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TESTIMONY OF

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AND

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TO THE

DEPARTMENT OF ENERGY

CONCERNING

THE DRAFT ENVIRONMENTAL IMPACT STATEMENT

ON THE

SPECIAL ISOTOPE SEPARATION FACILITY

March 25, 1988

Idaho Falls, Idaho

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My name is Thomas B. Cochran. I am a Senior Staff Scientist with the Natural Resources Defense Council (NRDC). I hold a Ph.D in Physics from Vanderbilt University and was a member of the Department of Energy's (DOE) Energy Research Advisory Board (ERAB) from 1978-1982; DOE's Nuclear Proliferation Advisory Panel (1977-79); and the Nuclear Regulatory Commission's Advisory Panel for the Decontamination of the Three Mile Island Unit 2 (1980-1986). While on the ERAB, I was a member of a committee which reviewed DOE's Advanced Isotope Separation Program, including the Atomic Vapor Laser Isotope Separation (AVLIS) process. Consequently, I have some familiarity with the Special Isotope Separation (SIS) technology. I am also an editor and co-author of the Nuclear Weapons Databook, Volume II, "U.S. Nuclear Warhead Production," and Volume III, "U.S. Nuclear Warhead Facility Profiles," published by Ballinger Company. Therefore, I am also knowledgeable about DOE programs for providing plutonium to meet perceived nuclear weapons needs.

I am accompanied this afternoon by Dan Reicher, a senior project attorney with NRDC. Prior to joining NRDC, Mr. Reicher was an assistant attorney general for environmental protection in the Commonwealth of Massachusetts, a law clerk to a federal district court judge, a staff member of the President's Commission on the Accident at Three Mile Island, and a legal assistant in the hazardous waste section of the U.S. Department of Justice. Mr. Reicher is a graduate of Stanford Law School and Dartmouth College.

The Natural Resources Defense Council is a national non-profit environmental organization with almost 70,000 members. NRDC has been working for the past 15 years to ensure the safety of DOE's nuclear weapons production facilities, prevent the proliferation of nuclear weapons, and halt the use of weapon-usable plutonium in civilian commerce. I am pleased to have this opportunity to present our views concerning the Draft Environmental Impact Statement (DEIS) on the SIS facility.

<u>Summary</u>

In our testimony last year at the scoping hearings on the DEIS, we established that there is no need to develop the proposed SIS facility. This is because there already exists an alternative technology called "blending" that is currently being used by the DOE for producing weapon-grade plutonium from the same limited stockpile of fuel-grade plutonium that would be processed through the SIS facility. As a result of our testimony DOE was forced to confirm that by the time the SIS plant would go on line in the mid-1990's, there would be at most a seven to eight year supply of fuel-grade plutonium to process through the plant because a large proportion of the stockpile would already have been converted to weapon-grade via blending. We argued that the slightly faster rate at which the remaining fuel-grade plutonium would be processed (after 1995) using SIS versus blending did not justify the $1 billion price tag for the plant and the significant risk it would pose to human health and the environment. Following our testimony, DOE was also forced to confirm that the SIS plant would not be large enough to carry out a secondary mission, the cleanup of weapon-grade plutonium removed from existing nuclear warheads.[1]

Since our testimony last year, the case against SIS has grown even stronger for a number of reasons. As DOE Secretary Herrington admitted a few weeks ago: "We are awash in plutonium. We have more plutonium than we need."[2] This situation reflects, in part, accelerated plutonium production between 1980 and 1985, the upcoming retirement of a large number of nuclear warheads under the Intermediate Nuclear Forces (INF) Treaty with the Soviet Union, continued operation of the SRP reactors which Secretary Herrington recently stated have no known life-limiting factors, and the availability of a large inventory of plutonium scrap. Citing its decreased requirements for plutonium, the DOE recently shut down the N Reactor at the Hanford Nuclear Reservation, and placed it on "cold standby" for use in emergency situations.

The Strategic Arms Reduction Treaty (START), which President Reagan is currently negotiating with the Soviets, would make more than twice as much plutonium available for new warhead production than would be produced by the SIS plant or the preferred blending

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[1] Idaho Falls Post Register, March 30, 1987.

