systems Architecture – Information
Technology Infrastructure**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Improve system efficiency for the following IT programs: Enterprise Network, Metropolitan Area Network, Internet/Intranet, and the web. The programs will enhance the agency's systems for its internal customers.

These improvements will increase the quality of IT program products and services, such as anti-virus software, bandwidth, extranet firewall, multi-media communication, and Internet web. The anti-virus software will provide the latest software tools to constantly monitor and scan the system for authorization access, viruses, Trojans, and worms. Enhancements to bandwidth will increase the speed of the Internet connections and reduce the bandwidth usage during the workday. Improvements to the extranet firewall will provide hardware necessary to host the extranet firewall so that extranet traffic will have a stringent rule set and will alleviate the traffic going across the primary firewall. Multi-media improvements require hardware to implement a converged network for video and voice capabilities. The Internet/Intranet enhancements provide industry-quality web servers, database support hardware, security hardware, locational security and software for the servers, automated routines, and diagnostics.

The overall benefits of these products and services (e.g., anti-virus software and the extranet firewall) will lower cost and increase system efficiency.

**Category 5: 5A27 Technical Support Services Contract
Technical Support Services Contract**

Primary Outcome Goal: FAA Goal: System Efficiency: Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Narrative for Primary Outcome Goal:

Perform site surveys and preparation and equipment installation for large F&E programs as they move from acceptance to the field delivery phase. The Technical Support Services Contract (TSSC) is an enabling vehicle that expands and contracts with work requirements and available F&E funds.

TSSC funding enables the FAA to effectively plan and implement NAS programs that provide system efficiency as expected by the aviation community. It provides supplemental resources to assist the F&E organizations to accomplish NAS Modernization, thereby providing a safe, secure, and efficient airspace system. It is through this contract that many sites are prepared for equipment installation. The average FY 2003 cost per staff year for TSSC is approximately \$98,000. This amount includes all associated contract labor and travel cost (salary, travel, general and administrative overhead, and fees).

**Category 5: 5A28 Resource Tracking Program
Continued General Support – Resource Tracking Program**

Primary Outcome Goal: FAA Goal: People: Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Narrative for Primary Outcome Goal:

Improve organizational excellence by providing a diverse set of tools to support and enhance F&E project management.

The Resource Tracking Program (RTP) is used by the regions, implementation centers, and the Aeronautical Center to identify requirements, prepare internal budgets, plan implementation, estimate resources, track the status of projects, measure performance, and report on F&E projects (from inception through capitalization) to upper management. RTP enhances the productivity of the F&E workforce by providing greater visibility to the FAA engineers and managers on the status of F&E projects, and by supporting standardized project management processes across the ATS.

**Category 5: 5B01 National Airspace System Facilities Occupational Safety and Health Administration and Environmental Standards Compliance
National Airspace System Facilities Occupational Safety and Health**

Administration/Environmental Standards Compliance

Primary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Primary Outcome Goal:

Implement programs for OSHA and Environmental Compliance, Fire Life Safety (FLS), and Energy Conservation. Ensure a safe and healthful workplace for FAA employees, and protect the environment through sound environmental and energy efficient practices.

FAA employees are exposed to a variety of chemical, physical, and biological hazards on the job. This program implements procedures to identify and eliminate workplace hazards. Through proper handling and disposition of hazardous materials, the agency will minimize hazardous waste and environmental liability. The FLS Upgrade Program will protect NAS operations by ensuring employees' safety in the event of a fire in an ATCT. In addition, implementing energy conservation measures, including identifying inefficient resource utilization and then developing solutions, will help eliminate excessive costs.

Category 5: 5B02 Fuel Storage Tank Replacement and Monitoring

National Airspace System Facilities Occupational Safety and Health Administration & Environmental Standards – Fuel Storage Tank Replacement and Monitoring

Primary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Primary Outcome Goal:

Meet the FAA goal of protecting and enhancing communities and the natural environment affected by transportation. Also, future associated liability costs will be minimized, and the FAA will be in compliance with State and Federal regulations governing fuel storage tank systems. Reducing or eliminating damage to communities and the natural environment will strengthen the linkage between transportation and environmental policy.

Category 5: 5B03 Hazardous Materials Management

National Airspace System Facilities Occupational Safety and Health Administration & Environmental Standards Compliance – Environmental Cleanup/Hazardous Materials

Primary Outcome Goal: FAA Goal: Human and Natural Environment: Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Narrative for Primary Outcome Goal:

Ensure compliance with statutory mandates and identify appropriate procedures for proactively managing hazardous materials (HAZMAT) to prevent future environmental contamination and notices of violations. This program will improve the quality of human health and the

environment by removing HAZMAT that is carcinogenic and materials that destroy living organisms (animal or plant).

This program improves human and natural environment through the identification, assessment, and remediation of contaminated FAA sites. Site identification occurs through employee interviews, public notifications, and historical site reviews. Site assessments and investigations determine the extent of the contamination and impact on human health and the natural environment. HAZMAT support personnel and contractors conduct the remediation activities. The national environmental site cleanup tracking system tracks the number of sites and status of each contaminated site. Based on the present number of FAA contaminated sites on the Environmental Protection Agency (EPA) docket, this program has received “no further remedial action planned (NFRAP)” status at 97 percent of the presently known FAA sites. This progress supports the DOT Goal to increase the total number of NFRAPs for DOT sites on the EPA Docket.

Appendix B

Federal Aviation Administration Goal Matrix

1. **Department of Transportation (DOT) Goal: Safety:** Promote the public health and safety by working toward the elimination of transportation-related deaths and injuries.

1.1. **Federal Aviation Administration (FAA) Goal: Safety:** Reduce fatal aviation accident rates by 80 percent in 10 years.

Strategies to Achieve FAA Goals:

Accident Prevention: Prevent accidents before they happen through appropriate, targeted, systematic interventions in the aviation system.

Safety Information Sharing and Analysis: Develop partnerships with the aviation community to share data and information supporting safe, secure aviation.

Certification and Surveillance: Develop new approaches to working with others on certification, inspection, and surveillance, and target FAA resources.

FAA Annual Performance Goals:

- 1.1.1 **Air Carrier Fatal Aircraft Rate** – Reduce the fatal aviation accident rate for commercial air carriers from a 1994-1996 baseline of 0.051 fatal accidents per 100,000 departures. The Fiscal Year (FY) 2003 target is 0.033 per 100,000 departures—with the reduction to be achieved in six key areas outlined in the Safer Skies Agenda.
- 1.1.2 **General Aviation (GA) Fatal Aircraft Rate** – By 2007, reduce the GA fatal accidents by an amount that results in a 20 percent improvement from the projected total for that year. Assuming a 1.6 percent annual growth in activity, the annual number of GA fatal accidents is projected to grow from the three-year baseline of 379 for 1996 through 1998 to 437 in 2007. The FY 2003 target is 374.
- 1.1.3 **Operational Errors** – Reduce operational errors per one million activities. The FY 2003 goal is no more than 6.5 per million.
- 1.1.4 **Runway Incursions** – Reduce the number and rate (per 100,000 operations) of runway incursions. The FY 2003 goal is no more than 56 runway incursions per 0.08 of 100,000 operations.

2. **DOT Goal: Mobility:** Shape an accessible, affordable, reliable transportation system for all people, goods, and regions.

2.1. **FAA Goal: System Efficiency:** Provide an aerospace transportation system that meets the needs of users and is efficient in the application of FAA and aerospace resources.

Strategies to Achieve FAA Goals:

Free Flight: Within safety and environmental considerations, work toward giving aircraft the opportunity to fly in a way that gives them the most benefit as they define it.

National Airspace System (NAS) Modernization: Using the NAS Architecture as the guideline, continually refine and update the NAS to achieve efficient aerospace systems and operations.

Systems Integration: Integrate airport and commercial space requirements into NAS planning and architecture.

FAA Annual Performance Goals:

2.1.1. **Flight Route Flexibility**

--Attain a cumulative increase in throughput during peak periods at certain major airports. FY 2002 goal is a 3.8 percent increase from the FY 2000. (FY 2003 percentage is to be determined)

--Attain a cumulative increase in direct routings for the en route flight phase. FY 2002 goal is a 7.6 percent increase over the FY 2000 baseline. (FY 2003 percentage is to be determined)

2.1.2. **Aviation Delays** – Reduce aviation delays to no more than 171 per 100,000 activities.

2.1.3. **Runway Pavement Condition** – Maintain the percent of runways in good or fair condition (commercial service and selected GA airports). FY 2002 goal is at least 95 percent of runways. (FY 2003 deletes this goal)

2.1.4. **All Weather Access to Airports** – Increase the number of runways that are accessible in low visibility conditions. FY 2003 goal is at least 1,624 runways.

2.1.5. **Operational Efficiency and Effectiveness** – Provide services at a lower cost without reducing availability of facilities, infrastructure or equipment (the target level of performance for this goal has not been defined by the Office of the Secretary of Transportation (OST)/FAA).

3. **DOT Goal: Economic Growth:** Support a transportation system that sustains America's economic growth.

3.1. **FAA Goal: Economic Growth:** FAA also supports this DOT goal through its system efficiency goal that ensures a safe, secure aerospace system that is efficient for users.

Strategies to Achieve FAA Goals: See FAA Goal: System Efficiency: Strategies to Achieve FAA Goals

FAA Annual Performance Goals:

3.1.1. See FAA Goal: System Efficiency: FAA Annual Performance Goals

4. **DOT Goal: Human and Natural Environment:** Protect and enhance communities and the natural environment affected by transportation.

4.1. **FAA Goal: Human and Natural Environment:** Maintain the number of people exposed to aircraft noise at current levels despite increasing operations.

Strategies to Achieve FAA Human and Natural Environment Goals:

Understanding Aerospace Environmental Impacts: Participate in research to understand more fully the effect of aerospace on the atmosphere and the degree of regulation necessary to minimize those impacts.

Reducing Aerospace Environmental Impacts: Use combinations of regulations, research, technology, and procedures to reduce and mitigate adverse impacts from the aerospace.

Quantifying and Mitigating Environmental Impacts of FAA activities: Assess compliance with environmental regulations; honor the mandates to clean up contamination in accordance with existing agreements; reduce the use of hazardous materials at its facilities; and promote recycling.

FAA Annual Performance Goals:

- 4.1.1. **Aircraft Noise Exposure** – Reduce the number of people in the United States exposed to significant aircraft noise by at least 64 percent from the 1995 baseline of 1.7 million. The FY 2003 target is to be determined.

5. **DOT Goal: National Security:** Ensure the security of the transportation system for the movement of people and goods, and support the National Security Strategy.

5.1. **FAA Goal: National Security:** Prevent security incidents in the aviation system.

Strategies to Achieve FAA National Security Goals:

Security Baseline: Continue to improve the baseline security system for civil aviation and address vulnerabilities that may remain.

Information Security: Develop and implement a comprehensive information system security (ISS) program and security activities to protect the national airspace and mission support systems.

FAA Annual Performance Goals:

- 5.1.1 **Explosive Device and Weapons Detection** – Increase the detection rate for explosives and weapons that may be brought aboard an aircraft. The detection rates are sensitive information protected under Code of Federal Regulations (CFR) Part 191.
- 5.1.2 **Information Security** – Develop and implement a comprehensive ISS program and security activities to protect the national airspace and mission support systems.

6. **DOT Goal: Organizational Excellence:** Advance the Department’s ability to manage for results and innovation.

6.1 **FAA Goal: People:** Prepare the workforce for the demands of the 21st century.

Reform: Become more businesslike while increasing customer responsiveness.

Strategies to Achieve FAA Goals:

People: Implement a model work environment, a productive and hospitable work environment, where employees can develop to their potential and contribute fully to the organization. Contributions of all employees are supported and encouraged; discrimination and harassment have been eliminated; and the nation’s diversity is reflected.

Acquisition Reform: Reform acquisition processes to make them faster, simpler, and more mission-based.

Personnel Reform: Reform personnel systems to provide increased flexibility in hiring, pay, and placement; protect employee rights; increase productivity; promote high standards of accountability; enhance the agency’s intellectual capital; and create incentives for change.

Financial Reform: Reform financial systems to enable a more performance-based management approach.

FAA Annual Performance Goals:

- 6.1.1 **Customer satisfaction** – Gain positive feedback from stakeholders.
- 6.1.2 **People** – Continue to build a model work environment.
- 6.1.3 **Financial Responsibility** – Achieve a clean audit and further improve agency accountability by implementing core financial systems.

Format of Appendix B

The sections of this appendix will present multiple Facilities and Equipment (F&E) projects organized into the following format:

Category Number: Budget Line Item (BLI) Number; BLI Name;

- Capital Investment Plan (CIP) Project Name #1
- CIP Project Name #2

Appendix B Format Legend

Budget Category and Line Item



Category 1: 1C01; Advanced Technology Development and Prototyping;

**Primary and Secondary Goals
the Program Supports**

Primary Goal (s): 1.1/1.1.4

Secondary Goal(s): n/a

Program Name and Outcome Description	FY2001 Program Accomplishments/Status Performance Output Goals
Runway Incursion Reduction Program (RIRP) – Advanced Technology Development and Prototyping (ATDP). Reduce the number and rate of runway incursions and improve surface safety at NAS airports through research, development, demonstration, and evaluation of new and emerging methods, procedures, and technologies.	<ul style="list-style-type: none"> • Awarded 6 contracts to evaluate and demonstrate emerging technologies for reducing runway incursions under the Surface Technology Broad Agency Announcement (BAA). • Completed the technical assessment of microwave motion sensors at Eppley Airport.

Program Title and Outcome Goal Description

FY 2001 Accomplishments

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete the operational evaluation of microwave motion sensors integrated with the pavement light-emitting diode (LED) light strip at Eppley Airport. • Conduct testing of runway status lights (RWSL) data fusion and safety logic subsystems. • Complete site surveys at 14 high runway incursion non-ASDE airports. 	<ul style="list-style-type: none"> • Continue research on potential technology solutions for small - to medium - sized airports. • Complete the technical and operational evaluation of RWSL Program. • Develop performance standards/requirements for selected runway incursion reduction technologies. 	<ul style="list-style-type: none"> • Continue research on potential technology solutions for small - to medium - sized airports. • Continue the development of performance standards/requirements for selected runway incursion reduction technologies.

**Ongoing Activities Planned
for this Fiscal Year**

Planned 2003 Activities

**Key Events Based on Expected
Fiscal Year 2003 Funding**

Category 1: Improve Aviation Safety

Category 1: 1A01; Terminal Business Unit: 1A01A; Next Generation Weather Radar – Provide;

- Next Generation Weather Radar – Open Systems Upgrade
- Medium-Intensity Airport Weather System

Primary Goal: 1.1/1.1.1, 1.1.2

Secondary Goal(s): 2.1/2.1.1, 2.1.2

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Next Generation Weather Radar (NEXRAD) Programs. Improve the NAS safety through better detection and characterization of hazardous weather phenomena, which is achieved by technology upgrades to the NEXRAD systems, and implementation of medium intensity airport weather system (MIAWS) to airports with limited wind shear detection capabilities. MIAWS will be used to alert air traffic control to the severity, location, movement, and expected duration of hazardous weather phenomena.</p>	<ul style="list-style-type: none"> • Installed new rotary uninterruptible power systems (UPS) at 5 NEXRAD sites. • Obtained approval of MIAWS Initial Requirements Document (IRD).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Make the 1st FAA NEXRAD site with the open radar products generator (ORPG) upgrade available for operational use. • Install rotary UPSs at the 5 remaining FAA NEXRAD sites. • Make MIAWS Initial Investment Decision-2a. • Install prototype MIAWS at Little Rock, AR, and Springfield, MO. 	<ul style="list-style-type: none"> • Award production contract to supply 40 airports with MIAWS. 	<ul style="list-style-type: none"> • Complete the last FAA NEXRAD site with the ORPG upgrades for operational use by 2005. • Continue MIAWS installations. • Initiate technical enhancements to MIAWS systems.

Category 1: 1A01; Terminal Business Unit: 1A01B; Terminal Doppler Weather Radar – Provide;

- Terminal Doppler Weather Radar - Product Improvements
- Terminal Doppler Weather Radar - Service Life Extension Program

Primary Goal: 1.1/1.1.1, 1.1.2, 1.1.3

Secondary Goal(s): 2.1/2.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Terminal Doppler Weather Radar (TDWR) – Product Improvements and</p>	<ul style="list-style-type: none"> • Completed installation of last 2 of 47

<p>TDWR Service Life Extension Program (SLEP) Programs. Increase aviation safety with the accurate and timely detection of hazardous aviation weather conditions. The primary mission of the TDWR is to enhance the safety of air travel through timely detection and reporting of hazardous wind shear in and near an airport's terminal approach and departure zone by detecting micro burst and gust fronts.</p>	<p>systems (Chicago Midway Airport and John F. Kennedy International Airport).</p>
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deploy radar products generator rehost upgrade at 30 sites. • Perform last Operational Readiness Date (ORD) of 47 systems. 	<ul style="list-style-type: none"> • Implement technology improvements to update and enhance the 1980s technology of the main computer/processor. • Complete implementation of remaining product improvements, including backup communications. 	<ul style="list-style-type: none"> • Continue to implement major elements of the TDWR SLEP, including elevation bull gear replacement, direct digital controller replacement, antenna motor replacement, and radar data acquisition.

Category 1: 1A01; Terminal Business Unit: 1A01C; Airport Surface Detection Equipment;

Primary Goal: 1.1/1.1.4

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Airport Surface Detection Equipment (ASDE) Model 3 Service Life Extension Program (SLEP). Provide positive ground surveillance and assistance to air traffic controllers in expediting aircraft flow during conditions of restricted visibility. The ASDE-3 radar assists the ground controller in preventing collision situations and provides orderly movement of aircraft and ground vehicles on the airport surface when visibility restrictions prevent controllers, pilots, or vehicle operators from seeing other ground traffic on the airport surface. The SLEP addresses obsolete parts issues and other parts impacting reliability and maintainability. The SLEP activities will ultimately extend the useful life of the ASDE-3 at 34 high activity airports an additional 10 years beyond the original 20-year life cycle to 2015. Mid-life upgrade activities will improve the ability at 34 high-activity airports with the ASDE-3 to integrate its radar output with the ASDE-x processing equipment.</p>	<ul style="list-style-type: none"> • Began SLEP to replace obsolete microprocessor subsystem contained in every cabinet of the ASDE-3 system. • Completed commissioning of all operational (33 of 34) ASDE-3 sites, except Ronald Reagan Washington National Airport. • Initiated Congressionally directed roll ring/slip ring evaluation. • Began activities to relocate the Ronald Reagan Washington National Airport ASDE-3 in compliance with Congressional direction.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Continue SLEP. • Purchase and test 80% of obsolete part replacements. • Begin procurement of microprocessor subsystem replacement for obsolete subsystem to increase maintainability. • Submit Congressionally requested roll ring/slip ring report. • Complete an 80/20 cost estimate report for a 6-year projection for obsolete parts requirements. • Complete relocation/reinstallation of the Ronald Reagan Washington National Airport ASDE-3. 	<ul style="list-style-type: none"> • Continue implementation of the SLEP through 2004. • Complete purchase and testing of obsolete part replacements and deliver to depot. • Continue procurement of microprocessor subsystem replacement hardware and install at ten ASDE-3 sites. • Design upgraded receiver hardware with an ASDE-x interface. 	<ul style="list-style-type: none"> • Continue implementation of the SLEP through 2004. • Continue procurement of microprocessor subsystem replacement hardware and install at ASDE-3 sites as funding authority becomes available.

Category 1: 1A01; Terminal Business Unit: 1A01D; Airport Movement Area Safety System;

Primary Goal: 1.1/1.1.4

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Airport Movement Area Safety System (AMASS). Improve system safety at 34 high activity airports through the use of AMASS's automated visual and aural alarm alerts and warnings provided as an enhancement to the ASDE-3. The enhancements aid in the prevention of accidents resulting from runway incursions and other accidents.</p>	<ul style="list-style-type: none"> • Delivered the 40th of 40 systems. • Completed independent operational test and evaluation (IOT&E). • Completed operational suitability demonstrations and commissioning into the NAS, the San Francisco International Airport, and the Detroit Metropolitan Wayne County Airport systems.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete test and acceptance of software build 5, which will resolve remaining human factors open issues and improve overall system performance. • Install 26 remote audio amplifier modifications, which will complete the final hardware installations required for commissionings. • Install 40 computer access panel modifications, 	<ul style="list-style-type: none"> • Develop and implement the ASDE-x interface. • Start the operational suitability demonstrations at 12 additional sites. 	<ul style="list-style-type: none"> • Start the operational suitability demonstrations at the last 3 sites.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> which will close out an IOT&E open item. Start the operational suitability demonstrations at 18 additional sites. 		

Category 1: 1A01; Terminal Business Unit: 1A01E; Weather Systems Processor;

Primary Goal: 1.1/1.1.1, 1.1.2, 1.1.3 Secondary Goal(s): 2.1/2.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Airport Surveillance Radar (ASR) Weather Systems Processor (WSP). Improve aviation safety by providing air traffic controllers with warnings of wind shear and microburst events for immediate issue to pilots. The WSP, a low cost alternative to TDWR, provides hazardous weather situational awareness between tower and terminal radar approach control (TRACON) personnel, including prediction of gust fronts and storm cell motion that will allow improved runway reconfiguration in advance of future wind shifts.</p>	<ul style="list-style-type: none"> Commenced deployment of 1st of 32 systems.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete delivery of 26 systems. 	<ul style="list-style-type: none"> Complete deployment and commissioning of all 37 systems. 	<ul style="list-style-type: none"> Address WSP SLEP efforts during Phase IIB of ASR-9 SLEP.

Category 1: 1A01; Terminal Business Unit: 1A01F; Airport Surface Detection Equipment – Model x;

Primary Goal: 1.1/1.1.4 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Airport Surface Detection Equipment (ASDE) Model x. Improve safety on the airport surface by preventing accidents resulting from runway incursions. The ASDE-x system will provide detailed coverage of runways and taxiways, and will alert air traffic controllers, both aurally and visually, to potential collisions. Runway collision risks will be reduced because controllers will be provided with improved situational awareness, which will ultimately improve the safety of the nation's runways.</p>	<ul style="list-style-type: none"> • Completed system requirements review (SRR) as scheduled. • Completed preliminary design review (PDR) as scheduled. • Completed critical design review (CDR) as scheduled. • Completed both radio frequency (RF) site surveys and final site surveys at key site in Milwaukee, WI. • Procured an ASDE-x interim contractor depot level support (ICDLS) system to provide a realistic test environment.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Install ICDLS system at Hancock Airport in Syracuse, NY. • Deliver and install system to key site (Milwaukee, WI, is the Key Site and Orlando, FL, is the alternate Key Site). • Complete software coding, integration, and testing. • Complete factory acceptance testing (FAT). 	<ul style="list-style-type: none"> • Complete site acceptance testing (SAT). • Complete operational testing (OT). • Complete initial operating capability (IOC) at key site(s). • Complete final design review (FDR). • Complete in-service decision. • Complete IOT&E. • Achieve ORD at key site in Milwaukee, WI. • Deliver and install 4 sites out of 26 sites. 	<ul style="list-style-type: none"> • Deliver safety logic system enhancement at 23rd delivery site. • Deliver and install 20 sites out of 26 sites. • Achieve ORD at 24 sites out of 26 sites.

Category 1: 1A02; Aviation Weather Service Improvements;

- **Integrated Terminal Weather System – Development/Procurement**
- **Integrated Terminal Weather System – Corridor Integrated Weather System**

Primary Goal: 1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Integrated Terminal Weather System (ITWS) Programs. Improve safety by the detection, forecasting, processing, and delivery of aviation weather information to pilots, airlines operations centers (AOC), and controllers. ITWS provides terminal aviation weather data and integrated products from other sensors, including TDWR, NEXRAD, low level wind shear alert system (LLWAS), and automated surface observing system (ASOS). ITWS will cover 47 high-activity airports that have significant convective weather.</p>	<ul style="list-style-type: none"> • Delivered First Article systems. • Continued to develop advanced terminal weather algorithms and display capabilities. • Began full-scale development, training, maintenance, and testing of software and algorithms; developed test cases and test data to support system level testing. • Included hardware upgrades, transfer protocol Transmission Control Protocol (TCP)/Internet Protocol (IP), adaptation data tool, and on-site test tool in Block 0 production system.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure 24 production systems, deliver 4 production systems, and begin installation. • Conduct IOT&E and information security certification. • Continue to operate prototypes. • Conduct demonstration/validation of corridor integrated weather systems (CIWS) with additional sensor input. 	<ul style="list-style-type: none"> • Procure 13 production systems, deliver 24 production systems, and continue installation. • Conduct acceptance testing, continue algorithm support, and conduct IOT&E and information security certification on production upgrade. • Continue to operate prototypes. 	<ul style="list-style-type: none"> • Complete production/development efforts. • Begin to implement advanced capability upgrades. • Replace prototypes with production systems.

Category 1: 1A03; Low Level Wind Shear Alert System – Upgrade;

- **Low Level Wind Shear Alert System – Upgrade Low Level Wind Shear Alert System to Expanded Network Configuration**
- **Low Level Wind Shear Alert System – Disposal/Decommissioning of Low Level Wind Shear Alert System Model 2**

Primary Goal: 1.1/1.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Low Level Wind Shear Alert System (LLWAS) Programs. Monitor the airport area and alert pilots through the air traffic controllers when hazardous wind shear conditions are detected. Severe wind shear/microburst conditions occurring at low altitude near airports can pose a significant threat to aircraft during takeoff or landing. Wind shear conditions are common in the United States, especially in areas where thunderstorms are frequent.</p>	<ul style="list-style-type: none"> • Delivered the LLWAS–relocation/sustain system to the Academy, Oklahoma City, OK, April 2001. • Completed operational test and evaluation (OT&E) in June 2001. • Completed the Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA) in August 2001.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deliver 8 LLWAS sustainment systems. • Make production decision. • Make in-service decision. • Complete 1st ORD. • Upgrade 9 network expansion sites to network expansion++ sustainment configuration. 	<ul style="list-style-type: none"> • Deliver remaining 25 LLWASs. 	<ul style="list-style-type: none"> • Establish depot for logistics support. • Complete Last Site Acceptance Test. • Achieve last ORD. • Transition to operations (Operational Support Service (AOS) 250).

