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UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON D.C. 20548

FOR RELEASE ON DELIVERY
EXPECTED AT 9:00 AM
WEDNESDAY, OCTOBER 5, 1977

STATEMENT OF

DONALD L. EIRICH

ASSOCIATE DIRECTOR

LOGISTICS AND COMMUNICATIONS DIVISION

BEFORE THE

SUBCOMMITTEE ON TRANSPORTATION, AVIATION AND WEATHER

COMMITTEE ON SCIENCE AND TECHNOLOGY

HOUSE OF REPRESENTATIVES

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MR. CHAIRMAN AND MEMBERS OF THIS DISTINGUISHED SUBCOMMITTEE

WE APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE YOU TODAY IN CONNECTION WITH YOUR INQUIRY INTO NAVIGATION SYSTEMS. AS YOU KNOW, WE PLAN SHORTLY TO ISSUE A REPORT TO THE CONGRESS ENTITLED "NAVIGATION PLANNING--A NEW DIRECTION IS NEEDED." I HAVE WITH ME TODAY MR. WILBUR BAILEY AND MR. ROBERT CARPENTER. MR. BAILEY IS MY ASSISTANT DIRECTOR AND MR. CARPENTER WAS THE AUDIT MANAGER RESPONSIBLE FOR OUR FORTHCOMING REPORT.

I WILL SUMMARIZE OUR FINDINGS AND RECOMMENDATIONS AT THIS TIME, FOLLOWING WHICH WE WILL BE HAPPY TO TRY TO ANSWER ANY QUESTIONS YOU MAY HAVE.

IN RECENT YEARS KNOWLEDGEABLE PEOPLE BOTH WITHIN AND OUTSIDE GOVERNMENT HAVE EXPRESSED GROWING CONCERN OVER THE PROLIFERATION OF NAVIGATION SYSTEMS AND THEIR MOUNTING COSTS.

THE GOVERNMENT IS THE PROVIDER OF RADIONAVIGATION SYSTEMS AND, ALONG WITH THE CIVIL AVIATION AND MARITIME COMMUNITIES, IS ALSO A MAJOR USER. ADDED TO THIS, THERE IS A GROWING INTEREST IN LAND VEHICLE LOCATER SYSTEMS WHICH, IN SOME INSTANCES, MAY RELY UPON RADIONAVIGATION SIGNALS.

THIS SAME CONCERN FOR THE PROLIFERATION OF NAVIGATION SYSTEMS IS WHAT PROMPTED GAO TO UNDERTAKE ITS REVIEW. IN SHORT, WE WANTED TO FIND OUT WHY THERE ARE SO MANY DIFFERENT SYSTEMS AND WHETHER A SIGNIFICANT REDUCTION IN THE NUMBER OF SYSTEMS WOULD BE FEASIBLE AND STILL MEET THE DIVERSE NEEDS AND COST CONSTRAINTS OF USERS.

IN JULY OF THIS YEAR THE PRESIDENT'S OFFICE OF TELE-COMMUNICATIONS POLICY RECEIVED ITS CONTRACTED STUDY ON RADIO-NAVIGATION SYSTEMS, ECONOMIC AND PLANNING ANALYSIS. I MENTION THIS BECAUSE THIS STUDY, AS DOES OUR REPORT, POSTULATES LARGE SAVINGS THROUGH THE WIDEST POSSIBLE USE OF THE NAVIGATION SATELLITE SYSTEM KNOWN AS

NAVSTAR--GLOBAL POSITIONING SYSTEM OR THE GPS--AND THE PHASE OUT OF NUMEROUS OTHER SYSTEMS. ALTHOUGH THE OTP STUDY AND OUR REPORT DIFFER IN MANY OF THEIR DETAILS AND THE PROPOSED TIMING OF EVENTS, SUCH AS SYSTEMS' PHASE OUT, THEY REACH MANY OF THE SAME OR SIMILAR CONCLUSIONS.

WE CONCENTRATED OUR EVALUATION ON MAJOR ENROUTE NAVIGATION SYSTEMS INCLUDING THE TEN EXISTING SYSTEMS SHOWN ON THIS CHART. (CHART 1)

WE ALSO EVALUATED THREE SYSTEMS IN DEVELOPMENT. THIS CHART (CHART 2) LISTS THEM. THE "PLRS" IS THE ACRONYM FOR THE GROUND-BASED POSITION LOCATION REPORTING SYSTEM. WE EXAMINED ONLY THE POSITIONING COMPONENT OF THIS SYSTEM.

