

7/16/79
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STATEMENT OF QUENTIN S. TAYLOR, DEPUTY ADMINISTRATOR OF THE FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON SCIENCE AND TECHNOLOGY, SUBCOMMITTEE ON TRANSPORTATION, AVIATION AND COMMUNICATIONS, CONCERNING THE FAA R,E&D PROGRAM, FEBRUARY 20, 1979.

MR. CHAIRMAN, I APPRECIATE THIS OPPORTUNITY TO DISCUSS WITH YOU TODAY THE MISSION OF THE FAA AND HOW OUR RESEARCH AND DEVELOPMENT PROGRAM IS INVOLVED IN HELPING TO FULFILL THE ACCOMPLISHMENT OF THAT MISSION. WITH ME IS AL ALBRECHT, FAA'S ACTING ASSOCIATE ADMINISTRATOR FOR ENGINEERING AND DEVELOPMENT AND BILL FLNER OUR ASSOCIATE ADMINISTRATOR FOR AIR TRAFFIC AND AIRWAY FACILITIES. ON BEHALF OF THE FAA, WE WOULD LIKE TO EXPRESS OUR APPRECIATION FOR THE SUBCOMMITTEE'S INTEREST IN THE FASCINATING, SOMETIMES FRUSTRATING, BUT ALWAYS CHALLENGING SUBJECT OF AVIATION R&D.

THE FAA WAS FORMED PURSUANT TO THE FEDERAL AVIATION ACT OF 1958. WE HAVE OPERATED AS ONE OF THE MODAL ADMINISTRATIONS WITHIN THE DEPARTMENT OF TRANSPORTATION SINCE THE DEPARTMENT WAS ORGANIZED PURSUANT TO THE DEPARTMENT OF TRANSPORTATION ACT OF 1966.

ALTHOUGH WE ADMINISTER A NUMBER OF IMPORTANT STATUTES, OUR BASIC STATUTORY AUTHORITY TO REGULATE IN THE INTEREST OF AVIATION SAFETY IS SET FORTH IN THE FEDERAL AVIATION ACT.

THE FAA SEEKS TO ACHIEVE THIS PRIMARY GOAL OF AVIATION SAFETY THROUGH TWO DISTINCTLY DIFFERENT MECHANISMS, ONE REGULATORY, THE OTHER OPERATIONAL. THE FAA PROMULGATES REGULATIONS, IN THE

INTEREST OF SAFETY, BY ESTABLISHING STANDARDS FOR THE DESIGN, PERFORMANCE AND MAINTENANCE OF AIRCRAFT, AIRCRAFT ENGINES, AND AIRCRAFT EQUIPMENT AND INSTRUMENTS, AND CERTIFICATION OF AIRCRAFT AND AIRMEN.

IN ADDITION TO REGULATION, FAA HAS MAJOR OPERATIONAL FUNCTIONS AND RESPONSIBILITIES WHICH OCCUPY THE BULK OF THE AGENCY'S EMPLOYEES. THEY INCLUDE: (1) PROCUREMENT, INSTALLATION, OPERATION AND MAINTENANCE OF A NATIONWIDE SYSTEM OF AIR NAVIGATION, COMMUNICATIONS, AND SURVEILLANCE FACILITIES; (2) INSTALLATION, OPERATION, AND MAINTENANCE OF THE DOMESTIC AIR TRAFFIC CONTROL SYSTEM WHICH UTILIZES ABOUT 68% OF THE FAA'S TOTAL WORK FORCE OF 55,000; (3) ADMINISTRATION OF A GRANT-IN-AID PROGRAM FOR AIRPORT PLANNING AND DEVELOPMENT; (4) DEVELOPMENT, OPERATION AND ADMINISTRATION OF THE TWO WASHINGTON AIRPORTS; (5) ADMINISTRATION OF A SYSTEM FOR REGISTRATION OF AIRCRAFT; AND (6) DEVELOPMENT AND EVALUATION OF SYSTEMS, PROCEDURES, FACILITIES AND DEVICES TO MEET THE NEEDS FOR SAFE AND EFFICIENT NAVIGATION AND TRAFFIC CONTROL OF ALL CIVIL AND MILITARY AVIATION -- OUR RESEARCH AND DEVELOPMENT PROGRAM.

WE WANT TO DISCUSS OUR ACTIVITIES IN THIS LAST AREA WITH YOU TODAY.