Category 1: 1A04; Aviation Safety Analysis System;

(A) Aviation Safety Analysis System

(B) System Approach for Safety Oversight

(A) Aviation Safety Analysis System

Primary Goal: 1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aviation Safety Analysis System (ASAS). Improve aviation safety and security through enhanced effectiveness in safety and security regulation and oversight of the civil aviation industry by improving the automation safety and security subsystems and tools that are essential for the safety and security work forces to accomplish their responsibilities. Provide information technology (IT) infrastructure and develop systems to facilitate partnerships with the aviation community to share data and information supporting safe and secure aviation. The infrastructure and systems provide the tools to enhance the effectiveness of FAA's certification, inspection, and surveillance responsibilities in areas of safety and security in civil aviation.</p>	<ul style="list-style-type: none"> • Completed document imaging workflow subsystem (DIWS) Phase IV enhancements: completed application development; analyzed and designed Airman Medical Examiner (AME) internet data transmission; acquired and implemented storage equipment; designed and developed "Decision Support Database" for analysis of trends to facilitate improved decision making for regulatory and procedural changes; implemented required security modifications; completed airport/air carrier information reporting system (AAIRS)/system development; completed infrastructure development and upgrades; completed hardware and software replacement/upgrades; developed aviation security data repository; and completed system documentation. • Completed formal acceptance, enhancements, and code reconciliation of Airmen Certification and Rating Application (ACRA). • Enhanced, upgraded, supported, and conducted initial training of operations specifications subsystem (OPSS). • Completed requirements document for facilities database (corporate repository). • Enhanced certificate management system; completed requirements document. • Acquired desktop personal computers (PC), laptops, and communication equipment. • Implemented integrated rulemaking information system (IRMIS)/updated CyberDocs; converted automated exemption system (version 1.1) from mainframe to web-based application; awarded contract for design engineers and manager. • Completed Phase II development of parts reporting system (PRS) to include web-based technology; deployed database nationally. • Completed development of information system for industry criminal records checks.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete accident investigation quality assurance system upgrade; continue accident investigation duty room system upgrade; complete DIWS implementation of AME Internet data transmission; perform administration and compliance tracking in an integrated office network subsystem (ACTIONS)—reengineer and integrate the compliance assessment reporting system (CARS). • Complete development, test, and begin deployment of aircraft certification systems evaluation program (ACSEP). • Create databases for Airworthiness Directive Notices of Proposed Rulemaking, final and special conditions (corporate repository). • Fulfill hardware requirements for national deployment (PRS). Implement a limited production OPSS solution with additional air carriers. • Continue deployment of Internet-based ACRA software. • Develop a web-based data collection and analysis system for AIIRS. Develop and implement an information system for background checks. • Initiate development of crisis management system to provide the capability to have up-to-date and immediate access to environmental and incident status information. • Completed joint vulnerability analysis system (JVAS) 1st phase of mechanism for jointly reporting, tracking, and detecting trends. Upgrade to Windows 2000. 	<ul style="list-style-type: none"> • Complete DRS upgrade; initiate NTSB Recommendations System (NRS) upgrade. • Perform DIWS-application enhancements ACTIONS; continue application enhancements. • Perform additional modifications (AAIRS) for recording assessments performed under the revised rules for checked baggage and additional modules for screening arrests and foreign assessments. • Deploy ACRA along with enhancements and database integration with other FAA systems. • Complete deployment of ACSEP; corporate repository/complete deployment of corporate repository 1st phase of project activity file (PAF). • Develop and web-enable CARs, joint aviation regulation (JAR), and Special Federal Air Regulation (SFAR) databases. • Complete requirements document for e-commerce for enhanced certificate management system. • Acquire desktop PCs, laptops, servers, licenses, lab support, and communication equipment. • Convert automated federal regulations (AFAR) from mainframe to web-based (IRMIS). • Continue deployment to air carriers and repair stations and provide security and performance enhancements (OPSS). • Continue to develop enhancements in the in the facility security reporting system (FSRS), the fingerprinting processing system (FPS), the crisis management system, and the JVAS. 	<ul style="list-style-type: none"> • Complete NRS upgrade; initiate accident investigation system consolidation. DIWS/Phases VII and VIII planned enhancements: application development; implementation of telecommunications capabilities; acquisition and implementation of improved viewing equipment; and implementation of airman access to status information. • Continue application development and planned enhancements for ACTIONS. • Complete AAIRS/system development-additional modules; aviation security data repository technical remote support operational systems. • Complete design documents for corporate repository 2nd phase of PAF and electronic data interchange with industry; deploy multimedia capabilities within corporate repository. • Continue adding safety related documents to web for public access. • Complete deployment for enhanced certificate management system. • Continue development and implementation of medical knowledge database and statistical and trending reporting capabilities (covered position decision support subsystem (CPDSS)). • Continue 3 to 4-year cycle of upgrade/enhancement/replacement of old technology workstations, servers, laptops, printers, software, operating systems, etc. • Continue additional modules for the FPS; continue system expansion for the crisis management system; continue the implementation of JVAS.

(B) System Approach for Safety Oversight

Primary Goal: 1.1/1.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>System Approach for Safety Oversight (SASO). Improve safety by implementing new approaches to certification, inspection, and surveillance activities with the integration of Flight Standards Service (AFS) tools and databases. This system will provide a comprehensive set of analytical tools to allow targeted inspections and actions in areas of highest potential vulnerability and probability of hazard.</p>	<ul style="list-style-type: none"> n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> Develop system safety business processes. Develop risk metrics. Develop supporting analysis/decision tools. Integrate tools and databases.

Category 1: 1A05; Integrated Flight Quality Assurance System;

Primary Goal: 1.1/1.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Integrated Flight Quality Assurance (IFQA) System. Develop and implement electronic capability for collecting and analyzing aggregate digital flight data from airline operations. 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 for use in formulating FAA policy and decision making to improve safety.</p>	<ul style="list-style-type: none"> Completed prototype system design. Achieved operational implementation of prototype IFQA system. Performed prototype assessment, tests, and evaluation. Completed CDR process for FAA system topology and ISS implementation. Procured hardware, software, communication, and ISS infrastructure for initial FAA system installation.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Continue technical infrastructure design and 	<ul style="list-style-type: none"> Continue development of hardware, 	<ul style="list-style-type: none"> Achieve 100% development and

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>development to accommodate growth.</p> <ul style="list-style-type: none"> • Continue OT&E of system. • Develop user, administrator, and system documentation and training materials. • Achieve IOC of IFQA system (support for 10 air carriers). • Deploy off-site mirror site and FAA hot backup. • Continue refinement of ISS capability for emerging threats. 	<p>communication, and technical infrastructure to accommodate growth (35 air carriers).</p> <ul style="list-style-type: none"> • Implement FOQA Training Course at FAA Academy. • Implement web-based training materials and user aids. • Continue development of statistical indices for airline aggregate data submissions. • Continue design and development of IFQA system data warehouse, data marts, and metadata repository. • Initiate separate FOQA applications for maintenance and engineering purposes. 	<p>implementation of maintenance and engineering applications.</p> <ul style="list-style-type: none"> • Initiate development and implementation of techniques to supply near real-time alerts. • Initiate development and implementation of advanced search and analysis techniques. • Continue design and development of expanded IFQA system data warehouse, data marts, and metadata repository. • Implement pre-planned product improvements (P3I). • Continue implementation of user aids, documentation, and training materials for P3I releases.

Category 1: 1A06; Safety Performance Analysis System;

Primary Goal: 1.1/1.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Safety Performance Analysis System (SPAS). Improve safety by providing aviation safety inspectors (ASI) with an automated tool to assist them in targeting critical areas for inspection. This system provides the capability to target certificate holders that pose a greater safety risk and dynamically modify the surveillance work program as a result. It also allows the FAA to monitor the status of aging aircraft, to track the growing number of aircraft operations, and to increase industry accountability for aviation safety.</p>	<ul style="list-style-type: none"> • Completed development of SPAS II. • Completed SPAS enhancement training. • Added Air Operator FAA Oversight (Foreign Flag) Performance Measure. • Added Simulator/Fixed Time Determination (FTD) Discrepancy Performance Measure.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Incorporate air transportation oversight system (ATOS) data repository into SPAS. • Include ATOS data in SPAS data arrays, profiles, and query and browse. 	<ul style="list-style-type: none"> • Perform enhancements to the system. • Integrate into flight standards business applications. 	<ul style="list-style-type: none"> • n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Develop and implement repair station risk model. 		

Category 1: 1A07; Performance Enhancement Systems;

Primary Goal: 1.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Portable Performance Support System (PPSS). Improve aviation safety by providing ASIs mobile electronic tools to identify and track potential and actual violations of safety standards. These mobile units allow the inspectors to make safety critical decisions while conducting surveillance and certification activities on site.</p>	<ul style="list-style-type: none"> Began integration of certification, surveillance, and inspection applications. Developed training materials for flight standards workforce.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Continue integration of certification, surveillance, and inspection applications and initiatives. Begin deployment of integrated software. Develop plans for integration of new technologies. 	<ul style="list-style-type: none"> Complete deployment of integrated software to flight standards workforce. Conduct training for flight standards workforce. 	<ul style="list-style-type: none"> n/a

Category 1: 1B01; Safe Flight 21;

(A) Safe Flight 21 – Alaska Capstone Initiative

(B) Safe Flight 21 – Ohio Valley Prototype Project

(C) Automatic Dependent Surveillance Broadcast – Advanced Technology Development and Prototyping

(A) Safe Flight 21 – Alaska Capstone Initiative

Primary Goal: 1.1/1.1.1, 1.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Safe Flight 21 – Alaska Capstone Initiative. Reduce the number and rate of</p>	<ul style="list-style-type: none"> Completed 132 automatic dependent surveillance broadcast (ADS-B)

<p>accidents, fatalities, and property damage, and improve aviation safety in Alaska through the integration of interdependent technologies. Capstone provides an improved ground and air infrastructure that furnishes pilots with better information about the location and severity of hazardous weather, proximity to terrain, improved instrument approaches to small airports, and traffic information for the reduction of mid-air collisions. Additionally, Capstone provides improved surveillance information to controllers to assist in sequencing, separation, flight following, and search and rescue (SAR) activities. A more useable instrument flight rules (IFR) infrastructure will be provided to enable lower en route and approach/departure routes.</p>	<p>avionics installations in participating aircraft in the Bethel, AK, area.</p> <ul style="list-style-type: none"> Continued to install ground broadcast transceivers (GBT) in the Bethel, AK. Supported universal access transceiver (UAT) minimum operational performance standard (MOPS) development. Performed micro en route automated radar terminal system (MicroEARTS) capacity modifications to aid in the data collection and validation process as controllers provide key safety services through use of ADS-B. Conducted site survey for multilateration system at Juneau International Airport. Commissioned 9 automated weather-observing systems (AWOS).
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete Phase I (Bethel core) hardening and commissioning of GBTs. Purchase 2nd generation ADS-B avionics and begin installation in participating aircraft in southeast Alaska. Install ADS-B display in Bethel Tower to increase controller situational awareness. Obtain Joint Resources Council (JRC) decision to harden Phase I (Bethel core) systems and equipment and obtain operations and maintenance funding. Define surveillance requirements and concept of operations for Juneau area of southeast Alaska. Demonstrate incorporation of wide area augmentation system (WAAS) technology with Capstone avionics in southeast Alaska. Begin GBT installation in southeast Alaska. Install and commission additional AWOSs. 	<ul style="list-style-type: none"> Complete installation of ADS-B avionics in remaining participating aircraft in southeast Alaska. Based on surveillance requirement and concept of operations, determine surveillance approach (e.g., multilateration, radar, etc.) for Juneau area of southeast Alaska. Establish approach/terminal services at Juneau International Airport. Begin Yukon-Kuskokwim Delta expansion by installing and commissioning ADS-B ground stations and AWOSs. 	<ul style="list-style-type: none"> Continue expansion of ADS-B ground stations, AWOS, and surveillance approach for southeast Alaska.

(B) Safe Flight 21 – Ohio Valley Prototype Project

Primary Goal: 2.1/2.1.1, 2.1.2

Secondary Goal(s): 1.1/1.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Safe Flight 21 – Ohio Valley Prototype Project. Improve flight route flexibility and reduce delays through the use of ADS-B technology to achieve user-preferred routes and to maximize airspace and airport resources. ADS-B will serve as enabling technology for free flight capability in the NAS.</p>	<ul style="list-style-type: none"> • Conducted operational evaluation at Louisville, KY, testing approach spacing and surface moving map display technologies. • Awarded test and evaluation surveillance and information system (TESIS) contracts to 4 avionics manufacturers to steer industry toward specific ADS-B applications (surface and terminal applications). • Awarded contract to modify Common ARTS to display ADS-B target information (in conjunction with Air Traffic Systems Development (AUA)). • Conducted Air Traffic Control Modernization Forum in Memphis, TN, to provide status and demonstrations to industry on ADS-B and low area augmentation system (LAAS) developments. • Received supplemental-type certificate (STC) approval for installation of ADS-B/cockpit display of traffic information (CDTI) on Boeing 757s and 727s for “Enhanced See and Avoid” application (working in conjunction with United Parcel Service Airlines).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete development of “Call Sign Procedure” using ADS-B for trial use in Louisville, KY. • Complete development of concept of use and business case for “Approach Spacing” and “Enhanced Visual Approach” applications. • Support effort to obtain STC approval for “Surface Moving Map” functionality on those aircraft with CDTI displays (working in conjunction with United Parcel Services Airlines). • Conduct TESIS contracts efforts with avionics vendors to support dual-link interoperability between ADS-B links. • Survey 60 airports in the NAS to build map database in support of “Surface Moving Map” functionality (working in conjunction with National Geodetic Survey). 	<ul style="list-style-type: none"> • Obtain NAS Change Proposal (NCP) approval for “Radar-like Separation Services” using ADS-B on Common ARTS. • Continue development for integration of ADS-B and STARS. • Continue activities associated with development and use of procedures for CDTI and “Electronic Flight Rules” in the terminal environment to allow descents through marine layers, etc. • Complete integration of CDTI and airborne surveillance and separation assurance (ASSA) MOPS into a single document. 	<ul style="list-style-type: none"> • Expand development and feasibility exploration of ADS-B applications in the en route and oceanic domains. • Begin development for integration of ADS-B and en route automation system. • Work to transition “Broadcast Services” for certified use at all ASDE-x locations (in conjunction with the ASDE-x Program). • Explore strategies for integration of CDTI functionality into “Glass Cockpit” aircraft.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Conduct testing of “Broadcast Services” using ASDE-x infrastructure. • Begin development for integration of ADS-B and standard terminal automation replacement system (STARS). 		

(C) Automatic Dependent Surveillance Broadcast – Advanced Technology Development and Prototyping

Primary Goal: 1.1/1.1.1, 1.1.2, 1.1.4

Secondary Goal(s): 2.1/2.1.1, 2.1.2

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Automatic Dependent Surveillance Broadcast (ADS-B) – Advanced Technology Development and Prototyping (ATDP). Improve aviation safety through the development of system standards for ADS-B technology in terminal, en route, and oceanic airspace, as well as on the airport surface. Development of domestic (RTCA) International Civil Aviation Organization (ICAO) ADS-B performance standards through rigorous testing, simulation, and analysis will enhance surveillance for the pilots and controllers and overall system safety.</p>	<ul style="list-style-type: none"> • Completed RTCA ADS-B 1090 megahertz (MHz) MOPS. • Completed RTCA CDTI MOPS for selected ADS-B applications.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete RTCA UAT MOPS. • Complete RTCA Airborne Separation Assurance Minimum Aviation System Performance Standards (MASPS) for 4 ADS-B applications. • Complete Revision A of ADS-B MASPS. • Complete baseline MASPS for traffic information service broadcast (TIS-B). • Complete Revision A of 1090 MHz ADS-B MOPS. 	<ul style="list-style-type: none"> • Complete baseline RTCA MOPS for airborne surveillance and separation assurance processing (ASSAP). • Complete Revision A of TIS-B MASPS. 	<ul style="list-style-type: none"> • Complete UAT ICAO Standards and Recommended Practices (SARP). • Complete additional revisions of TIS-B MASPS for more ADS-B applications. • Complete additional revisions of Airborne Separation Assurance (ASA) MASPS. • Complete additional revisions of ASSAP MOPS for more ADS-B applications.

Category 1: 1C01; Advanced Technology Development and Prototyping;

- (A) Separation Standards – Advanced Technology Development and Prototyping
- (B) Runway Incursion Reduction Program – Advanced Technology Development and Prototyping
- (C) System Capacity, Planning, and Improvements – Advanced Technology Development and Prototyping
- (D) Operations Concept Validation – Advanced Technology Development and Prototyping
- (E) Software Engineering Resource Center – Advanced Technology Development and Prototyping
- (F) Wide Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping – SEE 3A01B
- (G) Local Area Augmentation System for Global Positioning System – Advanced Technology Development and Prototyping – SEE 3A01A
- (H) Airspace Management Laboratory – Advanced Technology Development and Prototyping
- (I) National Airspace System Requirements Development – Advanced Technology Development and Prototyping
- (J) General Aviation /Vertical Flight Technology – Advanced Technology Development and Prototyping
- (K) Domestic Reduced Vertical Separation Minima – Advanced Technology Development and Prototyping

(A) Separation Standards – Advanced Technology Development and Prototyping

Primary Goal: 2.1/2.1.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Separation Standards – Advanced Technology Development and Prototyping (ATDP). Improve oceanic system efficiency through introduction of reduced separation standard values in horizontal and vertical planes. Reduced separation standard values permit more aircraft to operate on fuel- and time-optimal routings during the oceanic phase of flight. Increased system capacity following from introduction of reduced separation standard values, as measured by availability of more fuel- and time-efficient routings, induces reduction in delays of oceanic flights at origin airports because increased system capacity allows more on-time departures.</p>	<ul style="list-style-type: none"> • Completed all air traffic control, regulatory, safety assessments, and international documentation preparations for introduction of reduced vertical separation minimum (RVSM) into West Atlantic Route System airspace on November 1, 2001. • Initiated adaptation of North Atlantic airspace model and associated benefit-cost methodology to North Pacific airspace. • Monitored height-keeping performance of 200 aircraft in connection with safety oversight of Pacific and North Atlantic RVSM. • Led Asia Pacific RVSM Implementation Task Force at its 9th, 10th, 11th, and 12th meetings.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Initiate safety oversight of Gulf of Mexico (GOM) and West Atlantic airspace in connection with implementation of reduced lateral-separation 	<ul style="list-style-type: none"> • Establish ICAO GOM/Caribbean (CAR) RVSM Task Force (01/03). • Conduct seminar for states and operators 	<ul style="list-style-type: none"> • Publish operator approval criteria for ADS-based 30-nmi lateral and longitudinal separation standards in FAA-administered

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>parallel Air Traffic Services (ATS) routes (T-Routes and Q-Routes) (10/01).</p> <ul style="list-style-type: none"> • Implement West Atlantic Route System RVSM (11/01). • Complete safety assessment, readiness assessment, and international documentation to support Western Pacific/South China Sea RVSM implementation (01/02). • Implement Western Pacific/South China Sea RVSM. • Introduce parallel ATS routes in GOM with 18-nautical miles (nmi) lateral separation based on required navigation performance (RNP) approval of operators (06/02). 	<p>planning to participate in GOM/CAR RVSM (6/03).</p> <ul style="list-style-type: none"> • Develop air traffic control operational concept for application of 30-nmi lateral and longitudinal separation standards in FAA-administered oceanic airspace based on deployed FAA oceanic automation system and automatic dependent surveillance (ADS) (6/03). • Monitor 200 aircraft in connection with application of RVSM airworthiness approval process in North Atlantic and Pacific and with Pacific long-term monitoring requirements (9/03). 	<p>Pacific oceanic airspace (03/04).</p> <ul style="list-style-type: none"> • Implement GOM/CAR RVSM (11/04). • Implement ADS-based 30-nmi lateral and longitudinal separation standards in FAA-administered Pacific oceanic airspace (10/05). • Begin work on horizontal-plane separation minima below 30-nmi for ICAO Separation and Airspace Safety Panel (5/06).

(B) Runway Incursion Reduction Program – Advanced Technology Development and Prototyping

Primary Goal: 1.1/1.1.4

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Runway Incursion Reduction Program (RIRP) – Advanced Technology Development and Prototyping (ATDP). Reduce the number and rate of runway incursions and improve surface safety at NAS airports through research, development, demonstration, and evaluation of new and emerging methods, procedures, and technologies.</p>	<ul style="list-style-type: none"> • Extended the multilateration technology evaluation to west side of Dallas/Fort Worth International Airport. • Achieved approval for the procurement, testing, and evaluation of ASDE-x at Dallas/Fort Worth International Airport. • Completed the technical assessment of LOOP technology at Long Beach Airport. • Awarded 6 contracts to evaluate and demonstrate emerging technologies for reducing runway incursions under the Surface Technology Broad Agency Announcement (BAA). • Completed the technical assessment of microwave motion sensors at Eppley Airport. • Awarded a contract to evaluate precision approach path indicator (PAPI) flashing lights as a low-cost runway incursion reduction solution. • Initiated and evaluated responses to a Vehicle Tracking BAA for future award of several demonstration contracts.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Continue research on potential technology solutions for small- to medium-sized airports. Complete the operational evaluation of microwave motion sensors integrated with the pavement light-emitting diode (LED) light strip at Eppley Airport. Conduct testing of runway status lights (RWSL) data fusion and safety logic subsystems. Develop procedures, education, training, and airport improvements to reduce runway incursions. Complete site surveys at 14 high runway incursion non-ASDE airports. 	<ul style="list-style-type: none"> Continue research on potential technology solutions for small- to medium-sized airports. Complete the technical and operational evaluation of RWSL Program. Develop performance standards/requirements for selected runway incursion reduction technologies. 	<ul style="list-style-type: none"> Continue research on potential technology solutions for small- to medium-sized airports. Continue the development of performance standards/requirements for selected runway incursion reduction technologies.

(C) System Capacity, Planning, and Improvements – Advanced Technology Development and Prototyping

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>System Capacity, Planning, and Improvements – Advanced Technology Development and Prototyping (ATDP). Focus on the following: (1) airport improvements such as new runways, high speed exits, departure staging aprons, and new technologies such as Free Flight Phases 1 and 2, WAAS, and LAAS; (2) approach procedure development and refinement for more efficient use of new and existing runways; (3) development of a performance measurement system for the air traffic system to measure FAA progress against agency costs and customer expectations; and (4) expansion of the performance measurement data collection system to include surface operations within the movement area.</p>	<ul style="list-style-type: none"> Conducted demonstrations at George Bush Intercontinental Airport/Houston. Conducted simultaneous offset instrument approaches (SOIA) at San Francisco International Airport, Newark International Airport, Lambert St. Louis International Airport; Chicago O’Hare International Airport/Chicago Midway Airport Enhanced Arrivals (Benchmark). Completed Airport Capacity Benchmark Report 2001. Finished the Airport Efficiency Metric. Conducted Phoenix Sky Harbor International Airport Phase I Airport Design Study. Completed the 2000 Aviation Capacity Enhancement (ACE) Plan.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
I. NAS PERFORMANCE	I. NAS PERFORMANCE	I. NAS PERFORMANCE

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>MEASUREMENT</p> <ul style="list-style-type: none"> • En Route Balance Scorecard <ul style="list-style-type: none"> ○ Development and Implementation ○ En Route Scorecard Metrics • Air Traffic System Metrics <ul style="list-style-type: none"> ○ System ○ Facility – Performance Data Analysis Reporting System (PDARS) • En Route Capacity Metric • En Route Efficiency/Economic Causal Analysis • Terminal Efficiency/Economic Causal Analysis <p>II. Airport Development</p> <ul style="list-style-type: none"> • Benchmarking <ul style="list-style-type: none"> ○ San Francisco International Airport, Philadelphia International Airport, William B. Hartsfield Atlanta International Airport • William J. Hughes Technical Center (WJHTC)/ACT-540 Requirements • New Large Aircraft (NLA) <ul style="list-style-type: none"> ○ Memphis International Airport, John F. Kennedy International Airport, Los Angeles International Airport • Regional Jets <ul style="list-style-type: none"> ○ Dallas/Fort Worth International Airport • 2001 ACE Plan • 2002 ACE Plan • Metrics for Operational Evolution Plan (OEP) 8 Pacing Airports <p>III. Capacity Improvement Opportunities</p> <ul style="list-style-type: none"> • Houston (Arrival Departure-1 (AD-1), Airport Weather-1 (AW-1)) • GPS Support • San Francisco Bay Area Analysis 	<p>MEASUREMENT</p> <ul style="list-style-type: none"> • En Route Balance Scorecard <ul style="list-style-type: none"> ○ Implementation ○ En Route Scorecard Metrics • Air Traffic System Metrics <ul style="list-style-type: none"> ○ System ○ Facility - PDARS • En Route Capacity Metric • Airport Capacity Metric • Terminal Balance Scorecard • En Route Efficiency/Economic Causal Analysis • Terminal Efficiency/Economic Causal Analysis <p>II. Airport Development</p> <ul style="list-style-type: none"> • Benchmarking <ul style="list-style-type: none"> ○ San Francisco International Airport, Philadelphia International Airport, William B. Hartsfield Atlanta International Airport • ACT-540 Requirements • NLA <ul style="list-style-type: none"> ○ Memphis International Airport, John F. Kennedy International Airport, Los Angeles International Airport • Regional Jets <ul style="list-style-type: none"> ○ Newark International Airport, Philadelphia International Airport, Baltimore-Washington International Airport, General Edward Lawrence Logan International Airport • 2002 ACE Plan • 2003 ACE Plan • Metrics for OEP 8 Pacing Airports • Benchmarking <ul style="list-style-type: none"> ○ La Guardia Airport, Newark 	<p>MEASUREMENT</p> <ul style="list-style-type: none"> • En Route Capacity Metric Evaluation • Airport Capacity Metric • Terminal Balance Scorecard • Full Integration of Facility Level Performance Metrics into the NAS <ul style="list-style-type: none"> ○ Performance Measurement ○ Cost Measurement • Small Aircraft Transportation System Demonstration <ul style="list-style-type: none"> ○ Manassas, Blacksburg, Daytona Beach • En Route Efficiency/Economic Causal Analysis • Terminal Efficiency/Economic Causal Analysis <p>II. Airport Development</p> <ul style="list-style-type: none"> • Benchmarking <ul style="list-style-type: none"> ○ La Guardia Airport, Newark International Airport, John F. Kennedy International Airport • ACT-540 Requirements • NLA <ul style="list-style-type: none"> ○ William B. Hartsfield Atlanta International Airport, General Edward Lawrence Logan International Airport, Chicago O'Hare International Airport • 2003 ACE Plan • 2004 ACE Plan • New OEP Site Specific Airport Design Studies and Performance Management Activities <p>III. Capacity Improvement Opportunities</p> <ul style="list-style-type: none"> • Miami International Airport/Orlando International Airport Metropolitan Control

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>(Metropolitan Oakland International Airport, San Francisco International Airport, San Jose International Airport)</p> <ul style="list-style-type: none"> • Chicago O’Hare International Airport Design Task Force <p>IV. Architecture Deployment Support</p> <ul style="list-style-type: none"> • SOIA (AW-1) • Along Track Separation • Wake Turbulence Separation Standards (AW-1) • RNP Operations <ul style="list-style-type: none"> ○ Chicago O’Hare International Airport/Chicago Midway Airport 	<p>International Airport, John F. Kennedy International Airport</p> <ul style="list-style-type: none"> • NLA <ul style="list-style-type: none"> ○ William B. Hartsfield Atlanta International Airport, General Edward Lawrence Logan International Airport, Chicago O’Hare International Airport <p>III. CAPACITY IMPROVEMENT OPPORTUNITIES</p> <ul style="list-style-type: none"> • Houston (AD-1, AW-1) • GPS Support • Chicago O’Hare International Airport Design Task Force <p>IV. Architecture Deployment Support</p> <ul style="list-style-type: none"> • SOIA (AW-1) • Along Track Separation • RNP Operations <ul style="list-style-type: none"> ○ Chicago O’Hare International Airport/Chicago Midway Airport ○ San Francisco International Airport, Metropolitan Oakland International Airport, San Jose International Airport <p>V. NAS Plan Handoff</p> <ul style="list-style-type: none"> • Transition Facility Metrics to Operational Use • PDARS Maintenance, Logistics & Infrastructure; Air Traffic Control System Command Center (ATCSCC), aviation weather processor (AWP), Warsaw Municipal Airport, Office of the Regional Administrator, Southern Region (ASO) 	<p>Facility (AD-1, AW-1)</p> <ul style="list-style-type: none"> ○ Economic Benefits of Airspace Redesign • Other Site Specific Studies <p>IV. Architecture Deployment Support</p> <ul style="list-style-type: none"> • RNP Operations <ul style="list-style-type: none"> ○ San Francisco International Airport, Metropolitan Oakland International Airport, San Jose International Airport ○ Detroit Metropolitan Wayne County Airport, Ronald Reagan Washington National Airport • NAS System Modernization Capacity Impacts <p>V. NAS Plan Handoff</p> <ul style="list-style-type: none"> • Transition Facility Metrics to Operational Use • PDARS Maintenance, Logistics & Infrastructure; ATCSCC, AWP, Warsaw Municipal Airport, ASO

(D) Operations Concept Validation – Advanced Technology Development and Prototyping;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Operations Concept Validation – Advanced Technology Development and Prototyping (ATDP). Develop and deliver validated operational concepts to identify the transition steps in NAS Modernization and support the development of the NAS Architecture and new operational requirements.</p>	<ul style="list-style-type: none"> • Developed gridded airspace prototype to validate concept of new reference system to support en route automation modernization (ERAM). • Conducted analysis of the benefits of domestic reduced vertical separation minimum (DRVSM) and the dynamic use of 1000 foot separations. • Developed detailed scenarios of current NAS as baseline for change. • Developed software architecture and tools to incorporate cognitive models into fast-time simulations. • Conducted studies of secondary tasks (e.g., moving controller from active participants to monitors). • Conducted studies of alerting time/lead-time for operational changes such as dynamic resectorization.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Develop detailed scenarios of operational changes in support of architecture and research requirements. • Conduct a comparison of traffic flow management (TFM) techniques (Europe and the United States). • Establish a validation data repository for reuse of experimental data and results. • Deliver an analysis of the core factors related to common trajectory. • Develop detailed workload assessments of traffic situations for use in validating density concepts and alerts for collaborative decision-making (CDM) and TFM products. 	<ul style="list-style-type: none"> • Deliver an information model to translate concept into NAS interface requirements. • Complete study of the technical and human factor parameters in the flight object concept. <ul style="list-style-type: none"> • Deliver concept of use for future of TFM. • Deliver concept of use for management by trajectory. • Provide capability to model Air Traffic Management (ATM) influences (strategic simulator). 	<ul style="list-style-type: none"> • Develop concept and measures for required total system performance, extending ICAO concept. • Expand high altitude concept through analysis (strategies for point-to-point—no verbal exchange of latitude/longitude nor inclusion in flight plans (cognitive and situational awareness issues)). • Conduct analysis and develop concept for change in cross facility coordination (terminal and en route). • Develop concept for and analysis of separation normalization (3 miles everywhere).