THIS NEXT CHART (CHART 3) LISTS THOSE SYSTEMS WHICH WE DID NOT REVIEW. LET ME ADD, HOWEVER, THAT WE BELIEVE THAT NAVSTAR MAY EVENTUALLY PLAY AN IMPORTANT ROLE IN AIRCRAFT APPROACH AND LANDINGS AND MIGHT BECOME A SERIOUS ALTERNATIVE TO LONG RANGE RADARS.

OUR REPORT IDENTIFIED SUBSTANTIAL NAVIGATION OVERLAP OR DUPLICATION OF FUNCTION. THIS CHART (CHART 4) ILLUSTRATES WHAT WE MEAN BY OVERLAP. I SHOULD EXPLAIN THAT THE WORDS "EQUALLY WELL OR BETTER" CONSIDER NAVIGATION ACCURACY, GEOGRAPHICAL COVERAGE, RELIABILITY, EASE OF USE, AND COST OR USER AFFORDABILITY. I SHOULD ALSO EXPLAIN THAT WE USED GENERALLY ACCEPTED VALUES FOR THESE ATTRIBUTES SINCE WE DID NOT INDEPENDENTLY VERIFY THEM. ALTHOUGH THE EXAMPLE SHOWN LISTS SYSTEMS FOR OVERLAND FLIGHTS, WE FOUND SIMILAR EXAMPLES OF OVERLAP IN ALL ENVIRONMENTAL AREAS.

I MUST APOLOGIZE FOR THIS NEXT CHART (CHART 5) BECAUSE IT IS EXTREMELY BUSY. HOWEVER, IT SHOWS WHAT WE MEAN BY OVERLAP. THERE IS, OF COURSE, NO SINGLE NAVIGATION SYSTEM TODAY WHICH CAN MEET THE NEEDS OF ALL OR EVEN MOST USERS. HOWEVER, AS THE CHART CLEARLY SHOWS, THE PLANNED NAVSTAR SYSTEM OFFERS THE POTENTIAL FOR MEETING THE NEEDS OF MOST USERS. THERE ARE IMPORTANT EXCEPTIONS WHICH I WILL COVER LATER.

DESPITE THIS OBVIOUS OVERLAP THE FAA, COAST GUARD AND THE MILITARY SERVICES PLAN TO MODERNIZE OR EXPAND EXISTING SYSTEMS WHILE THE MILITARY ARE ALSO DEVELOPING NEW SYSTEMS WHICH COULD REPLACE THEM.

IN OUR REPORT 1/ OF MARCH 26, 1974, DEALING ONLY WITH THE COAST GUARD AND MARITIME NAVIGATION NEEDS, WE OBSERVED THAT THE PROLIFERATION OF NAVIGATION SYSTEMS HAD TWO PRINCIPAL CAUSES. FIRST, AS NEW AND IMPROVED SYSTEMS CAME ALONG THERE WAS RESISTANCE TO DISCARD OLDER SYSTEMS BECAUSE OF USER COSTS TO CHANGE OVER. SECOND, GOVERNMENT PLANNERS OF NAVIGATION SYSTEMS HAVE BEEN UNABLE OR UNWILLING TO RECONCILE THE PERCEIVED DIFFERENCES IN NAVIGATION REQUIREMENTS AMONG THE CIVIL AND MILITARY AVIATION AND MARITIME COMMUNITIES. WE ALSO OBSERVED THAT THE INTERAGENCY NAVIGATION PLANNING COMMITTEE, ESTABLISHED IN LATE 1973 BY OTP CIRCULAR 12 AND CHAIRED

1/ "SUMMARY OF GAO STUDY OF RADIONAVIGATION SYSTEMS MEETING MARITIME NEEDS" (B-180715)

BY THE DEPARTMENT OF TRANSPORTATION, SEEMED TO BE AN APPROPRIATE FORUM FOR THE RESOLUTION OF DIVERSE OR PAROCHIAL VIEWS. HOWEVER, IN OUR RECENT REVIEW WE FOUND THAT THIS COMMITTEE HAD NOT, IN OVER THREE AND A HALF YEARS, PRODUCED A NATIONAL PLAN FOR NAVIGATION WHICH WOULD SIGNIFICANTLY REDUCE THE NUMBER OF OVERLAPPING SYSTEMS. ALTHOUGH THIS MATTER HAS RECEIVED INCREASING ATTENTION BOTH WITHIN AND OUTSIDE GOVERNMENT, NO ONE SEEMED TO BE DOING ANYTHING WHICH WOULD EFFECTIVELY SOLVE THE PROBLEM.

