STATEMENT

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BEFORE THE

ENERGY AND WATER DEVELOPMENT SUBCOMMITTEE

APPROPRIATIONS COMMITTEE

U.S. SENATE

CONCERNING

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ATOMIC ENERGY DEFENSE ACTIVITIES APPROPRIATIONS

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Mr. Chairman, I am William Arkin, Director of the Nuclear Weapons Research Project of the Institute for Policy Studies. Accompanying me here today is Dr. Thomas B. Cochran, Senior Staff Scientist at the Natural Resources Defense Council (NRDC). We are co-editors of the Nuclear Weapons Databook, a series of reference works on nuclear weapons. Along with Dr. Milton Hoenig, who is an NRDC consulting physicist, we are co-authors of Volume I of the Databook, U.S. Nuclear Forces and Capabilities. It was published in January of this year.

We recognize that it is very rare for outside witnesses to appear before this Subcommittee on the nuclear weapons budget. Thus, we appreciate very much this opportunity to testify on the Fiscal Year 1985 appropriations bill for Department of Energy (DOE) Atomic Energy Defense Activities.

DOE nuclear weapons spending has more than tripled since FY 1980 to $7.8 billion. Not much attention has been focused on this growing portion of the military budget. In our testimony, we would like to focus upon three major elements of the FY 1985 request: nuclear artillery, tactical naval nuclear weapons, and nuclear materials production.

Nuclear Artillery

Today the Army and Marine Corps, as well as Allied armies, have deployed eight-inch and 155mm artillery guns, which are able

to fire either nuclear or conventional projectiles. The guns are supplied principally with conventional shells, but a majority are certified to fire nuclear warheads. Nuclear shells were originally fielded in the 1950s, and today over 2,000 have been deployed, predominantly in Europe.

Over the last decade, the Army's plans to replace these warheads have become very controversial. First, there have been questions raised concerning continued reliance upon forward-based nuclear battlefield weapons in Europe. Second, the Army's choice of enhanced radiation warheads or so-called "neutron bombs" proved to be unacceptable to many Europeans. Third, there has been growing concern regarding the high cost of these warheads.

The production of the enhanced radiation W-79 warhead for the 8-inch gun began in 1980. Already close to $1 billion has been spent and about half of the planned 800 W-79's have been manufactured. Yet not a single one of these warheads can be deployed in Europe, because they are politically unacceptable to NATO governments. Many Americans would be appalled if they realized that these warheads are still sitting in storage in upstate New York.

The lessons of the W-79 have not been entirely lost. The Carter Administration cancelled plans for the comparable enhanced radiation warhead for the 155mm gun, the W-82. However, the Reagan Administration resurrected plans in 1981 to build some 900-1000. At $3 million apiece, the W-82 would be the most expensive artillery shell ever manufactured. Last July, the

Senate terminated funding for this warhead and now DOE has decided not to request production of the W-82 in FY 1985.

Yet, the W-82 is not dead. Engineering development for the warhead continues, and its backers in the Defense Department are lobbying hard to have production funding reinstated. Some are now arguing that the W-82 should be converted to a pure fission design and that production of the undeployable W-79 be curtailed.

We seriously question the Army's insistence that nuclear warheads for both 155mm and 8-inch guns are required. It does not appear to be justified. Since deployment of the original warheads in the 1950s, 155mm and 8-inch guns have been widely dispersed in Army divisions. The difference between heavy and medium artillery guns is no longer that significant. Innovations in rocket assist projectiles and fire control allow both guns to attain similar ranges, explosive power and accuracy.

It is clear to us that there does not exist a coherent U.S. plan for nuclear artillery. Adding to this confusion is the recently announced NATO decision to withdraw 1,400 battlefield nuclear warheads from Europe over the next few years. We believe that rather than allowing the present drift to continue, the Congress must make some fundamental decisions about the future of nuclear artillery warheads. We ask the Subcommittee to force the necessary review by deciding <u>not</u> to appropriate any funds for either the W-79 or W-82 until the Defense Department can explain

how these weapons fit into changing Army doctrine or NATO deterrent strategy.

Tactical Naval Nuclear Weapons

The second issue we will address is tactical naval nuclear weapons. The Navy is on the road to replacing its entire inventory of nuclear weapons at sea with a new generation. Yet once again this program is moving ahead without a clear plan or justification. The DOE FY 1985 budget request includes funding for work on five different naval warheads, two for anti-air warfare and three for anti-submarine warfare.

In regard to anti-air weapons, DOE has proposed to begin the production of W-81 warheads for Standard 2 surface-to-air missiles in FY 1985. The Standard 2 is proposed to replace the nuclear-armed Terrier, which was initially deployed in 1956. Yet this weapon is controversial; and there remain a number of major questions which must be answered prior to initiating W-81 production.