OUR AVIATION SYSTEM IS THE SAFEST IN THE WORLD, BUT IF WE ARE TO SUSTAIN AND IMPROVE ON THIS HIGH LEVEL OF SAFETY IN THE FACE OF INCREASING DEMAND, WE MUST IMPROVE OUR EXISTING SYSTEMS AND PROCEDURES AND STRIVE TO DEVELOP NEW SYSTEMS THAT OFFER ADDED CAPABILITIES AND GREATER EFFICIENCY.

OUR MAJOR THRUSTS IN ENGINEERING AND DEVELOPMENT, OUR REASONS FOR HAVING A SIGNIFICANT PROGRAM, RELATE TO SAFETY; THE PERFORMANCE OF OUR SYSTEM; AND THE PRODUCTIVITY, OR COST, OF OUR SYSTEM.

WE ARE WORKING TO IMPROVE THE AIR TRAFFIC CONTROL SEPARATION AND ADVISORY SERVICE AND REDUCE THE RISK OF MID-AIR COLLISIONS WITH MINIMUM BURDEN ON THE PARTICIPANTS. WE ARE WORKING TO REDUCE THE NUMBER OF APPROACH AND LANDING ACCIDENTS. WE ARE WORKING TO ACHIEVE A MORE ENERGY EFFICIENT SYSTEM THROUGH THE REDUCTION OF AIR TRAFFIC CONTROL DELAY AND INCREASES IN AIRPORT AND AIRSPACE CAPACITY, AND TO REDUCE THE IMPACT OF WEATHER DELAYS. WE WANT TO IMPROVE AIRPORT PAVEMENT BY APPLICATION OF NEW TECHNOLOGY, AND TO REDUCE THE NEGATIVE IMPACTS OF AVIATION ON THE ENVIRONMENT. WE NEED TO EXAMINE THE LONGER TERM TECHNOLOGICAL ALTERNATIVES FOR SYSTEM IMPROVEMENT AND INNOVATION TO COPE WITH GROWING TRAFFIC. WE NEED TO WORK CONTINUALLY TO REDUCE THE LABOR INTENSIVENESS OF OUR SYSTEM BY MAKING BETTER USE OF OUR PEOPLE AND AUTOMATION. THOSE ARE THE BASIC THRUSTS OF OUR ENGINEERING AND DEVELOPMENT PROGRAM.

AL ALBRECHT WILL BE TALKING ABOUT OUR PROGRAM IN SOME DETAIL,
BUT I WOULD LIKE TO TOUCH ON SEVERAL OF OUR MAJOR ACTIVITIES.
THESE INCLUDE FURTHER REDUCING THE THREAT OF MIDAIR COLLISIONS;
CONTINUING PROGRESS IN OUR MICROWAVE LANDING SYSTEM PROGRAM;
OUR PROGRAM TO IMPROVE THE WEATHER SERVICES TO AVIATION, OUR
UPGRADING EFFORTS TO ACCOMMODATE THE RAPID GROWTH OF HELICOPTER
OPERATIONS; AND UPDATING AND MODERNIZING OUR LARGE FAA COMPUTER
COMPLEX.

AIRCRAFT SEPARATION ASSURANCE

I'D LIKE FIRST TO TOUCH ON OUR PROGRAM TO FURTHER REDUCE THE
POSSIBILITY OF MID-AIR COLLISIONS.

ON DECEMBER 27, 1978, SECRETARY ADAMS AND ADMINISTRATOR BOND
ANNOUNCED A WIDE RANGING AIR SAFETY PROGRAM DESIGNED TO PROVIDE
INCREASED PROTECTION AGAINST MID-AIR COLLISIONS AT AND NEAR THE
COMMERCIAL AIRPORTS WHICH SERVE 97 PERCENT OF ALL SCHEDULED
AIRLINE TRAVELERS AND 62 PERCENT OF COMMUTER AIRLINE PASSENGERS.
THIS PROGRAM IS EXPECTED TO REDUCE, BY ABOUT 80 PERCENT, THE
RISK OF NEAR MID-AIR COLLISIONS INVOLVING AIRLINERS OPERATING
ABOVE 10,000 FEET. ON JANUARY 4, A NOTICE OF PROPOSED RULE
MAKING WAS PUBLISHED IN THE FEDERAL REGISTER SETTING FORTH A
PROGRAM WHICH INCLUDES PROPOSALS TO:

- INCREASE RADAR SERVICES AT 80 AIR CARRIER AIRPORTS;
- ESTABLISH TERMINAL CONTROL AREAS AT 44 ADDITIONAL LOCATIONS;

- ESTABLISH POSITIVE CONTROL AIRSPACE COVERING MOST OF THE BUSIEST AIR ROUTES ABOVE 10,000 FEET;
- PROVIDE RADAR SEPARATION SERVICE TO PILOTS WHO REQUEST IT IN ENROUTE AREAS;
- INSTALL INSTRUMENT LANDING SYSTEMS AT A NUMBER OF GENERAL AVIATION AIRPORTS, AND SEVERAL OTHERS.

