STATEMENT OF A. P. ALBRECHT, ASSOCIATE ADMINISTRATOR FOR ENGINEERING AND DEVELOPMENT, FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY, SUBCOMMITTEE ON TRANSPORTATION, AVIATION AND COMMUNICATIONS, CONCERNING R,E&D PROGRAM STATUS AND ACCOMPLISHMENTS, SEPTEMBER 18, 1980

Mr. Chairman, it is a pleasure to appear before your Subcommittee and to report on the status and accomplishments of our Research, Engineering and Development program.

Mr. Bond has asked me to express his regrets at not being able to be here today. He is leading the U.S. delegation to the International Civil Aviation Organization (ICAO) Assembly.

I have with me Mr. Neal Blake, my Deputy, who, at the conclusion of my testimony, will present a status report on the Advanced Computer Program.

Before moving into a report of our progress since our last testimony, I would like to respond to a question raised by one of your staff regarding the status of the revised Five-Year Plan we provided to you on March 12, and whether the FY 1981 Congressional appropriation deliberations would impact upon it.

The very significant differences between the House and Senate on our FY 1981 R,E&D appropriation have not been resolved. The resolution of the differences could have a significant impact upon our efforts in FY 1981 and on the Advanced Computer Program plan and schedule. The impact on the balance of our FY 1981 program would be no less severe in both the near and far-term program implications.

I will highlight the status and accomplishments of our higher priority programs and will, of course, be happy to provide information on any portion of the program.

AIRCRAFT SEPARATION ASSURANCE

DABS/ATARS

This key program is on schedule. The technical data upon which a production specification will be based was handed over to the operating services in April.

We have,put the DABS interference question to bed. DOD has concurred with the DABS National Standard with the proviso that we coordinate use of the DABS data link with them. We previously had recognized that the management of the utilization of the data link was a significant element in the successful implementation of DABS, and so will not have any problem in complying with DCD's proviso. The DABS National Standard was published in the Federal Register in March of this year as scheduled. Changes in the Standard, necessitated by revisions to the BCAS interfaces with ATARS, precluded the issuance of the approved Standard in April. The DABS National Standard will be approved next month. This delay does not impact the overall progress of the program.

BEACON COLLISION AVOIDANCE SYSTEM

ACTIVE

The Active BCAS Program is progressing essentially as planned. Results of tests of engineering models conducted on the West Coast were very successful.

The equipment performed as specified and no significant problems occurred. Our July 23 letter explained that due to technical changes to the previously coordinated BCAS National Standard, we felt obligated to go public again for comments. We will issue it next month and expect to have it approved shortly after the first of the year. (This slippage of 3-4 months may result in a comparable slippage in the availability of the first commercial units.)

FULL

We expect to award the contract for the design concept phase of the Full BCAS Program in the next thirty days. We have encountered several delays in this activity and there could be an impact on the issuance of the final report. We will assess the schedule after the contract is awarded and, if a slippage is indicated, we will take whatever steps we can to minimize it.

NASA has completed its study of the reasonableness of testing the Tri-Modal BCAS in the Los Angeles area. The study confirmed our assessment that the test would not provide any data not already available and would only result in expending critical manpower and fiscal resources. We are awaiting advice from Congressman Duncan as to any further action he may require on the matter.

AVIATION WEATHER

NEXRAD

We are participating with the Department of Commerce and the Department of Defense in the development of a new doppler weather radar which we expect will meet our combined sensor requirements. Although some common processing

of the radar signal will be done in the common equipments at the site, the processing of the sensor data for each organization's peculiar needs will be the individual agency's responsibility. The sensor development is being conducted by a special program office and will be carried out in accordance with OMB Circular A-109. The present schedule calls for the initiation of full production in mid-1986 and the sensors to be installed in a national grid by 1990.

Coincidentally, with the development of the new doppler sensor we are proceeding to address the methods and techniques of processing and displaying the data in the air traffic control facilities.

We view the NEXRAD program as a high priority effort having significant safety implications. We foresee bringing the weather data into the air traffic control system as the sensors go on line rather than waiting for the entire grid to be installed. On that basis, we should begin to go into operation in the 1987-1988 time frame which is coincidentally the planned date for the first installation of the Advanced Computers.

NAVIGATION

We are continuing to address the development, test and evaluation to determine the role of an alternative navigation system in the post 1995 time frame as a high priority program. We expect to have our technical evaluations, our findings, and recommendations completed by the end of 1982--on schedule.