Since the start of on-again, off-again work on the warhead in the mid-70s, the Navy has remained adamant on the need for a new last-ditch nuclear defense missile for naval ships. But one of the unresolved difficulties is the serious damage that might occur to a ship's electronics from a defense nuclear warhead exploded relatively close to the fleet. There is also a serious question as to the usefulness of such a nuclear-armed defense in light of existing requirements for Presidential control. Since

the development of the weapon began in the mid-1970's, Soviet anti-ship cruise missile (ASCM) capabilities have also significantly improved to the point where Navy officials now admit that the Standard 2 is outmatched. In addition, design was initiated in FY 1983 on still another anti-air nuclear warhead to arm the Phoenix air-to-air missile, which is to be launched from F-14 Tomcat interceptors. Since this nuclear warhead is intended to arm the primary long-range air defense element of naval forces, it calls into question the entire W-81 nuclear warhead program, which now appears redundant. Last year, the Congress refused to fund the production of W-81 and we urge that the Subcommittee do likewise this year.

Three anti-submarine warfare (ASW) nuclear warheads are also under development, a part of the ASW Standoff Weapon (ASWSOW) program. These three new nuclear-armed weapons -- the ASWSOW for submarines, the Vertical Launch ASROC for surface ships, and a new air-delivered nuclear depth bomb -- are in earlier stages of development, but deserve close scrutiny before they enter the engineering phase. They are intended to replace the SUBROC missile currently deployed aboard attack submarines, the ASROC deployed aboard surface ships, and the B-57 nuclear depth bomb.

The nuclear ASW warhead program has been in constant flux for a number of years. Since 1981, the ASW warheads have been restructured twice, once to consolidate all three into a "common" generic program and the second time to split them again into three different programs, with new names and different

development dates. The three warheads, however, should be looked at as a group. U.S. nuclear ASW weapons, in addition to the considerable conventional ASW forces, now number over 2,000 nuclear warheads. These are intended to destroy some 200 ocean-going submarines of the Soviet Navy, nuclear overkill in anyone's book.

A new generation of ASW nuclear warheads should not move forward merely because the present generation is getting old. There are several outstanding questions which must be addressed before Congress approves these systems, including:

- What is U.S policy for using nuclear weapons in a war at sea? It is not as if the oceans were like the continent of Europe where aggression is measured by crossing borders and a rationale for nuclear retaliation is clear.
- Would ASW nuclear weapons be used only to protect submarines and to to defend against nuclear attacks, or would they serve offensive purposes?
- What are the implications of exploding nuclear warheads underwater within close proximity of submarine launching platforms? Would not the effects on sonar and communications nullify the usefulness of the platform which was ostensibly being defended against destruction?
- Finally, what about arms control? Both the U.S. and the Soviet Union are significantly upgrading their nuclear threats to enemy naval forces, completely outside of any arms control constraints. A forum does not even exist for the U.S. and the Soviet Union to discuss nuclear arms control at sea.

DOE's Nuclear Weapons Material Production

The third issue we would like to address is nuclear weapons materials production. Over the last three years, DOE has

undertaken a number of initiatives to boost the production of plutonium and tritium for new nuclear weapons. These have included converting the N-Reactor at Hanford to the production of weapon-grade plutonium, restarting the PUREX processing plant at Hanford and dramatically increasing operating efficiency of the reactors at the Savannah River Plant (SRP). Since FY-1980, overall funding for nuclear weapons materials production has increased over 300% to some $1.9 billion.

DOE is currently producing some 2.4 metric tons of plutonium-equivalent for weapons annually, almost twice the rate of the late 1970s. A program is underway to further boost plutonium output by 25% at SRP through use of a new core design. Increased production of materials is rather insignificant when one takes into account the total inventory of U.S. nuclear materials, including some 600 tons of highly-enriched uranium, some 90 tons of plutonium, and some 50-100 kg of tritium (4-8 tons of plutonium-equivalent). With the exception of tritium which has a half-life of about 12 years, these materials do not wear out. Old warheads are the major source of fissile materials for new ones.

DOE expanded materials output in response to the Nuclear Weapons Stockpile Memoranda of October 1980 and March 1982. Yet, as a result of Congressional and Administration decisions, the pace of the projected buildup has been tempered. The number of planned MX missile warheads has been reduced from 2000 to 1000. Plans to build 1000 W-82 155mm enhanced radiation warheads have

been cancelled. The number of projected sea-launched cruise missile warheads has fallen, and other warhead plans have been stretched out.

DOE is currently able to produce plutonium and tritium to meet nuclear weapons production schedules. Indeed, DOE has established a new requirement for a 5-ton reserve of plutonium, the desirability of which has received virtually no public attention. In our view, there are serious questions as to the need for yet three more DOE proposals to increase materials production: the New Production Reactor, the startup of the L-Reactor at SRP, and Plutonium Laser Isotope Separation.

We are very concerned about the momentum which is building for the construction of a $4-8 billion New Production Reactor (NPR). DOE has already spent $12.7 million on NPR feasibility and design studies, and intense lobbying has begun to determine a site for this facility. The fact is that the United States simply does not need to start building another materials production reactor. We believe that the NPR can be safely deferred for at least a decade.