[2] Seattle Times, February 23, 1988 at B2.

alternative. We calculate that START and INF together would produce almost three times as much plutonium as SIS and at two and one-half times the rate (Table 1).

In light of this plutonium glut, DOE no longer attempts to justify the SIS facility on the basis of need. Instead, DOE Secretary Herrington has resorted to promotion of the facility as an "insurance policy." Under this view SIS would be developed in the unlikely event future plutonium supplies become inadequate, in particular due to reduction or elimination of production capacity at the SRP and the resulting curtailment of blending. However, we establish that the DOE already has seven layers of insurance policies that will provide complete coverage in the unlikely event a potential plutonium shortfall develops. These include a substantial plutonium reserve, increased processing of plutonium scrap, accelerated retirement of low-priority and obsolete warheads, restart of the renovated Hanford N Reactor, use of an SIS facility currently being developed at the Lawrence Livermore National Laboratory (LLNL), plutonium production at a new production reactor, and, in an emergency, production of reliable and effective warheads directly from fuel-grade plutonium without processing in the SIS plant. In light of the current plutonium glut and the existence of a comprehensive insurance policy to protect against any future shortfall, our conclusion remains the same as last year: there is absolutely no justification to develop the SIS facility.

Even assuming for the sake of argument that SIS might somehow be needed at some point in the future, the decision at hand is not whether to build SIS but whether a commitment to construct the facility should be made this year, particularly given the bright prospects for a START agreement. We conclude that, at a minimum, Congress should defer any decision to construct an SIS facility by at least one year pending the outcome of the START negotiations. DOE Undersecretary Salgado admitted recently that "a two year moratorium on plutonium production 'would not have a negative impact' on national defense."[3] A one year deferral of SIS would delay the availability of a quantity of weapon-grade plutonium equivalent to less than one percent of the U.S. plutonium stockpile. The INF agreement by itself will make available enough plutonium to compensate for a deferral of as long as three years.

A. The U.S. is "Awash in Plutonium"

In testimony on February 23, 1988 concerning the recent decision to place the Hanford N Reactor in standby status, DOE Secretary Herrington stated: "We're awash in plutonium. We have more than we need."[4] This plutonium glut reflects a number of factors which must be understood in analyzing the need for development of SIS. First, as a recent report from Senator Mark Hatfield, the ranking Republican on the Senate Appropriations

[3] Washington Post, February 28, 1988 at A4.

[4] Seattle Times, February 23, 1988 at B2.

Committee notes: "Most plutonium for new weapons is obtained from retired weapons rather than from production at defense reactors. The most important source of plutonium is the current stockpile of weapons and the reserve inventory of plutonium which awaits use in future weapons ... Therefore, a nuclear weapons modernization and replacement program can be met largely through retirement and dismantlement of old weapons."[5] Typically, the U.S. retires about 1600 warheads per year. On average each of these warheads contains about 3.6 kilograms (8 pounds) of plutonium. Each year, then, a little less than 6000 kilograms or 6 metric tons of plutonium is made available for production of new warheads, an amount about equivalent to the entire output of the SIS plant over its seven to eight year mission. In the mid-1990's, for example, some 2500 Poseidon missile warheads will be dismantled.[6] Closer on the horizon, the Intermediate Nuclear Forces (INF) treaty that the U.S. has entered into with the Soviet Union will result in the dismantlement of warheads containing about 1.8 metric tons of plutonium, the equivalent of about one-third the total output of the SIS facility. And the Strategic Arms Reduction Treaty (START) which President Reagan is currently negotiating with the Soviets would eliminate about 4000 strategic warheads thus freeing up some 14 metric tons of

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[5] "The Plutonium Cushion, Report on U.S. Defense Plutonium Needs and the Hanford N Reactor," Senator Mark O. Hatfield, October, 1987 at 5.

[6] Albright & Taylor, A Case Against Producing Nuclear Material, Bulletin of the Atomic Scientists, January, 1988 at 48.

plutonium, about two and one-half times the total production of the SIS plant. We calculate in Appendix I that taken together START and INF produce almost three times as much plutonium as SIS and at two and one-half times the rate.