Based upon the data we have available at this time, we believe LORAN-C, as a technique, will probably be found to be acceptable as a supplementary

en route and terminal navigation aid and may possibly be useable as a non-precision approach aid to meet unique user requirements. There are still problems such as coverage limitations and path shifts which must be resolved before LORAN-C could be certificated as a primary navigation system.

We are continuing our evaluations of the possible use of NAVSTAR/GPS to meet civil aviation requirements. DOD has decided to go with an 18-satellite configuration in lieu of the originally planned 24, and we are assessing the impact of this change on the coverage and availability we require.

We are continuing the development of a low cost GPS receiver. A contract for the fabrication of a prototype unit was let in April of this year and we expect to have it in test by February 1982. The unit is intended to establish General Aviation user equipment requirements. Our target cost for the unit in commercial quantities is about $3,000.

TECHNICAL CENTER BUILDING PROGRAM

Our new building at the Technical Center was dedicated in May of this year, and we are moving into it as rapidly as possible. It is an outstanding example of a building designed to conduct research, development and test programs. The building was constructed on time on a 24-month schedule and within its cost estimate of $50M. It's a noteworthy accomplishment.

NEW INITIATIVES

We summarized New Engineering and Development Initiatives recommendations to 53 specific recommendations, and responded to the community in a report

earlier this year. A user conference to discuss the recommendations and FAA responses was held on January 29-30, 1980. The majority of the recommendations confirmed on-going engineering and development programs and of course provided insights into various views on some very complex problems. Some of the recommendations and their current status in our program activities are:

1. The New Engineering and Development Initiatives group did not prioritize their recommendations, but we did attempt to develop a general priority list from the New Engineering and Development Initiatives Report and use it as a reference in the development of our priorities.
2. FAA has a Future Surveillance System Task Force to deal with the primary/secondary radar issue and it will respond to the New Engineering and Development Initiatives recommendations concerning primary radar.
3. With respect to the recommendation concerning "Electronic Flight Rules," FAA has completed a study of alternate separation concepts. Further work is required related to procedural methods and simpler ways of providing limited protection to non-participants in the IFR system. An alternate separation concepts workshop is planned for late this year to involve users, particularly general aviation users.

4. The recommendations of Topic Group 1 with respect to advanced automation, with particular emphasis to the backup and reliability aspects were consistent with our Advanced Computer - 9020 Replacement Program.

5. The recommendations of Topic Group 1 into the ATC automated decision process concept feasibility and demonstration program are being considered by the FAA AERA Concept Development Team. The concept development includes consideration of airborne flight management computers, 4D area navigation, and the need for conflict free paths in an integrated flow management system.

6. Responding to the high level of interest by the aviation community in cockpit displays of traffic, planning for a joint FAA/NASA program on CDTI has been completed and coordinated, and work is underway. Included in the program will be the issues and potential uses for CDTI which were postulated by the New Initiatives topic groups.

7. FAA is strengthening its aircrew human factors efforts and is undertaking a major agencywide human factors requirements development effort. Human factors facilities are being strengthened at the Technical Center, and an active FAA/NASA program in this area is underway.

8. The very difficult human factors problems related to controllers in a more highly automated environment are being addressed and studies are underway by MITRE and RAND to deal with this complex issue.

9. Studies are underway dealing with the voice party line problem in a data link environment. The studies will help determine how far one can go in computer voice as a substitute for digital data link communications.

10. A series of activities are continuing to resolve the airport capacity and delay problem. Among them are the integrated flow management program, technology and site specific studies concerning potential reductions of separation with special emphasis on coping with wake vortex problems, studies to establish beneficial applications of MLS and others. An Administrator-level inter-FAA task force has been established to examine, on an agencywide basis, both economic and technological problems and opportunities in achieving additional airport capacity.

11. Some basic work has been carried out on a program to develop performance standards for the achievement of 1,000 ft. vertical separation above FL-290. Problem definition is progressing and a three to four year program may be initiated.

12. A major activity is underway to develop an FAA-wide scenario for the turn of the century--a long-range plan for the future system and Engineering and Development activity required to support it.

With respect to continued user consultation, a series of public meetings and and seminars on a wide variety of subjects are planned by the engineering and development organization. Among such conferences will be ones on BCAS, on DABS and on the computer replacement program, a joint FAA/NASA workshop on CDTI, and a user workshop on alternate separation concepts.

MICROWAVE LANDING SYSTEM

Mr. Bond recently provided the Committee with detailed information on our MLS program. If you have any further questions concerning the present status of this program, I will endeavor to answer them.

Mr. Chairman, that concludes my statement. Mr. Blake will now present the status of the Advanced Computer Program.