(E) Software Engineering Resource Center – Advanced Technology Development and Prototyping

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Software Engineering Resource Center (SERC) – Advanced Technology Development and Prototyping (ATDP). Reduce the cost of delivering IT services without reducing service quality, and acquire and maintain critical IT knowledge, skills, and abilities.</p>	<ul style="list-style-type: none"> • Conducted analyses of current technologies in software adaptation and implemented these technologies in systems in the NAS systems in order to reduce costs and the time required to deploy software-intensive systems. • Streamlined the procedures for certifying avionics and ground-based safety-critical software. • Implemented prototypes and process improvements into NAS acquisition and operational environments. • Evaluated/validated improved software processes, methods, and engineering tools. • Brought together recognized experts and FAA personnel to solve software problems. • Increased the technical competency of the FAA workforce. • Investigated better and cheaper ways to ensure that NAS hardware and software is safe, secure, and efficient through research and prototyping. • Reduced software costs and schedule slippages. • Reduced system and software acquisition costs. • Provided better estimates for total cost of ownership of commercial off-the-shelf (COTS) intensive systems.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Evaluate/validate improved software processes, methods, and engineering tools. • Bring together recognized experts and FAA personnel to solve software problems. • Investigate better and cheaper ways to ensure that NAS hardware and software is safe, secure, and efficient through research and prototyping. • Develop standards and guidelines for COTS/non-developmental item (NDI) software/system assurance. • Develop standards and guidelines for 	<ul style="list-style-type: none"> • Evaluate/validate improved software processes, methods, and engineering tools. • Bring together recognized experts and FAA personnel to solve software problems. • Investigate better and cheaper ways to ensure that NAS hardware and software is safe, secure, and efficient through research and prototyping. • Develop standards and guidelines for COTS/NDI software/system assurance. • Develop standards and guidelines for COTS/NDI software/system cost estimation. 	<ul style="list-style-type: none"> • Evaluate/validate improved software processes, methods, and engineering tools. • Bring together recognized experts and FAA personnel to solve software problems. • Investigate better and cheaper ways to ensure that NAS hardware and software is safe, secure, and efficient through research and prototyping. • Develop standards and guidelines for COTS/NDI software/system assurance. • Develop standards and guidelines for COTS/NDI software system cost estimation.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>COTS/NDI software system cost estimation.</p> <ul style="list-style-type: none"> • Develop standards and guidelines for certification of safety critical software-intensive systems. • Lower systems and software acquisition costs. • Develop FAA systems with enhanced safety and reliability characteristics. • Improve system security. • Improve network infrastructure system capacity, enabling increased utilization of electronic data interchange (EDI) commerce, video conferencing, and Internet-based activities. • Modernize obsolete IT infrastructure elements in headquarters and the regions. • Improve and modernize FAA software engineering skills and capabilities. • Deploy new NAS systems and add new functionality to existing NAS systems more rapidly. • Adapt NAS systems more rapidly and correctly. • Increase confidence in the quality and timeliness of aeronautical data. • Reduce the total lifecycle cost of software adaptation for new and legacy NAS systems. 	<ul style="list-style-type: none"> • Develop standards and guidelines for certification of safety critical software-intensive systems. • Lower systems and software acquisition costs. • Develop FAA systems with enhanced safety and reliability characteristics. • Improve system security. • Improve network infrastructure system capacity, enabling increased utilization of EDI commerce, video conferencing, and Internet-based activities. • Modernize obsolete IT infrastructure elements in headquarters and the regions. • Improve and modernize FAA software engineering skills and capabilities. • Deploy new NAS systems and add new functionality to existing NAS systems more rapidly. • Adapt NAS systems more rapidly and correctly. • Increase confidence in the quality and timeliness of aeronautical data. • Reduce the total lifecycle cost of software adaptation for new and legacy NAS systems. 	<ul style="list-style-type: none"> • Develop standards and guidelines for certification of safety critical software-intensive systems. • Lower systems and software acquisition costs. • Develop FAA systems with enhanced safety and reliability characteristics. • Improve system security. • Improve network infrastructure system capacity, enabling increased utilization of EDI commerce, video conferencing, and Internet. • Modernize obsolete IT infrastructure elements in headquarters and the regions. • Improve and modernize FAA software engineering skills and capabilities. • Deploy new NAS systems and add new functionality to existing NAS systems more rapidly. • Adapt NAS systems more rapidly and correctly. • Increase confidence in the quality and timeliness of aeronautical data. • Reduce the total lifecycle cost of software adaptation for new and legacy NAS systems.

(H) Airspace Management Laboratory – Advanced Technology Development and Prototyping

Primary Goal: 2.1

Secondary Goal(s): 4.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>AIRSPACE MANAGEMENT LABORATORY – ADVANCED TECHNOLOGY DEVELOPMENT AND PROTOTYPING (ATDP). IMPROVE THE EFFICIENCY OF THE NAS BY PROVIDING THE DATA, METRICS, AND TOOLS TO</p>	<ul style="list-style-type: none"> • Deployed obstruction evaluation legacy replacement prototype to Great Lakes Region. • Deployed PC beta version of sector design and analysis tool (SDAT) to advanced airspace tool users.

ANALYZE TRAFFIC AND AIRSPACE CONFIGURATION TO OPTIMIZE TRAFFIC FLOWS THROUGH SECTOR DESIGN AND ANALYSIS USING HISTORICAL AND PROJECTED TRAFFIC LOADS.	
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete deployment of 1st generation obstruction evaluation legacy system to all FAA regions. • Complete replacement of legacy SDAT functionality on to the PC platform. Begin integration of data services into SDAT. • Begin higher resolution traffic repository for National Airspace Redesign analysis and deployment of data as an integrated service to SDAT. • Begin web-based airspace metrics. 	<ul style="list-style-type: none"> • Expand obstruction evaluation system to handle workflow requirements of non-air traffic divisions. • Enable entry of obstruction evaluation case by the public. • Expand SDAT coverage to include advanced functionality for terminals and TRACONS. • Integrate noise analysis tools as service to SDAT. • Extend next-day drill-down capabilities of airspace metrics to cover FAA points of delivery from terminal to center. 	<ul style="list-style-type: none"> • See paperless obstruction evaluation processing from public entry through workflow processing to resolution. • Enable all FAA connected facilities to be capable of analyzing local airspace and traffic issues using a single integrated system. • Standardize security, workflow, and processing for all airspace management processes. • Evaluate performance (using airspace metrics) of advanced drill-down capabilities for all FAA points of delivery from terminal to center

(I) National Airspace System Requirements Development – Advanced Technology Development and Prototyping

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Requirements Development – Advanced Technology Development and Prototyping (ATDP). Contribute to system efficiency through research and evaluation that is provided for the purpose of identifying new and existing technologies that will meet the identified needs of aerospace users. Provide funding for independent investigation of technologies and selected programs to transition from existing to new user needs. Such investigations assist in determining and selecting only those programs or technologies best suited to advance overall NAS system efficiency.</p>	<p>Completed research on navigation aids and NTSB high-risk airports. Completed research on the impact of ADS-B information on controller techniques and decision-making. Completed research on weather radar technology NEXRAD for the National Academy of Sciences. Completed research on weather forecasting accuracy for FAA air traffic control for the National Academy of Sciences. Conducted special studies, research, and analysis of existing operational facilities and capabilities in support of the Commercial Aviation Safety Team (CAST). Completed research on requirements for service-based planning in the</p>

	<p>NAS tool. Supported aviation weather issue management and coordination. Supported acquisition management system (AMS) and requirements development. Initiated portfolio management process for FAA's weather programs. Conducted human factors evaluation and requirements development.</p>
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Fund contracts to continue support of the goals identified in FY 2001. 	<ul style="list-style-type: none"> Continue to support AMS process through research and investigation of selected programs and/or technologies. 	<ul style="list-style-type: none"> Continue to support AMS process through research and investigation of selected programs and/or technologies.

(J) General Aviation /Vertical Flight Technology – Advanced Technology Development and Prototyping

Primary Goal: 1.1/1.1.2

Secondary Goal(s): 2.1/2.1.1, 2.1.2

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>General Aviation (GA)/Vertical Flight (VF) Technology – Advanced Technology Development and Prototyping (ATDP). Reduce GA accident rate by integrating new navigation, communication, surveillance technology, improved avionics, and aircraft performance capability in addition to airman training requirements in order to enable a greater number of GA and VF aircraft to receive IFR services and to enable visual flight rules (VFR) aircraft to navigate with a higher level of precision and awareness of the proximity of other aircraft and obstacles.</p>	<ul style="list-style-type: none"> • Designed global positioning system (GPS) based flight procedures for GA operations in mountain passes (Safer Skies initiative). • Completed assessment of requirements and research needed for precision operations at heliports. Wendell H. Ford Aviation Investment Reform Act (AIR-21) legislative requirement. • Completed flight-testing to validate safety of reduced visibility and decision height for helicopter instrument landing system (ILS) approaches. Completed simulation tests of helicopter ILS lighting (helicopter safety issue). • Completed program plan for simultaneous non-interfering (SNI) operations for vertical flight aircraft. AIR-21 legislative requirement.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Conduct flight tests to ascertain maximum descent angles for visual segment of helicopter instrument approaches. Modification of terminal instrument procedures (TERPS) criteria. • Develop initial procedures for SNI. Conduct simulation of SNI procedures. • Develop procedures for flight locating (CFR Part 135.79 requirement) using Safe-Flight 21 concepts. • Complete helicopter ILS test report and publish data in the Aeronautical Information Manual (AIM). 	<ul style="list-style-type: none"> • Initiate helicopter steep angle instrument approach and departure TERPS criteria work. • Plan and initiate a demonstration of SNI procedures in a small hub terminal area. • Develop methodology for air traffic control surveillance of sailplanes. Publish criteria and information in the AIM. • Complete plan for aircraft regulatory work required for implementation of elements of Safe Flight 21. 	<ul style="list-style-type: none"> • Complete helicopter steep angle instrument approach and departure TERPS criteria work. • Develop helicopter TERPS for safe reduced noise segmented approaches. • Develop improved lighting systems for heliports. • Complete SNI demonstration in a small hub area and publish SNI criteria and procedures. • Plan and complete a demonstration of SNI in a major hub area. • Complete aircraft regulatory criteria for small aircraft moving map displays, synthetic displays, and enhanced vision.

(K) Domestic Reduced Vertical Separation Minima – Advanced Technology Development and Prototyping

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Domestic Reduced Vertical Separation Minima (DRVSM) – Advanced Technology Development and Prototyping (ATDP). Reduce vertical separation from 2000 feet to 1000 feet above flight level (FL) 290, which will enhance en route traffic throughput by providing 6 additional altitudes between FL 290-FL 410. This will increase NAS efficiency and result in an estimated 1% fuel burn reduction, saving an estimated 400 million annually for users.</p>	<ul style="list-style-type: none"> • Completed management plan and implemented simulation plan. • Developed concept of operations (CONOPS). • Conducted 2 user seminars. • Completed analysis of domestic fleet (Civil and the Department of Defense (DoD)). • Completed safety assessment and monitoring plan.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Establish phased implementation. • Complete CONOPS. • Complete air traffic control simulations. • Publish Notice of Proposed Rule Making. • Deploy monitoring system. • Establish Mountain Wave Activity Mitigation Group. • Coordinate activities with Canada and Mexico. 	<ul style="list-style-type: none"> • Modify host computer. • Conduct air traffic control simulations. • Continue Mountain Wave Activity Mitigation Group. • Conduct performance monitoring activity. • Publish final rule. • Coordinate activities with Canada and Mexico. 	<ul style="list-style-type: none"> • Continue performance monitoring. • Complete NAS host computer modifications. • Complete safety and readiness assessment. • Implement DRVSM.

Category 1: 1C02; Aircraft Related Equipment Program;

(A) Aircraft Related Equipment Program

(B) Aircraft Related Equipment Program – Simulator Replacement

(A) Aircraft Related Equipment Program

Primary Goal: 1.1

Secondary Goal(s): 2.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aircraft Related Equipment Program. Improve air safety by ensuring that (1) flight inspection aircraft/systems are equipped/modified to validate/certify accuracy of navigational aids' electronic signals and validate/certify the flyability of approach/departure flight at all airports in the NAS; (2) research and development (R&D) aircraft are equipped to test/evaluate new aviation technologies for proof of concept, systems integration, equipment, procedures,</p>	<ul style="list-style-type: none"> • Established various contracts to obtain products and services for modernization of aircraft and aircraft systems, and delivered equipment and services that were tested and validated for installation and implementation. These included: <ul style="list-style-type: none"> ○ Digital ILS/very high frequency (VHF) omni-directional range (VOR) flight inspection receivers

<p>and related human factors impacts; and (3) support flight/training mission aircraft are equipped to provide meaningful and relevant ASI pilot currency/proficiency experience and training required for ASIs to regulate/certify all pilot instructors and test pilots and validate/certify all NAS commercial and civil aircraft operations. Each of these flight program missions serves to reduce fatal aviation accident rates through investigation and incorporation of accident prevention techniques, safety information sharing/analysis, and certification/surveillance via in-flight inspection, testing, evaluation, and validation of activities directly serving safety initiatives benefiting all air carrier and GA users of the NAS.</p>	<ul style="list-style-type: none"> ○ WAAS/LAAS software development ○ Automated flight inspection system (AFIS) hardware and software ○ Computerized flight monitoring and scheduling system (CFMSS) hardware and software ○ Terrain awareness and warning system (TAWS) acquisition
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Install/evaluate ILS/VOR receivers in 1 flight inspection aircraft. • Expand CFMSS capabilities. • Develop WAAS/LAAS software. • Install/check out TAWS in 5 aircraft. • Continue AFIS enhancement in 28 aircraft. • Acquire/install low-earth orbit (LEO) satellite communications (SATCOM) in 10 aircraft. 	<ul style="list-style-type: none"> • Complete ILS/VOR receiver installation in all 33 flight inspection aircraft. • Continue expansion of CFMSS capabilities. • Acquire WAAS/LAAS receivers (fleet). • Install TAWS in 22 aircraft. • Install LEO SATCOM in 12 aircraft. • Continue AFIS enhancements in 29 aircraft. • Acquire flight data recorder/cockpit voice recorder upgrade (fleet). • Acquire radio frequency interference RFI/direction finder (DF) equipment (18 aircraft). 	<ul style="list-style-type: none"> • Install TAWS in 20 aircraft. • Install LEO SATCOM in 13 aircraft. • Achieve major cockpit avionics technology refresh for 33 flight inspection aircraft. • Install/implement airborne controller-pilot data link communication (CPDLC) in fleet. • Install/implement RFI/DF in 18 aircraft. • Develop/implement 6 modular flight information service (FIS) units. • Complete flight data recorder/cockpit voice recorder upgrade in fleet. • Develop/implement automated aircraft/scheduling performance system (ASPS). • Develop/implement new technology AFIS.

(B) Aircraft Related Equipment Program – Simulator Replacement

Primary Goal: 1.1 Secondary Goal(s): 2.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aircraft Related Equipment Program – Simulator Replacement. Improve air safety (through the acquisition of an advanced technology flight simulator) by performing meaningful and relevant R&D operational evaluations for large transport category aircraft representative of the U.S. air carrier industry. Also, provide capability for ASI pilot training and currency/proficiency experience required in the regulation/certification of all activities comprising U.S. aircraft operations.</p>	<ul style="list-style-type: none"> • Determined investment solution. • Developed an acquisition strategy. • Developed acquisition requirements.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Solicit vendor interest. 	<ul style="list-style-type: none"> • Acquire new simulator. 	<ul style="list-style-type: none"> • Install/test/accept new simulator. • Conduct simulator operations/maintenance

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
		training. <ul style="list-style-type: none"> • Achieve partial implementation. • Acquire logistics support/equipment. • Achieve full implementation.

Category 1: 1C03; National Aviation Safety Data Analysis Center;

Primary Goal: 1.1/1.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Aviation Safety Data Analysis Center (NASDAC). Maximize the potential for data analysis to reduce or prevent fatal commercial accidents by simplifying complicated and difficult data access problems, by strengthening questionable data integrity, by enabling automated analysis to be performed on an integrated basis across multiple bases, by creating integrated data sets, by distributing quality data to the FAA and the broader aviation community, and by acquiring and sharing analytical tools for identification and analysis of precursors to aviation accidents.</p>	<ul style="list-style-type: none"> • Completed Phase I implementation of the NASDAC Advanced Data Architecture, which dramatically enhances legacy data quality and facilitates the use of complex and customized methods of analyzing aviation safety data. • Prepared software requirements statements for 2 integrated data sets (aging aircraft wiring, incident trend monitoring). • Co-sponsored the building of an FAA Data Registry that will be a reference of standardized agency-wide data descriptions (new and legacy databases). • Developed 4 safety data models that will aid in identifying and analyzing accident precursors by enabling users to understand relationships between aviation safety activities and the data elements that describe them. • Developed a draft international standard for assigning unique aircraft identifiers that will enable analysts to trace the history of individual aircraft. • Initiated development of an international standard for “aircraft make/model.” • Initiated development of an aviation thesaurus that can be used to standardize decoding of legacy database narrative fields to structured data fields (text mining) for further analysis. • Completed a proof of concept study of feasibility for adapting commercially available text mining tools to FAA and airline textual safety databases, opening the door to sharing analytical tools beyond FAA and government agencies. • Completed user-based assessment of analytical tools to enhance the delivery of NASDAC services. • Completed a requirements analysis and evaluation of the most effective tools for safety analysis. • Provided 2 governmental agencies with access to the NASDAC desktop system via development and initial deployment of an “Extranet” capability.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Create and deploy initial specialized, integrated datasets for individual FAA lines-of-business (LOB) or offices. • Deploy enhanced web-enabled analysis tools on the NASDAC system, including an enhanced query tool and a data visualization tool. • Enhance user analytical capabilities by providing users of the NASDAC Web Site with the capability to download multiple files. • Continue development of international standards for “aircraft make/model” and assignment of unique aircraft identifiers. • Complete development of initial prototype aviation thesaurus and demonstrate usefulness through application to multiple data sources. • Begin planning for aviation community conference on aviation thesaurus development. • Build and validate a prototype text mining tool for airline users in analyzing aircraft crew incident reports. • Provide access to the NASDAC desktop system to at least 2 additional governmental agencies via the NASDAC “Extranet.” 	<p>Conduct aviation community conference on aviation thesaurus development.</p> <p>Analyze requirements for capacity/delay related data mart for Air Traffic Operations (ATO) performance-based organization (PBO).</p> <p>Acquire and deploy web-enabled data mining tool.</p> <p>Analyze need for NASDAC to provide data mining service in addition to data mining tool.</p>	<ul style="list-style-type: none"> • Complete technology refresh of the NASDAC system. • Transform the NASDAC system into a knowledge management system.

Category 1: 1C04; Explosive Detection Technology;

Primary Goal: 5.1/5.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Explosive Detection Technology (EDT). Achieve 100% screening of selected checked baggage by certified explosives detection systems, eliminating equivalent technologies and procedures at airports.</p>	<ul style="list-style-type: none"> • To be provided.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Program will be transferred to the new DOT organization. 	<ul style="list-style-type: none"> • Program will be transferred to the new DOT organization. 	<ul style="list-style-type: none"> • Program will be transferred to the new DOT organization.

Category 2: Improve the Efficiency of the Air Traffic Control System

Category 2: 2A01; Terminal Business Unit; 2A01A; Terminal Automation Program

- Standard Terminal Automation Replacement System – Development & Procurement
 - Standard Terminal Automation Replacement System – Technology Refresh
- Terminal Sustain
- Interim Tower Displays
- Standard Terminal Automation Replacement System – Automated Radar Terminal System Model IIIE/Automated Radar Terminal System

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Standard Terminal Automation Replacement System (STARS) Programs. Provide a digital capable system to meet expanding air traffic control needs. The STARS will provide new computer workstations with high-resolution color displays and commercially-based software to allow the FAA to move toward uniform configuration at all terminal facilities. The terminal automation evolves from an infrastructure composed of various FAA and DoD automation systems (ARTS IIIA, ARTS IIA, ARTS IIE, ARTS IIIE, etc.) and associated displays to the STARS.</p>	<ul style="list-style-type: none"> • Achieved ORD of STARS early display configurations (EDC) at 2 key sites. • Delivered final 40 ARTS color displays (ACD). • Commissioned ARTS IIIE at Atlanta TRACON. • Delivered and installed 57 remote ARTS color display (RACD).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deliver Full STARS full service (FS) 2+ at Philadelphia. • Commission ARTS IIIE at Minneapolis-St. Paul, St Louis, Atlanta Phase II, Northern California, and Potomac. • Deliver final 17 RACDs. • Complete Power PC upgrade. • Deploy 11 interim tower displays. • Deliver STARS EDC-2 to 7 sites. • Upgrade El Paso and Syracuse to Full STARS FS-1. • Continue deployment of life cycle maintenance builds for EDC-2 and STARS initial systems 	<ul style="list-style-type: none"> • Procure 39 STARS. • Procure 19 DoD ISC systems. • Deliver 18 STARS. • Deliver 19 DoD ISC systems. • Deploy 25 interim tower displays. • Deliver STARS EDC-2+ to 4 sites. • Start EDC-2 upgrades to EDC-2+. • Continue deployment of life cycle maintenance builds for EDC-2 and FS-2+. • Develop STARS enhancements. • Conduct IOT&E. 	<ul style="list-style-type: none"> • Procure 109 STARS. • Procure 60 DoD ISC/FS-2+ systems. • Deliver 141 STARS. • Deliver 91 DoD ISC/FS-2+ systems. • Deploy nine interim tower displays. • Upgrade all EDC-2 and DoD ISC sites to FS-2+ configuration. • Develop and implement life cycle maintenance builds. • Implement technology refresh (i.e., New Sun Operating Systems). • Continue planning, development, and implementation of additional STARS

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
configuration (ISC).		enhancements.

Category 2: 2A01; Terminal Business Unit; 2A01B: Air Traffic Control Beacon Interrogator – Replacement;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): 1.1/1.1.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Secondary Surveillance – Air Traffic Control Beacon Interrogator (ATCBI) – Replacement. Replace existing surveillance ATCBI-4/5 equipment that has reached the end of its life cycles. ATCBI-6 selectively interrogates individual aircraft and provides precise tracking information to the host system. This improved automation tool is designed to support Free Flight.</p>	<ul style="list-style-type: none"> • Procured the first 50 ATCBI-6 production systems. • Conducted site surveys at 46 sites. • Purchased and delivered 40 monopulse beacon test sets (MBTS). • Procured the ATCBI-6 system depot and site spares. • Began the air route surveillance radar (ARSR) model 4/mode 4 and MBTS interface. • Continued rotary joint, antenna, and mounting kit installations. • Began the NAS infrastructure management system (NIMS) interface development.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure 42 ATCBI-6 production systems. • Commission the 1st article and 1st production systems at Tinker Air Force Base (AFB) and Putnam, OK. • Continue the ARSR-3 and ARSR-4/mode 4 interface. • Procure an additional 60 MBTSs. • Conduct site surveys at 40 sites. • Continue rotary joint, antenna, and mounting kit installations. • Support commissioning efforts. • Begin system delivery and installation at ATCBI-6 sites. 	<ul style="list-style-type: none"> • Procure the remaining 35 ATCBI-6 systems. • Continue the ARSR-3 interface and ARSR-4/mode 4 interface development. • Support commissioning efforts. • Continue rotary joint, antenna, and mounting kit installations. • Complete NIMS interface development. • Continue system delivery and installation at ATCBI-6 sites. 	<ul style="list-style-type: none"> • Continue to support commissioning efforts. • Complete ARSR-4/mode 4 interface efforts and testing to begin in FY 2004. • Continue system delivery and installation at ATCBI-6 sites through FY 2005.

