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STATEMENT OF
RICHARD A. DAVIS
ASSOCIATE DIRECTOR, COMMAND, CONTROL, COMMUNICATIONS AND
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NATIONAL SECURITY AND INTERNATIONAL AFFAIRS DIVISION

BEFORE THE

COMMITTEE ON GOVERNMENT OPERATIONS
SUBCOMMITTEE ON LEGISLATION AND NATIONAL SECURITY
UNITED STATES HOUSE OF REPRESENTATIVES

ON

AIRCRAFT IDENTIFICATION PROGRAMS

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MR. CHAIRMAN AND MEMBERS OF THE SUBCOMMITTEE:

I AM PLEASED TO BE HERE TODAY TO TESTIFY ON THE STATUS OF AIRCRAFT IDENTIFICATION ISSUES WITHIN THE DEPARTMENT OF DEFENSE (DOD). OUR AUDIT IN THIS AREA HAS FOCUSED ON DETERMINING (1) WHETHER U.S. AND NORTH ATLANTIC TREATY ORGANIZATION (NATO) ARMED FORCES HAVE THE IDENTIFICATION CAPABILITY NEEDED TO EFFECTIVELY EMPLOY AIR DEFENSE WEAPONS, (2) THE EFFECTIVENESS OF THE JOINT OFFICE ESTABLISHED IN 1980 TO ADDRESS IDENTIFICATION PROBLEMS, AND (3) WHERE PROBLEMS EXIST, WHAT COULD OR SHOULD BE DONE IN BOTH THE SHORT AND LONG-TERM. ALTHOUGH WE HAVE NOT COMPLETED OUR AUDIT, I CAN SHARE WITH YOU SOME OBSERVATIONS BASED ON OUR WORK TO DATE.

BACKGROUND

THE ABILITY TO POSITIVELY IDENTIFY AIRCRAFT AT BEYOND-VISUAL RANGES, AT NIGHT AND DURING BAD WEATHER IS A CRITICAL REQUIREMENT IF CURRENT DEFENSE STRATEGY IS TO BE SUCCESSFUL. DOD HAS LONG RECOGNIZED THAT WE CANNOT MATCH THE WARSAW PACT IN TERMS OF THE QUANTITIES OF TROOPS AND EQUIPMENT, SUCH AS PLANES, TANKS, AND GUNS. THE U.S. STRATEGY, THEREFORE, HAS BEEN TO DEVELOP AND FIELD TECHNICALLY SUPERIOR WEAPON SYSTEMS TO OFFSET ANY NUMERICAL DISADVANTAGE. A KEY TO THE SUCCESS OF THIS STRATEGY IS AN ABILITY TO DETECT AND DEFEAT AIR ATTACKERS BEFORE THEY CLOSE TO WITHIN THE LETHAL RANGE OF THEIR MUNITIONS. TO DO

THIS, DOD HAS DEVELOPED AND FIELDED HIGH PERFORMANCE AIRCRAFT AND AIR DEFENSE SYSTEMS EQUIPPED WITH VERY CAPABLE LONG-RANGE WEAPONS. WITHOUT POSITIVE IDENTIFICATION, THESE QUALITY WEAPON SYSTEMS CANNOT, HOWEVER, BE USED TO THEIR MAXIMUM EFFECTIVE RANGES WITHOUT THE RISK OF ATTACKING FRIENDS AND NEUTRALS. THE ABILITY TO IDENTIFY AIRCRAFT OTHER THAN VISUALLY IS THE FOUNDATION FOR EFFECTIVE AIR BATTLE MANAGEMENT WITH TODAY'S TECHNOLOGY.

IDENTIFICATION METHODS

IDENTIFICATION TECHNIQUES ARE BROADLY CHARACTERIZED AS DIRECT OR INDIRECT. DIRECT IDENTIFICATION INVOLVES AN INTERACTION SOLELY BETWEEN THE AIRCRAFT BEING IDENTIFIED--"THE TARGET"--AND THE OBSERVER. INDIRECT IDENTIFICATION OCCURS WHEN INFORMATION CONCERNING THE TARGET'S IDENTITY IS COMMUNICATED TO THE OBSERVER BY A THIRD PARTY.