IN ADDITION, FAA PLANS TO ISSUE AN ADVANCED NOTICE OF PROPOSED RULE MAKING IN MARCH 1979, WHICH WILL PROPOSE:

- ALTITUDE-REPORTING TRANSPONDERS FOR ALL AIRCRAFT OPERATIONS IN TERMINAL CONTROL AREAS AND TERMINAL RADAR SERVICE AREAS BY JULY 1981, WITH TRANSPONDERS INSTALLED IN AIRCRAFT AFTER JULY 1982, TO BE OF THE ADVANCED, DISCRETE ADDRESS VARIETY.
- ACTIVE BEACON COLLISION AVOIDANCE SYSTEM, BY JANUARY 1985, FOR ALL AIR CARRIER AND AIR TAXI AIRCRAFT.

THE ENGINEERING AND DEVELOPMENT ACTIVITY WHICH SUPPORTS THIS EFFORT HAS SEVERAL ELEMENTS:

FIRST, THE DEVELOPMENT OF THE DISCRETE ADDRESS BEACON SYSTEM AND ITS INTEGRAL AUTOMATIC DATA LINK, WHICH WILL SIGNIFICANTLY IMPROVE OUR AIR TRAFFIC CONTROL SURVEILLANCE CAPABILITY AND MAKE POSSIBLE THE IMPLEMENTATION OF A GROUND-BASED COLLISION PROTECTION SYSTEM CALLED THE AUTOMATIC TRAFFIC ADVISORY AND RESOLUTION SERVICE. THE DISCRETE ADDRESS BEACON SYSTEM, NOW UNDERGOING PROTOTYPE TESTING AT OUR NATIONAL AVIATION

ACILITIES EXPERIMENTAL CENTER, FORMS THE HEART OF A NUMBER OF AIR TRAFFIC CONTROL IMPROVEMENTS FOR THE YEARS TO COME.

THE AUTOMATIC TRAFFIC ADVISORY AND RESOLUTION SERVICE UNDER DEVELOPMENT WILL PROVIDE, VIA THE DISCRETE ADDRESS BEACON SYSTEM DATA LINK, INFORMATION ON TRAFFIC OF CONCERN TO AIRCRAFT WITHIN ITS COVERAGE AND WILL, IF NEEDED, AUTOMATICALLY TRANSMIT CONFLICT RESOLUTION INSTRUCTIONS, AS A CHECK ON THE BASIC AIR TRAFFIC CONTROL SYSTEM.

THIRD, WE HAVE A MAJOR DEVELOPMENT UNDERWAY OF AN ACTIVE BEACON COLLISION AVOIDANCE SYSTEM INTEGRATED WITH THE OTHER ELEMENTS, AND USING THE DATA FORMAT OF THE DISCRETE ADDRESS BEACON SYSTEM, WHICH WILL PROVIDE AIR-TO-AIR COLLISION PROTECTION WHERE THE DABS/ATARS SERVICE IS NOT AVAILABLE. WE ARE ALSO DEVELOPING A FULL-CAPABILITY BEACON COLLISION AVOIDANCE SYSTEM WHICH, ALTHOUGH FAR MORE COMPLEX, WILL BE ABLE TO PROVIDE PROTECTION IN ALL AIRSPACE.

