

STATEMENT OF THE HONORABLE DONALD D. ENGEN, FEDERAL AVIATION ADMINISTRATOR, BEFORE THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY, SUBCOMMITTEE ON TRANSPORTATION, AVIATION, AND MATERIALS, CONCERNING THE NATIONAL AIRSPACE SYSTEM PLAN AND THE RESEARCH, ENGINEERING AND DEVELOPMENT PROGRAM, APRIL 23, 1986.

Mr. Chairman and Members of the Subcommittee:

I am pleased to appear before you today to discuss the Federal Aviation Administration's National Airspace Systems Plan (NAS) and our FY 1987 Research, Engineering and Development programs. With me are Frank Frisbie, the Acting Associate Administrator for Development and Logistics; his Deputy, Martin Pozesky; Neal Blake, the Deputy Associate Administrator for Engineering; Val Hunt, Director of the Advanced Automation Program Office; and Dale McDaniel, Deputy Associate Administrator for Policy and International Aviation. They will review the status of the NAS Plan and our fiscal year 1987 RE&D activities.

As this Subcommittee knows, the FAA developed the NAS Plan to replace outmoded facilities and equipment, increase system capacity, and to improve the timeliness and dissemination of weather data to serve the air transportation industry beyond the year 2000. The Plan is a blueprint, involving substantial capital investments, for achieving increased safety, capacity, productivity, and economy in the operation of the Nation's air traffic control and air navigation system. These goals will be achieved through: higher levels of automation, facility consolidations, and use of new telecommunications technology.

We are committed to a program that will include the new terminal Doppler weather radar as well as other technological advances to assist controllers in their jobs and expand system capacity while ensuring safety. The FAA will realize substantial benefits from this investment through lower labor and other operating costs. Savings will accrue to aviation users through reduced delays and more fuel efficient routing. We have made considerable progress toward achieving our NAS Plan goals.

NAS PLAN ACCOMPLISHMENTS

During fiscal year 1985, we obligated \$1.2 billion of Facilities and Equipment appropriations. This is more than three times the amount ever before obligated in a single year. By the end of fiscal year 1985, we had awarded about 68 percent of the major equipment contracts that are associated with the implementation of the NAS Plan. Critical elements of the NAS Plan remain essentially on schedule in FY 1986. Some of the more significant accomplishments are as follows:

- o An acquisition contract for the Host computer, the first phase of the automation modernization program, was awarded to IBM for \$197 million. This program will replace existing computer hardware with state-of-the-art computer systems which will initially utilize current software, provide additional computer capacity, and improve the

reliability of the en route systems. Formal capacity testing of the Host computer is scheduled to begin in July 1986. However, preliminary tests indicate that the forecasted 1995 traffic levels can be easily handled by the Host computer. It is our opinion, based on these tests, that the concerns expressed by the General Accounting Office that the Host computer will not provide sufficient capacity are unwarranted.

- o The Advanced Automation System is proceeding through the Design Competition Phase leading to an acquisition award in January 1988. The major cost item during this phase will be the demonstration and testing of preproduction sector suites. This element of the system embodies a significant portion of the cost of the later acquisition phase contract. The House Joint Resolution on Further Continuing Appropriations for Fiscal Year 1986 directed the FAA to conduct a thorough and independent cost-benefit analysis to support the Advanced Automation System acquisition. This study is in process.

- o Negotiations are essentially complete, and award of the prototype contracts for the Voice Switching and Control System is scheduled for this summer.

- o The Model I Flight Service Automation System has been

delivered to nine locations. The initial Model I commissioning occurred in February 1986 at the Cleveland family of facilities. The FAA is actively considering using the private sector to provide direct access user telephone services to take advantage of existing technology. Although the procurement approach is still under consideration, we anticipate that the system could be implemented within 30 months after approval of the acquisition strategy.

- o A contract with a total value of \$221.8 million awarded in October 1984 for 78 Mode-S ground stations with an option for 59 more. Mode-S will provide more accurate positional information and reduce radar beacon interference.
- o A \$55.6 million contract was awarded for 17 airport surface detection radar units with an option for 13 more. This new solid-state equipment will have a greater capability to penetrate heavy precipitation and present a cleaner, sharper radar picture under all light conditions than is now available from the present equipment.
- o A contract for design, development, and first-article production of the remote maintenance monitoring equipment for Instrument Landing Systems (ILS) was awarded for \$10 million. This is the first phase of a two-phase

contract. The second phase will be for production quantities sufficient to retrofit all Category I ILS's.

- o A Microwave Landing System (MLS) implementation contract was awarded for \$90.6 million in 1984 to provide 172 systems. The contractor successfully completed the critical design review in 1985, and funding of \$22.8 million was provided for the third-year procurement quantity under this contract. MLS will provide more precise landing guidance than the present ILS.

- o In the National Radio Communications Systems (NARACS) program, a \$15.4 million contract was awarded to procure equipment for regional communications networks. The NARACS provides essential communications capability to support DOT and DOD missions during a national, regional, or local emergency when leased common carrier telecommunications services are interrupted.