WITH, ADMITTEDLY, SOME TREPIDATION WE PREPARED AN ALTERNATE PLAN WHICH WE BELIEVE, IF IMPLEMENTED, WOULD MARKEDLY REDUCE THE MIX OF SYSTEMS WHILE SATISFYING THE NEEDS OF ALL USERS. OUR ALTERNATIVE WAS BASED UPON THE FACTORS SHOWN ON THIS CHART. (CHART 6)

NOT UNEXPECTEDLY, SOME AGENCIES HAVE CRITICIZED OUR ALTERNATIVE SINCE IT RESTS BASICALLY UPON THE SUCCESSFUL DEVELOPMENT, TEST AND EMPLOYMENT OF NAVSTAR

WHOSE TEST VALIDATION WILL NOT LIKELY BE CONFIRMED UNTIL LATE 1978. TO THIS DEGREE, OUR PROPOSAL CONTAINS RISK. HOWEVER, IN OUR VIEW, THE OPPORTUNITIES FOR SUBSTANTIAL SAVINGS BY DEFERRING SPENDING FOR SYSTEMS WHICH, WE ANTICIPATE, NAVSTAR COULD REPLACE JUSTIFY THIS RISK, FOR THE PERIOD INVOLVED.

WE SHOULD ADD THAT THERE IS NO GREAT RISK BY DEFERRING THE SPENDING FOR SYSTEMS WHICH NAVSTAR MAY REPLACE SINCE, FOR THE MOST PART, THESE SYSTEMS ARE ALREADY PROVIDING NAVIGATION TO THE COMMUNITIES WHICH NEED THEM.

OUR ALTERNATIVE PLAN ASSIGNS THE 13 NAVIGATION SYSTEMS TO 3 CATEGORIES: NEEDED SYSTEMS, POTENTIALLY NEEDED SYSTEMS, AND UNNEEDED SYSTEMS AS SHOWN ON THIS CHART. (CHART 7) BY "POTENTIALLY NEEDED SYSTEMS," WE MEAN THAT THEY WILL LIKELY BE NEEDED FOR AN INDEFINITE TIME OR AT LEAST UNTIL THE NAVSTAR SYSTEM HAS FULLY MATURED AND BECOME UNIVERSALLY ACCEPTED.

SINCE THE DEPARTMENT OF DEFENSE WITNESS HAS ALREADY COVERED NAVSTAR, WE WILL NOT DO SO EXCEPT TO TOUCH UPON TWO KEY POINTS OF THE PROGRAM WHICH LED US TO CONCLUDE THAT NAVSTAR MAY INDEED HAVE THE POTENTIAL TO REPLACE THE UNNEEDED SYSTEMS. THE FIRST OF THESE POINTS CONCERNED THE DEPARTMENT OF DEFENSE'S ASSURANCE THAT IT WOULD NOT DENY THE COARSE OR LOW ACCURACY SIGNALS TO USERS, ALTHOUGH IT MIGHT DESIGN A CAPABILITY TO DENY OTHER THAN MILITARY USE OF THE PRECISE OR HIGH ACCURACY SIGNALS IN WAR OR NATIONAL EMERGENCY. THE SECOND KEY POINT WAS THE CONCLUSION MADE BY ROCKWELL INTERNATIONAL AND MAGNAVOX IN THEIR STUDY REPORTS THAT CIVIL NAVSTAR RECEIVERS (KNOWN AS "SPARTAN" RECEIVERS) COULD BE MANUFACTURED TO SELL, IN LARGE QUANTITY PRODUCTION, IN THE RANGE OF NOT MORE THAN $2,500. WE WILL NOT COMMENT FURTHER ON THESE STUDIES SINCE WE UNDERSTAND THAT OFFICIALS OF THESE CORPORATIONS WILL PROVIDE INFORMATION AT THESE HEARINGS. HOWEVER, THE

POINT WE WANT TO MAKE IS THAT THIS WOULD MAKE NAVSTAR AFFORDABLE TO THE MAJORITY OF GENERAL AVIATION AIRCRAFT OWNERS AND TO THAT SEGMENT OF THE MARITIME COMMUNITY WHICH USE SYSTEMS SUCH AS OMEGA OR LORAN C.