Category 2: 2A01; Terminal Business Unit; 2A01C; Air Traffic Control En Route Radar Facilities Improvements;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): 1.1

Program Name and Outcome Goal	
<p>Long-Range Radar Program – Long-Range Radar (LRR) Improvements –</p>	<ul style="list-style-type: none"> • Completed facility infrastructure upgrades at 25 en route LRR

<p>Infrastructure Upgrades. Improve system efficiency of the NAS by ensuring that aircraft positional information and identification derived from LRR sites remain available to support air traffic control services (including separation assurance, traffic management, navigation, and flight information).</p>	<p>facilities. Upgrades included the refurbishment or replacement of heating, ventilating, and air-conditioning (HVAC) system and power panels, improvements to grounding systems, and replacement of equipment shelters where necessary and at ATCBI-6 sites.</p> <ul style="list-style-type: none"> • Performed in-service engineering.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Perform facility infrastructure upgrades at 20 additional en route LRR facilities out of 126 sites. Upgrades included the refurbishment or replacement of HVAC systems and power panels, improvements to grounding systems, and replacement of equipment shelters, where necessary, and at ATCBI-6 sites. • Perform in-service engineering. 	<ul style="list-style-type: none"> • Perform facility infrastructure upgrades at 20 additional en route LRR facilities out of 126 sites. Upgrades included the refurbishment or replacement of HVAC systems and power panels, improvements to grounding systems, and replacement of equipment shelters, where necessary, and at ATCBI-6 sites. • Perform in-service engineering. 	<ul style="list-style-type: none"> • Upgrade en route, beacon-only, ARSR 1/2, 2, and 3, 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.

Category 2: 2A01; Terminal Business Unit; 2A01D; Terminal Air Traffic Control Facilities - Replace;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Replacement. Improve system efficiency and availability of service in the NAS by replacing existing ATCTs and TRACONs that cannot meet the needs of present day airport operational requirements. The average age of control towers is 27 years and some are as old as 40 years. As the volume and complexity of terminal air traffic control increases, so does the need to have additional positions in the ATCTs/TRACONs. The FAA provides air traffic control services from over 270 ATCTs/TRACON facilities and must continually replace these buildings to meet demands.</p>	<ul style="list-style-type: none"> • Commissioned 3 ATCTs/TRACONs in FY 2001.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure equipment for 10 sites. • Start construction at 3 sites. • Commission 5 sites. 	<ul style="list-style-type: none"> • Start construction at 6 sites. • Commission 3 sites. 	<ul style="list-style-type: none"> • Start construction at 18 sites. • Commission 17 sites.

Category 2: 2A01; Terminal Business Unit; 2A01E; Air Traffic Control Tower /Terminal Radar Approach Control Facilities - Improve;

(A) Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Air Traffic Control Tower/Terminal Radar Approach Control Modernization

(B) Large Terminal Radar Approach Controls – Advanced Facility Planning

(C) Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Standard Terminal Automation Replacement System Facilities Upgrades

(A) Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Air Traffic Control Tower/Terminal Radar Approach Control Modernization

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Modernization. Improve system efficiency and availability of service in the NAS by modernizing and improving terminal facilities to meet current and future operational requirements.	<ul style="list-style-type: none"> Continued modernization efforts at 65 terminal facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Improve, repair, and sustain 40 ATCTs/TRACON facilities. Add additional positions at 2 ATCTs/TRACON facilities. 	<ul style="list-style-type: none"> Improve, repair, and sustain 28 ATCTs/TRACON facilities. Add additional positions at 6 ATCTs/TRACON facilities. 	<ul style="list-style-type: none"> Continue facility sustainment and modernization activities (subject to available funding).

(B) Large Terminal Radar Approach Controls – Advanced Facility Planning

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Large Terminal Radar Approach Controls (TRACON) – Advanced Facility Planning. To be provided.	<ul style="list-style-type: none"> To be provided.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> To be provided. 	<ul style="list-style-type: none"> To be provided. 	<ul style="list-style-type: none"> To be provided.

(C) Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Standard Terminal Automation Replacement System Facilities Upgrades

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Air Traffic Control Tower/Terminal Radar Approach Control Establish/Sustain/Replace – Standard Terminal Automation Replacement System (STARS) Facilities Upgrades. Complete facility upgrades required to provide a stable platform for deployment of STARS.	<ul style="list-style-type: none"> n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Provide facility upgrades for STARS deployment at 14 TRACONs and/or associated ATCTs. 	<ul style="list-style-type: none"> Provide facility upgrades for STARS deployment at 56 TRACONs and/or associated ATCTs. 	<ul style="list-style-type: none"> Provide facility upgrades for STARS deployment for remaining TRACONs and/or associated ATCTs. <p>Note: Last FY of funding for this program is FY 2006</p>

Category 2: 2A01; Terminal Business Unit; 2A01F: Potomac Terminal Radar Approach Control;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Large Terminal Radar Approach Controls (TRACON) – Potomac TRACON (PCT). Improve system efficiency through the consolidation of the TRACON facilities serving the Washington-Baltimore Metropolitan and outlying areas and redesign of the associated airspace.	<ul style="list-style-type: none"> Completed PCT building construction. Started PCT system installations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete PCT system installations. Commission PCT (consolidated TRACONs at Andrews AFB, Baltimore-Washington International Airport, Ronald Reagan Washington National, Washington Dulles 	<ul style="list-style-type: none"> Implement PCT airspace redesign. 	<ul style="list-style-type: none"> n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
International Airport, and Richmond International Airport).		

Category 2: 2A01; Terminal Business Unit; 2A01G; Northern California Terminal Radar Approach Control;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Large Terminal Radar Approach Controls (TRACON) – Northern California TRACON (NCT). Improve system efficiency and effectiveness through the consolidation of the 4 TRACONs (Bay, Sacramento, Stockton, and Monterey) into 1 facility serving Northern California Metropolitan and outlying areas.</p>	<ul style="list-style-type: none"> • Installed equipment, such as the enhanced traffic management system (ETMS). • Activated 358 out of 361 (99%) telecommunications circuits.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete installation of ARTS IIIIE Power PC upgrade. • Complete testing and integration of all equipment and automation software. • Commission NCT. 	<ul style="list-style-type: none"> • Complete decommissioning of pre-NCT TRACONS. 	<ul style="list-style-type: none"> • n/a

Category 2: 2A01; Terminal Business Unit; 2A01H; Dallas/Fort Worth Terminal Radar Approach Control;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Large Terminal Radar Approach Controls (TRACON) – Dallas/Fort Worth TRACON. To be provided.</p>	<ul style="list-style-type: none"> • To be provided.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • To be provided. 	<ul style="list-style-type: none"> • To be provided. 	<ul style="list-style-type: none"> • n/a

Category 2: 2A01; Terminal Business Unit; 2A01I; Terminal Digital Radar (Airport Surveillance Radar Model 11);

- **Airport Surveillance Radar Model 11 – Airport Surveillance Radar Model 7/Airport Surveillance Radar Model 8 Replacement, Department of Defense Takeover, New Establishments**
- **Airport Surveillance Radar Model 11 – Technology Refresh**

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>The Terminal Digital Radar Programs. Improve system efficiency and availability of service in the NAS by replacing existing ASR-7/8 systems and associated ATCBI 4/5. Replacement of existing systems with new digital ASR-11 radar systems will ensure continuation of surveillance service with improved and expanded 6-level weather detection/display capability. New digital ASR-11 systems will also provide the input required for STARS and eliminate the need and cost to re-engineer/replace obsolete parts required to sustain existing ASR-7/8 systems.</p>	<ul style="list-style-type: none"> • Selected 29 ASR-11 sites. • Completed environmental activities at 17 sites. • Initiated 15 site designs. • 2 sites are currently under construction.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure 3 of 112 production systems. • Install 1 ASR-11 systems at DoD site. • Complete construction at 8 ASR-11 facilities. <p>Note: Procurement of production systems is contingent upon FY 2002 Conference Mark.</p>	<ul style="list-style-type: none"> • Achieve ORD at Key Site, Stockton, and first operational feed at Willow Grove. • Complete construction at 7 ASR-11 sites. • Deliver and commission 10 ASR-11 systems. • Conduct IOT&E. 	<ul style="list-style-type: none"> • Complete construction at 79 ASR-11 sites. • Deliver and commission 71 ASR-11 systems.

Category 2: 2A01; Terminal Business Unit; 2A01J; Airport Surveillance Radar (Airport Surveillance Radar Model 9);

- Terminal Radar Program – Airport Surveillance Radar Model 9
- Terminal Radar Program – Airport Surveillance Radar Model 9 - Service Life Extension Program

Primary Goal: 1.1 Secondary Goal(s): 2.1/2.1.2/2.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>The Airport Surveillance Radar (ASR) Model 9 Programs. Completed the ASR-9 system acquisition program, with all systems delivered and commissioned, but numerous outages at specific locations have impacted critical ASR-9 operations. The ASR-9 has reached the end its economical service life. Due to increases in power outages, equipment outages, Occupational Safety and Health Administration (OSHA) concerns, and diminishing manufacturing sources (obsolete parts), a SLEP is necessary to maintain the functionality currently provided by these systems.</p>	<ul style="list-style-type: none"> • Implemented power conditioning systems at ASR-9 locations. • Initiated procurement of receiver protectors that have exceeded their service life. • Procured transportable ASR-9 system for Palm Springs Regional Airport. • Signed Finding of No Significant Impact (FONSI) and Record of Decision (ROD) for locating the St. Louis ASR-9.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Initiate OSHA modifications, including wave guide relocation, lift cart, and safe sail access. Install 20 ASR-9 jack-screw and box beam emergency fixes. Exercise option for procurement of receiver/protectors that have exceeded their service life. Initiate non-recurring engineering effort for SLEP. Complete surveillance and communication interface processor emulator for Potomac TRACON Project. 	<ul style="list-style-type: none"> Conduct OSHA modifications, including wave guide relocation, lift cart, and safe sail access. Complete antenna box beam and jack-screw fixes. Complete SLEP PDR and working engineering model. Exercise option for procurement of receiver/protectors that have exceeded their service life. 	<ul style="list-style-type: none"> Complete OSHA modifications, including wave guide relocation, lift cart, and safe sail access. Exercise final option for procurement of receiver/protectors that have exceeded their service life. Conduct SLEP.

Category 2: 2A01; Terminal Business Unit; 2A01K; Mode-Select – Provide;

- **Secondary Surveillance – Mode-Select**
- **Secondary Surveillance – Mode-Select - Service Life Extension Program**

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>The Mode-Select (Mode-S) Programs. Implement a National Upgrade II (after a 4 year delay). The current 68020 processor does not have enough capacity to meet initial and future Mode-S requirements. The National Upgrade to replace the 68020 processor with the newer 68040 processor is required to install dynamic reflectors to mitigate a critical beacon reflection problem, TIS, site identifications to support deployment of beacon interrogator model 6 and ASR-11/monopulse secondary surveillance radar (MSSR). Also, procurement of time of year (TOY) clock replacement, rework of the digital power supply, and modulation control unit board modification will improve performance, reliability, and supportability.</p>	<ul style="list-style-type: none"> Tested 68040 processor boards. Deployed beacon video reconstituter. Initiated TOY clock installation.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Initiate Mode-S National Upgrade. 	<ul style="list-style-type: none"> Conduct installation of 68040 processor 	<ul style="list-style-type: none"> Complete last ORD in FY 2004.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Conduct installation of TOY clock, modulation control unit modification, and rework of the digital power supply. 	boards in conjunction with Mode-S National Upgrade. <ul style="list-style-type: none"> Conduct installation of TOY clock, modulation control unit modification, and rework of the digital power supply. Expand TIS coverage. 	<ul style="list-style-type: none"> Complete installation of 68040 processor boards in conjunction with Mode-S National Upgrade. Complete installation of TOY clock, modulation control unit modification, and rework of the digital power supply. Implement advanced message format. Implement ASR-9 SLEP activities.

Category 2: 2A01; Terminal Business Unit; 2A01L; Terminal Applied Engineering;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Air Traffic Control Tower (ATCT)/Terminal Radar Approach Control (TRACON) Establish/Sustain/Replace – Terminal Applied Engineering. Support system efficiency by streamlining the deployment of FAA resources to conduct surveys and by providing a benchmark for future terminal facility planning.	<ul style="list-style-type: none"> Completed government transition evaluations (GTE) at 49 of 400 terminal facilities. Completed Phase I of a 3 phase development for the facilities information and analysis tool (FIAT).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete GTE and terminal area transition plan at an additional 40 of 400 terminal facilities. Revise the retrofit terminal area transition plans for 31 existing GTE TRACON site reports. Complete Phases II and III for FIAT development. 	<ul style="list-style-type: none"> Complete GTE at an additional 68 of 400 terminal facilities. 	<ul style="list-style-type: none"> Complete GTE at an additional 204 out of 400 terminal facilities.

Category 2: 2A01; Terminal Business Unit; 2A01M; Precision Runway Monitors;

Primary Goal: 2.1/2.1.2, 2.1.4

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Precision Runway Monitor (PRM). Provide the capability to conduct	<ul style="list-style-type: none"> Commissioned the Philadelphia, PA, system.

simultaneous independent IFR approaches on parallel runways spaced less than 4,300 feet apart by utilizing 1 second update radar, which will return lost capacity, reduce delays, and improve fuel savings.	<ul style="list-style-type: none"> Began site construction at John F. Kennedy International Airport. Purchased additional system parts due to parts obsolescence.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Commission the John F. Kennedy International Airport system. Replenish obsolete and spare parts for all PRM systems and training platform. 	<ul style="list-style-type: none"> Continue the Atlanta construction. Award the Atlanta contract for system installation. 	<ul style="list-style-type: none"> Commission the Atlanta system. Atlanta construction, site testing, and commissioning.

Category 2: 2A01; Terminal Business Unit; 2A01N; Houston Area Air Traffic System;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Large Terminal Radar Approach Controls (TRACON) – Houston Area Air Traffic System (HAATS). To be provided.	<ul style="list-style-type: none"> To be provided.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> To be provided. 	<ul style="list-style-type: none"> To be provided. 	<ul style="list-style-type: none"> To be provided.

Category 2: 2A02; Aeronautical Data Link Applications;

- (A) Aeronautical Data Link – Flight Information Service**
- (B) Aeronautical Data Link – Controller-Pilot Data Link Communication Build I/IA**
- (C) Aeronautical Data Link – Tower Data Link Services**

(A) Aeronautical Data Link – Flight Information Service

Primary Goal: 1.1/1.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aeronautical Data Link (ADL) – Flight Information Service (FIS). Improve the safety of the NAS by providing new weather hazard graphics directly to pilots via data link for cockpit display relative to current position and route of flight, and by improving the quality of aviation weather hazard advisories through input of aircraft derived weather data from commuter and low-altitude GA operations.</p>	<ul style="list-style-type: none"> • Obtained license from the Federal Communications Commission (FCC) for 3 initial FIS data link (FISDL) ground stations and achieved IOC. • Published guidance for pilots in FAA AIM, Section 7-1-10.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Publish government-industry standards for flight information service broadcast (FIS-B) data link communications through RTCA Special Committee 195. • Achieve operational FISDL service through activation of at least 30 ground stations out of planned 200 total (15%). 	<ul style="list-style-type: none"> • Expand national coverage and operational FISDL services through activation of 100 more ground stations, resulting in 130 operational out of 200 total (65%). • Achieve at least 1,500 active users of FISDL services. • Establish FAA monitoring and quality control of FISDL services. • Publish Advisory Circulars and Technical Standards Order (TSO) supporting FISDL implementation. 	<ul style="list-style-type: none"> • Complete activation of 70 remaining FISDL ground stations in 2003. • Achieve at least 1,500 additional active users of FISDL services each year. • Implement national system for collecting and disseminating automated meteorological reports (AUTOMET) from commuter and low-altitude GA operations beginning in 2003. • Input at least 1,000 AUTOMET reports per day to national system beginning in 2004.

(B) Aeronautical Data Link – Controller-Pilot Data Link Communication Build I/IA

Primary Goal: 2.1/2.1.2 Secondary Goal(s): 1.1/1.1.3

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aeronautical Data Link (ADL) – Controller-Pilot Data Link</p>	<ul style="list-style-type: none"> • Completed CPDLC Build I system development.

<p>Communication (CPDLC) Build I/IA. Combine reduced voice communications workload and distributed communications responsibility to provide benefits by increasing flight efficiency, which is reflected by less time and fewer miles flown in sector, as well as increased airspace capacity, which is reflected by increased sector traffic throughput (miles in trail restrictions relaxed in an experimental sector based on voice communication reduction) and reduced delay.</p>	
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete CPDLC Build I evaluation at Miami Air Route Traffic Control Center (ARTCC). 	<ul style="list-style-type: none"> Complete CPDLC Build I initial daily use (IDU) at Miami ARTCC. 	<ul style="list-style-type: none"> Complete CPDLC Build IA IDU at Miami ARTCC.

(C) Aeronautical Data Link – Tower Data Link Services

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aeronautical Data Link (ADL) – Tower Data Link Services (TDLS). Improve the efficiency of the NAS by replacing aging, obsolete systems and software. Transition all maintenance from contractor furnished to FAA (organic).</p>	<ul style="list-style-type: none"> Completed refresh system design and development. Performed OT&E. Developed air traffic and airway facilities training materials. Installed refresh system at 1st Key Site (Teterboro, NJ).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Conduct FCA/PCA. Perform shakedown. Acquire remainder of all required system replacement components. Retrofit system at second Key Site (Philadelphia ATCT). Obtain in-service decision. Continue deployment at 25% of current TDLS sites (58 systems at 57 sites). 	<ul style="list-style-type: none"> Continue/complete deployment of technology refresh. Determine suitable replacement for voice synthesis units. Perform system integration of new voicing units. Procure new voice synthesis hardware for all sites. 	<ul style="list-style-type: none"> Install new voice synthesis hardware (and related software upgrades) at all TDLS sites. Initiate requirements analysis for follow-on TDLS configuration (Aeronautical Telecommunications Network (ATN) based).

**Category 2: 2A03; Free Flight Phase 2;
(A) Free Flight Phase 2 – Integration**

- (B) Free Flight Phase 2 – User Request Evaluation Tool
- (C) Free Flight Phase 2 – Traffic Management Advisor-Single Center
- (D) Free Flight Phase 2 – Collaborative Decision-Making
- (E) Free Flight Phase 2 – Priority Research Support Efforts

(A) Free Flight Phase 2 – Integration

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 2 - Integration. Improve system efficiency by supporting the IDU/planned capability available activities for the Free Flight Phase 2 tools/capabilities.	<ul style="list-style-type: none"> • Completed human factors assessment for Free Flight Phase 2.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002. 	<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002. 	<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002.

(B) Free Flight Phase 2 - User Request Evaluation Tool

Primary Goal: 2.1/2.1.1, 2.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 2 - User Request Evaluation Tool (URET). Provide a tool that identifies conflicts in requested flight paths and allows air traffic controllers to evaluate pilot requests. Contribute to an increase in direct routings by 15%.	<ul style="list-style-type: none"> • n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002. 	<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002. 	<ul style="list-style-type: none"> • Establish Free Flight Phase 2’s tracking milestones during JRC-2B in June 2002.

(C) Free Flight Phase 2 - Traffic Management Advisor-Single Center

Primary Goal: 2.1/2.1.1, 2.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 2 - Traffic Management Advisor (TMA) – Single Center (TMA-SC). Contribute to an increased capacity at selected airports by 3%.	• n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
• Establish Free Flight Phase 2's tracking milestones during JRC-2B in June 2002.	• Establish Free Flight Phase 2's tracking milestones during JRC-2B in M June 2002.	• Establish Free Flight Phase 2's tracking milestones during JRC-2B in June 2002.

(D) Free Flight Phase 2 – Collaborative Decision-Making

Primary Goal: 2.1/2.1.1, 2.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 2 - Collaborative Decision-Making (CDM). Contribute to an increased capacity at selected airports by 3% and contribute to an increase in direct routings by 15%.	<ul style="list-style-type: none"> • Deployed initial increment of collaborative routing and coordination tools (CRCT) functionality. • Made available the flow constrained area information for use on ETMS and common constrained situation display for strategic planning purposes.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
• Establish Free Flight Phase 2's tracking milestones during JRC-2B in June 2002.	• Establish Free Flight Phase 2's tracking milestones during JRC-2B in June 2002.	• Establish Free Flight Phase 2's tracking milestones during JRC-2B in June 2002.

(E) Free Flight Phase 2 - Priority Research Support Efforts

Primary Goal: 2.1/2.1.1, 2.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 2 - Priority Research Support Efforts. Develop new tools to help increase NAS capacity/efficiency.	• Conducted the following: laboratory and field demonstrations of direct-to, problem analysis, resolution, and ranking (PARR) conflict probe tools; initial lab simulation with surface management system (SMS); design and development of TMA-multi center (TMA-MC).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Conduct lab and field evaluations of priority research tools. Establish JRC investment decisions for incremental development of PARR. 	<ul style="list-style-type: none"> Conduct lab and field evaluations of TMA-MC, direct-to, PARR, and SMS. 	<ul style="list-style-type: none"> Deploy operational prototype, if technology is sufficiently mature. Transition prototype to production (if research is successful).

Category 2: 2A04; Air Traffic Management;

Primary Goal: 2.1/2.1.2, 2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Air Traffic Management (ATM) – Traffic Flow Management (TFM) Infrastructure – Current Enhanced Traffic Management System (ETMS) Operations. Improve system efficiency by utilizing national-scale traffic management. Sustain and upgrade mission essential TFM operations that are mandated Congressionally 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.</p>	<ul style="list-style-type: none"> Funded the 3rd year of a 3-year nation wide lease for hardware and communication equipment at Hub Development Lab, Academy facilities. Completed bandwidth manager (BWM) circuit upgrade. Finalized communications upgrade to support current requirements and new Free Flight Phase 1 functionality, including additional ground delay program enhancements (GDPE) and collaborative routing tools. Upgraded software/memory to increase efficiency and functionality for configuration at traffic management units (TMU), Hub, and lab facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Continue functional upgrades to provide national-scale traffic management tools to balance traffic loads. Support continued safe flight operations and maximize air traffic flow, thereby performing the mission of managing en route air traffic flow at the ATCSCC from data from the TFM HUB. Report traffic conditions from local TMUs and coordinate delay reduction initiatives with the airlines. Develop and initiate new software releases 	<ul style="list-style-type: none"> Integrate sector traffic management tools, web-based situational display, dynamic sector realignment, and monitor alert-flight database restructuring. Integrate and utilize (free flight) additional CDM tools. Upgrade to enhanced hardware and site integration until new platform is in place. 	<ul style="list-style-type: none"> Continue TFM operations at all facilities. Begin infrastructure re-engineering modernization. Determine future requirements for ETMS transitioning to operations funding.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
and related data integration that affect Hub operations at VOLPE. <ul style="list-style-type: none"> • Install ETMS in new PCT and Gateway (Lambert St. Louis International Airport) TRACON. 		

Category 2: 2A05; Free Flight Phase 1;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Free Flight Phase 1 – Sustain. Improve system efficiency by continuing to derive capacity gains realized from Free Flight Phase 1 systems.	<ul style="list-style-type: none"> • Deployed TMA to Miami ARTCC with an IDU of 5/01. • Deployed passive final approach spacing tool (pFAST) to Southern California TRACON with an IDU of 2/01. • Completed URET system government acceptance 10/01. • Made CDM runway visual range (RVR) information available from Boston, Memphis, and Volpe 2/01.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete 3 en route centers with URET capability by 3/02. • Complete center terminal radar approach control automation system (CTAS) en route spiral 3 software by March 2002. 	<ul style="list-style-type: none"> • Increase direct routing within ARTCCs (URET). The target is 15 percent. 	<ul style="list-style-type: none"> • Conduct maintenance.

Category 2: 2A06; Automated Surface Observing System;

- Automated Surface Observing System – Base Systems
- Automated Surface Observing System – Pre-Planned Product Improvements
- Automated Surface Observing System – Data Displays
- Automated Surface Observing System – Standalone Weather Systems

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Automated Surface Observing System (ASOS) Programs. Support system efficiency by supplying automating surface weather observations to meet the needs of pilots, operators, and air traffic personnel. The Aviation Surface Weather Observation Network (ASWON) includes AWOS, ASOS, automated weather sensors systems (AWSS), stand alone weather sensors (SAWS), and ASOS controller equipment information display system (ACE-IDS or Data Displays).</p>	<ul style="list-style-type: none"> • Delivered 8 ACE-IDS. • Implemented product improvements and upgrades to ASOS. • Commissioned 79 ASOSs.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Begin SAWS delivery. • Implement product improvements and upgrades to the base ASOSs. • Deliver 10 SAWSs. • Deliver 4 ACE-IDSs. • Complete ASOS commissioning. 	<ul style="list-style-type: none"> • Implement product improvements and upgrades to the base ASOSs. • Deliver 36 SAWSs. • Deliver 2 ACE-IDSs. 	<ul style="list-style-type: none"> • Implement product improvements and upgrades to the base ASOSs. • Deliver 144 SAWSs. • Deliver 1 ACE-IDSs.

Category 2: 2B01; Next Generation Very High Frequency Air-to-Ground Communications System;

- Next Generation Air-to-Ground Communications System - Segment 1a
- Next Generation Air-to-Ground Communications System - Segment 1b
- Next Generation Air-to-Ground Communications System - Segments 2/3
- Ultra High Frequency Radio Replacement

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Next Generation Air-to-Ground (A/G) Communications System (NEXCOM) Segments 1a, 1b, and 2/3 and Ultra High Frequency (UHF) Radio Replacement Programs. Provide a new communications system to satisfy requirements that cannot be met using the current voice communications system.</p>	<ul style="list-style-type: none"> • Awarded NEXCOM multi-mode digital radio (MDR) contract (completed 7/01).

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete analog voice IOC. • Award system prototype contract. • Establish government/industry partnership for avionics development. • Conduct IOT&E. 	<ul style="list-style-type: none"> • Conduct MDR in-service decision. • Complete 1st commissioning (analog voice). 	<ul style="list-style-type: none"> • Conduct NEXCOM demonstration validation. • Award NEXCOM contract in 2005. • Conduct NEXCOM in-service decision in 2007.