DIRECT IDENTIFICATION MAY BE EITHER COOPERATIVE OR NONCOOPERATIVE, DEPENDING ON WHETHER THE INFORMATION USED TO MAKE AN IDENTIFICATION IS INTENTIONALLY PROVIDED BY THE TARGET. COOPERATIVE SYSTEMS OFFER THE POTENTIAL FOR HIGH CONFIDENCE IDENTIFICATION OF FRIENDLY AIRCRAFT. THE PRINCIPAL DRAWBACK OF COOPERATIVE IDENTIFICATION IS ITS ELECTRONIC EMISSIONS, WHICH INCREASE AN AIRCRAFT'S SIGNATURE.

NONCOOPERATIVE TECHNIQUES CAN BE BROADLY CLASSIFIED AS RELYING ON FEATURES OF THE AIRFRAME OR ITS ANCILLARY EQUIPMENT. AIRFRAME FEATURES DETECTABLE BY NONCOOPERATIVE TECHNIQUES INCLUDE PHYSICAL, AUDIBLE, AND INFRARED CHARACTERISTICS. THESE TECHNIQUES OFFER THE POTENTIAL OF GIVING POSITIVE CONFIRMATION THAT AN AIRCRAFT IS HOSTILE, THUS ALLOWING THE AIR DEFENDER TO ENGAGE.

INDIRECT IDENTIFICATION TECHNIQUES REQUIRE A THIRD PARTY TO PASS INFORMATION CONCERNING A TARGET'S IDENTITY TO TACTICAL COMMAND AND CONTROL CENTERS AND, WHERE FEASIBLE, TO WEAPON SYSTEMS. THE KEY TO AN EFFECTIVE INDIRECT IDENTIFICATION SYSTEM IS THE COMMUNICATION LINK WHICH MUST PROVIDE TIMELY DISSEMINATION OF RELIABLE IDENTIFICATION INFORMATION TO AIR DEFENSE AND COMMAND ELEMENTS.

ABILITY TO IDENTIFY
AIRCRAFT AT BEYOND-
VISUAL RANGE IS LIMITED

AT PRESENT, U.S. AND NATO FORCES CANNOT IDENTIFY AIRCRAFT AT BEYOND-VISUAL RANGE WITH A HIGH DEGREE OF CONFIDENCE. THEREFORE, THEY CANNOT EFFECTIVELY EMPLOY AIR DEFENSE WEAPONS WITHOUT THE RISK OF ATTACKING FRIENDS AND NEUTRALS. EFFORTS TO AGREE ON AND DEVELOP NEW IDENTIFICATION SYSTEMS AND TECHNIQUES HAVE PROGRESSED SLOWLY. MAJOR IDENTIFICATION IMPROVEMENTS ARE NOT EXPECTED TO BE FIELDLED UNTIL THE 1990'S AND LATER.

NATO IDENTIFICATION SYSTEM

THE ONLY SECURE IDENTIFICATION SYSTEM NOW AVAILABLE TO NATO IS A DIRECT COOPERATIVE QUESTION-AND-ANSWER SYSTEM CALLED THE MARK XII. IT, HOWEVER, IS OLD TECHNOLOGY; HAS SOME SIGNIFICANT LIMITATIONS; AND, MOST IMPORTANTLY, HAS NEVER BEEN TOTALLY ACCEPTED BY NATO. CONSEQUENTLY, OUR ARMED FORCES AND NATO ALLIES ARE FORCED TO RELY ON RESTRICTIVE VISUAL, COMMAND AND CONTROL, AND PROCEDURAL IDENTIFICATION METHODS ALTHOUGH THEY ARE ARMED WITH LONG-RANGE, ALL-WEATHER, DAY-AND-NIGHT CAPABLE WEAPON SYSTEMS. IN WARTIME, THIS COULD RESULT IN SIGNIFICANT DEGRADATION IN OUR ABILITY TO MANAGE AND WIN THE AIR BATTLE BY RESTRICTING THE FLEXIBILITY OF OUR FORCES.

