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DOT/FEDERAL AVIATION ADMINISTRATION

BEFORE THE

HOUSE SCIENCE AND TECHNOLOGY COMMITTEE,
SUBCOMMITTEE ON TRANSPORTATION,
AVIATION, AND MATERIAL

CONCERNING R&D IMPLEMENTATION

FEBRUARY 18, 1981

MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM GRATEFUL FOR THE OPPORTUNITY TO BE HERE TODAY TO DISCUSS WITH YOU OUR PLANS FOR THE IMPLEMENTATION OF EQUIPMENT INTO THE NATIONAL AIRSPACE SYSTEM, DESCRIBE THE MANAGEMENT INTERACTION WITH THE ENGINEERING AND DEVELOPMENT ORGANIZATION, AND GIVE YOU MY VIEWS CONCERNING THE NEED FOR CAPITAL INVESTMENT.

BUT FIRST, LET ME TALK ABOUT A COUPLE OF OTHER THINGS.

ONE OF THE MAJOR RESPONSIBILITIES OF THE FAA IS THE SAFE AND EXPEDITIOUS MOVEMENT OF AIR TRAFFIC. IT IS A RESPONSIBILITY WHICH I BELIEVE HAS BEEN VERY WELL CARRIED OUT. WE HAVE THE FINEST, SAFEST, MOST EFFICIENT AIR TRAFFIC SYSTEM IN THE WORLD. THERE IS ABSOLUTELY NO DOUBT ABOUT THAT -- IT'S TRUE IN RELATIVE TERMS AND IT'S TRUE IN ABSOLUTE TERMS. WE OPERATE AND MAINTAIN ABOUT 15,000 ELECTRONIC

FACILITIES -- RANGING FROM RELATIVELY UNSOPHISTICATED COMMUNICATIONS OUTLETS TO THE LARGEST, MOST COMPLEX AIR TRAFFIC CONTROL COMPUTER SYSTEM IN THE WORLD. THE AVAILABILITY OF OUR NAVIGATIONAL AIDS RUNS OVER 99 PERCENT. OUR COMMUNICATIONS FACILITIES ARE EVEN BETTER. OUR EN ROUTE COMPUTERS, WHICH ARE SCHEDULED TO OPERATE IN EACH AIR ROUTE TRAFFIC CONTROL CENTER AN AVERAGE OF 21.5 HOURS PER DAY, EXPERIENCE LESS THAN ONE OUTAGE PER CENTER PER WEEK. THE RECORD OF PERFORMANCE OF THE NATIONAL AIRSPACE SYSTEM IS EXCELLENT, BUT IT ISN'T GOOD ENOUGH. I AM SURE, AND YOU CAN BE ASSURED, THAT WE ARE DEDICATED TO EXPLORING EVERY OPPORTUNITY FOR IMPROVEMENT AND TAKING ADVANTAGE OF THOSE WHICH OFFER THE GREATEST PROMISE FOR IMPROVEMENT.

OBVIOUSLY WE CANNOT IMPLEMENT EVERY IDEA, BUT WE CAN PUT THOSE WITH THE GREATEST RETURN ON INVESTMENT AT THE TOP OF OUR LIST. REALIZING THAT RESOURCES ARE LIMITED, GOOD BUSINESS SENSE DICTATES THAT'S THE WAY IT SHOULD BE.

TO REEMPHASIZE THESE POINTS -- WE HAVE A VERY FINE SYSTEM -- IT'S GETTING BETTER ALL THE TIME -- IT VERY LIKELY WILL NEVER BE GOOD ENOUGH.

NOW LET US DIRECT OUR ATTENTION TO THE NEED FOR CAPITAL INVESTMENT. IN MY JUDGMENT, THAT NEED FALLS INTO FOUR CATEGORIES:

- THE NEED FOR EXPANSION
- THE NEED FOR IMPROVEMENT
- THE NEED FOR REPLACEMENT
- THE NEED FOR NEW SYSTEMS

WHEN I SPEAK OF SYSTEM EXPANSION, I AM TALKING ABOUT ADDING FACILITIES WHICH ARE FUNCTIONALLY THE SAME AS THOSE WHICH ALREADY EXIST IN THE NATIONAL AIRSPACE SYSTEM -- MORE COMMUNICATIONS FACILITIES -- MORE NAVIGATIONAL FACILITIES -- MORE PRECISION LANDING FACILITIES -- MORE RADAR FACILITIES (BOTH TERMINAL AND LONG RANGE) AND SO ON. THE NEED FOR EXPANSION IS GENERALLY PREDICATED ON AIRWAY PLANNING STANDARDS -- WHICH PROVIDE CRITERIA FOR THE INSTALLATION OF ADDITIONAL FACILITIES. THE CRITERIA ARE BASED ON AVIATION ACTIVITY LEVELS -- CONSIDERING AIRCRAFT MOVEMENTS AND ENPLANED PASSENGERS -- AND IMPROVEMENTS TO SAFETY AND EFFICIENCY OF THE NATIONAL AIRSPACE SYSTEM.