Second, the same report indicates that the DOE has built up a substantial reserve supply of plutonium in recent years. As Senator Hatfield points out, this is the result of the fact that since about 1980 plutonium production has been tied to erroneous and inflated projections of future warhead production. These projections are made in the Nuclear Weapons Stockpile Memorandum (NWSM), a classified document developed annually by DOE and the Department of Defense. The NWSM is a "blueprint" for warhead production and retirements and is the basis for DOE's plutonium production requirements. In reality, however, the NWSM grossly overestimates the number of warheads that will actually be produced. Since plutonium production is linked to these overestimates DOE has built up a surplus of plutonium over the past six years. Senator Hatfield reported:

> The problem with using the NWSM as a blueprint or strict schedule for nuclear weapons requirements is that it never comes close to reality....Over the last six years, it has always overstated the number of warheads to be produced -- sometimes by a factor of two. The five year projection of warheads contained in the 1984 budget request and the 1983 NWSM was over estimated on average by 35% as compared to the actual warheads which were built or are now projected.[7]

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[7] "The Plutonium Cushion, Report on U.S. Defense Plutonium Needs and the Hanford N Reactor," Senator Mark O. Hatfield, October,

> Overstated projections in the Nuclear Weapons Stockpile Memorandum resulted in lower demand [for plutonium] than anticipated. Increased supply and reduced demand have created a plutonium cushion. Available alternative supply options can add to the size of the plutonium cushion.[8]

Similarly, our analysis of DOE and Congressional documents show that while in 1983 DOE was projecting a 13% increase in the number of warheads in the arsenal by 1987/88, in reality there has been a 3% drop.[9] Meanwhile, between 1980 and 1985 DOE doubled plutonium production relative to the output during the Carter administration.[10] In fact, during the Reagan years FY 1982-87, while the number of warheads in the stockpile was dropping, over 10 metric tons of weapon-grade plutonium were added to the inventory.

Third, three reactors remain in operation at the Savannah River Plant for plutonium as well as tritium production. DOE reduced the operating power of these reactors about one year ago in response to safety concerns raised by the National Academy of Sciences. However, the Department is currently adding new safety

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1987 at 5 ("Plutonium Cushion Report").

[8] Id.

[9] Hearings Before the House Armed Services Committee, FY 1988, at 129; Hearings Before the House Armed Services Committee, FY 1984, at 19.

[10] See, Nuclear Weapons Databook, Vol. 2 at 63, 67.

systems and according to Secretary Herrington plans to increase the operating power of the reactors in the near future.[11]

Secretary Herrington also recently stated that the DOE knows of no factors limiting the useful operating life of the reactors.[12] Production of supergrade plutonium may therefore continue indefinitely at the SRP. This means that blending of this material with fuel-grade plutonium from the stockpile at Hanford to produce weapon-grade plutonium can also continue. We show in Table 2 that blending will eliminate the inventory of fuel-grade plutonium sometime around the years 2006-07, even assuming the C-Reactor remains permanently shutdown and no plutonium is produced at SRP in 1989 and 1990. The DOE admitted last year that the SIS would process the same inventory of fuel-grade plutonium in seven to eight years. Assuming startup of the facility in 1995 this would mean that SIS would run through the fuel-grade plutonium in 2003 (see Table 1, which assumes blending stops when SIS begins), a mere three to four years sooner than blending.

Fourth, over the years the DOE has generated a huge inventory of weapon-grade plutonium in scrap. Some of this plutonium is recovered for further warhead production. The scrap inventory is apparently so large that, according to DOE's recently retired assistant secretary for defense programs,

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[11] Statement of Secretary Herrington at Hearing before the Energy and Water Development Subcommittee of the House Armed Services Committee, March 10, 1988.

[12] Id.

existing scrap recovery facilities are "barely able to keep current with the residues [scrap] being generated. There is little or no capacity left to attack the residue backlog."[13]

B. The U.S. Has A More Than Adequate Plutonium Insurance Policy Without SIS

The above review indicates that the DOE cannot justify development of the SIS on need. The DEIS reflects this fact. No where does it state that the U.S. needs more plutonium and that the SIS is the best way to produce it. Instead, the DOE resorts to a justification that raises bureaucratic gobbledygook to a high art form. According to the DEIS,

> The SIS Project is needed by DOE to provide a redundancy in production capacity and technical diversity with respect to the current dependence of weapon-grade plutonium production on reactor availability and to provide a timely response to potential increases in approved needs for weapon-grade plutonium. (DEIS, p. S-1)

In Table S-1 this jargon is reduced to three key phrases:

(a) redundancy in production capacity,

(b) technological diversity

(c) flexibility in the DOE nuclear materials production complex

All of these justifications reflect the simple concern that future unknown events may affect the continued operation of the

[13] Energy and Water Development Appropriations for 1988: Hearings before the Subcommittee on Energy and Water Development, House Committee on Appropriations, 100th Cong., 1st Sess. 1009-1010 (1987).