Category 2: 2B02; En Route Automation Program;

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Modernization (ERAM). Improve system efficiency in all ARTCCs through the use of a more modern, open, and supportable en route automation environment that has the capability to readily adapt to evolving requirements and meet the long-term requirements for availability, capacity, and efficiency.</p>	<ul style="list-style-type: none"> • Completed en route information display system (ERIDS) COTS-based developmental system. • Completed initial evaluation of en route training simulation NDI capabilities. • Completed flight plan preprocessing (FPPP) phase 1 prototype design.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deploy ERIDS developmental system to Salt Lake City and Boston ARTCCs. • Complete initial evaluation of deployed ERIDS developmental system. • CONDUCT FPPP PHASE 1 	<ul style="list-style-type: none"> • Award ERAM solution contract. 	<ul style="list-style-type: none"> • Achieve IOC for ERAM capabilities. • Achieve ORD for ERAM capabilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>PROTOTYPE EVALUATIONS.</p> <ul style="list-style-type: none"> • Complete FPPP phase 2 prototype development with dynamic restrictions, and initiate evaluation activities. • Complete JRC-2A for the ERAM Solution contract. 		

Category 2: 2B03; Weather and Radar Processor;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Weather and Radar Processor (WARP) – Stage 3 – Sustain Weather Operations. Collect, process, and disseminate NEXRAD data and other weather data to ARTCC controllers, traffic management specialists, and ARTCC weather service unit meteorologists. WARP provides the most timely and accurate weather forecast products to other NAS subsystems.</p>	<ul style="list-style-type: none"> • Deployed WARP Stage 1 and 2 systems. • Implemented WARP Stage 3 weather information network system (WINS) to support Free Flight Phase 1 at 7 sites. • Continued development of other WARP Stage 3 critical operational changes, upgrades, and new interfaces.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • IOC of NEXRAD products on display system replacement (DSR). • Complete WINS deployment at all ARTCCs. • Continue Stage 3 and provide systems changes as required by users. 	<ul style="list-style-type: none"> • Develop an interface with the National Weather Service (NWS) advanced weather interactive processing system (AWIPS) to improve weather forecasting. • Develop operational changes to accommodate NEXRAD hardware and software upgrades. • Implement WINSs at additional ARTCCs to provide critical weather data to Free Flight Phase 1 and 2 Programs. 	<ul style="list-style-type: none"> • Continue Stage 3 activities to develop critical NAS interfaces (e.g., ITWS, operational and supportability implementation system (OASIS), and ETMS). • Conduct hardware refresh.

Category 2: 2C04 Aircraft Fleet Modernization;

Primary Goal: 2.1/2.1.1, 2.1.2, 2.1.3, 2.1.4 Secondary Goal(s): 1.1/3.1/4.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Research and Development (R&D), Aircraft Replacement. Acquire a modern jet transport aircraft equipped with a suite of digital cockpit avionics representative of the current and future U.S. airline jet aircraft population to perform required various airborne R&D and test and evaluation (RDT&E) functions in support of agency safety, security, system efficiency, and human & natural environment goals.	<ul style="list-style-type: none"> • n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Incorporate latest security program concerns into proposed replacement criteria. • Negotiate the acquisition of a new aircraft. 	<ul style="list-style-type: none"> • Delivery of new aircraft. • Configure aircraft for RDT&E support. 	<ul style="list-style-type: none"> • Continue to provide wide-ranging RDT&E airborne support with a modern jet transport. • Provide a critical in-flight jet transport test functions in the proper test laboratory.

Category 3: Increase Capacity of the National Airspace System

Category 3: 3A01; Navigation and Landing Aids: 3A01A; Local Area Augmentation System for Global Positioning System;

- Local Area Augmentation System for Global Positioning System
- Local Area Augmentation System - Advanced Technology Development and Prototyping

Primary Goal: 1.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Local Area Augmentation System (LAAS) Programs. Increase system safety and efficiency by providing a satellite-based precision approach capability to the NAS that meets the requirements for weather approach and landing capability.</p>	<ul style="list-style-type: none"> • Released Category (CAT) I draft RFI.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Award contract for CAT I LAASs. 	<ul style="list-style-type: none"> • Begin procurement of CAT I LAASs. 	<ul style="list-style-type: none"> • Award CAT II/III development contract. • Complete CAT I LAAS buys.

Category 3: 3A01; Navigation and Landing Aids: 3A01B; Wide Area Augmentation System for Global Positioning System;

- Wide Area Augmentation System for Global Positioning System
- Wide Area Augmentation System – Satellite Telecommunications
- Wide Area Augmentation System – Advanced Technology Development and Prototyping

Primary Goal: 1.1 Secondary Goal(s): 2.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Wide Area Augmentation System (WAAS) Programs. Provide benefits to both aviation users through efficiencies, safety, and simplification of avionics, and to the government through reduced ground-based facility costs. The qualitative benefits include improved safety while operating in reduced weather conditions, improved efficiency at airport operations due to greater runway availability, reduced separation, more direct en route paths, and new precision</p>	<ul style="list-style-type: none"> • Negotiated and signed lateral navigation (LNAV)/vertical navigation (VNAV) schedule/contract modification with the prime contractor, Raytheon Corporation (September 2001). • Published LNAV/VNAV December 2003 Commissioning Date (March 2001). • WAAS Integrity Performance Panel (WIPP) eliminated Space

approach services to the public. Outcome Measure: Percent reduction in system costs per flight.	Vehicle-19 monitor algorithm requirement: <ul style="list-style-type: none">○ Simplified design○ Total of 8 instead of 9 monitor algorithms● Acknowledged 1 year anniversary of WAAS signal available for public use (August 2001).
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Reduce the rates of volume- and equipment-related system delays by 20% from the 1994 baseline. Support the Associate Administrator for Certification and Regulation (AVR) Safer Skies initiative (cornerstone for free flight). Demonstrate that WAAS systems architecture achieves deliverable performance objectives. Develop LNAV/VNAV procedures for additional runway ends. 	<ul style="list-style-type: none"> WAAS performance parameters for Level I: <ul style="list-style-type: none"> En Route/Non-Precision Approach (NPA) Horizontal Accuracy 100 meters or less Vertical Accuracy n/a Time to Alarm 8 seconds Availability 99.9% Continue reduction rate of volume and equipment-related delays. 	<ul style="list-style-type: none"> Commission WAAS IOC for LNAV/NAV 12/03 Develop and initiate implementation of GPS landing system capability. Acquire additional redundant geostationary satellite services. Continue to develop GPS approach procedures to serve all IFR runway ends. Develop LNAV/VNAV and global navigation satellite system (GNSS) landing system (GLS) procedures for additional runway ends. Develop an electromagnetic interference detection and location capability.

Category 3: 3A01; Navigation and Landing Aids: 3A01C; Equipment (Distance Measuring Equipment);

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Very High Frequency (VHF) Omni-Directional Range Collocated with Tactical Air Navigation (VORTAC). Improve system efficiency in the NAS by replacing, relocating, or converting VOR/VORTAC facilities in order to maintain a reliable, safe, and efficient air navigation system used for en route and approach purposes.</p>	<ul style="list-style-type: none"> Performed field installation of approximately 29 tactical air navigation (TACAN) antenna retrofit kits. Initiated relocation process of 1 VOR facility.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Perform field installation of approximately 29 TACAN antenna retrofit kits. Complete relocation process of 1 VOR facility. 	<ul style="list-style-type: none"> Perform field installation of approximately 31 TACAN antenna retrofit kits. 	<ul style="list-style-type: none"> Continue facility relocations, retrofits, conversions, and upgrades as required.

Category 3: 3A01; Navigation and Landing Aids: 3A01D; Instrument Landing System – Establish/Upgrade;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Instrument Landing Systems (ILS). Improve system efficiency of the NAS by establishing and maintaining precision approach capability at large- and medium-sized hub airports and their associated reliever airports. ILS will help meet expanding air traffic control needs for increased airport capability by increasing capacity through lowering of visual minimums required for landing.	<ul style="list-style-type: none"> • Deploy 15 ILSs at various locations. • Deploy 2 medium-intensity approach light systems with runway alignment indicator lights (MALSR) at various locations. • Deploy 1 approach light system with sequenced flashing lights (ALSF) model 2.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deploy 6 ILSs at various locations. • Deploy 4 MALSR at various locations. • Deploy 2 ALSF-2 at various locations. 	<ul style="list-style-type: none"> • Procure and perform regional installations at approximately 30 ILS locations. 	<ul style="list-style-type: none"> • Continue to procure and install ILSs and associated equipment to meet demand for precision approach capability at required airports.

Category 3: 3A01; Navigation and Landing Aids: 3A01E; Approach Lighting System Improvement Program;

Primary Goal: 1.1/1.1.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Visual Navigation Aids – Approach Lighting System Improvement Program (ALSIP) Continuation. Improve safety in the NAS by replacing rigid, non-frangible lighting support structures with frangible approach lighting equipment.	<ul style="list-style-type: none"> • Deployed 6 MALSR at various locations. • Deployed 1 ALSF-2.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deploy 2 MALSR at various locations. • Deploy 1 ALSF-2. 	<ul style="list-style-type: none"> • Deploy 5 MALSR at various locations. • Deploy 1 ALSF-2. 	<ul style="list-style-type: none"> • Continue to procure and install approach lighting systems and their associated frangible structures.

Category 3: 3A01; Navigation and Landing Aids: 3A01F; Runway Visual Range;

Primary Goal: 1.1/1.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Runway Visual Range (RVR) – Replacement/Establishment. Improve safety in the NAS by replacing the older, maintenance intensive, and difficult to support legacy systems (RVR, SSR, and Tasker 400s and 500s). RVR systems provide critical meteorological visibility information that is necessary for takeoff and landings on precision approach equipped runways. These older systems are frequently supported by rigid, steel, non-frangible structures.</p>	<ul style="list-style-type: none"> Deployed 10 RVR systems at various airports.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Performance Output Goals
<ul style="list-style-type: none"> Deploy 6 RVR systems at various airports. 	<ul style="list-style-type: none"> Procure and perform field installations at approximately 19 RVR locations. 	<ul style="list-style-type: none"> Continue to procure and install RVR systems to meet demand for visibility information at precision approach equipped runways.

Category 3: 3A01; Navigation and Landing Aids: 3A01G; Distance Measuring Equipment – Sustain;

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Distance Measuring Equipment (DME) – Sustain. Improve system efficiency in the NAS by replacing obsolete, tube-type DME that provides critical distance information to pilots during preparation for landing.</p>	<ul style="list-style-type: none"> Deployed 10 low power DME systems at various locations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deploy 5 low power DME systems at various locations. 	<ul style="list-style-type: none"> Procure and perform field installations at approximately 15 low power DME locations. 	<ul style="list-style-type: none"> Continue to procure and install low power DME to replace the current older, tube-type equipment in the NAS.

Category 3: 3A01; Navigation and Landing Aids: 3A01H; Non-Directional Beacon Facilities – Sustain;

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Non-Directional Beacons (NDB) Sustain. Improve system efficiency in the NAS by replacing obsolete, tube-type NDBs with current technology electronics that continue to provide navigational direction information.	<ul style="list-style-type: none"> Procure and install NDB equipment at approximately 8 regional locations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Procure and install NDB equipment at approximately 13 regional locations. 	<ul style="list-style-type: none"> Procure and install NDB equipment at approximately 14 regional locations. 	<ul style="list-style-type: none"> Continue to procure and install NDB equipment at approximately 16 regional locations.

Category 3: 3A01; Navigation and Landing Aids: 3A01I; Visual Navigation Aids – Establish/Expand;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Visual Navigation Aids – Visual Navigation Aids for New Qualifiers. Improve system efficiency of the NAS by providing visual approach slope guidance and runway threshold identification in order to increase landing capability at designated airports throughout the United States.	<ul style="list-style-type: none"> Deployed 12 PAPI systems at various locations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deploy 6 PAPI systems at various locations. 	<ul style="list-style-type: none"> Procure and perform regional installations at approximately 35 PAPI locations. 	<ul style="list-style-type: none"> Continue to procure and install PAPI and runway end identifier lights (REIL) equipment to meet demand for visual approach guidance at required airports.

Category 3: 3A01; Navigation and Landing Aids: 3A01J; Visual Approach Slope Indicator Replacement – Replace with Precision Approach Path Indicator;

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Visual Navigation Aids – Replace Visual Approach Slope Indicator (VASI) with Precision Approach Path Indicator (PAPI). Improve system efficiency in the NAS by replacing aging, obsolete VASI with newer technology—the more standardized PAPI.	<ul style="list-style-type: none"> Deployed 4 PAPI systems at various locations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deploy 6 PAPI systems at various locations. 	<ul style="list-style-type: none"> Procure 12 additional PAPI systems and perform regional installations at approximately 47 locations. 	<ul style="list-style-type: none"> Continue to procure and install PAPI equipment to replace the current inventory of VASI systems in the NAS.

Category 3: 3A01; Navigation and Landing Aids: 3A01K; Instrument Approach Procedures Automation;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Instrument Approach Procedures Automation (IAPA). Improve system efficiency to the NAS by providing automated tools, including the ability to digitize maps and charts, that allow FAA specialists to develop more timely and accurate instrument approaches for pilots into airports clear of obstacles such as radio towers, buildings, and trees. In addition, the automated tools will meet expanding air traffic control needs (e.g., the FAA receives 30,000 annual requests to erect more obstacles near airports. The automated tools help to reduce the time it takes to evaluate, revise, and update the approaches).	<ul style="list-style-type: none"> Completed programming for RNP, missed approach segments, precipitous terrain, and use of terrain data for all segments. Developed fly-ability tool for delivery to users. Assessed feasibility of porting IAPA to personnel computer platform, purchased prototype equipment, and began the porting process. Maintained the current production system, including numerous new criteria changes. Configured new servers and completed delivery of 1:24,000 maps. Purchased replacement printers. Purchased necessary software to provide drawing capabilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete porting software to a new platform. Begin testing and certification process. Purchase new IAPA workstations. 	<ul style="list-style-type: none"> Certify and deploy new IAPA systems. Continue to develop all approach types and segments. 	<ul style="list-style-type: none"> Continue to develop suite of tools to deploy to the regions in support of CAST plan. Maintain established programming and keep

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Maintain the current production system, including changes to criteria. • Develop, certify, and deliver fly-ability tool and other suite of tools required to support the CAST plan. • Purchase necessary software to provide drawing capabilities. • Design automated obstacle evaluation tool. • Purchase servers and associated hardware to support instrument flight procedures (IFP) database. • Develop interface between IFP database and instrument procedures automation system (IPAS). 	<ul style="list-style-type: none"> • Continue to develop suite of tools to deploy to the regions in support of CAST plan. • Maintain established programming and keep pace with criteria changes. • Provide contractor assistance for obstacle evaluation services. • Continue design of obstacle evaluation tool. • Purchase hardware and software to support data warehousing. • Develop interface between IFP database and IPAS. • Expand development of digital charts to provide data for the automated tools. • Replace obsolete cartographic workstations and reproductions hardware. • Provide access interface to critical data to update source information. • Upgrade software support for obstacle evaluation, visual charts, and en route charts. 	<p>pace with criteria changes.</p> <ul style="list-style-type: none"> • Continue design and development of obstacle evaluation tool. • Complete obstacle evaluation centralization database and integration. • Replace end-of-life cycle peripheral equipment for IPAS. • Purchase hardware and software as necessary to support IPAS, obstacle evaluation, and IFP database. • Continue to expand storage capacity. • Continue to replace cartographic workstations and reproduction hardware. • Continue to upgrade software for aerocharts. • Continue to digitize charts for the automated tools.

Category 3: 3A01; Navigation and Landing Aids: 3A01L; Navigational and Landing Aids – Service Life Extension Program (Long-Range Navigation – C);

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Long-Range Navigation – C (LORAN-C) Monitors and Transmitter Enhancements. Support system efficiency by determining whether LORAN-C can provide navigation and other benefits to aviation.</p>	<ul style="list-style-type: none"> • Developed and tested all in-view digital signal processing receivers. • Developed and tested magnetic (H-Field) antenna to solve precipitation static problems.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Provide technical report to the DOT regarding capabilities of LORAN-C to support aviation navigation and other requirements. 	<ul style="list-style-type: none"> • Continue enhancements and re-capitalization of LORAN-C system. 	<ul style="list-style-type: none"> • n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Provide recommendation to DOT regarding whether LORAN-C services should continue. 		

Category 3: 3A01; Navigation and Landing Aids: 3A01M; Navigation and Landing Aids – Service Life Extension Program;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Visual Navigation Aids – Sustain, Replace, Relocate. Improve system efficiency in the NAS by replacing aging, obsolete visual navigational aids as well as other ground-based navigation and landing aids that are necessary in order to maintain en route, approach, and landing capabilities at various airports throughout the United States.</p>	<ul style="list-style-type: none"> n/a

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deploy 1 ALSF-2. 	<ul style="list-style-type: none"> Deploy 2 ALSF-2. Deploy 2 MALSRS. 	<ul style="list-style-type: none"> Continue procurement and installation of various visual navigational aids as well as other ground-based navigation and landing aids.

Category 3: 3A02; Oceanic Automation System;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Advanced Technologies & Oceanic Procedures (ATOP). Increase system efficiency in all oceanic ARTCCs through the modernization of the oceanic air traffic control systems. When in place, the new integrated satellite-based system combined with new air traffic control procedures will render a new concept of operations, providing significant efficiency benefits to both the FAA and its customers. The ATOP system, without reliance on paper strips, will provide a new platform for delivering customer benefits through increased air traffic control efficiencies and capacity; a fully integrated flight data processor, radar data processor, and satellite-based data link communication and surveillance (automatic dependent surveillance-address (ADS-A)); and</p>	<ul style="list-style-type: none"> Released ATOP RFO. Completed evaluation of vendor offers. Completed ATOP JRC, securing approved acquisition program baseline. Awarded ATOP contract.

controller tools, such as conflict probe. In addition, the system will enable reduced separation standards – 30/30 longitudinal/latitudinal separation, resulting in the most efficient oceanic airspace in the world.	
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deliver “test bed” procedural system to the WJHTC. • Complete procedural system FAT. 	<ul style="list-style-type: none"> • Complete Oakland (Key Site) ARTCC procedural system IOC. 	<ul style="list-style-type: none"> • Complete New York ARTCC procedural system IOC. • Complete Anchorage ARTCC radar/system IOC.

Category 3: 3A03; Gulf of Mexico Offshore Program;

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Gulf of Mexico Offshore Program (GOMP). Develop an approach to improve efficiency and capacity while enhancing the currently inadequate communication coverage over the GOM. This project is comprised of two systems: the buoy communications system (BCS) and the VHF extended range network (VERN). They are directed at expanding direct controller-pilot VHF radio communications. The combination of the BCS and VERN will improve efficiency and capacity through enhanced communications in the en route portion of the GOM above 18,000 ft. These enhancements answer current shortfalls as well as proactively address future anticipated growth and user demand for efficient use of the GOM airspace.</p>	<ul style="list-style-type: none"> • Awarded BCS production contract. • Initiated production buoy #3 refurbishment. • Continued to support VERN and satellite telecommunications. • Completed VERN operator maintenance training. • Completed VERN certification and IOC.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Transfer VERN to operational control of Houston ARTCC in support of NAS Handoff. • Complete construction/refurbishment of production buoys #2, 3, and 4. • Conduct and complete the BCS Provisioning Conference. • Complete environmental test, production acceptance test, site acceptance test, system integration and multi-buoy test, and operational test for 2 out of 4 production buoys. • Conduct and complete FCA/PCA with National Data Buoy Center (NDBC). • Conduct several 4-day BCS training course with airway facilities technicians. • Initiate multi-buoy upgrades at Houston ARTCC. • Deliver first operational buoy. • Complete IOC for 2 production buoys. 	<ul style="list-style-type: none"> • Commission 3 BCS production buoys into the NAS. • Continue to support 4 BCS buoys. • Complete testing on last buoy. • Maintain 3 production buoys in the GOM. • Complete full operating capability (FOC). • Conduct IOT&E. 	<ul style="list-style-type: none"> • Transfer BCS operational control of Houston ARTCC via NAS Handoff. • Maintain all production buoys. • Refurbish 2 BCS production buoys.

Category 3: 3A04; Voice Switching and Control System;

- **Voice Switching and Control System – Voice Switching and Control System Control System Upgrade**
- **Voice Switching and Control System – Technology Refresh**

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Voice Switching and Control System (VSCS) Programs. Improve operational efficiency and effectiveness of the NAS by replacing and upgrading the obsolete, non-supportable VSCS hardware and software in all ARTCCs. The sustainment activities planned under this program include software upgrades, power supply upgrades, position electronic module upgrades, display module upgrades, and system expansions. Through the performance of these sustainment activities, the VSCS Program will provide improved air traffic control services within the en route environment.</p>	<ul style="list-style-type: none"> • Delivered final F&E software baseline to 6 of 21 ARTCCs. • Delivered VSCS hardware to 5 choke point sectors, providing for expanded air traffic services in the NAS.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure 21 of 21 VSCS servers for the ARTCCs. • Procure and deliver new cutover switch PCs and laser printers for the VSCS backup and training system at 21 of 21 ARTCCs. • Deliver VSCS hardware to additional 8 choke point sectors, providing expanded air traffic operations in the NAS. • Initiate procurement to replace/upgrade the contractor traffic simulation unit (CTSU), which is used to perform system loading requirements for all formal baseline verifications of VSCS functions. 	<ul style="list-style-type: none"> • Initiate technology refresh activities for the sustainment of the VSCS. 	<ul style="list-style-type: none"> • Continue technology refresh activities for the sustainment of VSCS in FY 2004-2007.

Category 4: Improve the Reliability of the National Airspace System

Category 4: 4A01; Guam Center Radar Approach Control – Relocate;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Relocated Guam Center Radar Approach Control (CERAP). Improve system efficiency at the Guam CERAP by relocating operations from the existing CERAP at Andersen AFB to the FAA Base Building at the Agana International Airport. The existing base building at the Agana International Airport will be renovated and expanded to accommodate CERAP operations, NAS equipment, and associated environmental support equipment.</p>	<ul style="list-style-type: none"> • Funding was not available in FY 2001.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Construct/remodel the base building at the Agana International Airport. • Begin procurement of power system. 	<ul style="list-style-type: none"> • Complete construction/remodeling activities of the base building. • Install power system. • Begin procurement/installation of NAS electronics systems. • Procure and install the MicroEARTS automation system. 	<ul style="list-style-type: none"> • Complete installation of the NAS equipment systems. • Commission operations at new Guam CERAP. • Conduct clean-up activities at old CERAP facility. • Dispose equipment/systems.

Category 4: 4A02; Terminal Voice Switch Replacement/Enhancement Terminal Voice Switch;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Enhanced Terminal Voice Switch (ETVS). Improve NAS system efficiency by replacing the electromechanical and aging electronic switches at all ATCTs and TRACON facilities. Through the deployment of modern voice switches, the ETVS Program provides terminal facilities with modern reliable voice-switching capabilities, which enables efficient and effective air traffic operations.</p>	<ul style="list-style-type: none"> • Replaced 57 of 212 terminal voice switches.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Replace an additional 24 of 212 terminal voice switches. 	<ul style="list-style-type: none"> Replace an additional 17 of 212 terminal voice switches. 	<ul style="list-style-type: none"> Replace an additional 21 of 212 terminal voice switches in 2004. Replace remaining 87 of 212 terminal voice switches in 2005 through 2007.

Category 4: 4A03; Airport Cable Loop Systems – Sustained Support;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Airport Cable Loop Systems Sustained Support. Support agency goals by improving systems efficiency by enhancing communications outages and increased system performance from multiple pathways.	<ul style="list-style-type: none"> Purchased fiber optic installation equipment. Completed fiber optic installations at 1 or 2 large airports. Began fiber optic installations at 1 or 2 large airports. Provide FAA Academy-based training.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Continue to replace airport system communication cabling system where airport construction or system installations occur. 	<ul style="list-style-type: none"> Continue to replace airport system communication cabling system where airport construction or system installations occur. 	<ul style="list-style-type: none"> Continue to replace airport system communication cabling system where airport construction or system installations occur.

Category 4: 4B01; En Route Automation Program;

- (A) En Route Automation Program – En Route Enhancements Program
- (B) En Route Automation Program – Flight Data Input/Output Replacement
- (C) En Route Automation Program – Direct Access Radar Channel
- (D) En Route Automation Program – Host/Oceanic Computer System Replacement
- (E) En Route Automation Program – En Route Communications Gateway
- (F) En Route Automation Program – En Route System Modification and Voice Switching and Control System Electronic Module/Position Electronic Module Relocation

(A) En Route Automation Program – En Route Enhancements Program

Primary Goal: 2.1/2.1.2 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Program – En Route Enhancements Program. Support FAA system efficiency goals by maintaining and enhancing host computer system (HCS) and DSR system software at the ARTCCs.</p>	<p>EN ROUTE ENHANCEMENTS DEVELOPED DURING FY 2001 INCLUDE THE FOLLOWING:</p> <ul style="list-style-type: none"> • Deployed safety-critical fixes to support en route minimum safe altitude warning (EMSAW) corrections. • Changed flight plans to facilitate exchange of ICAO compliant flight plan messages with Canada and Mexico. • Developed multiple flight plan readout on DSR. • Developed common message set (CMS) to facilitate data exchange with Free Flight Phase 1 Programs' URET core capability limited deployment (CCLD) and CTAS. • Developed host communication via CPDLC Build 1. • Sourced national and local patches, as space allowed, to reduce maintenance burden. • Implemented system improvements for airway facilities to facilitate system operations and maintenance. • Developed multiple flight plan readout, range readout, continuous range readout, and multiple dwell lock user functionality for DSR. • Developed BCC20, including important computer-human interface (CHI) enhancements, annotation feature for air traffic, and upgrades to support URET.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>En route enhancements planned during FY 2002 include the following:</p> <ul style="list-style-type: none"> • Complete software adaptation of up to 50,000 fixes to support route structuring. • Enhance safety and controller efficiency by adding 4th line to the DSR full data block. • Provide interface for transitioning from peripheral adapter module replacement item (PAMRI) to ECG. • Upgrade CMS functionality for URET CCLD, CTAS, and ETMS enhancements. • Facilitate display of RVSM capability for 	<p>En route enhancements planned during FY 2003 include the following:</p> <ul style="list-style-type: none"> • Accommodate national RVSM capability. • Accommodate national equipment restricted route enhancements. • Enhance ICAO compliant flight plan processing to facilitate exchange of ICAO compliant flight plan messages with Canada and Mexico. • Source national and local patches, as space allows, reducing maintenance burden. • Implement improvements to facilitate system 	<p>En route enhancements for the period FY 2004-2007 include the following:</p> <ul style="list-style-type: none"> • Continue to provide software evolution, as prioritized and approved by air traffic and airway facilities, to provide new capabilities and enhancements to the host and DSR software and to address critical software problems. • Support ERAM initiative.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
MicroEARTS. <ul style="list-style-type: none"> • Source national and local patches, as space allows, reducing maintenance burden. • Implement improvements to facilitate system operations and maintenance. • Develop R-console display replacement enhancements. • Develop BCC21 with features such as 4th line of the data block, interactive data block, and toolbar enhancements • Perform upgrades to support URET. 	operations and maintenance. <ul style="list-style-type: none"> • Provide command support enhancements. • Enhance target filtering capability. • Provide upgrades to computer readout device. • Enhance surveillance range settings. • Enhance range readout. • Complete R-position display replacement. 	