- o A 5-year contract was awarded for procurement of 312 radar microwave link installations with options for an additional 692. The initial order value is \$49.2 million and there are options that could bring the total contract value to \$188.2 million. This system will transmit voice and data communications, providing better services at lower costs.

- o A contract was awarded in February 1985 for prototype development of the necessary hardware and software modifications to allow Automated Radar Terminal System-IIA (ARTS IIA) to accept Mode S sensor data. Award of the production contract is expected in July 1986.

- o A contract was awarded in March 1986 which will add new displays and processing power at the New York TRACON. This will increase system capacity at this busy facility.

- o A hazardous in-flight weather advisory system is operational in three air route traffic control center areas. The system will be implemented nationwide in FY 1987. This system provides forecast information on severe weather, in the form of significant meteorological data (SIGMET's), and current updates on severe weather hazards in the form of Center Weather Advisories.

- o The prototype test phase of the Next Generation Weather Radar (NEXRAD) Program is proceeding well. The tests will be completed during FY 1986 and contract award for the limited production system is expected in January 1987.

- o The 1986 edition of the NAS Plan, when published, will include a new project for the terminal Doppler weather radar. Fifteen systems are included in the FY 1987

budget. These 15 units will be a terminal derivative of the NEXRAD. First delivery is expected in FY 1989. A competitive procurement is planned in FY 1988 for a terminal Doppler Radar System designed specially for the terminal environment. The 15 terminal derivatives of NEXRAD will be returned to the NEXRAD configuration.

- o After some start-up difficulties, the terms of the AMEX contract were renegotiated to complete the design of the Automated Weather Observation System. This contract has an option for 206 production systems, commencing delivery in April 1988.

- o Implementation of the Low Level Wind Shear Alerting System at 110 airports is being completed. Research and development leading to definition of an enhanced system has been conducted. A contract award for the enhanced system is currently scheduled for February 1988 with delivery scheduled to begin in 1989. The enhanced system will have additional sensors for improved processing, data recording and archiving, and improved display formats.

The FAA's FY 1987 request for the Facilities and Equipment appropriation is \$825 million--\$125 million less than the FY 1986 level, and considerably below the authorization level. We plan to accommodate these reductions through a series of management

actions which, I believe, will keep critical elements of the NAS Plan essentially on schedule. These management actions include:

- o Selectively taking three projects off full funding in FY 1987.
- o Deferring some lower priority modernization or improvement projects for future years.
- o Reducing the quantities on some projects, as opposed to deleting complete programs.

The more critical modernization projects, such as terminal radar replacement, Host computer, advanced automation, Mode S, MLS, and NEXRAD are proceeding as planned. These projects were given priority because they contain the largest capacity, productivity, and safety payoffs. Other assessments included contract, program, and technical impacts.

RE&D PROGRAMS

With the funds provided by the Congress, FAA has undertaken a variety of key research and development activities in the area of aviation safety and security:

- o Significant progress has been made in the wind shear

area. A contract was awarded during 1986 to a team of companies to develop a comprehensive wind shear pilot training program. This program will develop a course of instruction on recognition and avoidance of wind shear, and piloting techniques that will provide the best performance from an aircraft should wind shear be encountered.

- o Design studies are being conducted during FY 1986 on the development of an advanced thermal neutron detection system for the detection of explosives in baggage and cargo.

- o A chemiluminescence detector is currently under development. This detector will operate in conjunction with the portal screening systems to detect vapors from explosives carried on the passenger's person.

- o In FY 1985 and 1986, the FAA sponsored investigations on new concept studies for explosive detection. The most promising of these concepts will become candidates for breadboard system development and tests.

Our FY 1987 budget proposes \$134.5 million for FAA research, engineering and development activities or \$55.5 million less than last year. The essential elements of the NAS Plan related

projects, as well as technical support of regulatory activities in the areas of aircraft safety, aviation medicine, aircraft noise, and pollution, are being funded within the levels of the President's budget request. About 67 percent of the funding request addresses four major programs: the Advanced Automation System (17 percent); the Voice Switching and Control System (25 percent); aircraft safety (17 percent); and the Advanced En Route Automation System (9 percent).

Additional work in FY 1987 will include efforts to improve the acquisition, distribution, and display of weather data; the evaluation of navigation systems; aviation environmental protection; medical research into aircrew and passenger protection; and controller performance.

In summary, we will experience modest slippage in some programs but, on the whole, the NAS Plan and our research, engineering and development programs have not been significantly altered. The funding levels will allow us to continue those programs to increase safety, efficiency, and capacity of the Nation's airway system. Our top priorities are to ensure continued progress in important safety programs and to protect the key accomplishments of the National Airspace System Plan and are doing all we can to manage this program in a way that continues to recognize its high priority within the agency and the aviation community as a whole.

Mr. Chairman, this concludes my prepared remarks. Later in this hearing Martin Pozesky, Val Hunt, and Neal Blake will provide more details on major NAS Plan projects and the various RE&D programs. With your permission, I would like Mr. Frisbie to discuss our Fiscal Year 1987 RE&D and NAS Plan resource requirements. After his briefing, we will be pleased to respond to your questions.