

STATEMENT OF GENERAL G. E. LUNDQUIST, ASSOCIATE ADMINISTRATOR FOR
ENGINEERING AND DEVELOPMENT, FEDERAL AVIATION ADMINISTRATION,
DEPARTMENT OF TRANSPORTATION, BEFORE THE SUBCOMMITTEE ON ADVANCED
RESEARCH AND TECHNOLOGY OF THE HOUSE SCIENCE AND ASTRONAUTICS
COMMITTEE 18 JANUARY 1972

Mr. Chairman and Members of the Committee:

It is my pleasure to discuss with you this afternoon various aspects of coordination between the DOT and NASA, and to present to you a brief FAA overview of several of our joint programs. As you have heard earlier, the implementation planning group has provided excellent support for integrating NASA and FAA programs in the Civil Aviation Research and Development Policy Study. In carrying out this goal, the DOT/NASA Coordinating Committee together with frequent personal contacts are our main vehicles for interagency relations in our overall R&D activities. We exchange information on our current programs and coordinate our planning for future research in areas of mutual concern. The FAA keeps NASA informed of its needs for aeronautical technical support and identifies those areas in which advances in technology are most urgently needed. We strive to eliminate unwarranted duplication in our programs and to maximize the return from our resources. The formal committee meets quarterly and is presently composed of eight top-level officials from each agency. As Associate Administrator for Engineering and Development, I am the FAA Co-Chairman. Joining me from the FAA are the Directors of the Flight Standards Service, the Office of Aviation Medicine, the Systems Research and Development Service, the Office of Systems

Engineering Management, the V/STOL Special Projects Office, the Aircraft Division of the Systems Research and Development Service, and the Office of Aviation Policy and Plans. The NASA Co-Chairman is the Deputy Associate Administrator for Aeronautics. Joining him from NASA are the Directors of the Aerodynamics and Vehicles Division, the Guidance, Control and Information Systems Division, the Life Sciences Division, the Aeronautical Operating Systems Division, the Transport Experimental Programs Office, the Communications Programs Office, and the Assistant Administrator for DOD and Inter-Agency Affairs.

Last Spring the NASA/FAA Interagency Agreement for the Committee was updated to emphasize the coordinating activities. Shortly afterwards, Administrator John H. Shaffer and Administrator James C. Fletcher met to discuss further means for assuring effective relationships between NASA and FAA in the total area of civil aviation activity. They discussed practical means to ensure a strong liaison between their project personnel. In addition to the broader review of their respective R&D activities, they decided that there would be seven formal areas of direct contact for the working levels of both organizations. These areas of major importance were air traffic control, navigation, collision avoidance systems, communication satellite, V/STOL systems development, noise and advanced high speed/supersonic transport. In each of these areas a specific individual was designated, both in the FAA and NASA, to act as the point of contact for coordinating the associated R&D programs.

These contacts have since met with their counterparts and reviewed the existing and proposed programs in their areas. They have discussed their planning, developed suggestions about additional work that should be done and identified which organization should take the lead.

At the last meeting of the committee we reviewed the progress in each one of these areas and discussed the various plans that each area had for the future. I would like now to give you a brief FAA overview of some of the programs in which we are cooperating with NASA.

Our main thrust for relieving congestion in the airways and in the airport area is through improvements in our air traffic control system and in further development of the short haul aviation system. The System Design for the entire Air Traffic Control Program is the responsibility of DOT and FAA. However, NASA is working with us in developing some specific elements or subsystems of the Air Traffic Control System. Some of the important joint programs which we are conducting in this area are the microwave instrument landing system, pilot warning indicator, collision avoidance systems and satellite communications. In the microwave instrument landing system NASA is a member of the DOT/FAA Team responsible for the development of the system. Last July we issued a National Plan for this program which

delineated our integrated activity. The FAA is responsible for managing the industry development effort and will shortly release the initial contracts. NASA has system test and evaluation responsibilities and will conduct flight simulation at their Ames facility. We are also coordinating the development of satellite communication relay stations which may be integrated with ATC surveillance and navigation facilities.

The Department of Transportation and FAA are also providing airport R&D leadership to increase airport capacity with support from NASA, Transportation System Center, Urban Mass Transportation Administration (UMTA) and the Federal Highway Administration (FHWA). These coordinated efforts are reflected in the CARD Implementation Plan. For example, increased capacity R&D programs currently defined are: Airport Airside (airfield) which supports movement of aircraft on runways, taxiways, aprons and gates; Airport/Community Access and Egress which is concerned with public and private transportation to and from the airport; Long Range Planning which provides for development of planning methods, evaluation of new airport design concepts, determination of quantitative total regional air transportation demand as a basis for planning.

We are also conducting joint programs having major safety implications in civil aviation. Such programs include wake

turbulence studies, runway surface friction tests and flight simulation investigation. Runway friction developments include methods, procedures, and equipments to improve the safety of aircraft operations on slippery runways. This work is conducted with contractor and NASA support. In FY-72 we plan to investigate effects of grooved runways on tire cuts and landing loads; obtain runway friction data by contract and, in FY-74, to substantiate, through contract, the Friction/Aircraft Performance Correlation method which involves the conduct of tests to predict stopping distance of aircraft. For flight simulation we have signed an agreement with NASA to time share their Ames flight simulation facilities so that we may gather additional information for formulating Federal Aviation Regulations. In wake turbulence, NASA is studying basic vortex phenomena and modifications to aircraft while the FAA is examining ways to detect, measure and dissipate the wake vortices from aircraft.

In the area of airports, NASA has sponsored much of the basic research in fog removal, prevention and dissipation. We are now involved in planning NASA support of our All Weather Program with a fog chamber facility designed to study problems of landing aircraft in low visibility conditions. This facility may be located at Ames. We are also following NASA's work in microwave radiometry for its potential use as an independent airborne monitor for the All Weather Landing System.

Last April the FAA Administrator established a V/STOL Special Projects Office to ensure that the FAA carried out its responsibilities in short-haul system development in a timely and responsive manner. Since the establishment of this single point contact for agency V/STOL matters, FAA/NASA cooperation in V/STOL development has been greatly enhanced. We have formed a joint STOL Operating Experiments Steering Group to provide direction and balance to inter-agency projects which deal with different aspects of the operation and certification of V/STOL systems. Recently, NASA and the FAA jointly purchased a STOL flying test bed, fitted with a complex avionics system, which will be used in our development effort. While NASA will concentrate on vehicle, engine and avionics technology, the FAA will provide total systems analysis and guidance. In addition, we will be conducting economic studies and supporting the development of landing, navigation and air traffic control techniques and equipments.

Gentlemen, this has been a brief sketch of the mechanism that the FAA and NASA have set up to ensure that our R&D programs are well integrated. We are aiming to achieve the maximum return from both our R&D resources. We are working to fill any voids in our joint programs and at the same time to eliminate any potential duplication. The joint working group which developed the first draft of the CARD Implementation Plan has further refined our interrelationships. The CARD Policy Study upon which the CARD Implementation Plan

is based, endorsed the findings of the DOT Air Traffic Control Advisory Committee (ATCAC) which addressed the technical aspects of the ATC system only. The CARD Policy Study addressed all aspects of civil aviation research and development. The Director of the group which did this work was provided from my office on a full-time basis. In addition to these activities, I am also a member of the NASA Research and Technology Advisory Council - Committee on Aeronautics, and Mr. David Israel, a Service Director in my organization, is a member of the NASA Research and Advisory Council-- Committee on Aeronautical Operating Systems. If there are any areas about which you would like further detail, I would be most happy to discuss them in greater depth.