MICROWAVE LANDING SYSTEM (MLS)

IN APRIL 1978, THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) SELECTED THE U.S./AUSTRALIAN TIME REFERENCE SCANNING BEAM APPROACH AS THE INTERNATIONAL STANDARD MICROWAVE LANDING SYSTEM, CULMINATING A NINE-YEAR EFFORT TO SELECT A REPLACEMENT FOR THE EXISTING INSTRUMENT LANDING SYSTEM. THE NEXT STEP IN THE INTERNATIONAL PROCESS IS THE COMPLETION OF ICAO MICROWAVE LANDING SYSTEM TECHNICAL STANDARDS AND RECOMMENDED PRACTICES, THE INTERNATIONAL STANDARDS THAT WILL DEFINE THE MLS SIGNAL TO

ENSURE FULL INTERNATIONAL COMPATIBILITY. WE ARE DEEPLY INVOLVED IN THE PREPARATION FOR THE NEXT ICAO STEPS. WE HAVE PREPARED DRAFT STANDARDS AND RECOMMENDED PRACTICES FOR THE MLS SIGNAL-IN-SPACE, WHICH WILL RECEIVE CONSIDERATION BY THE APPROPRIATE ICAO BODY THIS SPRING. A WORLDWIDE ICAO MEETING IS PLANNED NEXT YEAR, TO CONSIDER THE FINAL STANDARDS.

THE NEXT MAJOR FAA MILESTONE IN OUR U.S. MICROWAVE LANDING SYSTEM PROGRAM IS A SERVICE TEST AND EVALUATION PROGRAM. A NUMBER OF SYSTEMS WILL BE DEPLOYED FOR OPERATIONAL DEMONSTRATION AT SELECTED LOCATIONS TO PROVIDE FAA AND AVIATION USERS WITH FIRST-HAND OPERATIONAL EXPERIENCE. WE HAVE JUST COMPLETED INSTALLATION OF AN MLS FOR THE "RIVER" APPROACH AT WASHINGTON NATIONAL AIRPORT AS THE FIRST ELEMENT OF THIS PROGRAM.

FINALLY, WE ARE NEAR COMPLETION OF AN MLS TRANSITION PLAN WHICH IS INTENDED TO IMPLEMENT THE MLS SYSTEM IN THE MOST EFFICIENT AND USEFUL MANNER, WITH THE SMALLEST AMOUNT OF TRANSITION PAIN. WE WILL, OF COURSE, DISCUSS THIS TRANSITION PROPOSAL WITH THE USER COMMUNITY.

HELICOPTERS

DURING THE LAST YEAR, WE UNDERTOOK A NUMBER OF EFFORTS TO ENABLE THE CURRENT AIR TRAFFIC CONTROL SYSTEM TO ACCOMMODATE A FULL RANGE OF HELICOPTER OPERATIONS. R&D EFFORTS PERTAINING TO HELICOPTERS HAVE BEEN EXPEDITED. SOME HIGHLIGHTS IN THIS AREA INCLUDE:

- WE ARE BEGINNING A PRIORITY PROGRAM TO IMPROVE HELICOPTER ICING CERTIFICATION STANDARDS AND CRASHWORTHINESS STANDARDS.
- WITH NASA AND THE COAST GUARD, WE ARE IN THE PROCESS OF DEVELOPING IMPROVED OFF-SHORE NAVIGATION PROCEDURES. WE ARE CURRENTLY CONDUCTING A FLIGHT TEST PROGRAM USING THE NASA CH-53 HELICOPTER TO EVALUATE AIRBORNE RADAR APPROACHES AND THE USE OF LORAN-C AS A NAVIGATION AID TO OFF-SHORE OIL PLATFORMS.
- WE HAVE IMPROVED COMMUNICATIONS FOR HELICOPTERS OPERATING OFF THE NEW JERSEY COAST. WHERE COMMUNICATIONS SERVICES WERE ONCE AVAILABLE ABOUT A THIRD OF THE WAY TO THE OFF-SHORE OIL RIGS AT ENROUTE ALTITUDES, THEY ARE NOW AVAILABLE ALL THE WAY AT THESE SAME ALTITUDES.
- WE ARE NOW SOLICITING USER COMMENTS RELATED TO SETTING UP SPECIAL HELICOPTER ROUTES IN THE NORTHEAST CORRIDOR.
- WE ARE DEVELOPING SPECIAL TERMINAL INSTRUMENT APPROACH PROCEDURES USING THE TEST HELICOPTER AT NAFEC AS WELL AS OUR BELL 206L HELICOPTER.