(B) En Route Automation Program – Flight Data Input/Output Replacement

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
En Route Automation Program – Flight Data Input/Output (FDIO) Replacement. Support the FAA system efficiency goal by maintaining and replacing obsolete FDIO equipment.	<ul style="list-style-type: none"> • Completed installation of FDIO at 80 terminal facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete installation of FDIO at 80 terminal facilities. 	<ul style="list-style-type: none"> Complete installation of FDIO at 80 terminal facilities. 	<ul style="list-style-type: none"> Complete installation of FDIO at 80 terminal facilities.

(C) En Route Automation Program – Direct Access Radar Channel

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Program – Direct Access Radar Channel (DARC). Maintain an enhanced independent back-up radar automation system capable of continuous improvements to functionality. Eliminate legacy hardware and interfaces, and replace current software architecture with one that provides hardware independence.</p>	<ul style="list-style-type: none"> Completed development of Phase I (display processor). Completed airway facilities training for Phase I. Achieved successful data processor replacement at key sites. Completed quality processor functionality upgrade to detect radar failures. Corrected 116 problem trouble reports and 1 configuration control decision.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Develop control processor prototype. 	<ul style="list-style-type: none"> Deploy control processor replacement. Add conflict alert. Add Mode C (altitude reporting) intruder alert. Reduce DSR to DARC system interfaces to improve supportability, expandability, and system response time. 	<ul style="list-style-type: none"> Continue functional enhancements based on air traffic and airway facilities evolving requirements and priorities.

(D) En Route Automation Program – Host/Oceanic Computer System Replacement

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Program – Host/Oceanic Computer System Replacement (HOCSR). Maintain the reliability and performance of the host</p>	<ul style="list-style-type: none"> Delivered Phase 2 to Honolulu, HI, control centers. Achieved government acceptance of Phase 3 at the WJHTC August

<p>and oceanic computer systems within the NAS so that future major outages of air traffic control services do not occur. HOCSR provides operation air traffic control capabilities in the mission areas of safety and capacity, and provides secondary benefits in the mission area of productivity/business practices.</p>	<p>20, 2001.</p> <ul style="list-style-type: none"> • Achieved government acceptance of Phase 3 at the FAA Aeronautical Center (FAAAC) August 23, 2001. • Completed installation of Phase 3 equipment at Denver, Key Site.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Complete government acceptance of Phase 3 at 13 en route operational sites (13 sites) 13/23. Complete Phase 4 keyboard video display terminal printer replacement procurement and GA for all 23 sites. Complete Phase 4 high-speed printer procurement for all 23 sites. 	<ul style="list-style-type: none"> Complete government acceptance of Phase 3 at all oceanic operational sites (3 sites) and the remaining 7 en route sites 10/23. Complete government acceptance of Phase 4 high-speed printer replacements at all 23 operational sites. 	<ul style="list-style-type: none"> Plan/deploy tape replacement and keyboard video display terminal. Sustain terminal cluster control unit (TCU) switches thru 2008.

(E) En Route Automation Program – En Route Communications Gateway

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Program – En Route Communications Gateway (ECG). Increase system capacity and expandability by minimizing the time that full operational services are not available, and by enabling the integration of new surveillance technology, the introduction of new interface standards and formats, and connection to additional remote equipment (e.g., radar). The ECG infrastructure will provide the automation system capacity and expandability required to support anticipated increases in air traffic and changes in the operational environment. By providing a flexible and expandable architecture, ECG must be deployed prior to the introduction of new services, systems, and capabilities.</p>	<ul style="list-style-type: none"> Completed SRR. Completed software development technical interchange meeting. Completed hardware design technical interchange meeting.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deliver equipment to WJHTC labs (PAMRI Support Facility (PSF), ECG maintenance support system (EMSS), standalone simulator (SAS), System Support Facility (SSF), and Instruction and Interoperability Facility (I²F)). 	<ul style="list-style-type: none"> Achieve WJHTC government acceptance. Deliver FAAAC equipment. Achieve FAAAC government acceptance. Deliver equipment to Key Site (Seattle ARTCC). 	<ul style="list-style-type: none"> Achieve Key Site government acceptance. Achieve ORD at 21 of 21 sites.

(F) En Route Automation Program – En Route System Modification and Voice Switching and Control System Electronic Module /Position Electronic Module Relocation

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>En Route Automation Program – En Route System Modifications (ERSM) and Voice Switching and Control System (VSCS) Electronic Module (VEM)/Position Electronic Module (PEM) Relocation. Provide product modifications and upgrades to replace aging or obsolete components while ensuring that national, agency, and customer requirements are met through cost effective methods capitalizing on technology evolution, supporting growth in NAS functionality and providing system flexibility.</p>	<ul style="list-style-type: none"> • Produced DSR display processing upgrade comparative analysis. • Completed developmental engineering effort for main display monitor (MDM) upgrade. • Conducted prototype demonstrations of display processing and MDM display replacement for air traffic and airway facilities. • Developed and demonstrated an engineering approach for a better and less costly solution for VEM/PEM relocation by combining the relocation with MDM replacement. Demonstrations of the improved approach to air traffic and airway facilities users resulted in positive agreement of both user groups. • Provided additional tape drive capabilities to sites to ensure that system availability requirements are met and that maintenance objectives can be achieved. • Provided test and training ring modification to allow physical isolation, or detachment, of support and operational DSR systems. This modification reduces risks associated with the physical coupling of networks used for simulation/training and air traffic control operations. • Provided enhanced direct access radar channel (EDARC) and EDARC system interface (ESI) maintainability analysis. The analysis proved that system availability and maintainability did not require system modification; sustainment and purchase of a limited quantity of components was the most cost-effective approach to extending the ESI system life.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Continue to develop DSR radar-console display processing technical upgrade. • Develop and begin deployment activities for MDM replacement, accompanied by relocation of VEM/PEM hardware. • Coordinate and demonstrate display and display thread CHI development and functional upgrade requirements definitions with Air Traffic 	<ul style="list-style-type: none"> • Complete development of display processing technical upgrade. • Continue development and deployment of storage and support devices. • Deploy MDM replacement. 	<ul style="list-style-type: none"> • Complete MDM replacement. • Deploy DSR radar-console display processing upgrade. • Provide storage and support device technology refresh/upgrades of hardware at ARTCCs and support sites. • Develop a refresh package and install a DSR data-console processor upgrade.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>Display System Replacement Evolution Team (ATDET), Professional Airways System Specialists (PASS), and National Air Traffic Controllers Association (NATCA).</p> <ul style="list-style-type: none"> • Develop design specifications and change packages for technology refresh of DSR storage and support devices. 		<ul style="list-style-type: none"> • Develop design specifications and change packages for refresh of the DSR backup channel.

Category 4: 4B02; Air Route Traffic Control Center Building Improvements/Plant Improvements;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Air Route Traffic Control Center (ARTCC) Modernization/Expansion – ARTCC Modernization. Support operational efficiency and effectiveness in maintaining the integrity of 21 ARTCCs, 3 CERAP facilities, and the ATCSCC, and ensure facility sustainment, modernization, and expansion to support air traffic control operations. This will aid in the integration and transition of new NAS systems within ARTCCs, CERAPs, and the ATCSCC, and management of the life cycle of these facilities.</p>	<ul style="list-style-type: none"> • Funded Control Systems International-TAC (CSI-TAC) contract, installation, and implementation of fire alarm annunciation system at 21 centers. • Funded chiller replacements at 4 sites. • Funded administration wing rehabilitation/expansion at 1 site. • Funded sustainment projects at all 21 centers. • Funded various headquarter contracts for technical and programmatic support. • Provided funding to support FAA Telecommunications Infrastructure (FTI) equipment area modernization requirements. • Established en route facilities and building systems (EFABS) product team; formalized lines of communication with en route users. Reprioritized remaining ARTCC modernization projects. <p>Note: These funded accomplishments are activities not completed as reported by ATS. Agreement could not be reached to move these unaccomplished items to FY 2002.</p>

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Modernization/Sustainment: <ul style="list-style-type: none"> ○ Modernize air traffic control automation wing 2nd floor and M-1 control room at 2 sites ○ Modernize/renovate M-1 control room at 2 sites ○ Identify and fund mini-modification facility sustainment projects at 21 sites ○ Manage the implementation of 12 ARTCC fire alarm projects • Transition/Integration Management: <ul style="list-style-type: none"> ○ Develop standard ARTCC layout drawings and standard transition plan and initiate site-specific end-state drawings 	<ul style="list-style-type: none"> • Modernization/Sustainment: <ul style="list-style-type: none"> ○ Modernize air traffic control automation wing 2nd floor and M-1 control room at 2 sites ○ Modernize/renovate M-1 control room at 1 site ○ Identify and fund mini- modification facility sustainment projects at 21 sites ○ Manage the implementation of 9 ARTCC fire alarm projects • Transition/Integration Management: <ul style="list-style-type: none"> ○ Complete remaining end-state site-specific drawing revisions ○ Conduct facility administrative space requirements analysis 	<ul style="list-style-type: none"> • Modernization/Sustainment: <ul style="list-style-type: none"> ○ Modernize air traffic control automation wing 2nd floor and M-1 control room at 5 sites ○ Modernize/renovate M-1 control room only at 6 sites ○ Modernize administrative wing rehabilitation/expansion at 5 sites ○ Identify and fund mini- modification facility sustainment projects at 21 sites ○ Manage the implementation of 21 ARTCC fire alarm projects • Transition/Integration Management: <ul style="list-style-type: none"> ○ Manage the smooth transition and integration

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> ○ Initiate an integrated resource requirement document for en route facilities NAS system deployment and facility modernization. 	<ul style="list-style-type: none"> ○ Manage the smooth transition and integration of the NAS system and the en route facility 	<ul style="list-style-type: none"> of the NAS system and the en route facility

Category 4: 4B03; Air Traffic Management;

(A) Air Traffic Management – Air Traffic Management Functionality Development/Deployment – Departure Spacing Program

(B) Air Traffic Management – Traffic Flow Management Infrastructure – Infrastructure Modernization

(A) Air Traffic Management – Air Traffic Management Functionality Development/Deployment – Departure Spacing Program

Primary Goal: 2.1/2.1.2

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Air Traffic Management – Air Traffic Management (ATM) Functionality Development/Deployment – Departure Spacing Program (DSP). Continue development of the DSP prototype and eventual integration of DSP functionality into a modernized TFM infrastructure, which will result in a reduction of system-wide delays while facilitating achievement of CDM and free flight operating concepts.</p>	<ul style="list-style-type: none"> • Achieved operational DSP at David J. Hurley ATCSCC. • Deployed DSP at 3 additional New York facilities. • Deployed Phase I at Boston ARTCC. • Achieved operational barcode processing capability for flight strips at 7 New York area ATCTs, significantly reducing tower workload during periods of heavy departure activity.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Continue operation and mandated expansions of DSP prototypes at the Boston ARTCC and Washington ARTCC. • Continue enhancements and software upgrades to DSP at existing facilities. • Develop and utilize DSP integrations and Operations Lab in northeast corridor operations concept refinement. 	<ul style="list-style-type: none"> • Sustain DSP basic capability at existing facilities. • Integrate DSP operations with Washington ARTCC—inclusive of departure positions in associated facilities. • Integrate departure positions in associated facilities. • Upgrade lab facility development to evaluate NAS expansion. • Improve entire existing DSP system operations. • Begin analysis of COTS/NDI hardware and software and systems necessary to work in conjunction with TFM infrastructure and NAS infrastructure to support DSP operations. 	<ul style="list-style-type: none"> • Conduct testing and provide additional sustainment of northeast corridor. • Research and evaluate NAS expansion of DSP.

(B) Air Traffic Management – Traffic Flow Management Infrastructure – Infrastructure Modernization

Primary Goal: 2.1/2.1.2, 2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Air Traffic Management – Traffic Flow Management (TFM) Infrastructure – Infrastructure Modernization. Implement the required TFM infrastructure modifications and enhancements to support increased demand for flight planning data exchange services.	<ul style="list-style-type: none"> No current FY 2001 funding to accomplish goals. Planned future development and initiated systems engineering plan for TFM modernization/technology refresh.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Provide planning, requirements definition for platform development, communications efficiency studies, and development of software architecture requirements (current goals funded). 	<ul style="list-style-type: none"> Continue hardware refresh, software redesign and development, and integration of standalone prototype capability. 	<ul style="list-style-type: none"> Refresh current field site workstations through site planning, analysis, and key site implementation. Database management system development consistent with projected capabilities, planned hardware and software, and communications requirements. Re-engineer TFM architecture so that it supports improved access to TFM information and integration of standalone capabilities.

Category 4: 4C01; Critical Telecommunications Support;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Critical Telecommunications Support (CTS). Improve system efficiency and effectiveness by providing changes to existing telecommunications systems at over 5,000 facilities within the NAS. CTS provides funds for air traffic communications diversity, non-programmed telecommunications additions, moves, modifications, and emergency requirements.	<ul style="list-style-type: none"> Installed emergency circuits for operations at Northwest Mountain Region after 2001 earthquake. Replaced wind damaged Alaska Region radome and antenna. Funded emergency and unplanned telecommunications requirements.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Install 20 new operational circuits for ATS mission support. Upgrade telecommunications interfaces in ARTCCs. Relocate and add operational 	<ul style="list-style-type: none"> Install 15 new operational circuits for ATS mission support. Provide telecommunications diversity at 10 remote sites. Relocate and add operational 	<ul style="list-style-type: none"> Provide new operational circuits as required for ATS mission support. Relocate and add operational telecommunications services as required by airspace reconfigurations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>telecommunications services required by airspace reconfigurations.</p> <ul style="list-style-type: none"> • Provide emergency telecommunications restoration activities. 	<p>telecommunications services required by airspace reconfigurations.</p> <ul style="list-style-type: none"> • Provide emergency telecommunications restoration activities. 	<ul style="list-style-type: none"> • Provide telecommunications diversity as required. • Continue to provide emergency telecommunications restoration activities and “pop-up” requirements from ATS.

Category 4: 4C02; Federal Aviation Administration Telecommunications Infrastructure;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Federal Aviation Administration (FAA) Telecommunications Infrastructure (FTI). Improve system efficiency by integrating operational telecommunications services and by providing highly reliable telecommunications that are critical to the NAS. These services will provide lower costs, improved bandwidth utilization, improved flexibility and security, and modern business processes.</p>	<ul style="list-style-type: none"> • FTI in program acquisition phase.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Award FTI contract. • Complete development of telecommunications information management system (TIMS) ordering capability for FTI. • Complete ARTCC telecommunications modernization for FTI at New York Center. 	<ul style="list-style-type: none"> • Achieve in-service decision for FTI. • Achieve security certification and authorization (SCAP). • Complete development of integrated business system and network manager user interface. • Establish FTI telecommunications infrastructure for inter air traffic control center backbone at 22 en route facilities. • Initiate transition for leased interfacility NAS communications system (LINCS), data multiplexing network (DMN), and national airspace data interchange network (NADIN). 	<ul style="list-style-type: none"> • Initiate transition to FTI for FAA Telecommunication Satellite (FAATSAT) in 2004. • Initiate transition to FTI for Hawaiian LINCS in 2005. • Complete transition for NADIN in 2005. • Initiate transition to FTI for BWM in 2005. • Complete transition for FAATSAT and Hawaiian LINCS in 2006. • Complete transition for DMN and LINCS in 2007.

Category 4: 4C03; Air-to-Ground Communications Infrastructure;

- Communications Facilities Enhancement – Expansion
 - Communications Facilities Enhancement – Limited Radio Replacement Program
- Communications Facilities Enhancement – Air-to-Ground Communications Radio Frequency Interference Elimination
 - Backup Emergency Communications – Replacement
 - Radio Control Equipment

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status
<p>Air-to-Ground (A/G) Communications Infrastructure Programs. Enhance operational efficiency and effectiveness through planned improvements to the A/G communications infrastructure that include replacement of aging and increasingly unreliable equipment, associate sites, and facility improvements, including the establishment of new facilities intended to broaden communications coverage.</p>	<ul style="list-style-type: none"> • Communications facilities enhancement (CFE) procured 484 replacement radios, equipment racks, antennas, and towers. • Conducted CFE site preparation at 8 sites. • Procured and installed RFI equipment to maintain existing communications infrastructure. • Continued backup emergency communications (BUEC) systems integration, site preparation, and installation of 100 channels at 3 ARTCCs (completing 2 of the 3). • Procured radio control equipment (RCE) for new requirements, continued software upgrades, and installed 200 channels.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure CFE 375 replacement radios, equipment racks, antennas, and towers. • Deliver CFE equipment for the next 8 choke point sectors. • Procure and install RFI equipment to maintain existing communications infrastructure. • Continue BUEC systems integration, site preparation, and installation. Complete 1 ARTCC. • Procure RCE for new requirements, continue software upgrades, and install 200 channels. 	<ul style="list-style-type: none"> • Procure CFE 375 replacement radios, equipment racks, antennas, and towers. • Conduct CFE site preparation at 12 sites. • Procure and install RFI equipment to maintain existing communications infrastructure. • Continue BUEC systems integration, site preparation, and installation. Complete 3 ARTCCs. • Install 150 RCE channels. 	<ul style="list-style-type: none"> • Procure CFE 375 replacement radios, equipment racks, antennas, and towers. • Conduct CFE site preparation at 82 sites. • Procure and install RFI equipment to maintain existing communications infrastructure • Continue BUEC systems integration, site preparation, and installation. Complete 10 ARTCCs.

Category 4: 4C04; Voice Recorder Replacement Program;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Voice Recording Replacement Program (VRRP). Improve NAS system efficiency by replacing aging analog voice recording systems with modern digital voice recording systems (DVRS). DVRSs enable air traffic controllers to effectively record all voice communications between the controllers, pilots, and other ground-based air traffic control facilities, meeting the statutory requirement.</p>	<ul style="list-style-type: none"> • Replaced an additional 29 of 530 voice recording systems.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Replace an additional 68 of 530 voice recording systems. 	<ul style="list-style-type: none"> • Replace an additional 62 of 530 voice recording systems. 	<ul style="list-style-type: none"> • Replace remaining 25 of 530 voice recording systems in 2004. • Perform 36 of 345 retrofits to previously delivered systems to bring them up to current hardware and software configurations in 2004. • Award follow-on contract to perform remaining 309 of 345 retrofits to previously procured systems to bring them up to current hardware and software configurations in FY 2005–2007, which will complete all the replacements planned for VRRP.

Category 4: 4C05; National Airspace System Infrastructure Management System;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): 5.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Infrastructure Management System (NIMS) – Phase 2. Establish a National Operational Control Center (NOCC) and 3 strategically located operations control centers (OCC) to centralize information and technical expertise. Field a COTS-based information system that consists of distributed computers, integrated software and database applications, remote monitoring, and control capabilities. NIMS will provide the necessary tools to FAA maintenance personnel to support ATS in meeting demand for increasing services with diminished resources while maintaining safety.</p>	<ul style="list-style-type: none"> • Achieved IOC for 3 OCCs. • Consolidated 7 general NAS maintenance control centers (GMCC) into OCCs. • Completed 7% of the system.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Achieve IOC for enterprise manager at NOCC and 3 OCCs. • Consolidate 12 GMCCs into OCCs. • Initiate technology refresh of Maintenance Data Terminals. • Begin transition of fielded remote maintenance monitoring systems (RMMS) to NIMS. • Completed 8% of the system; total completed: 15%. 	<ul style="list-style-type: none"> • Complete 1 GMCC consolidation. • Deploy facility maintenance logging tools to eliminate duplicate data entries. Overall cost and performance metrics utility and accuracy will be increased, enabling more objective capital investment decisions and maximizing the return on the investment. • Continue technology refresh of Maintenance Data Terminals. • Continue transition of fielded RMMS to NIMS. • Completed 11% of the system; total completed: 26%. 	<ul style="list-style-type: none"> • Complete deployment of NIMS functionality to 33 service operations centers (SOC) and over 300 work centers. • Retire legacy maintenance processor subsystem (MPS) hardware and software. • Continue technology refresh of Maintenance Data Terminals. • Initiate NIMS technology refresh for Phase 2 components. • Completed 74% of the system; total completed: 100%.

Category 4: 4C06; Flight Service Station Modernization;

Primary Goal: 6.1

Secondary Goal(s): 2.1

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Flight Services Facilities (FSS) – Automated Flight Service Stations (AFSS)</p>	<ul style="list-style-type: none"> • Completed UPS installations at 6 sites.

<p>Facilities Sustainment. Optimize customer satisfaction with the safety, security, and efficiency of the air transportation system in the United States. This objective requires planning, evaluating, and controlling the system in such a manner as to enable optimizing customer satisfaction, providing funding options together with advantages and disadvantages, and then accomplishing modifications, sustainment actions, and expansions that address customer satisfaction.</p>	<ul style="list-style-type: none"> Completed HVAC upgrades at 3 sites. Completed infrastructure improvements at 10 sites, including accessibility improvements, carpet replacement, facility rehabilitation, and lightning protection.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Identify new systems to acquire in order to result in optimum customer satisfaction. Complete UPS installations at 9 sites. Complete HVAC upgrades at 3 sites. Perform minor infrastructure improvements at 10 sites, including roof and fire light safety, to OSHA standards. Improve NAS system efficiency by procuring power conditioning systems for the AFSS to alleviate power problems and accommodate any new load requirement from future systems. Upgrade and sustain leased and owned flight service stations (FSS) on a priority basis. 	<ul style="list-style-type: none"> Accomplish acquisitions that are most effective in terms of results. Complete UPS installations at 9 sites. Complete HVAC upgrades at 3 sites. Perform minor improvements at 10 sites, including roof and fire light safety, to meet OSHA standards. Improve NAS system efficiency by procuring power conditioning systems for the AFSS to alleviate power problems and accommodate any new load requirement from future systems. Upgrade and sustain leased and owned FSSs on a priority basis. 	<ul style="list-style-type: none"> Accomplish procurements that are most effective in terms of results. Complete UPS installations at 20 sites. Complete HVAC upgrades at 28 sites. Perform major rehabilitation at 30 sites, including roof and fire light safety, to OSHA standards Improve NAS system efficiency by procuring power conditioning systems for the AFSS to alleviate power problems and accommodate any new load requirement from future systems. Upgrade and sustain leased and owned FSSs on a priority basis.

Category 4: 4C07; Flight Services Automation System Operational and Supportability Implementation System;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Flight Service Automation System (FSAS) Operational and Supportability Implementation System (OASIS). Provide on-going operational support, enabling flight service specialists to more efficiently provide weather and flight information to GA pilots. The existing FSAS equipment is 1980s technology and is difficult to maintain and support. OASIS will provide significant improvement in the CHI by replacing the existing FSAS display with a graphical user interface. Additionally, new ergonomic equipment consoles will be installed.</p>	<ul style="list-style-type: none"> Continued software development and testing.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Procure 15 systems and install 1 system. • Complete IOT&E. 	<ul style="list-style-type: none"> • Continue to procure and install OASISs. 	<ul style="list-style-type: none"> • Procure and install remaining OASISs. • Install OASIS lease service last system for operational use (2005).

Category 4: 4C09; Flight Service Station Switch Modernization;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Automated Flight Service Station Voice Switches. Provide pilots with significantly improved access to flight planning, weather, communications, and emergency services deemed essential to the conduct of safe and efficient flight. This modernization program will replace the aging, non-supportable voice switches at 61 AFSSs throughout the NAS and at 14 non-AFSSs located in Alaska. The principle enhancement of this program is a call transfer capability, enabling AFSSs to transfer A/G calls to other AFSSs during periods of low demand. When fully implemented, the call transfer capability will significantly reduce operational costs. Through the deployment of modern digital voice switches, the Automated FSS Voice Switches Program will significantly improve the operational and maintenance aspects of flight service operations.</p>	<ul style="list-style-type: none"> Delivered 4 of 8 small tower voice switch (STVS) systems to FSSs in Alaska.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Deliver 4 of 8 STVS systems to FSSs in Alaska, which completes all FSS voice switch replacements in Alaska. Award automated FSS voice switches contract. 	<ul style="list-style-type: none"> Deliver 3 of 3 automated FSS voice switches testing systems and accept system into the NAS. 	<ul style="list-style-type: none"> Conduct OT&E and IOT&E in 2004. Install 7 of 61 voice switches to AFSSs throughout the NAS in 2005. Install an additional 11 of 61 voice switches to AFSSs throughout the NAS in 2006. Install an additional 11 of 61 voice switches to AFSSs throughout the NAS in 2007.

Category 4: 4C10; Alaskan National Airspace System Interfacility Communications System;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Alaskan National Airspace System (NAS) Interfacility Communications System (ANICS) Satellite Network – Phase II. Improve system efficiency of the NAS by installing a new satellite telecommunications facility at locations where the FAA has experienced poor performing telecommunications. The increase of telecommunications availability provided by implementing ANICS</p>	<ul style="list-style-type: none"> Purchased and engineered 3 Phase II ANICS sites. Installed 1 new Phase II ANICS site. Completed Phase II design to include all OSHA requirements. Completed standardized drawing package.

sites corresponds to a direct increase in the availability of the NAS and improves air safety in Alaska.	
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Purchase and engineer 8 Phase II ANICS sites. • Install 8 new Phase II ANICS sites. • Bring online 9 Phase II ANICS sites. • Improve communications at 9 sites. • Reduce outages from almost 15 hours per month to ¾ of an hour. • Increase telecommunications availability from 98% to 99.9% for each new site. • Save approximately \$17,000 per year for each site brought on line. 	<ul style="list-style-type: none"> • Purchase and engineer 2 Phase II ANICS sites. • Install 8 new Phase II ANICS sites. • Bring online 8 Phase II ANICS sites. • Improve communications at 8 sites. • Reduce outages from almost 15 hours per month to ¾ of an hour. • Increase telecommunications availability from 98% to 99.9% for each new site. • Save approximately \$17,000 per year for each site brought on line. 	<ul style="list-style-type: none"> • Install 1 new Phase II ANICS site. • Bring online 1 Phase II ANICS site. • Improve communications at 1 site. • Reduce outages from almost 15 hours per month to ¾ of an hour. • Increase telecommunications availability from 98% to 99.9% for each new site. • Save approximately \$17,000 per year for each site brought on line. • Correct any installation discrepancies. • Correct Joint Acceptance Inspection (JAI) discrepancies. • Cutover of circuits to operational sites.