DOE justification for the NPR is that it will be required to meet increased tritium needs in the mid-1990s. However, as a Congressional report (HASC98-124) stated last May there is "no basis to assume that large numbers of new weapons will be produced in the years beyond 1990" and that needed tritium could come from the SRP reactors. The Subcommittee should also take into account the decisions to cancel the 155mm artillery shells

and Sentry ABM, both using enhanced radiation warheads. This has significantly reduced tritium demand, roughly equivalent to 10 years of reactor operations.

Much less expensive alternatives to the NPR are, we believe, a refurbished N-Reactor or the L-Reactor. Neither of these options need be implemented before the 1990s. DOE is already considering extending the life of the N-Reactor beyond the mid-1990s with the installation of a new graphite core.

In regard to the L-Reactor, DOE remains embroiled in a controversy over its plans to start up the refurbished facility. This reactor can no longer be operated as it was thirty years ago. DOE has begun to take steps to bring SRP into compliance with federal and state environmental law and to properly dispose of its vast accumulation of radioactive and chemical wastes. DOE has also recently admitted that there will be a further delay in the startup of the L-Reactor which was initially planned for last October. It is our view that further environmental and safety improvements should be made in the L-Reactor and related operations at SRP prior to its startup so that the L-Reactor will meet the same standards applied to commercial nuclear power plants throughout the nation. We hope that the Subcommittee will view the L-Reactor as essentially a new facility and will require the needed environmental and safety upgrades.

The development of the plutonium-laser isotope separation (Pu-LIS) technology is dangerous and not cost effective and

should be terminated. This technology was originally promoted as a method for enriching the 70 to 80 tons of plutonium produced by commercial nuclear power plants to weapon-grade for use in U.S. nuclear weapons. Fortunately, Congress, recognizing that this would seriously undermine U.S. nonproliferation efforts, amended the Atomic Energy Act in late 1982 to prohibit the use of plutonium from licensed nuclear power reactors in nuclear weapons. The Senate vote on this amendment introduced by Senators Hart, Simpson, and Mitchell was an overwhelming 88-9.

DOE, nonetheless, has not been deterred from proceeding with Pu-LIS development. DOE is now claiming that the primary justification for Pu-LIS is to enrich 11 tons of its 15 tons of fuel-grade plutonium. (Four tons is earmarked for blending to obtain weapon-grade plutonium.)*/ But about 7 tons of this plutonium has already been fabricated into fuel for the Fast Flux Test Facility (FFTF) and the Zero Power Plutonium Reactor part of the civil breeder reactor development program. Furthermore, a large fraction of the plutonium in these civilian facilities (about 4 tons) was obtained in barter from the United Kingdom and was produced in British civil power reactors. The remainder could be from the fuel-grade plutonium produced in the N-Reactor before 1982.

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*/ One part fuel-grade plutonium (12% Pu-240) when mixed with two parts super-grade plutonium (3% Pu-240) yields three parts weapon-grade (6% PU-240).

In any event, transfer of the 7 tons from the U.S. civil breeder program to weapons would violate the traditional barrier between "atoms for peace" and "atoms for war." We ask the Subcommittee to consider extending the Hart-Simpson-Mitchell amendment to cover DOE's civilian R&D plutonium stockpile by prohibiting the expenditure of funds to divert such "peaceful" plutonium to the production of nuclear weapons. With this prohibition, at most 4 tons of plutonium, produced in the N-Reactor and never transferred from the weapons program, would be available for weapons manufacture.

DOE has recently admitted that the Pu-LIS technology is the most expensive of the various methods increasing plutonium production. (DOE, FY-1985 Budget Request, Vol 1, p. 407). Although DOE has already spent some $181 million on Pu-LIS, there is no justification for spending several hundred million dollars more to complete the R&D and build a Pu-LIS production plant. With recent reductions in planned new weapons and DOE's greatly increased plutonium-equivalent production rate, now almost twice that of the late 1970's, there is going to be a surplus of plutonium production capacity in the 1990s, not a shortage.

Finally, DOE is requesting funds in the FY 1985 budget to prepare to begin highly-enriched uranium (HEU) production for weapons in the 1989-1990 timeframe. This would be the first time DOE has produced HEU for weapons since 1964 when the U.S. and the Soviet Union simultaneously announced substantial reductions in the production of nuclear weapons materials. The need for

additional HEU in the 1990s is overstated. The average warhead today is designed to be more efficient in its use of its fissile material (greater yield-to-weight) compared to 10-20 years ago. On the average, the ratio of plutonium to enriched uranium in warheads has been increasing over this period. We would be surprised if these factors did not offset the additional HEU required to meet new weapon requirements. After all, the total number of warheads in the stockpile is projected not to exceed the historical high of some 32,000 warheads in 1967. To the extent there is a projected shortage, it is surely a reflection of the fact that DOE's retirement schedule for obsolete warheads is in disarray. Congress should take a close look at whether new HEU production is warranted. We seriously question whether the reconditioning of the facilities at Y-12 for this purpose is needed.

Thank you.