WHEN I SPEAK OF IMPROVEMENT, I AM TALKING ABOUT GENERAL MODERNIZATION -- SHORT OF REPLACEMENT -- AND THE RELOCATION

OF FACILITIES TO SATISFY NEW OR CHANGING OPERATIONAL REQUIREMENTS. THIS WOULD INCLUDE SUCH THINGS AS MODERNIZING A TOWER CAB OR RADAR ROOM BY PROVIDING NEW CONSOLES OR REARRANGING THE LAYOUT. IT WOULD ALSO INCLUDE RELOCATING FACILITIES SUCH AS RADARS OR AIR TRAFFIC CONTROL TOWERS TO ENHANCE SAFETY OR OTHERWISE IMPROVE THE OPERATION.

THE NEED FOR REPLACEMENT IS A RELATIVE NEW COMER TO OUR LIST OF NEEDS. IT IS A NEED WE HAVE NOT REALLY BEEN FACED WITH TO ANY GREAT DEGREE UNTIL THE LAST FEW YEARS. THERE ARE REALLY TWO REASONS FOR THAT. FIRST -- THE EQUIPMENT IN THE NATIONAL AIRSPACE SYSTEM THAT WAS INSTALLED IN THE 40'S, 50'S, AND EARLY 60'S IS REACHING THE END OF ITS USEFUL LIFE. A SIGNIFICANT SHARE OF OUR CAPITAL INVESTMENT DOLLARS MUST BE DEVOTED TO EQUIPMENT REPLACEMENT. SECONDLY, THE GREAT TECHNOLOGICAL ADVANCES, WHICH HAVE BEEN MADE IN THE LAST DECADE OR SO, PROVIDE US WITH THE OPPORTUNITY TO DRAMATICALLY INCREASE OUR PRODUCTIVITY BY REPLACING MANPOWER INTENSIVE, TUBE-TYPE EQUIPMENT WITH MODERN SOLID STATE EQUIPMENT. LET ME GIVE YOU JUST ONE EXAMPLE. OUR FIRST MAJOR PROGRAM TO REPLACE TECHNOLOGICALLY OBSOLETE, MANPOWER INTENSIVE EQUIPMENT IS THE VORTAC REPLACEMENT PROGRAM. WE WILL HAVE INVESTED ABOUT $150 MILLION AND, WHEN THE NEW EQUIPMENT IS INSTALLED,

WILL SAVE OVER 700 POSITIONS WHICH, WHEN YOU CONSIDER TRAVEL, UTILITIES, SUPPLY SUPPORT, TRAINING, AND SALARIES, EQUATES TO ABOUT $30 MILLION ANNUALLY.

WHEN WE TALK ABOUT NEW SYSTEMS, WE ARE TALKING ABOUT ADDITIONAL FUNCTIONAL CAPABILITIES -- WHICH ARE DESIGNED TO IMPROVE SAFETY OR EFFICIENCY OR BOTH. HERE I AM TALKING ABOUT THINGS LIKE DABS/DATA LINK, ATARS, ETABS, AUTOMATIC CONFLICT FREE CLEARANCE AND THE LIKE.

IN YOUR LETTER INVITING ME TO APPEAR HERE, YOU ASKED THAT I DISCUSS PLANS BEYOND FY 1982 FOR PROCUREMENT AND INSTALLATION -- WITH EMPHASIS ON THOSE PROJECTS WHICH HAVE -- OR WILL SOON -- EMERGE FROM THE R&D ORGANIZATION. THE R&D "PRODUCTS" WE PLAN TO IMPLEMENT IN THE NEXT SEVERAL YEARS INCLUDE: ESTABLISH ASDE-3; ETABS; TERMINAL MTD; MLS; TERMINAL DABS; AND EN ROUTE COMPUTER REPLACEMENT PROGRAM.

WE MUST RECOGNIZE THAT IMPROVING THE NATIONAL AIRSPACE SYSTEM CAN AND SHOULD ONLY BE DONE IN THE CONTEXT OF NATIONAL TRANSPORTATION PRIORITIES -- AND INDEED -- IN THE EVEN GREATER CONTEXT OF OVERALL NATIONAL PRIORITIES, AND SOME OF THESE PROJECTS MAY NOT BE IMPLEMENTED AS SOON AS WE WOULD LIKE BECAUSE OF OVERRIDING NATIONAL PRIORITIES.