DURING OUR REVIEW SEVERAL OFFICIALS RAISED QUESTIONS AS TO WHETHER NAVSTAR COULD GAIN WIDE CIVIL OR INTERNATIONAL ACCEPTANCE IF IT WERE TO REMAIN UNDER MILITARY CONTROL. WE THINK THAT A DECISIO IN THIS MATTER IS IN THE PUBLIC POLICY DOMAIN; THEREFORE, WE WILL NOT ATTEMPT TO ANSWER THE QUESTION CONCLUSIVELY. WE WOULD LIKE TO SUGGES HOWEVER, CERTAIN CONSIDERATIONS WHICH BEAR UPON THE ANSWER. FIRST, AS PREVIOUSLY NOTED, THE MILITARY HAS STATED THAT IT WILL NOT DENY TH COARSE SIGNAL TO USERS. SECOND, MAGNAVOX COMPANY RECENTLY TOLD US THAT THEY HAD ALREADY SOLD SOME 800 TRANSIT RECEIVERS TO CIVIL USERS, BOTH DOMESTIC AND FOREIGN. OTHER COMPANIES ARE ALSO SELLING TRANSIT RECEIVERS. TRANSIT IS, OF COURSE, NAVY OPERATED. THIRD, IN PRESENT CIRCUMSTANCES AT LEAST, CIVIL AND

FOREIGN USERS OF NAVSTAR WOULD NOT BE PAYING FOR THE SATELLITES AND HENCE WE THINK SOME COUNTRIES MIGHT FIND IT IN THEIR ECONOMIC INTEREST TO PHASE OUT TERRESTRIAL SYSTEMS WHOSE OPERATING, MAINTENANCE AND TEST CALIBRATION COSTS ARE SIGNIFICANT. FOR EXAMPLE, ACCORDING TO A DOD STUDY, OUR GOVERNMENT SPENDS ABOUT $55 MILLION A YEAR TO OPERATE AND MAINTAIN VOR, VORTAC, TACAN AND LORAN TRANSMITTERS. FINALLY, IT IS WELL KNOWN THAT MOST RADIONAVIGATION SYSTEMS IN USE TODAY BEGAN AS MILITARY DEVELOPMENTS.

I WILL TOUCH ONLY BRIEFLY UPON THE OTHER "NEEDED" AND "POTENTIALLY NEEDED" SYSTEMS SINCE I AM SURE THIS SUBCOMMITTEE IS WELL AWARE OF THE CAPABILITIES AND LIMITATIONS OF THESE SYTEMS.

ALTHOUGH NAVSTAR HAS THE POTENTIAL FOR MEETING THE NAVIGATION NEEDS OF MOST USERS AND IT IS A HIGHLY RESILIENT OR "FAIL SOFT" SYSTEM, SOME BACKUP WILL BE NEEDED.

INERTIAL AND DOPPLER RADAR SYSTEMS, BEING SELF-CONTAINED, CAN BE USED ANYWHERE. ALTHOUGH RELATIVELY EXPENSIVE, THEY ALSO CAN BE USED AS BACKUP AT THE OPTION OF THE USER. AS YOU KNOW, MANY MILITARY AND INTERNATIONAL AIRLINES USE THESE SYSTEMS. SUBMARINES USE INERTIAL SYSTEMS AS THEIR PRIMARY NAVIGATION SYSTEM BECAUSE RADIO SIGNALS, EVEN FROM OMEGA--AT 10 KHz--WILL NOT PENETRATE SEA WATER TO DESIRED OPERATIONAL DEPTHS.

