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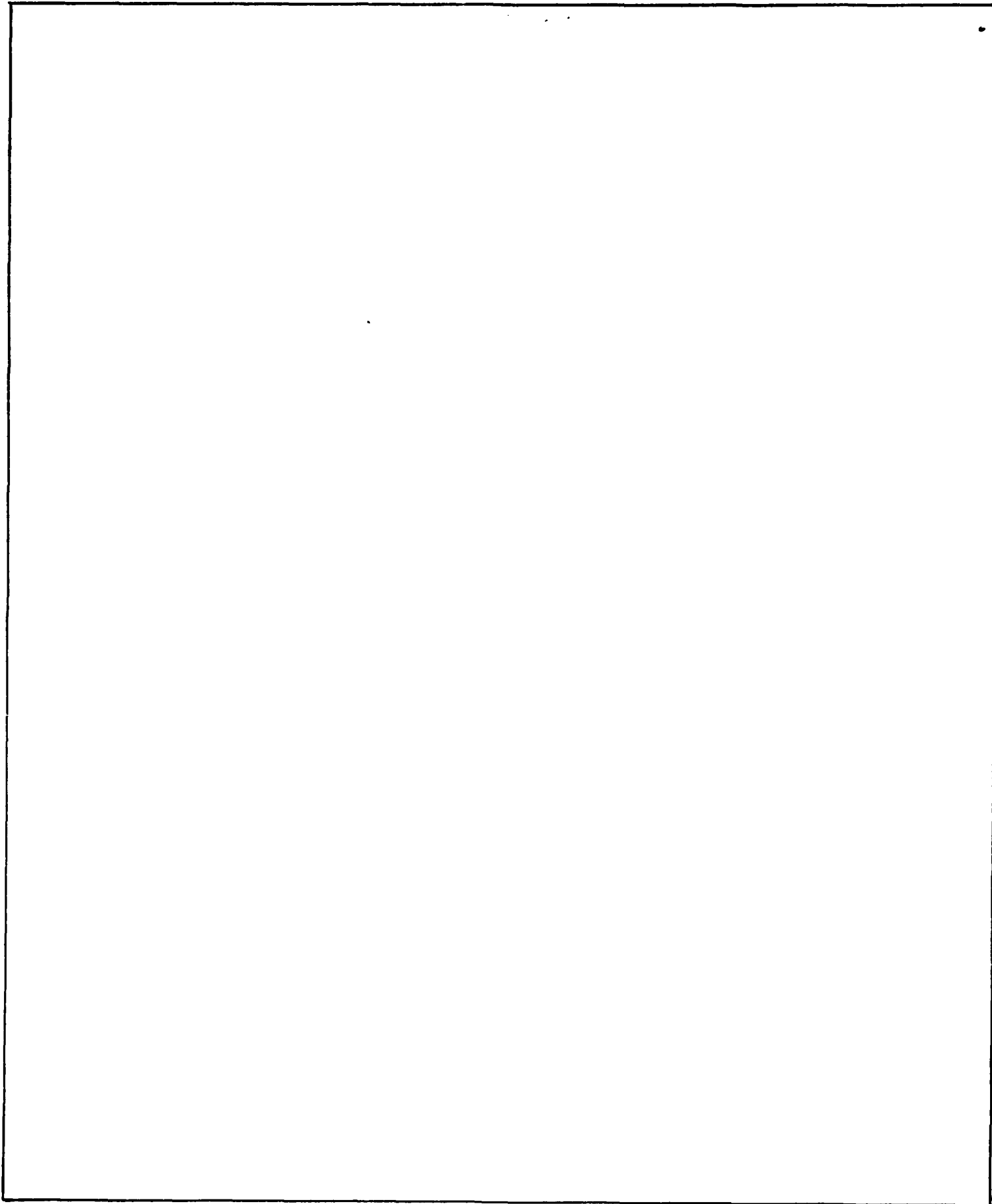
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**DEPARTMENT OF DEFENSE**