WEATHER PROGRAM

ANOTHER KEY PROGRAM IS OUR EFFORTS TO IMPROVE THE GATHERING AND FORECASTING OF HAZARDOUS WEATHER INFORMATION AND ITS ULTIMATE DISSEMINATION. FAA, THE NATIONAL WEATHER SERVICE AND THE U.S. AIR FORCE'S AVIATION WEATHER SERVICE ARE JOINTLY TESTING DOPPLER RADARS AT THE NATIONAL SEVERE STORMS LABORATORY AT NORMAN, OKLAHOMA. DOPPLER WEATHER RADARS HAVE THE ADDED CAPABILITY OVER THE CURRENT WEATHER RADARS OF MEASURING ACTUAL TURBULENCE AND WIND CONDITIONS, AS WELL AS PRECIPITATION.

IN ANOTHER EFFORT, IMPROVED SHORT TERM (0 TO 30 MINUTES) FORECASTING TECHNIQUES ARE BEING DEVELOPED. FAA AND THE NATIONAL WEATHER SERVICE WILL BEGIN TESTING A TECHNIQUE WHEREBY RADAR INFORMATION WILL BE COMBINED WITH COMPUTER PROCESSING TO PROVIDE ACCURATE SHORTER TERM FORECASTING.

IN THE AREA OF WINDSHEAR PREDICTION, WE WILL HAVE COMPLETED IMPLEMENTATION OF A NATIONWIDE LOW-LEVEL WINDSHEAR FORECASTING SYSTEM AT 60 AIRPORTS, IN LATE MARCH 1979.

AIR TRAFFIC CONTROL ADVANCED COMPUTER DEVELOPMENT

DIGITAL COMPUTERS ARE THE BACKBONE OF THE MODERN AIR TRAFFIC CONTROL PROCESS. THE ATC COMPUTERS IN USE AT THE AIR ROUTE TRAFFIC CONTROL CENTERS AND LARGER TERMINAL CONTROL FACILITIES ARE BASED ON MID-1960 TECHNOLOGY. CHANGING OPERATIONAL

REQUIREMENTS, THE ADDITION OF NEW FUNCTIONS, AND INCREASED AIR TRAFFIC HAVE COMBINED TO ACCELERATE THE DATE BY WHICH THESE COMPUTERS WILL REACH THEIR UPPER LIMITS OF CAPACITY. NEW CAPABILITIES AND MORE AUTOMATION WILL BE NEEDED IN COMING YEARS TO SAFELY ACCOMMODATE TRAFFIC GROWTH. ALSO, AS THE SYSTEM GETS OLDER, MAINTENANCE IS BECOMING INCREASINGLY EXPENSIVE. TO ACHIEVE PLANNED PRODUCTIVITY AND SAFETY IMPROVEMENTS, A DELIBERATE AND WELL-PLANNED REPLACEMENT OF THE CURRENT AIR TRAFFIC CONTROL COMPUTER COMPLEX IS IMPERATIVE. THE OBJECTIVE OF OUR PROGRAM CONCERNING ADVANCED COMPUTERS IS TO DETERMINE THE FEASIBILITY OF EITHER ENHANCING THE CURRENT COMPUTER SYSTEM OR TOTALLY REPLACING IT IN THE LATE 1980'S. OVER THE NEXT THREE YEARS, AN INTENSIVE FAA WIDE EFFORT WILL BE CARRIED OUT INVOLVING REQUIREMENTS ASSESSMENT, SYSTEM DESIGN, AND TRANSITION PLANNING.

THE HIGH COST AND GREAT COMPLEXITY OF A PROGRAM TO EVOLVE TO A NEW COMPUTER COMPLEX REPRESENTS A CHALLENGE, BUT ALSO AN OPPORTUNITY--A WINDOW IN TIME WHICH COMES ALONG ONLY ONCE IN 20 OR 25 YEARS. BECAUSE COMPUTERS INCREASINGLY AFFECT NEARLY EVERYTHING WE DO AND ALL FACETS OF THE FAA SYSTEM, A NEW COMPUTER SYSTEM CHALLENGES US TO FORMULATE THE SHAPE OF THE AIR TRAFFIC CONTROL SYSTEM AND ITS PROCESSES FOR MANY YEARS TO COME. WE HAVE BEEN WORKING TO DEFINE THAT SYSTEM, USING OUR OWN INTERNAL RESOURCES AND SOLICITING THE VIEWS AND JUDGMENTS OF BOTH USERS AND INDUSTRY. WE ARE PREPARING TO MAKE A SERIES OF DECISIONS

WHICH WILL DRIVE NOT ONLY THE SHAPE OF THE NEW COMPUTER SYSTEM,
BUT THE SHAPE OF THE AIR TRAFFIC CONTROL SYSTEM TO COME. WE
THINK IT WILL BE A FAR MORE AUTOMATIC SYSTEM THAN AT PRESENT,
AND WE WILL ENDEAVOR TO MAKE USE OF THE VERY BEST OF THE NEW
TECHNOLOGY.