OMEGA IS A LOW ACCURACY SYSTEM BUT IS ALREADY INTERNATIONALLY ACCEPTED AND ITS USE BY THE MARITIME AND AVIATION COMMUNITIES IS GROWING. WHEN THE LAST OF ITS EIGHT STATIONS COMES INTO SERVICE IT WILL LIKELY OFFER GLOBAL COVERAGE AND MAY BE USED AS A BACKUP TO NAVSTAR UNTIL THE COST OF NAVSTAR RECEIVERS CAN BE REDUCED THROUGH VOLUME PRODUCTION AND COMPETITION.

FINALLY, IT SEEMS UNLIKELY THAT NAVSTAR RECEIVER COSTS WILL SATISFY THE LOW COST NEEDS OF THE SMALL WATERCRAFT

AND AIRCRAFT USERS OF NONDIRECTIONAL BEACONS. GOOD QUALITY MANUAL DIRECTION FINDERS CAN BE PURCHASED IN THE $200 TO $300 RANGE AND BATTERY POWERED HAND HELD UNITS SELL IN THE $100 RANGE. THESE ARE FOR MARINE USE. AIRCRAFT DIRECTION FINDERS COST ABOUT $1,000 OR MORE BUT STILL MAY BE AN ATTRACTIVE ALTERNATIVE TO NAVSTAR FOR SMALL AIRCRAFT USE.

WE FOUND THAT THE DEPARTMENTS AND AGENCIES ARE PLANNING TO SPEND NEARLY $360 MILLION FOR EXPANSION, MODERNIZATION OR DEVELOPMENT OF THE UNNEEDED SYSTEMS, NEARLY 80 PERCENT OF WHICH IS FOR TACAN, VOR AND LORAN. (CHART 8) THIS IS THE AMOUNT PLANNED ONLY OVER THE NEXT 4 OR 5 YEARS AND DOES NOT INCLUDE INSTALLATION OR MAINTENANCE COSTS WHICH, BY SOME ESTIMATES, COULD EQUAL THE EQUIPMENT COSTS. WE THINK THAT MUCH OF THIS PLANNED SPENDING SHOULD BE DEFERRED AS LONG AS NAVSTAR HAS THE POTENTIAL TO REPLACE THESE SYSTEMS. EXCEPTIONS TO DEFERRAL OF SPENDING

SHOULD BE ALLOWED ON A CASE BY CASE BASIS (1) WHERE EITHER SAFETY OR COMBAT READINESS WOULD BE IMPAIRED; (2) WHERE EQUIPMENT IS NEEDED FOR NEW VEHICLES ENTERING THE INVENTORY BEFORE NAVSTAR RECEIVERS ARE AVAILABLE; OR (3) WHERE COSTS FOR OPERATION AND MAINTENANCE OF AGING EQUIPMENT, PRIOR TO ITS PHASE OUT, WOULD EXCEED NEW EQUIPMENT COSTS.

WITH RESPECT TO THE PHASE OUT OF UNNEEDED SYSTEMS, A DISTINCTION MUST BE MADE BETWEEN GOVERNMENT OPERATED TRANSMITTERS AND GOVERNMENT AND CIVIL USER EQUIPMENT (RECEIVERS). THIS CHART DEPICTS A PROPOSED PHASE-OUT SCHEDULE FOR THE TRANSMITTERS. (CHART 9) OBVIOUSLY, THE TRANSMITTERS CANNOT BE PHASED OUT UNTIL NAVSTAR RECEIVERS BECOME WIDELY AVAILABLE AT REASONABLE PRICES. IF NAVSTAR IS ANNOUNCED AS THE PRIMARY SYSTEM FOR LAND, SEA AND AIR USE IN 1982, USERS WILL HAVE 8 YEARS IN WHICH TO CHANGE OVER--BY THE END OF 1989.

THIS IS 2 YEARS LONGER THAN LORAN A USERS ARE BEING GIVEN TO SWITCH TO LORAN C. ALSO, IF THE DEPARTMENT OF TRANSPORTATION STARTS DEVELOPMENT OF LOW COST CIVIL NAVSTAR RECEIVERS WITH FY 1979 FUNDS, SUCH DEVELOPMENT SHOULD BE COMPLETED BY 1982 OR BY THE TIME PUBLIC ANNOUNCEMENT NEED BE MADE.