Category 4: 4C11; Electrical Power Systems – Sustain/Support;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Power Systems Sustained Support. Improve system efficiency by providing reliable quality power for the NAS. These power system sustainment activities will provide a more reliable standby source of quality power to support the continuous delivery of critical and essential air traffic control services within the NAS.	<ul style="list-style-type: none"> • Improved power in 5 ATCTs and TRACON facilities in advance of STARS. • Improved power in 5 ARTCCs. • Improved power in 7 other facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Install UPS at 13 of the 176 TRACONS. • Replace ARTCC critical essential power system batteries at 12 of the 21 ARTCCs. • Improve ARTCC critical essential power 	<ul style="list-style-type: none"> • Install UPS at 12 of the 176 TRACONS. • Replace ARTCC critical essential power system batteries at 9 of the 21 ARTCCs. • Improve ARTCC critical essential power 	<ul style="list-style-type: none"> • Complete training facility at Oklahoma City, OK (FY 2004 or FY 2005). • Improve power at 100 additional facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<p>system at 5 of the 21 ARTCCs.</p> <ul style="list-style-type: none"> • Improve FAA power cable at 30 of the 77 high activity airports. • Replace 66 engine generators out of the 2,250 engine generator inventory. 	<p>system at 5 of the 21 ARTCCs.</p> <ul style="list-style-type: none"> • Improve FAA power cable at 30 of the 77 high activity airports. • Replace 60 engine generators out of the 2,250 engine generator inventory. 	

Category 4: 4C12; National Airspace System Recovery Communications;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Recovery Communications (RCOM) Program. Provide system efficiency to the NAS by ensuring that during emergencies, the command and control communications (C3) will be able to provide time critical public safety and NAS information between the Administrator, the Administrator’s staff, key regional managers, the DOT, and other national level executive personnel.</p>	<ul style="list-style-type: none"> • Completed 39 of 39 RCOM high frequency single side band (HFSSB) upgrades. • Procured 154 of 408 secure telephone equipment (STE) units. • Initiated RFI for the VHF/frequency modulated (FM) programs. • Completed C3 HF Radio Sole Source Proof of Concept Test. • Established Defense Messaging System (DMS) System Architecture.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Deliver DMS equipment to 39 out of 39 sites. • Deliver 154 of 264 STEs. • Establish VHF operational test network. • Award VHF/FM contract. • Upgrade and enhance Satellite Telephone Network phones at 39 of 39 sites. • Upgrade and enhance automated notification system (ANS) equipment at 15 of 15 sites. • Deliver 2 out of 2 secure conferencing systems. • Install C3 high frequency operational test networks in 4 out of 4 networks. 	<ul style="list-style-type: none"> • Deliver 66 out of the remaining 112 STEs. • Deliver 39 VHF/FM handhelds out of 3036. • Deliver 109 VHF/FM repeaters out of 600. • Deliver 109 VHF/FM telephone interconnect units out of 600. • Deliver 84 out of 200 VHF/FM base stations. • Deploy 1 out of 22 ARTCC C3 high frequency systems. • Enhance and upgrade Communications Support Team (CST) equipment. 	<ul style="list-style-type: none"> • Complete the deployment of the VHF/FM network. • Complete the procurement of C3 high frequency systems. • Implement P3I.

Category 4: 4C13; Aeronautical Center Infrastructure Modernization;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): 6.1/6.1.2

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aeronautical Center Infrastructure Modernization. Improve operational efficiency and effectiveness by providing up-to-date facilities and supporting</p>	<ul style="list-style-type: none"> • Awarded contract for the 1st phase of the structural upgrade for the Logistics Support Facility (LSF).

<p>infrastructure that meet the needs of FAA mission support organizations located at the Aeronautical Center.</p>	<ul style="list-style-type: none"> • Began construction of the 1st phase. • Completed design work for the next construction phase. • Purchased and installed network equipment to expand the telecommunications system bandwidth capability. • Upgraded the FAAAC's telephone switching system through the NORTEL switch software upgrade.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Complete construction of the 1st construction phase of the LSF structural upgrade and begin 2nd phase. • Award contract for the 2nd phase of the LSF structural upgrade. • Install telecommunications equipment, including telephone system cabling, network equipment, and NOTEL telephone switch upgrade. • Design and award 1st phase of Civil Aeromedical Institute (CAMI) Building renovation. 	<ul style="list-style-type: none"> • Complete 2nd phase of the LSF structural upgrade, complete design for 3rd phase, and begin 3rd phase construction. • Install telecommunications equipment, including telephone system cabling, network equipment, and NOTEL telephone switch upgrade. • Design and award 2nd construction phase of CAMI renovation. 	<ul style="list-style-type: none"> • Complete design and construction of remaining phases of the LSF structural upgrade. • Complete installation of telecommunications systems expansion and upgrade. Upgrade NORTEL switch. • Begin next generation telecommunications system modernization. • Complete design and construction of remaining phases of the CAMI Building renovation. • Design and construct Systems Training Building renovation. • Construct storm sewer expansion. • Design and construct the 1st phase of the Multi-Purpose Building.

Category 4: 4C14; Frequency and Spectrum Engineering;

- **National Airspace System Spectrum Engineering Management – National Airspace System Spectrum Engineering Sustained Support**
- **National Airspace System Spectrum Engineering Management – Frequency Interference Support/Resolution**

Primary Goal: 2.1/2.1.1, 2.1.2, 2.1.4

Secondary Goal(s): 1.1/1.1.1, 1.1.2, 1.1.3, 1.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Frequency and Spectrum Engineering Programs. Improve system efficiency in the NAS with careful and detailed frequency planning necessary to ensure that current and future aeronautical safety systems are provided adequate radio spectrum in which to operate. In addition, spectrum management support must</p>	<ul style="list-style-type: none"> • Installed GPS RFI/DF systems on 2 flight inspection aircraft. • Supported FAA LAAS spectrum

<p>be provided to both government and non-government offices involved in operation of current systems and to organizations planning new aeronautical systems.</p>	<p>requirements.</p> <ul style="list-style-type: none"> • requirements. Supported FAA Capstone spectrum • Increased available VHF A/G communication channels for air traffic control to address spectrum congestion. • Provided engineering data to develop international standards for NEXCOM VHF digital link (VDL) – model 3 frequency engineering criteria.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Provide frequency engineering for ASDE-x. • Achieve consensus for a worldwide frequency allocation for LAAS. • Replace analog radios with next generation digital communication radios. • Complete studies and tests on the effects of ultra-wideband (UWB) devices on GPS*. • Support ADS-B spectrum requirements. • Support required spectrum studies for the 2003 World Radio communication Conference (WRC). 	<ul style="list-style-type: none"> • Support preparations for the WRC 2003. • Complete frequency and spectrum studies for ICAO to protect GNSS frequency bands. • Develop frequency assignment and airspace evaluation criteria for the ICAO approved ground-based augmentation system (GBAS). • Finalize NEXCOM transition plan. • Analyze radio spectrum technical and capacity issues associated with ADS-B. 	<ul style="list-style-type: none"> • Modernize and develop equipment for more efficient radio frequency engineering. • Improve RFI capabilities throughout the NAS. • Develop the next generation RFI van design. • Develop the next generation automated frequency management system. • Support preparations for WRC 2006.

* In FY2001, Congress mandated \$2.6 million to study the effects of UWB devices on aeronautical systems (including GPS). Funds were transferred to “ASR under project code 11270104, CIP # N120103.” Tests may include bench tests and flight tests, expanding on previous tests of aeronautical systems and systems that have not been tested to date. The tests may also include UWB signals that have not been previously used, and should provide additional information on aggregate effects of UWB devices. The results obtained will be used to provide the basis for rules for UWB devices.

Category 5: Improve the Efficiency of Mission Support

Category 5: 5A01/5A02; National Airspace System Improvement of System Support Laboratory /Technical Center Facilities;

- National Airspace System Improvement of System Support Laboratory
- Technical Center Facilities

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>William J. Hughes Technical Center (WJHTC) System Support Laboratory. Improve system efficiency in the NAS by providing the agency's laboratory infrastructure at the WJHTC for the development, testing, upgrades, and 2nd level field support of CIP programs. Each CIP program supported by these laboratories contributes to one or more of the FAA and DOT Goals.</p>	<ul style="list-style-type: none"> • Sustained and supported FAA WJHTC Laboratories and Test Facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003	Key Events FY2004-2007
<ul style="list-style-type: none"> • Sustain and support FAA WJHTC Laboratories and Test Facilities. 	<ul style="list-style-type: none"> • Sustain and support FAA WJHTC Laboratories and Test Facilities. 	<ul style="list-style-type: none"> • Sustain and support FAA WJHTC Laboratories and Test Facilities.

Category 5: 5A03; Technical Center Building and Plant Support;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status
<p>William J. Hughes Technical Center (WJHTC) Infrastructure Sustainment. Improve system efficiency of the NAS by refurbishing and replacing aging, obsolete facilities, systems, and equipment. These activities will ensure the WJHTC's ability to sustain its physical structures in its efforts to develop and support a safe, secure, and efficient global aviation system.</p>	<ul style="list-style-type: none"> • Expanded the WJHTC's energy management system. • Completed the Building 301 interior renovation design. • Completed Phase 1 of a base-wide central metering system.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Perform infrastructure upgrades at 5 R&D facilities at the WJHTC. Upgrades include the 	<ul style="list-style-type: none"> • Replace the exterior glazing in Building 301. 	<ul style="list-style-type: none"> • Complete Phase I of the Building 300 mechanical equipment replacement program.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
refurbishment or replacement of HVAC systems, electrical power panels, lighting systems, and exterior glazing, where necessary. <ul style="list-style-type: none"> • Complete the Building 301 interior renovation. • Complete the Building 303 emergency generator synchronization. 	<ul style="list-style-type: none"> • Replace the Building 303 boiler stack. • Complete the Building 300 interior upgrade design. 	<ul style="list-style-type: none"> • Renovate Building 275. • Replace electrical transformers at various WJHTC facilities. • Complete roadway improvements at WJHTC. • Expand Building 207. • Replace 1 refrigeration machine in Building 303.

Category 5: 5A05; Department of Defense/Federal Aviation Administration Facilities Transfer;

Primary Goal: 6.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status
<p>Department of Defense (DoD)/Federal Aviation Administration (FAA) Air Traffic Control Facility Transfer/Modernization – Original Program. Achieve the optimum level of customer satisfaction that should result from acquiring new systems (telecommunications, microwave, power supply, short-term emergency power, security, etc.) needed for providing essential air traffic data to FAA air traffic controllers covering transferred DoD airspace now controlled by the FAA.</p>	<ul style="list-style-type: none"> • Modernized facilities at DoD transferred locations: McClellan/Camp Kohler/Sacramento TRACON; El Toro; Castle; Skaggs Island; Barbers Point, HI; Kalaeloa Airport, HI; K.I. Sawyer; Vandenburg/Pt Mugu/Edwards, CA; and Pt Lay, AK.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Identify new acquisitions that should result in optimum customer satisfaction. • Complete Vandenburg/Pt Mugu/Edwards, CA (telecommunications, microwave, power 	<ul style="list-style-type: none"> • Acquire new systems that are the most effective in terms of results. • Accomplish projects identified by the DoD and approved by Congress for FY 2003. 	<ul style="list-style-type: none"> • Acquire new systems that are the most effective in optimizing total customer satisfaction. • Accomplish projects identified by the

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
supply, short-term emergency power, security, etc.). <ul style="list-style-type: none"> • Complete the communications project at Pt. Lay, AK. • Remote air traffic data from Point Mugu, CA, to either the Santa Barbara TRACON/Southern California TRACON/Los Angeles Center. • Install radar equipment at 29 Palms and El Centro. • Support the air traffic operations of Ft. Sill, OK, Army Radar Approach Control (ARAC), pending Congressional approval. 		DoD and approved by Congress for FY 2004 through FY 2007.

Category 5: 5A09; Federal Aviation Administration Buildings and Equipment;

Primary Goal: 6.1/6.1.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
Federal Aviation Administration (FAA) Buildings and Equipment Sustain Support – Modernize/Improve. Achieve the optimum level of customer satisfaction that should result from sustainment actions, expansions, and modifications, which also includes improving NAS efficiency by providing facility replacements and upgrades to reduce maintenance requirements associated with an aging infrastructure.	<ul style="list-style-type: none"> • Repaired/replaced cable, access roads, grounds, and roofs at the most critical VORs. • Repaired/replaced electrical systems, flooring, and plant equipment at the most critical ASRs. • Established/improved lightning, grounding, bonding, and shielding at limited remote transmitter/receiver locations.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Identify the future year sustainment actions, expansions, and modifications that should result in optimum customer satisfaction. • Replace/upgrade outdated radio communication link equipment HVAC systems for ARSRs and ASRs. • Replace/relocate power and control cabling at 	<ul style="list-style-type: none"> • Accomplish the modifications, sustainment actions, and expansions that are most effective in terms of results. • Replace/upgrade outdated radio communication link equipment and HVAC systems for ARSRs and ASRs. • Replace/relocate power and control cabling at 	<ul style="list-style-type: none"> • Accomplish the modifications, sustainment actions, and expansions that are most effective in terms of results. • Continue repair and upgrades for the most in-need/critical facilities. • Continue repair and upgrade of buildings for compliance with laws and directives with the

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
various navigation and landing system locations. <ul style="list-style-type: none"> • Repair/replace the most dilapidated shelters for VOR equipment, radar, radar microwave links, ILS, engine generators, and communications outlets. • Repair/improve facility access roads. • Make facility modifications to improve building accessibility and provide safety upgrades. 	various navigation and landing system locations. <ul style="list-style-type: none"> • Repair/replace the most dilapidated shelters for VOR equipment, radar, radar microwave links, ILS, engine generators, and communications outlets. • Repair/improve facility access roads. • Make facility modifications to improve building accessibility and provide safety upgrades for unstaffed facilities. 	objective to reduce the decline in facility infrastructure condition. <ul style="list-style-type: none"> • Continue power and HVAC repairs/replacements to facilitate the installation of new equipment, as appropriate.

Category 5: 5A10; Air Navigational Aids and Air Traffic Control Facilities (Local Projects);

Primary Goal: 1.1/1.1.3

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Continued General Support – Air Navigation Aids Facilities – Local Projects. Address F&E emergencies that arise during the course of daily operations and that require immediate attention to ensure the continued safe operation of air navigation facilities and air traffic control equipment. Capabilities include communications, surveillance, weather information, and air traffic control facilities.</p>	<ul style="list-style-type: none"> • Performed recurring emergency installations of navigational aid and air traffic control equipment.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Perform recurring emergency installations of navigational aid and air traffic control equipment. 	<ul style="list-style-type: none"> • Perform recurring emergency installations of navigational aid and air traffic control equipment. 	<ul style="list-style-type: none"> • Perform recurring emergency installations of navigational aid and air traffic control equipment.

Category 5: 5A11; Computer-Aided Engineering Graphics Modernization;

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Computer-Aided Engineering Graphics (CAEG) Replacement. Improve system efficiency at all regions and centers through the use of enhanced computer-aided design and drafting (CADD) systems coupled with a web-based document management system to improve the FAA’s ability to implement capital improvements. The enhanced system will meet increasing user access needs by expanding the system and by providing a flexible system interface to a suite of state-of-the-art graphical modeling and analysis tools and to an underlying secure and reliable engineering library to augment the decision making process.</p>	<ul style="list-style-type: none"> • Increased CAEG system access by delivering 61 foundation and 35 specialized CADD software based on the Windows operating system. • Delivered 6 modern high-performance CAEG servers to replace slow and inefficient servers. • Completed the electronic document managing system (eDMS) pilot effort at 4 sites. • Delivered 17 plotters to replace high maintenance out-of-production plotters. • Delivered 3 modern scanners for imaging applications. • Completed eDMS drawing database and searchable web page application for National Standard Drawings and populated it with 350 drawing file images and intelligence out of 17,000 drawings. • Deployed radio coverage analysis system (RCAS) v10.2.1. • Completed development of training material for the airport system v1.0 (Part 77 Analysis tool). • Completed customization of MicroStation CADD engine to reflect FAA-Standard-002e (the FAA’s drawing standard) and commenced beta testing. • Instituted a web-base problem reporting system and national help desk for specialized applications. • Provided timely application of all Windows security patches and virus protections, preventing unauthorized system penetration and preventing system infestation of Code Red virus. Applied 30 Windows patches and 20 Internet server patches to each CAEG national server. • Achieved Bargaining Unit Acceptance of FAA-Standard-002e.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Field the airport system v1.0 with requisite training material and curriculum. • Upgrade airport system v1.0 to v2.0 to include connectivity to 7460-1 Aeronautical Case Studies; upgrade to Threshold Siting Analysis. • Migrate RCAS v10.2.1 to the Windows NT Platform and serve via CITRIX solution, increasing product availability. • Upgrade and increase CITRIX server licenses by 30% for additional access points to the RCAS and airport system applications. • Upgrade CAEG database engine to v Oracle9i to increase system access time, reliability, and maintainability. • Complete the AutoCAD CADD engine FAA-Standard-002e customization and begin beta testing. • 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. • Install eDMS and make fully operational at 5 implementation centers. • Replace 3 CAEG outdated (WorkStation Solution) backup systems. • Populate the eDMS with 3000 engineering drawing file images and intelligence of remaining 16,650 drawings. • Test new CADD licensing concept (Bentley Portfolio), offering enhanced management and flexibility in terms of breadth of application. 	<ul style="list-style-type: none"> • Install and fully implement the eDMS at the remaining 4 implementation centers. • Develop an eDMS (rev2) software upgrade to capture the standard drawing management business process quality control revisions and document management improvements. • Implement next generation of Microsoft operating system and CAEG servers. • Finish implementation of the CAEG backup and recovery plan. • 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. • Populate the eDMS with 3000 engineering drawing file images and intelligence of remaining 13,650 drawings. 	<ul style="list-style-type: none"> • Deploy eDMS software upgrades to capture commercial updates of the MicroStation Windows Operating System Office Suite and the MicroStation and AutoCAD CADD software as needed. • Start analysis of 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. • Populate the eDMS with remaining 13,350 engineering drawing file images and intelligence.

Category 5: 5A12; Information Technology Integration;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Federal Aviation Administration (FAA) Corporate System Architecture – Information Technology (IT) Integration. Improve operational efficiency and effectiveness by reducing the cost of delivering IT services without reducing service quality, and by optimizing IT decisions and resources across the agency.</p>	<ul style="list-style-type: none"> • Implemented an agency data management program. • Continued to improve selected FAA programs to integrate capability maturity model (iCMM) Level 3 and expanded process improvement effort to include additional programs to reach maturity level 2. • Continued to integrate improved processes for certifying software aspects of airborne and ground systems to ensure safety. • Developed and implemented an FAA IT Investment Analysis and Prioritization Plan to ensure the efficient investment of IT resources.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Continue to integrate improved processes for certifying software aspects of airborne and ground systems to ensure safety. • Broaden the process improvement effort to include more acquisition programs and accelerate the benefits realized in programs that have already been applying process improvement. • Enhance the FAA metadata repository from a limited IOC to a COTS solution with expanded capability. • Develop the Agency’s Business Planning And Portfolio Management initiatives. 	<ul style="list-style-type: none"> • Continue to integrate improved processes for certifying software aspects of airborne and ground systems to ensure safety. • Continue to broaden the process improvement effort to include more acquisition programs and accelerate the benefits realized in programs that have already been applying process improvement. • Implement the initiatives of the Agency’s Data Management Program. • Implement the initiatives of the Agency’s Business Planning and Portfolio Management Programs. 	<ul style="list-style-type: none"> • Continue to integrate improved processes for certifying software aspects of airborne and ground systems to ensure safety. • Continue to broaden the process improvement effort to include more acquisition programs and accelerate the benefits realized in programs that have already been applying process improvement. • Continue to implement the initiatives of the Agency’s Data Management Program. • Continue to implement the initiatives of the Agency’s Business Planning and Portfolio Management Programs.

Category 5: 5A14; Logistics Support Systems and Facilities;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Logistics Support Systems and Facilities – Asset and Supply Chain</p>	<ul style="list-style-type: none"> • Evaluated and implemented short-term solutions.

Management (ASCM). Improve operational efficiency and effectiveness throughout the agency by exercising effective control of assets and providing full life cycle management.	<ul style="list-style-type: none">• Purchased initial hardware and software.• Sustained legacy systems.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007
<ul style="list-style-type: none"> • Award systems integration contract. • Begin business process analysis and re-engineering. • Initiate software improvements to legacy software, including inventory and shipping and receiving. • Continue barcoding of new and legacy NAS systems. 	<ul style="list-style-type: none"> • Complete business process analysis and reengineering. • Implement baseline solution, including hardware and software acquisition. • Continue barcoding of new and legacy NAS systems. • Update cataloging and storage management software. 	<ul style="list-style-type: none"> • Complete customization of ASCM solution. • Fully deploy national system. • Train personnel. • Complete update of barcode inventory tracking, quality assurance, and help desk software. • Operate and maintain ASCM solution.

Category 5: 5A16; Facility Security Risk Management;

Primary Goal: 5.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status
<p>Facility Security Risk Management (FSRM). Improve and/or enhance physical security at all FAA staffed facilities in accordance with FAA Order 1600.69a. This order delineates requirements for physical security protective measures, and establishes standards, objectives, procedures, and techniques for the protection of FAA employees, agency property, facilities, contractors, and the public. This 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.</p>	<ul style="list-style-type: none"> • Awarded contract for X-ray screening equipment • Accredited 150 facilities. • Developed standard drawings for guardhouses. • Completed standard drawings for 7 types of facilities. • Completed Engineering Design Reference Manual. • Developed and distributed the Physical Security Awareness video. • Developed and distributed standard statement of work (SOW) for guards.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Upgrade and accredit 200 facilities. • Develop SOW for contract maintenance. • Start engineering design at 10 ARTCCs. • Complete impact and implementation with bargaining units. 	<ul style="list-style-type: none"> • Upgrade and accredit 17 facilities. 	<ul style="list-style-type: none"> • Continue to upgrade and accredit 625 Level I, II, III, and IV facilities.

Category 1: 5A17; Information Security;

Primary Goal: 5.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Information Security – Information Systems Security. Safeguard information assets.</p>	<ul style="list-style-type: none"> • Certified and authorized mission critical systems on the Presidential Decision Directive (PDD) 63 list. • Expanded the computer security incident response capability (CSIRC). • Implemented cost-effective countermeasures based on risk assessment reports and intrusion detection analysis of CSIRC data. • Conducted independent penetration testing.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007
<ul style="list-style-type: none"> • Certify and authorize mission critical systems on the PDD-63 list. • Expand the CSIRC. • Implement cost-effective countermeasures based on risk assessment reports and intrusion detection analysis of CSIRC data. • Conduct independent penetration testing. 	<ul style="list-style-type: none"> • Certify and authorize the remaining mission critical systems on the PDD-63 list. • Expand the CSIRC. • Implement cost-effective countermeasures based on risk assessment reports and intrusion detection analysis of CSIRC data. • Conduct independent penetration testing. 	<ul style="list-style-type: none"> • Certify and authorize agency mission support systems. • Implement cost-effective countermeasures based on risk assessment reports and intrusion detection analysis of CSIRC data. • Conduct independent penetration testing.

Category 5: 5A18; Distance Learning;

Primary Goal: 2.1/2.1.1, 2.1.2, 2.1.4, 2.1.5 Secondary Goal(s): 1.1/1.1.1, 1.1.2, 1.1.3, 1.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Distance Learning. Maintain/improve system efficiency by making more efficient and effective training delivery systems available to all NAS programs and at all FAA learning centers. Significantly reduce training time through increased use of proven self-paced computer-based instruction (CBI) multimedia instruction, thus reducing costs and increasing training opportunities. Significantly reduce training costs through increased use of CBI at the job site, thus reducing travel and per diem costs and travel time. Significantly increase training delivered through improved availability by</p>	<ul style="list-style-type: none"> • Identified system requirements and specifications for FY 2002-2004. • Converted all analog video courseware to digital versatile discs (DVD). • Completed CBI platform digital video upgrades at all remaining sites. • Completed upgrade of central system servers to support field sites.

publishing more CBI courses. In addition to improving system efficiency, this project will clearly protect system safety by making more training available, as well as more immediate and individualized training and more effective training for controllers and all FAA technical personnel.	
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Upgrade all Airway Facilities Learning Centers to CBI enhanced DVD platforms. • Deliver 10 new courses to all sites. • Deliver courses to support current NAS system rollouts and commissionings. 	<ul style="list-style-type: none"> • Upgrade ATRCC and TRACON Learning Centers to CBI enhanced DVD platforms. • Upgrade all Flight Standards Learning Centers to CBI enhanced DVD platforms. • Deliver 50 new courses to all sites. • Deliver courses to support current NAS system rollouts and commissionings. 	<ul style="list-style-type: none"> • Upgrade all remaining learning centers to CBI enhanced DVD platforms. • Maintain all learning centers' upgrades to current platforms required to support delivery of CBI training and simulations for all other NAS components in the CIP. • Deliver 200 new courses to all sites. • Deliver courses to support current NAS system rollouts and commissionings (refer to each specific NAS program for dates).

Category 5: 5A19; National Airspace System Training Facilities;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): 1.1/1.1.3, 1.1.4

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Training – Modernization. Maintain operational efficiency and effectiveness in air traffic control training by replacing the FAA’s outdated air traffic control tower cab training simulator with one that is more versatile and up-to-date with those currently used by aviation organizations throughout the world. Also, improve operational efficiency and effectiveness in air traffic control, airway facilities, airports, and regulatory standards training by (1) upgrading classrooms to provide a more effective, efficient presentation and a reduction in course delivery costs; (2) replacing outdated laboratory equipment with actual current field test equipment; and (3) improving communications between academy and student and administrative customers, resulting in significant operational time savings.</p>	<ul style="list-style-type: none"> • Identified tower cab simulator requirements. • IOC of Enhanced Debrief Stations. • Initial system implementation for Airway Facilities Laboratories and Simulation. • Initial implementation of hardware for FAA Information Superhighway for Training (FIST). • Program completion status: 47.5% completed.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • FOC of enhanced debrief stations. • IOC of tower cab bay 1 of 2. • IOC of classroom refurbishment, including conversion of course material to suitable format for digital bright radar indicator tower equipment (DBRITE), data processing subsystem (DPS), and Sony Display. • Install and test FIST software. 	<ul style="list-style-type: none"> • FOC of tower cab bay 1 of 2. • IOC of tower cab bay 2 of 2. • Continue implementation of classroom refurbishment with necessary course conversion for ILS, VORTAC, and DME. • Replace by-pass exam functions and hardware added to FIST. 	<ul style="list-style-type: none"> • FOC of tower cab bay 2 of 2. • FOC of classroom refurbishment and related course conversion for ATOS, SPAS, OPSS, ACRA, designee information network (DIN), Regulatory and Guidance Library (RGL), en route radar, OASIS en route flight advisory, DSR, STARS, air traffic control system, quality assurance, ARTS IIE/IIIE, airports, motor vehicle management, and air traffic training enhancement (ATTE) cadre courses. • FOC of FIST, increasing service capabilities. • Technology refresh for tower operating training system (TOTS)/explosive detection system (EDS). • Complete technology refresh for classrooms. • Complete technology refresh for labs and simulation. • Complete technology refresh for FIST.