MY POINT IN TALKING ABOUT THESE FOUR CATEGORIES OF NEEDS IS TO MAKE CLEAR THE COMPETING DEMANDS FOR OUR CAPITAL DOLLARS. THE DAYS WHEN WE HAD TO DEVOTE OUR CAPITAL INVESTMENT TO ONLY EXPANSION, MODERNIZATION, AND NEW SYSTEMS ARE GONE. WE CANNOT FUND NEW SYSTEMS TO THE EXCLUSION OF THE OTHER NEEDS -- NOR CAN WE DO THE REVERSE. WE MUST STRIVE FOR A BALANCE. OVER THE LAST 3 YEARS, THE DISTRIBUTION HAS BEEN 34 PERCENT TO EXPANSION; 34 PERCENT TO IMPROVEMENT; 20 PERCENT FOR REPLACEMENT; AND 12 PERCENT FOR NEW SYSTEMS.

YOU ALSO ASKED THAT I DISCUSS THE A-109 PROCESS -- AND RELATE THE VARIOUS FACETS OF THE PROCESS TO THE RESPONSIBILITIES OF AIR TRAFFIC AND AIRWAY FACILITIES.

THIS PROCESS BEGINS WITH A MISSION NEED ANALYSIS WHICH INVOLVES EVALUATION AND RECONCILIATION OF THOSE NEEDS IN THE CONTEXT OF OVERALL CAPABILITIES, PRIORITIES, AND RESOURCES. UPON APPROVAL OF THE MISSION NEED BY THE AGENCY HEAD (DECISION POINT #1), THE A-109 PROCESS PROVIDES FOR DEVELOPMENT OF DESIGN CONCEPTS BY A NUMBER OF CONTRACTORS. UPON SELECTION OF THE MOST PROMISING OF THOSE DESIGN CONCEPTS BY THE AGENCY HEAD (DECISION POINT #2), THE SELECTED CONTRACTORS WILL MORE FULLY DEVELOP THEIR DESIGNS AND ACTUALLY DEMONSTRATE THAT THE CRITICAL SUBSYSTEMS WILL PERFORM AS INTENDED. THE AGENCY HEAD WILL THEN SELECT THE MOST PROMISING OF THOSE DESIGNS (DECISION POINT #3), AND THE SUCCESSFUL CONTRACTORS WILL

PROCEED WITH FULL SCALE DEVELOPMENT OR, PERHAPS MORE CORRECTLY, PRODUCE THE FIRST ARTICLE. FOLLOWING TEST AND EVALUATION OF THE FIRST ARTICLE, THE AGENCY HEAD WILL SELECT THE SINGLE CONTRACTOR TO PROCEED INTO FULL PRODUCTION (DECISION POINT #4). WHAT WE HAVE, THEN, WITH THE A-109 PROCESS IS A FRAMEWORK FOR REASONED DECISION-MAKING. IT IS A PROCESS WHICH IS FLEXIBLE AND WHICH CAN BE ADAPTED TO THE SPECIFIC ACQUISITION BEING CONSIDERED. SO LONG AS IT REMAINS THAT WAY AND DOES NOT BECOME AN END IN ITSELF, I BELIEVE IT WILL CONTRIBUTE TO OUR OBTAINING IMPROVED PRODUCTS AT LOWER COSTS. THE NOTION IS THAT THE EXTRA "FRONT END" MONEY REQUIRED FOR MULTIPLE CONTRACTS WILL BE MORE THAN OFFSET BY RETAINING TECHNICAL AND PRICE COMPETITION AS LONG AS POSSIBLE AND THAT ENCOURAGING INNOVATIVE APPROACHES TO FULFILLING OUR MISSION NEEDS WILL RESULT IN IMPROVED PRODUCTS.

ALTHOUGH AIR TRAFFIC AND AIRWAY FACILITIES ARE INVOLVED THROUGHOUT THE ENTIRE PROCESS (AS IS THE E&D ORGANIZATION), THE GREATEST DEGREE OF INVOLVEMENT IS IN THE MISSION NEEDS ANALYSIS AND REQUIREMENTS DEFINITION, THE FIRST ARTICLE PRODUCTION, AND IN THE FULL PRODUCTION.

AS I SAID EARLIER, WE HAVE THE FINEST, SAFEST, MOST EFFICIENT AIR TRAFFIC SYSTEM IN THE WORLD -- AND IT'S GETTING BETTER ALL THE TIME. IT'S GETTING BETTER BECAUSE WE HAVE BEEN ABLE TO ACHIEVE A REASONABLE BALANCE BETWEEN THE COMPETING NEEDS FOR EXPANSION, IMPROVEMENT, REPLACEMENT, AND NEW SYSTEMS. AND IT'S GETTING BETTER BECAUSE WE IN OPERATIONS AND OUR COUNTERPARTS IN ENGINEERING AND DEVELOPMENT HAVE OPENED A CONTINUING -- AND I BELIEVE VERY CONSTRUCTIVE -- DIALOGUE WITH EACH OTHER.

MR. CHAIRMAN, THAT CONCLUDES MY PREPARED STATEMENT. MY ASSOCIATES AND I WILL BE PLEASED TO RESPOND TO ANY QUESTIONS THAT YOU MAY HAVE.