ALTHOUGH OUR DRAFT REPORT DID NOT ADDRESS RADIO SPECTRUM MATTERS, IT MAY BE OF INTEREST TO NOTE THAT THE PHASE OUT OF SOME SYSTEMS WILL MAKE VERY VALUABLE SPECTRUM AVAILABLE FOR OTHER USES. THIS CHART (CHART 10) ILLUSTRATES SOME POSSIBILITIES. [redacted] Although THE PLANNED MILITARY JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM, CALLED "JTIDS," ~~MAY USE THE UPPER PART OF THIS BAND.~~ will use ~~this~~ The TACAN band, The military believes That its spread spectrum signals will be transparent to other use:

OUR PROPOSED ALTERNATIVE SHOULD NOT BE CONSIDERED AN IMPLEMENTATION PLAN. HOWEVER, IT IDENTIFIES WHAT WE BELIEVE

TO BE A MIX OF SYSTEMS THAT CAN MEET THE VARIETY OF NEEDS. OF COURSE OTHER ALTERNATIVES MAY BE POSSIBLE AS WELL. HOWEVER, UNTIL SUCH TIME AS ANOTHER PLAN IS DEVELOPED AND AGREED UPON BY THE DEPARTMENTS AND AGENCIES CONCERNED, WE BELIEVE THAT OUR PLAN CAN BE THE BASIS FOR PLANNING AND BUDGETING IN THE NEAR TERM AND CAN PROVIDE INTERESTED CONGRESSIONAL COMMITTEES, SUCH AS THIS COMMITTEE, A BASELINE FOR MEASURING THE MERITS OF APPROPRIATION REQUESTS, PARTICULARLY FOR SYSTEMS WHICH MAY NOT BE NEEDED IN FUTURE YEARS.

WE BELIEVE THAT AN IMPLEMENTATION PLAN IS NEEDED. SUCH A PLAN SHOULD CONTAIN SCHEDULES OR MILESTONES COMBINED WITH STRATEGIES FOR THE IMPLEMENTATION. FOR EXAMPLE, A STRATEGY IS NEEDED FOR GAINING CIVIL AND INTERNATIONAL ACCEPTANCE OF NAVSTAR DURING THE 1980s. AS MATTERS NOW STAND, GOVERNMENTS HAVE AGREED TO USE VOR/DME UNTIL JANUARY 1, 1985. UNLESS THE U.S. GOVERNMENT PLANS OTHERWISE, IT SEEMS LIKELY THAT THE VOR/DME AGREEMENT COULD EASILY BE EXTENDED ANOTHER 10 OR MORE YEARS.

BUT A PLAN ALONE WILL ACCOMPLISH LITTLE, WE THINK, UNLESS SOME OFFICE OR ENTITY IN THE EXECUTIVE BRANCH AT A LEVEL ABOVE THE DEPARTMENTS OF DEFENSE AND TRANSPORTATION IS GIVEN FULL RESPONSIBILITY AND AUTHORITY, INCLUDING BUDGET CONTROLS, TO ADMINISTER IT.

ACCORDINGLY, OUR RECOMMENDATIONS ARE: (CHART 11, 12 AND 13, IN ORDER).

FINALLY, WE THINK THAT THIS SUBCOMMITTEE, ALONG WITH OTHER AFFECTED COMMITTEES, SHOULD CONSIDER THE MATTERS SHOWN ON THIS CHART. (CHART 14)

ALTHOUGH WE HAVE NOT YET RECEIVED WRITTEN COMMENTS FROM ALL THE AGENCIES, DISCUSSIONS WITH AGENCY OFFICIALS HAVE BROUGHT OUT THE FOLLOWING:

THE DEPARTMENTS AND OFFICES GENERALLY AGREED THAT THE NUMBER OF OVERLAPPING NAVIGATION SYSTEMS CAN AND SHOULD BE REDUCED, EVENTUALLY. WITH MINOR EXCEPTIONS, OMB, OTP AND DEFENSE GENERALLY AGREED THAT NAVSTAR HAS THE POTENTIAL TO REPLACE A NUMBER OF SYSTEMS, INCLUDING MOST OF THOSE WHICH WE SAID WOULD NOT BE NEEDED. THE

DEPARTMENT OF TRANSPORTATION WAS MUCH MORE GUARDED IN ITS ACCEPTANCE OF NAVSTAR, POINTING OUT THAT NAVSTAR IS IN EARLY DEVELOPMENT AND THAT LORAN C AND VOR/DME WOULD BE NEEDED AT LEAST UNTIL 1995 OR THE YEAR 2000 EVEN IF NAVSTAR IS SUCCESSFUL.