**STATEMENT ON CRITICAL TECHNOLOGIES PLAN**

**BY**

**MR. MILTON L. LOHR**

**DEPUTY UNDER SECRETARY OF DEFENSE**

**FOR ACQUISITION**

**TO THE**

**SUBCOMMITTEE ON DEFENSE INDUSTRY AND TECHNOLOGY**

**OF THE**

**COMMITTEE ON ARMED SERVICES**

**UNITED STATES SENATE**

**101ST CONGRESS, FIRST SESSION**

**MARCH 17 1989**



THE PLAN DOES NOT CONSIDER NUCLEAR WEAPONS NOR THEIR EFFECTS BECAUSE OF THEIR SPECIAL NATURE. IT ALSO DOES NOT INCLUDE ANY TECHNOLOGIES WHICH MAY HAVE SPECIAL SECURITY RESTRICTIONS. MOST OF THE WORK IN THE 22 TECHNOLOGIES WE HAVE IDENTIFIED IS UNCLASSIFIED. IT IS ONLY IN THE DETAILS OF CERTAIN AREAS SUCH AS SIGNATURE CONTROL AND ADVANCED SENSORS THAT THE EFFORTS ARE CLASSIFIED.

IDENTIFICATION OF THE 22 MOST ESSENTIAL TECHNOLOGIES WAS BASED ON THE PLANNING AND INVESTMENT STRATEGY WE CURRENTLY USE FOR THE SCIENCE AND TECHNOLOGY (S&T) PROGRAM IN THE DEPARTMENT OF DEFENSE.

OUR S&T PLANNING PROCESS IS AN ITERATIVE, INTERACTIVE PROCESS IN WHICH TECHNOLOGY MANAGERS CHOOSE BETWEEN MANY ALTERNATIVE AND COMPETING TECHNOLOGIES IN ORDER TO RESPOND TO GUIDANCE FROM MILITARY PLANNERS AND POLICY MAKERS.

OUR FIGHTING FORCES MUST RESPOND THROUGHOUT THE SPECTRUM OF CONFLICT FROM TERRORIST ACTION TO GLOBAL CONFLICT. OUR PLANNING BEGINS WITH OUR ESTIMATE OF CURRENT NATIONAL DEFENSE DEFICIENCIES IN WARFIGHTING CAPABILITIES AND CURRENT THREAT PROJECTIONS.

WE CONDUCT A TOP-DOWN AND BOTTOM-UP, INTERACTIVE STRATEGIC PLANNING PROCESS FOR SCIENCE AND TECHNOLOGY. IN THIS PLANNING PROCESS, THE MILITARY SERVICES AND DEFENSE AGENCIES WORK WITH MY OFFICE TO JOINTLY DEVELOP INVESTMENT STRATEGIES THAT ARE RESPONSIVE TO THE DEFENSE GUIDANCE.

THIS PROCESS MAKES S&T INVESTMENT ACTIVITIES MORE VISIBLE TO BOTH PLANNERS AND USERS. THE CRITICAL TECHNOLOGIES PLAN HAS THE SAME BASIC OBJECTIVES AS THE INVESTMENT STRATEGY, AND IS A NATURAL OUTPUT OF OUR EXISTING DoD PLANNING PROCESS.

I WANT TO CAUTION YOU THAT ABSENCE OF A TECHNOLOGY FROM THE LIST DOES NOT MEAN IT IS "NOT IMPORTANT." FOR EXAMPLE, KNOWLEDGE OF THE OCEAN FLOOR CAN VASTLY AFFECT THE ABILITY TO DETECT SUBMARINES AND DUCTING OVER THE OCEAN SURFACE CAN MULTIPLY THE RADAR RANGE FOR SURFACE SHIP DETECTION. WITH DIFFERENT SELECTION CRITERIA, THESE TECHNOLOGIES COULD HAVE BEEN LISTED AS CRITICAL, AS COULD OTHERS RELATING TO THE ENVIRONMENT. IN ADDITION, TECHNOLOGIES TO PROTECT AGAINST SUCH SUPERIOR WEAPONS AS HIGH-ENERGY LASER BEAMS OR HIGH-POWER MICROWAVES, AS WELL AS AGAINST CHEMICAL AND BIOLOGICAL WARFARE, ALTHOUGH NOT SPECIFICALLY LISTED, MAY ALSO BE CONSIDERED CRITICAL.