WITH EXISTING IDENTIFICATION CAPABILITIES, SHOOTING AT BEYOND-VISUAL RANGE TARGETS CARRIES THE RISK OF ATTACKING FRIENDS AND NEUTRALS. THIS IS EXACTLY WHAT HAPPENED DURING A RECENT REFORGER EXERCISE. A NATO AIR COMMANDER WHO PARTICIPATED IN THIS EXERCISE SAID THAT FRIENDLY FORCES SHOT DOWN ALL HIS AIRCRAFT IN 5 DAYS. YET, TO REQUIRE OUR AIR CREWS AND AIR DEFENDERS TO OBTAIN VISUAL IDENTIFICATION BEFORE ENGAGING A TARGET NEGATES ANY TACTICAL ADVANTAGE WE HAVE IN LONGER RANGE AIR-TO-AIR AND SURFACE-TO-AIR WEAPONS. ADDITIONALLY, IT WOULD PLACE OUR PEOPLE WITHIN THE LETHAL RANGES OF ENEMY WEAPONS.

THE UNITED STATES AND OTHER NATO MEMBERS HAVE LONG RECOGNIZED THAT THE LACK OF A RELIABLE AND INTEROPERABLE AIRCRAFT IDENTIFICATION SYSTEM COULD SERIOUSLY AFFECT THE AIR DEFENSE POSTURE OF THE ALLIANCE. THEY REALIZED IN THE MID-1970'S THAT THE MARK XII COOPERATIVE QUESTION-AND-ANSWER SYSTEM, IN USE SINCE THE EARLY 1960'S, COULD NOT PROVIDE RELIABLE TARGET IDENTIFICATION CONSISTENT WITH THE ENGAGEMENT CAPABILITIES OF EXISTING WEAPON SYSTEMS. THE NEED FOR A NEW NATO INTEROPERABLE IDENTIFICATION SYSTEM WAS DOCUMENTED IN A REPORT ENTITLED FUTURE NATO IDENTIFICATION SYSTEMS, DATED MARCH 7, 1977, AND SUBSEQUENTLY IN A NATO TASK FORCE REPORT, DATED MARCH 1, 1978. THESE DOCUMENTS STATED THE NUMBER ONE DEFICIENCY IN NATO AIR DEFENSE WAS THE LACK OF A COMMON SYSTEM FOR POSITIVE AIRCRAFT IDENTIFICATION AT LONG RANGES WHICH IS RELIABLE AND WHICH IS SECURE AGAINST DECEPTION, EXPLOITATION, AND JAMMING.

CONCURRENTLY, THE DEFENSE SCIENCE BOARD TASK FORCE, STUDYING THE U.S. AIRCRAFT IDENTIFICATION PROGRAM, REACHED SIMILAR CONCLUSIONS AND RECOMMENDED ORGANIZATIONAL AND PROGRAMMATIC CHANGES IN THE WAY THE UNITED STATES SHOULD IMPROVE ITS IDENTIFICATION CAPABILITY. THE TASK FORCE RECOMMENDED ESTABLISHING A SINGLE FOCAL POINT WITHIN THE OFFICE OF THE SECRETARY OF DEFENSE (OSD) TO COORDINATE THE ACQUISITION OF AIR DEFENSE WEAPONS, COMMAND AND CONTROL, AND IDENTIFICATION SYSTEMS.

RECENTLY, AFTER SEVERAL YEARS OF NEGOTIATIONS, A TENTATIVE AGREEMENT WAS REACHED BETWEEN THE UNITED STATES, THE UNITED KINGDOM, FRANCE AND GERMANY ON THE FREQUENCY TO BE USED ON A NEW NATO DIRECT COOPERATIVE QUESTION-AND-ANSWER IDENTIFICATION SYSTEM. THE U.S. CANDIDATE FOR THIS NATO IDENTIFICATION SYSTEM IS CALLED THE MARK XV.