OUR WORK WITH THE USER COMMUNITY IN THIS AND MANY OTHER EFFORTS
LEADS ME TO THE QUESTION OF THE TECHNICAL ADVISORY COMMITTEE.
IN OUR LAST APPEARANCE BEFORE THIS SUBCOMMITTEE, THE FAA
COMMITTED ITSELF TO RECONSIDER THE CURRENT NEED FOR A TECHNICAL
ADVISORY COMMITTEE AS WAS CONSTITUTED IN 1976. THAT COMMITTEE
CONSISTED OF 15 HIGH-LEVEL SCIENTIFIC EXPERTS WHO CONSIDERED
BROAD ISSUES OF TECHNOLOGY AND RESEARCH AND DEVELOPMENT. IT DID
NOT GET INVOLVED IN ISSUES OF OPERATIONAL PHILOSOPHY, NOR DID IT
ADDRESS OR REPRESENT THE VIEWS OF THE AVIATION USERS. WE ARE
NOW CONVINCED THAT SUCH USER INPUTS, HOWEVER, ARE REQUIRED IN
OUR MAJOR DECISIONMAKING, AND WE HAVE TAKEN STEPS TO IMPROVE THE
FLOW OF INPUT FROM THE AVIATION COMMUNITY. IN ADDITION TO THE
FORMAL REGULATORY PROCESS, WE OBTAIN INPUTS THROUGH TECHNICAL
CONFERENCES, AVIATION TOWN MEETINGS WITH SPECIFIC SEGMENTS OF
THE INDUSTRY, NOTICES OF PROPOSED POLICY, AND DISCUSSIONS WITH
PROFESSIONAL SOCIETIES.

WE ARE JUST COMPLETING A MAJOR EFFORT TO GATHER USER VIEWS
THROUGH THE PROCESS WE HAVE CALLED THE NEW ENGINEERING AND
DEVELOPMENT INITIATIVES PROCESS. THIS PROCESS HAS BEEN AN

INTENSIVE EFFORT INVOLVING VIRTUALLY ALL MAJOR AVIATION INTERESTS WORKING IN DETAIL ON THE LARGE NUMBER OF ISSUES INVOLVED IN SYSTEM EVOLUTION. I BELIEVE WE GAIN A BETTER AND MORE DIRECTLY USABLE SOURCE OF INFORMATION BY THESE MEANS THAN BY A FORMALLY CONSTITUTED TECHNICAL ADVISORY COMMITTEE.

AL ALBRECHT WILL BE REPORTING ON THE NEW INITIATIVES EFFORT IN MORE DETAIL.

MR. CHAIRMAN, THE R&D BUDGET REQUEST FOR FY-1980 IS \$75.1 MILLION. THIS IS ABOUT 2.4 PERCENT OF THE TOTAL PROPOSED FAA BUDGET. AS SECRETARY ADAMS STATED IN ANNOUNCING DOT'S PROPOSED BUDGET, "OURS IS A LEAN BUDGET BUT STRONG WHERE IT MUST BE STRONG. WE HAVE ALIGNED OUR RESOURCES TO PLACE THE HIGHEST EMPHASIS ON THOSE PROGRAMS WHICH CONTRIBUTE TO SAFETY AND EFFICIENCY OF THIS NATION'S TRANSPORTATION SYSTEM. CONSISTENT WITH THE ADMINISTRATION'S AND THE DEPARTMENT'S POLICY OF RESTRAINT, MANY OTHER PROGRAMS ARE BEING CONTINUED AT A LEVEL APPROPRIATE TO THE ECONOMIC CIRCUMSTANCES."

THIS CONCLUDES MY FORMAL TESTIMONY. NOW I WOULD LIKE TO TURN THE PROCEEDINGS OVER TO AL ALBRECHT, WHO WILL DISCUSS IN DETAIL THE ENGINEERING AND DEVELOPMENT PROGRAMS NOW UNDERWAY TO ENSURE A SAFE AND EFFICIENT ATC SYSTEM OF TODAY WHILE KEEPING PACE WITH THE AVIATION TECHNOLOGY NEEDED FOR THE FUTURE.