I BELIEVE NO CRITICAL TECHNOLOGIES LIST CAN BE CONSIDERED AS COMPLETE OR COMPREHENSIVE. THE TECHNOLOGIES IDENTIFIED HEREIN ARE THOSE TECHNOLOGIES JUDGED AGAINST CERTAIN CRITERIA TO BE MOST ESSENTIAL FOR THE LONG-TERM QUALITATIVE SUPERIORITY OF U.S. WEAPON SYSTEMS. THEY DO NOT CONSTITUTE A COMPLETE LIST OF IMPORTANT AND SUPPORTING TECHNOLOGIES.

EVEN MORE IMPORTANTLY, THESE TECHNOLOGIES CANNOT BE APPLIED EFFECTIVELY WITHOUT THE SUBSTANTIAL INFRASTRUCTURE REPRESENTED BY THE REMAINDER OF THE S&T PROGRAM. FOR EXAMPLE, RADARS AND SENSORS, NO MATTER HOW ADVANCED, CANNOT BE USED EFFECTIVELY WITHOUT PLATFORMS TO CARRY THEM, WEAPONS TO DIRECT FOR TARGET KILL, OR DISPLAYS AND INFORMATION PROCESSORS TO SUPPLY THEIR DATA IN A TIMELY AND EFFECTIVE MANNER.

AS WILL BE DISCUSSED LATER IN A MORE COMPLETE DESCRIPTION OF THE PLAN, FUNDING LEVELS FOR EACH OF THE 22 CRITICAL TECHNOLOGIES ARE GIVEN FOR THE FY90 BUDGET SUBMITTED BY THE PRESIDENT IN JANUARY. HOWEVER, THE NATURE OF OUR PROCESS FOR TRACKING FUNDS IS NOT CONDUCIVE TO EXTRACTING INFORMATION AS A FUNCTION OF CRITICAL TECHNOLOGIES OR AT THIS LEVEL OF DETAIL. WE TRACK FUNDS BY PROJECT AND LINE ITEM AND THESE TECHNOLOGIES ARE EMBEDDED IN THEM. THUS THE FUNDING ESTIMATES REPRESENT OUR BEST EFFORTS TO BE RESPONSIVE TO THE CONGRESS BUT SHOULD NOT BE REGARDED AS PRECISE.

IN CONCLUSION THE CRITICAL TECHNOLOGIES PLAN DOES NOT ENDORSE ONE TECHNOLOGY OVER ANOTHER, BUT DOES IDENTIFY THE "STAR" PERFORMERS IN A LARGER TEAM OF ALL-IMPORTANT TECHNOLOGIES. A WELL-BALANCED S&T PROGRAM IS ESSENTIAL TO PROVIDE THE BASIS WHICH WILL BE NECESSARY TO TRANSLATE THOSE TECHNOLOGIES WHICH ULTIMATELY PROVE TO BE "MOST ESSENTIAL" INTO BETTER WAR-FIGHTING CAPABILITIES FOR OUR FIGHTING MEN

AND WOMEN. EVOLUTIONARY DEVELOPMENTS AND STEADY PROGRESS ARE AS IMPORTANT AS TECHNOLOGICAL BREAKTHROUGHS. THE EFFECT OF "COMPOUND YEARLY IMPROVEMENTS" CAN BE DRAMATIC OVER A LONG PERIOD OF TIME. STABILITY IN FUNDING AND PERSERVERANCE PAY OFF, AND THESE ARE IMPORTANT PARTS OF OUR INVESTMENT STRATEGY.

THIS CONCLUDES MY REMARKS. DR. MILLBURN IS PREPARED TO BRIEF THE SUBCOMMITTEE AT THIS TIME.