U.S. IDENTIFICATION SYSTEMS

TO COORDINATE U.S. EFFORTS AND RESPOND TO THE DEFENSE SCIENCE BOARD TASK FORCE, OSD, IN SEPTEMBER 1980, ESTABLISHED THE UNITED STATES IDENTIFICATION SYSTEM PROGRAM OFFICE, NOW KNOWN AS THE COMBAT IDENTIFICATION SYSTEM PROGRAM OFFICE (CISPO).

CISPO'S CHARTER IS VERY EXPLICIT. IT DIRECTS CISPO TO BE LOCATED AT THE AERONAUTICAL SYSTEMS DIVISION, AIR FORCE SYSTEMS COMMAND, WRIGHT-PATTERSON AIR FORCE BASE, OHIO, WITH THE AIR FORCE AS THE LEAD SERVICE. CISPO'S OBJECTIVE, ACCORDING TO THE CHARTER, IS TO DEVELOP AN EVOLUTIONARY IMPROVED IDENTIFICATION CAPABILITY FOR ALL APPLICABLE U.S. FUNCTIONS AND WEAPON SYSTEMS WITH WORLDWIDE OPERATIONAL CAPABILITIES. THE OVERALL AIRCRAFT IDENTIFICATION SYSTEM, DEFINED IN THE CHARTER, INCLUDES DIRECT COOPERATIVE AND NONCOOPERATIVE IDENTIFICATION SYSTEMS AND INDIRECT IDENTIFICATION SUBSYSTEMS.

CISPO'S PRIMARY FOCUS TO DATE HAS BEEN THE DIRECT COOPERATIVE MARK XV SYSTEM. UNTIL RECENTLY, THERE HAS BEEN LITTLE COORDINATION OF THE MANY SERVICE-UNIQUE NONCOOPERATIVE TARGET RECOGNITION PROGRAMS. AS A RESULT, THERE ARE A NUMBER OF SERVICE PROGRAMS THAT APPEAR TO OVERLAP. IN COOPERATION WITH CISPO THE SERVICES HAVE RECENTLY (JAN. 1985) SIGNED A MEMORANDUM OF AGREEMENT TO COORDINATE NONCOOPERATIVE DEVELOPMENTS. A RECENT REVIEW OF THE SEPARATE SERVICE NONCOOPERATIVE PROGRAMS AND PROJECTS IDENTIFIED A NUMBER OF AREAS WITH POTENTIAL FOR JOINT SERVICE APPROACHES. FURTHER, VERY FEW NONCOOPERATIVE DEVELOPMENT PROGRAMS HAVE BEEN FIELDDED, AND THOSE NOW BEING DEVELOPED WILL TAKE YEARS TO FIELD.

EACH OF THE SERVICES ARE DEVELOPING SEPARATE INDIRECT PROGRAMS. THEY ARE NOT BEING COORDINATED BY CISPO AS DIRECTED IN THE 1980 CHARTER. A FIRST STEP IN DEVELOPING AN INTEROPERABLE INDIRECT SUBSYSTEM WOULD BE TO DEFINE INTERSERVICE AND UNIFIED AND SPECIFIED COMMAND REQUIREMENTS. HOWEVER, NO JOINT MISSION ELEMENT NEEDS STATEMENT HAS BEEN PREPARED FOR THE NATO THEATER INDIRECT IDENTIFICATION SUBSYSTEM. THE ABSENCE OF INDIRECT SUBSYSTEM JOINT SERVICE REQUIREMENTS AND AN OVERALL THEATER ARCHITECTURAL DESIGN WILL MEAN A CONTINUATION OF INDIVIDUAL-SERVICE-UNIQUE SYSTEMS THAT MAY NOT INTEROPERATE.