Category 5: 5A21; Program Support Leases;

Primary Goal: 2.1/2.1.5 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Continued General Support – Program Support Leases. Assure efficient application of FAA and aerospace resources by providing payment for existing leases for land and space that directly support NAS operational facilities and critical components of an aerospace transportation system that meet the needs of users.</p>	<ul style="list-style-type: none"> Funded over 3,600 existing leases for land and space that directly support NAS operational facilities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Fund over 3,600 existing leases for land and space that directly support NAS operational facilities. 	<ul style="list-style-type: none"> Fund over 3,600 existing leases for land and space that directly support NAS operational facilities. 	<ul style="list-style-type: none"> Fund over 3,600 existing leases for land and space that directly support NAS operational facilities.

Category 5: 5A22; Logistics Support Services;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Regional/Center Logistics Support Services Program. Improve system efficiency by providing real estate, acquisition, and material management functions at regions and centers, as required, to field modernized NAS equipment, systems, and facilities within the timeframes established by the programs included in the CIP. Compile and maintain adequate documentation, suitable for independent audit, to establish the capital cost of facilities throughout the FAA.</p>	<ul style="list-style-type: none"> Provided 126 staff years contract support to perform real property acquisition, material management, and contracting activities.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Provide 126 staff years of contract support to perform real property acquisition, material management, and contracting activities. 	<ul style="list-style-type: none"> Provide 126 staff years of contract support to perform real property acquisition, material management, and contracting activities. 	<ul style="list-style-type: none"> Provide 126 staff years of contract support to perform real property acquisition, material management, and contracting activities.

Category 5: 5A23; Mike Monroney Aeronautical Center – Leases;

Primary Goal: 2.1/2.1.5

Secondary Goal(s): 6.1/6.1.2

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Aeronautical Center Lease. Improve operational efficiency and effectiveness by providing up-to-date facilities and supporting infrastructure that meets the needs of FAA mission support organizations located at the Aeronautical Center.</p>	<ul style="list-style-type: none"> Met all lease commitments on time, which provided land, facilities, and infrastructure to accomplish the mission of organizations at the Mike Monroney Aeronautical Center (MMAC). Completed last phase of the fire protection system upgrade in the Registry Building.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Meet all lease commitments on time, which provides land, facilities, and infrastructure to accomplish the mission of organizations at the MMAC. 	<ul style="list-style-type: none"> Meet all lease commitments on time, which provides land, facilities, and infrastructure to accomplish the mission of organizations at the MMAC. 	<ul style="list-style-type: none"> Meet all lease commitments on time, which provides land, facilities, and infrastructure to accomplish the mission of organizations at the MMAC. Retire senior lien debt on 1st phase of MMAC Renovation Program in FY 2005, which will reduce the lease requirement by approximately \$2.0 million.

Category 5: 5A25; Transition Engineering Support;

Primary Goal: 2.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Implementation Support Contract (NISC). Improve system efficiency by providing professional and technical support services to the FAA in over 13 functional areas, which include</p>	<ul style="list-style-type: none"> Provided vital support to: <ul style="list-style-type: none"> En Route Automation and STARS ATCT/TRACON (including TRACON consolidation)

<p>implementation and integration planning, engineering, automation, air traffic systems requirements, project management, environment, and other technical specialties. The primary function of the NISC is to assist the FAA in ensuring that over 80 CIP projects are completed on schedule and within budget and meet specifications and quality standards.</p>	<ul style="list-style-type: none"> ○ Terminal Evaluation, Free Flight Program, & Capstone Project ○ Information Security and NIMS ○ Configuration Management ○ Environmental and OSHA ○ Infrastructure Support ● Projected life cycle cost estimates.
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Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> ● Continue contractor support services that directly impact the completion of over 80 CIP projects and other projects and activities. 	<ul style="list-style-type: none"> ● Continue contractor support services that directly impact the completion of over 80 CIP projects and other projects and activities. 	<ul style="list-style-type: none"> ● Continue contractor support services that directly impact the completion of over 80 CIP projects and other projects and activities.

Category 5: 5A26; Federal Aviation Administration Corporate System Architecture'

Primary Goal: 1.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Federal Aviation Administration (FAA) Corporate Systems Architecture – Information Technology Infrastructure. Improve system efficiency for the following IT programs Enterprise Network, Metropolitan Area Network, Internet/Intranet, and the web. The programs will enhance the agency’s systems for its internal customers.</p>	<ul style="list-style-type: none"> • Continued to implement the latest anti-virus software. • Continued to improve the extranet firewall. • Continued to broaden.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Continue anti-virus software updates. • Continue bandwidth increase. • Continue multi-media improvements. • Continue Internet/Intranet improvements. 	<ul style="list-style-type: none"> • Continue anti-virus software updates. • Continue bandwidth increase. • Continue multi-media improvements. • Continue Internet /Intranet improvements. 	<ul style="list-style-type: none"> • Continue anti-virus software updates. • Continue bandwidth increase. • Continue multi-media improvements. • Continue Internet/Intranet improvements.

Category 5: 5A27; Technical Support Services Contract;

Primary Goal: 2.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Technical Support Services Contract (TSSC). Serve as an enabling vehicle that expands and contracts with work requirements and available F&E funds. As large F&E programs move from the acceptance to the field delivery phases, TSSC resources are needed to perform site surveys and preparation and equipment installation for them.</p>	<ul style="list-style-type: none"> • Completed RFO and screening information request (SIR) for follow-on contract (T-3). • Completed evaluation of bids (November 2001). • Awarded T-3 contract (estimated November 2001). • Supported approximate breakout of TSSC work hours: <ul style="list-style-type: none"> ○ En Route: 265,031 ○ Terminal: 739,880 ○ Flight Service: 99,387

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> Award follow-on contract (T-3), which will require a T-2 to T-3 transition period and a period supporting 2 simultaneous TSSC vendors in order to avoid a gap in services. 	<ul style="list-style-type: none"> Continue T-3 contract. 	<ul style="list-style-type: none"> Continue T-3 contract.

Category 5: 5A28; Resource Tracking Program;

Primary Goal: 6.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>Continued General Support – Resource Tracking Program (RTP). Improve organizational excellence by providing a diverse set of tools to support F&E project management.</p>	<ul style="list-style-type: none"> • Upgraded database to Oracle 8i. • Centralized the database. • Reviewed and received training on the proposed COTS project management tool.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Purchase a COTS project management tool. • Integrate COTS software into RTP. • Provide training on the COTS application. • Provide Oracle software development. • Begin communications upgrade. • Continue hardware and software maintenance and upgrades. 	<ul style="list-style-type: none"> • Provide a mirrored server for backup and archive. • Complete communications network upgrade. • Provide Oracle software development. • Continue hardware and software maintenance and upgrades. 	<ul style="list-style-type: none"> • Enhance/modify RTP to meet changing FAA needs.

Category 5: 5B01; National Airspace System Facilities Occupational Safety and Health Administration and Environmental Standards Compliance;

Primary Goal: 4.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Facilities Occupational Safety and Health Administration (OSHA)/Environmental Standards Compliance. Implement programs for OSHA and Environmental Compliance, Fire Life Safety (FLS), and Energy Conservation, insure a safe and healthful workplace for FAA employees, and protect the environment through sound environmental and energy efficient practices.</p>	<ul style="list-style-type: none"> • Developed lockout/tagout program implementation guidance, coordinated the guidance with the field, and initiated union coordination. • Developed and published training standards for all required OSHA and environmental training courses in the FAA. • Provided training for 100 technicians responsible for FLS systems in ATCTs and initiated upgrade projects at 28 ATCTs.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Implement a fall protection program to protect employees working at heights. • Support the acquisition management organizations by providing occupational safety and health (OSH) and environmental technical assistance throughout the acquisition process. • Perform Environmental Compliance Plan (ECP) follow-up reviews in 2 regions/centers. • Reduce energy consumption in FAA administrative buildings by 4%. • Continue to provide maintenance training for technicians responsible for FLS systems in ATCTs, initiate training for technicians responsible for FLS systems in ARTCCs, and continue FLS upgrades to ATCTs. 	<ul style="list-style-type: none"> • Implement an electrical safety program to protect employees working on electrical systems. • Support the acquisition management organizations by providing OSH and environmental technical assistance throughout the acquisition process. • Perform ECP follow-up reviews in 2 regions/centers. • Implement energy efficient/conservation efforts. • Continue to provide maintenance training for technicians responsible for FLS systems in ATCTs and ARTCCs, and continue FLS upgrades to ATCTs. 	<ul style="list-style-type: none"> • Continue to implement FLS upgrades for towers. • Continue to implement energy efficient/conservation efforts. • Support the acquisition management organizations by providing OSH and environmental technical assistance throughout the acquisition process. • Complete ECP follow up reviews in all regions/centers.

Category 5: 5B02; Fuel Storage Tank Replacement and Monitoring;

Primary Goal: 4.1

Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Facilities Occupational Safety and Health Administration (OSHA) & Environmental Standards – Fuel Storage Tank Replacement and Monitoring. Sustain fuel storage tank systems in FAA’s operational inventory to support continued operation of mission-critical activities, and to reduce or eliminate environmental damage to communities and the environment.</p>	<ul style="list-style-type: none"> • Investigated 381 beacon sites in 3 regions. • Reviewed and updated Operations Management Plan from each region and headquarters. • Replaced fuel storage piping at Farminton ARTCC.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Conduct a pilot test of fuel storage tank optical monitoring system with remote monitoring maintenance capability. • Finalize FAA Order 1050.16. • Meld environmental compliance program goals into FY 2002 spend plan categories and into Fuel Storage Tank Operation Management Plans. 	<ul style="list-style-type: none"> • n/a 	<ul style="list-style-type: none"> • Provide life-cycle replacement/sustainment of fuel storage tank systems. • Continue remediation efforts after fuel storage tank system replacements.

Category 5: 5B03; Hazardous Materials Management;

Primary Goal: 4.1 Secondary Goal(s): n/a

Program Name and Outcome Goal	FY2001 Program Accomplishments/Status Performance Output Goals
<p>National Airspace System (NAS) Facilities Occupational Safety and Health Administration (OSHA) & Environmental Standards Compliance – Environmental Cleanup/Hazardous Materials (HAZMAT). Ensure compliance with statutory mandates and identify appropriate procedures for proactively managing HAZMAT to prevent future environmental contamination and notices of violations. This program will improve the quality of human health and the environment by removing hazardous carcinogenic materials and materials that destroy living organisms (animal or plant).</p>	<ul style="list-style-type: none"> • Completed 4 remediation projects on the Environmental Protection Agency (EPA) Docket. • Initiated contaminated soil and water removal at Area of Concern 29, FAA Technical Center (FAATC), Atlantic City, NJ. • Completed environmental assessment of Annette Island, AK. • Developed regional environmental reporting requirements.

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Perform surface debris removal at Annette Island, AK. 	<ul style="list-style-type: none"> • Continue remedial assessments of contaminated areas at FAATC, Atlantic City, NJ. 	<ul style="list-style-type: none"> • Perform remediation of environmentally contaminated

Program Plan FY2002 Performance Output Goals	Program Plan FY2003 Performance Output Goals	Key Events FY2004-2007 Performance Output Goals
<ul style="list-style-type: none"> • Initiate assessment of mercury contamination at FAATC, Atlantic City, NJ. • Perform environmental assessments at multiple ARSR sites. • Continue remedial actions for environmentally contaminated sites. • Complete contaminated soil and water remediation at area of Concern 29, Atlantic City, NJ. 	<ul style="list-style-type: none"> • Identify extent of contamination at Annette Island, AK. • Develop Federal Interagency Remediation Plan for Annette Island, AK. • Complete remediation activities at multiple ARSR sites. 	<p>sites through 2007.</p>

Appendix C

FAA future budget projections are not released to the public due to the requirement for the FAA budget to be approved by Office of the Secretary of Transportation and Office of Management and Budget and submitted as part of the President's budget to Congress.

Appendix D

List of Acronyms and Abbreviations

A

A/A	air-to-air
AADR	automation assisted dynamic rerouting
AAIRS	airport/air carrier information reporting system
ACD	automated radar terminal system color display
ACE	Aviation Capacity Enhancement
ACE-IDS	automated surface observing system controller equipment information display system
ACRA	airmen certification rating application
ACSEP	aircraft certification systems evaluation program
ACT	William J. Hughes Technical Center
ACTIONS	administration and compliance tracking in an integrated office network subsystem
AD	arrival departure
ADA	Americans with Disabilities Act
ADAS	automated weather observing system data acquisition system
ADL	aeronautical data link
ADS	automatic dependent surveillance
ADS-A	automatic dependent surveillance address
ADS-B	automatic dependent surveillance broadcast
AFAR	Automated Federal Regulation
aFAST	active final approach spacing tool
AFB	air force base
AFIS	automated flight inspection system
AFS	Flight Standards Service
AFSS	automated flight service station
AFSSVSR	automated flight service station voice switch replacement
AIDC	air traffic services interfacility data communications
AIM	Aeronautical Information Manual
AIR-21	Wendell H. Ford Aviation Investment Reform Act
A/G	air-to-ground
ALSF	approach lighting system with sequence flasher
ALSIP	approach lighting system improvement program
AMASS	airport movement area safety system
AME	Airman Medical Examiner
AMS	acquisition management system
AMSC	satellite telephone network
ANICS	Alaskan National Airspace System Interfacility Communications System
ANS	automated notification system
AOC	airline operations center
AOS	Operational Support Service
ARAC	Army Radar Approach Control
ARSR	air route surveillance radar
ARTCC	air route traffic control center
ARTS	automated radar terminal system
ASA	airborne separation assurance
ASAS	aviation safety analysis system
ASC	Office of System Capacity
ASCM	asset supply chain management
ASDE	airport surface detection equipment
ASI	aviation safety inspector
ASO	Office of the Regional Administrator, Southern Region
ASOS	automated surface observing system

ASPS	aircraft/scheduling performance system
ASR	airport surveillance radar
ASSA	airborne surveillance and separation assurance
ASSAP	airborne surveillance and separation assurance processing
ASWON	aviation surface weather observation network
ATB	Terminal Business Service
ATCBI	air traffic control beacon interrogator
ATCSCC	air traffic control system command center
ATCT	air traffic control tower
ATDET	Air Traffic Display System Replacement Evolution Team
ATDP	advanced technology development prototyping
ATM	Air Traffic Management
ATN	aeronautical telecommunications network
ATO	Air Traffic Operations
ATOP	advanced technologies & oceanic procedures
ATOS	air transportation oversight system
ATS	Air Traffic Services
ATTE	air traffic training enhancement
AUA	Director, Air Traffic Systems Development
AUTODIN	automatic digital network
AUTOMET	automated meteorological reports
AVOSS	advanced vortex spacing system
AVR	Associate Administrator for Certification and Regulation
AW	airport weather
AWIPS	advanced weather interactive processing system
AWOS	automated weather observing system
AWP	aviation weather processor
AWSS	automated weather sensors systems

B

BAA	Broad Agency Announcement
BCS	buoy communications system
BLI	budget line item
BUEC	backup emergency communications
BWM	bandwidth manager

C

C3	command and control communications
CAASD	Center for Advanced Aviation Systems Development (Mitre Corporation)
CADD	computer-aided design and drafting
CAEG	computer-aided engineering graphics
CAMI	Civil Aeromedical Institute
CAR	Caribbean
CARS	compliance assessment reporting system
CAST	Commercial Aviation Safety Team
CAT	category
CBI	computer-based instruction
CCLD	core capability limited deployment
CDM	collaborative decision-making
CDR	critical design review
CDTI	cockpit display of traffic information
CERAP	center radar approach control
CFE	communications facilities enhancements
CFIT	controlled-flight-into-terrain

CFMSS	computerized flight monitoring and scheduling system
CFR	Code of Federal Regulations
CHI	computer-human interface
CIP	Capital Investment Plan
CIWS	corridor integrated weather system
CMS	common message set
CMS	crisis management system
CNS	communications, navigation, and surveillance
CONOPS	concept of operations
COTS	commercial off-the-shelf
CPDLC	controller-pilot data link communications
CPDSS	covered position decision support subsystem
CRCT	collaborative routing and coordination tools
CSIRC	computer security incident response capability
CSI-TAC	Control Systems International-TAC
CST	Communications Support Team
CTAS	center terminal radar approach control automation system
CTS	critical telecommunications support
CTSU	contractor traffic simulation unit

D

DARC	direct access radar channel
DASI	digital altimeter setting indicator
DBRITE	digital bright radar indicator tower equipment
DF	direction finder
DIN	designee information network
DIWS	document imaging workflow subsystem
DME	distance measuring equipment
DMN	data multiplexing network
DMS	defense messaging system
DOC	Department of Commerce
DoD	Department of Defense
DOT	Department of Transportation
DOTS+	dynamic ocean tracking system plus
DPS	data processing subsystem
DRVSM	domestic reduced vertical separation minima
DSP	departure spacing program
DSR	display system replacement
DUAT	direct user access terminal
DVD	digital versatile disc
DVRS	digital voice recorder system

E

ECG	en route communications gateway
ECP	Environmental Compliance Plan
E/DA	en route descent advisor
EDARC	enhanced direct radar access channel
EDC	early display configuration
EDI	electronic data interchange
eDMS	electronic document management system
EDP	expedite departure path
EDS	explosive detection system
EDT	explosive detection technology
EFABS	en route facilities and building systems

EMSAW	en route minimum safe altitude warning
EMSS	en route communications gateway maintenance support system
EPA	Environmental Protection Agency
ERAM	en route automation modernization
ERIDS	en route information display system
ERSM	en route system modifications
ESI	enhanced direct radar access channel system interface
ETMS	enhanced traffic management system
ETVS	enhanced terminal voice switch

F

FAA	Federal Aviation Administration
FAT	factory acceptance testing
FAAAC	Federal Aviation Administration Aeronautical Center
FAATC	Federal Aviation Administration Technical Center
FAATSAT	Federal Aviation Administration Telecommunications Satellite
FCA	functional configuration audit
FCC	Federal Communications Commission
FDIO	flight data input/output
FDR	final design review
F&E	facilities and equipment
FIAT	facilities information and analysis tool
FIS	flight information service
FIS-B	flight information service broadcast
FISDL	flight information services data link
FIST	Federal Aviation Administration Information Superhighway for Training
FL	flight level
FLS	Fire Life Safety
FM	frequency modulated
FOC	full operating capability
FONSI	Finding of No Significant Impact
FOQA	flight operational quality assurance
FOTS	fiber optic transmission system
FPPP	flight plan preprocessing
FPS	fingerprinting processing system
FS	full service
FSAS	flight services automation system
FSDPS	flight service data processing system
FSRS	facility security reporting system
FSRM	facility security risk management
FSS	flight service station
FTD	fixed time determination
FTI	Federal Aviation Administration Telecommunications Infrastructure
FY	fiscal year

G

GA	general aviation
GAO	Government Accounting Office
GBAS	ground-based augmentation system
GBT	ground broadcast transceivers
GDP	gross domestic product
GDPE	ground delay program enhancements
GEO	geostationary communications satellite
G/G	ground-to-ground

GLS	global navigation satellite system landing system
GMCC	general national airspace systems maintenance control center
GNSS	global navigation satellite system
GOM	Gulf of Mexico
GOMP	Gulf of Mexico offshore program
GPRA	Government Performance and Results Act
GPS	global positioning system
GTE	government transition evaluations
GUS	ground uplink system

H

HAATS	Houston Area Air Traffic System
HAZMAT	hazardous materials
HCS	host computer system
HFSSB	high frequency single side band
HOCSR	host/oceanic computer system replacement
HVAC	heating, ventilating, and air-conditioning

I

I ² F	Instruction and Interoperability Facility
IAPA	instrument approach procedures automation
ICAO	International Civil Aviation Organization
ICDLS	interim contractor depot logistics support
iCMM	integrated capability maturity model
IDU	initial daily use
IFP	instrument flight procedures
IFQA	integrated flight quality assurance
IFR	instrument flight rules
IGWDS	interim graphic weather display system
ILS	instrument landing system
IOC	initial operating capability
IOT&E	independent operational test and evaluation
IP	Internet Protocol
IPAS	instrument procedures automation system
IPT	integrated product team
IRD	initial requirements document
IRMIS	integrated rulemaking information system
ISC	initial systems configuration
ISD	interim situation display
ISS	information systems security
IT	information technology
ITWS	integrated terminal weather system

J

JAI	joint acceptance inspection
JAR	joint aviation regulation
JRC	Joint Resources Council
JVAS	joint vulnerability analysis system

L

LAAS	local area augmentation system
LAN	local area network
LED	light-emitting diode
LEO	low-earth orbit

LINCS	leased interfacility NAS communications system
LLWAS	low-level wind shear alert system
LNAV	lateral navigation
LOB	line-of-business
LORAN-C	long-range navigation – C system
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
MBTS	monopulse beacon test sets
MDM	main display monitor
MDR	multi-mode digital radio
MHz	megahertz
MIAWS	medium intensity airport weather system
MicroEARTS	micro en route automated radar terminal system
MMAC	Mike Monroney Aeronautical Center
Mode-C	mode c (altitude reporting)
Mode-S	mode-select
MOPS	minimum operational performance standard
MPS	maintenance processor subsystem
MSSR	monopulse secondary surveillance radar

N

NADIN	national airspace data interchange network
NAS	National Airspace System
NASA	National Aeronautics and Space Administration
NASDAC	national aviation safety data analysis center
NATCA	National Air Traffic Controllers Association
NCP	NAS Change Proposal
NCT	Northern California Terminal Radar Approach Control
NDB	non-directional beacon
NDBC	National Data Buoy Center
NDI	non-developmental item
NEXCOM	next generation air/ground communications system
NEXRAD	next generation weather radar
NFRAP	“no further remedial action planned”
NIMS	National Airspace System Infrastructure Management System
NIRS	noise integrated routing system
NISC	national airspace system implementation support contract
NLA	new large aircraft
nmi	nautical mile
NOCC	National Operational Control Center
NORAD	North American Air Defense Command
NOTAM	Notice to Airmen
NPA	non-precision approach
NPV	net present value
NRS	National Transportation Safety Board Recommendations System
NTSB	National Transportation Safety Board
NWS	National Weather Service

O

OASIS	operational and supportability implementation system
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OCC	operational control center
ODAPS	oceanic display and planning system
ODL	oceanic data link
OEP	Operational Evolution Plan
OMB	Office of Management and Budget
OPSS	operations specification subsystem
ORD	operational readiness date
ORPG	open radar products generator
OSH	occupational safety and health
OSHA	Occupational Safety and Health Administration
OST	Office of the Secretary of Transportation
OSTS	operational support telephone system
OT	operational testing
OT&E	operational test and evaluation

P

P3I	pre-planned product improvement
PAF	project activity file
PAMRI	peripheral adapter module replacement item
PAPI	precision approach path indicator
PARR	problem analysis, resolution, and ranking
PASS	Professional Airways System Specialists
PBO	performance based organization
PC	personal computer
PCA	physical configuration audit
PCB&T	Personnel, Compensation, Benefits, and Travel
PCT	Potomac Terminal Radar Approach Control
PDARS	Performance Data Analysis Reporting System
PDD	Presidential Decision Directive
PDR	preliminary design review
PEM	position electronic module
pFAST	passive final approach spacing tool
PPSS	portable performance support system
PRM	precision runway monitor
PRS	parts reporting system
PSF	peripheral adaptor module replacement item support facility

R

RACD	remote automated radar terminal system color display
RCAG	remote center air-to-ground
RCAS	radio coverage analysis system
RCE	radio control equipment
RCOM	recovery communications
R&D	research and development
RDT&E	research and development and test and evaluation
RDVS	rapid deployment voice switch
RE&D	research, engineering, and development
REIL	runway end identifier lights
RF	radio frequency
RFI	radio frequency interference
RFO	request for offer
RGL	Regulatory and Guidance Library
RIRP	runway incursion reduction program
RMMS	remote maintenance monitoring systems

RNAV	area navigation
RNP	required navigation performance
ROD	Record of Decision
RPM	revenue passenger miles
RTP	resource tracking program
RTR	remote transmitter/receiver
RVR	runway visual range
RVSM	reduced vertical separation minima
RWSL	runway status lights

S

SAR	search and rescue
SARP	standards and recommended practices
SAS	standalone simulator
SASO	system approach for safety oversight
SAT	system acceptance test
SATCOM	satellite communications
SAWS	stand-alone weather sensors
SCAP	Security Certification and Authorization
SCS	secure conferencing system
SDAT	sector design analysis tool
SDP	service delivery point
SERC	Software Engineering Resource Center
SFAR	Special Federal Air Regulation
SIR	screening information request
SLEP	service life extension program
SMS	surface management system
SNI	simultaneous non-interfering
SOC	service operations center
SOIA	simultaneous offset instrument approach
SOW	statement of work
SPAS	safety performance analysis system
SR1000	System Requirements 1000
SRR	system requirements review
SSF	System Support Facility
SSR	secondary surveillance radar
STARS	standard terminal automation replacement system
STC	supplemental-type certificate
STE	secure telephone equipment
STU	secure telephone unit
STVS	small tower voice switch

T

TACAN	tactical air navigation
TAIU	terminal automation interface unit
TAWS	terrain awareness and warning system
TCP	Transmission Control Protocol
TCU	terminal cluster control unit
TDLS	tower data link services
TDWR	terminal doppler weather radar
TERPS	terminal instrument procedures
TESIS	test and evaluation surveillance and information system
TFM	traffic flow management
TIMS	telecommunications information management system

TIS	traffic information service
TIS-B	traffic information service broadcast
TMA	traffic management advisor
TMA-SC	traffic management advisor-single center
TMA-MC	traffic management advisor-multi center
TMU	traffic management unit
TOTS	tower operating training system
TOY	time of year
TRACON	terminal radar approach control
TSA	Transportation Security Administration
TSO	technical standard order
TSSC	technical support services contract
TVSR	terminal voice switch replacement

U

UAT	universal access transceiver
UHF	ultra high frequency
UPS	uninterruptible power supply
URET	user request evaluation tool
UWB	ultra-wideband

V

VASI	visual approach slope indicator
VDL	very high frequency digital link
VEM	voice switching and control system electronic module
VERN	very high frequency extended range network
VF	vertical flight
VFR	visual flight rules
VHF	very high frequency
VNAV	vertical navigation
VOR	very high frequency omni-directional range
VORTAC	very high frequency omni-directional range collocated with tactical air navigation
VRRP	voice recorder replacement program
VSBP	voice switch by-pass
VSCS	voice switching and control system

W

WAAS	wide are augmentation system
WAN	wide area network
WARP	weather and radar processor
WINS	weather information network system
WIPP	Wide Area Augmentation System Integrity Performance Panel
WJHTC	William J. Hughes Technical Center
WMS	wide area master station
WMSCR	weather message switching center replacement
WRC	World Radiocommunication Conference
WRS	wide area reference station
WSP	weather systems processor