NEARLY ALL COMMENTS POINTED OUT THAT TECHNICAL AND ECONOMIC FACTORS, ESPECIALLY INVOLVING CIVIL USERS, WOULD MAKE THE TRANSITION DIFFICULT AND TIME-CONSUMING. MOST FELT THAT OUR SUGGESTED TIMING FOR THE TRANSITION IS OVERLY OPTIMISTIC BY A NUMBER OF YEARS, SOME MAINTAINING THAT BUDGETARY CONSTRAINTS WOULD DELAY THEIR TRANSITION TO NAVSTAR IN THE TIMEFRAME WE HAD POSTULATED.

OUR REACTION TO THESE VIEWS IS THIS. WITHIN THE OFFICE OF THE SECRETARY OF DEFENSE AND WITHIN EACH OF THE SERVICES, FOR THAT MATTER, THERE HAS BEEN NO CONSENSUS ON NAVIGATION SYSTEMS USAGE OR THE SELECTION OF SYSTEMS FOR PHASE OUT OR RETENTION. NOR HAS THERE BEEN A DEDICATED MANAGEMENT FOCUS FOR NAVIGATION MATTERS IN EACH SERVICE. FOR EXAMPLE, THE FULL USE OF NAVSTAR AS A REPLACEMENT FOR OTHER SYSTEMS HAS NOT YET BEEN IDENTIFIED. FURTHER, DOD HAS

NOT YET ESTABLISHED THE COST BENEFITS OF NAVSTAR. WE THINK THAT THE BENEFITS TO CIVIL OR INTERNATIONAL USAGE OF NAVSTAR COULD ADD MATERIALLY TO THE BENEFITS OF THIS VERY COSTLY SYSTEM. WE BELIEVE THAT THERE HAS ALSO BEEN A LACK OF MANAGEMENT FOCUS AND CONSENSUS IN THE DEPARTMENT OF TRANSPORTATION WHEREIN THE NAVIGATION AFFAIRS OF THE CIVIL MARITIME AND AVIATION COMMUNITIES HAVE EACH PURSUED THEIR OWN PAROCHIAL INTERESTS.

IN SHORT, WE BELIEVE THAT UNTIL THE SERVICES, AGENCIES AND DEPARTMENTS RECONCILE THEIR DIFFERING POSITIONS, THERE IS LITTLE PROSPECT FOR THE DEVELOPMENT OF OR AGREEMENT UPON AN INTERAGENCY NATIONAL PLAN. IN THESE CIRCUMSTANCES WE WOULD HAVE TO AGREE THAT OUR PROPOSED TRANSITION IS OVERLY OPTIMISTIC.

HOWEVER, WE THINK IT MAY BE POSSIBLE TO REDUCE THESE IMPEDIMENTS TO CHANGE OVER IF FIRM RESOLVE AND MANAGEMENT FOCUS, INCLUDING BUDGETARY CONTROLS, CAN BE APPLIED AT APPROPRIATE HIGH LEVELS WITHIN EACH AGENCY AND DEPARTMENT THROUGH THE EXECUTIVE OFFICE OF THE PRESIDENT. THIS IS WHY WE RECOMMENDED THAT THE PRESIDENT AND

HIS SECRETARIES OF DEFENSE and TRANSPORTATION CREATE OR DESIGNATE A SINGLE FOCUS FOR NAVIGATION WITH SUFFICIENT AUTHORITY TO IMPLEMENT DECISIONS TAKEN.

WE EXPECT THAT OUR FINAL REPORT WILL DEAL MORE FULLY WITH AGENCY COMMENTS AND SUGGESTIONS.

MR. CHAIRMAN, THAT CONCLUDES OUR PREPARED TESTIMONY AND MY ASSOCIATES AND I WILL TRY TO ANSWER ANY QUESTIONS WHICH YOU MAY HAVE.