GAO OBSERVATIONS

THE ABILITY TO IDENTIFY AIRBORNE TARGETS AS FRIENDS, FOES OR NEUTRALS AT BEYOND-VISUAL RANGES IS REQUIRED IF U.S. AND NATO FORCES ARE TO REALIZE THE MAXIMUM BENEFITS OF THEIR SOPHISTICATED AIR DEFENSE WEAPONS AND EFFECTIVELY COUNTER A NUMERICALLY SUPERIOR ENEMY. THE ONLY EXISTING SECURE SYSTEM AVAILABLE TO NATO IS THE MARK XII. IT, HOWEVER, HAS LIMITATIONS AND HAS NEVER BEEN WIDELY ACCEPTED BY OUR ALLIES. A TENTATIVE AGREEMENT TO REPLACE THE MARK XII WITH A NATO INTEROPERABLE DIRECT COOPERATIVE QUESTION-AND-ANSWER SYSTEM HAS RECENTLY BEEN REACHED. EFFORTS TO COORDINATE AND FOCUS THE DEVELOPMENTS OF NONCOOPERATIVE TARGET RECOGNITION TECHNIQUES AND INDIRECT IDENTIFICATION SUBSYSTEMS HAVE BEEN LIMITED AMONG THE SERVICES AND WITH OUR NATO ALLIES.

SINCE THE INITIAL OPERATIONAL CAPABILITY FOR THE MARK XV IS PLANNED FOR THE EARLY 1990S AND FULL OPERATIONAL CAPABILITY WILL BE REACHED AFTER THE YEAR 2000, THE UNITED STATES AND NATO MUST MAKE MAXIMUM USE OF EXISTING SYSTEMS. PRIOR STUDIES HAVE INDICATED THAT THE SERVICES COULD USE THE MARK XII MORE EFFECTIVELY. SPECIFICALLY, THESE STUDIES HAVE NOTED THAT INCONSISTENT COMMAND EMPHASIS HAS RESULTED IN INADEQUATE USE OF THE SYSTEM, INADEQUATE OPERATOR TRAINING, AND POORLY DESIGNED OR DEFINED OPERATING PROCEDURES. OUR AUDIT TO DATE INDICATES THAT THESE PROBLEMS STILL EXIST.

THE NAVY IS EMPHASIZING THE USE OF THE MARK XII MORE THAN THE ARMY OR AIR FORCE. NAVAL BATTLE GROUP COMMANDERS REQUIRE THE USE OF THE MARK XII, AND COMMON PRACTICE IS TO PROHIBIT AN AIRCRAFT FROM LEAVING THE VICINITY OF THE CARRIER IF IT CANNOT PROVIDE A VALID RESPONSE. THE ARMY AND AIR FORCE ARE NOT GIVING THE SYSTEM THE SAME COMMAND ATTENTION. DURING THE REFORGER 1984 EXERCISE WE OBSERVED THAT THE MARK XII SYSTEM WAS NOT EFFECTIVE. SUBSEQUENT DISCUSSIONS WITH AIR FORCE AND ARMY PARTICIPANTS DISCLOSED THAT NEITHER KNEW WHY THE SYSTEM WAS NOT WORKING AND NEITHER HAD A WAY OF DETERMINING WHY.

IN CONCLUSION, MR. CHAIRMAN, WE BELIEVE CORRECTING THIS CURRENT IMBALANCE BETWEEN WEAPON SYSTEM EFFECTIVENESS AND IDENTIFICATION CAPABILITY WOULD SIGNIFICANTLY IMPROVE U.S. AND NATO AIR DEFENSE CAPABILITIES. SOME IMPROVEMENT COULD BE ACHIEVED IMMEDIATELY IF COMMANDERS WOULD EMPHASIZE AND REQUIRE THE USE OF EXISTING SYSTEMS. ALSO, OSD MUST ASSURE THAT AIRCRAFT IDENTIFICATION BECOMES AN INTEGRAL PART OF THE WEAPON SYSTEM ACQUISITION AND REVIEW PROCESS. IN THE LONG TERM, MORE EMPHASIS NEEDS TO BE PLACED ON DEFINING AND DEVELOPING AN APPROPRIATE MIX OF DIRECT AND INDIRECT IDENTIFICATION SYSTEMS. THIS COMPLETES MY STATEMENT, MR. CHAIRMAN. WE WILL BE GLAD TO ANSWER ANY QUESTIONS YOU HAVE.