SRP reactors or require that their capacity be devoted exclusively to tritium production. In such a situation the DOE argues we need an alternative plutonium supply. According to DOE Secretary Herrington, the SIS, then, is "really an insurance policy."[14]

What DOE fails to acknowledge, however, is that our current insurance policy is more than adequate. In fact, SIS provides no tangible benefits that do not already exist through other more readily available and cheaper alternatives. Together these alternatives provide levels of redundancy, technological diversity and flexibility which reduce SIS to a senseless waste of money.

The seven elements of the U.S. plutonium insurance policy include:

* Reserve Plutonium Supply: In recent years DOE has built up a large reserve of weapon-grade plutonium -- estimated at more than five tons -- as warhead production did not keep pace with plutonium output.

* Plutonium Scrap: More efficient processing of scrap plutonium in the future will add more plutonium to the stockpile than SIS. DOE proposes to spend $370 million over the next nine years for enhanced scrap recovery including renovation of a

[14] Statement of Secretary Herrington at Hearing before the Energy and Water Development Subcommittee of the House Armed Services Committee, March 10, 1988.

recovery facility at the Rocky Flats plant in Colorado which was completed in 1981 but has never operated because of a variety of problems.

* N Reactor Restart: The Hanford N Reactor is currently in standby status. DOE acknowledges "the option of restarting N Reactor if future material requirements warrant such an action."[15] By the end of FY88 DOE will have spent over $100 million in upgrading the facility and expects to spend $70 million in FY90 to maintain it in cold standby status.[16] According to DOE, the reactor could be restarted in about two years. Moreover, its plutonium output, about 600-700 Kg/year during its remaining five to eight year life would be comparable to the proposed SIS plant.

* Accelerated Warhead Retirements: Senator Hatfield stated in his recent "Plutonium Cushion" Report that a substantial amount of additional plutonium could be made available for weapon production if the Department of Defense accelerated the retirement of obsolete warheads as Congress has urged it to do. "[B]y returning to earlier levels of retirements, we can significantly increase the amount of plutonium available for new

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[15] "Pre-hearing Questions and Answers Relating to the March 3, 1988 Hearing Before the Subcommittee on Energy and Power Committee on Energy and Commerce (sic)," John S. Herrington, Secretary of Energy at question 10(d).

[16] Id. at 10(b).

weapons production and thereby become less dependent upon production from our reactors."[17] By retiring only 200 warheads out of an inventory of 23,400, we would recover the equivalent of a year's worth of plutonium produced by SIS.[18]

* New Production Reactor: DOE is moving ahead with development of one or possibly two new production reactors capable of producing tritium and weapon-grade plutonium. According to its recent budget submission, DOE expects to have at least one plant on line by 1999.

* Production at SIS Demonstration Facility: DOE is already constructing what former SIS project manager called a "plant scale size" SIS facility at Lawrence Livermore National Laboratory (LLNL).[19] Apparently, the facility at LLNL will have the laser light capacity of a half scale, or possibly full scale production plant. Once completed and tested, the DOE could maintain the SIS facility at LLNL on cold standby and could even stockpile additional separator modules to provide a capability to expand its capacity rapidly. This would provide the additional

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[17] "The Plutonium Cushion, Report on U.S. Defense Plutonium Needs and the Hanford N Reactor," Senator Mark O. Hatfield, October, 1987 at 5.

[18] "The Plutonium Cushion, Report on U.S. Defense Plutonium Needs and the Hanford N Reactor," Senator Mark O. Hatfield, October, 1987 at 5.

[19] DOE Proceeding No. 86 D 148, Public Scoping Hearing, Vol. 1 at 18.

redundancy, diversity, and flexibility that is embodied in the Idaho SIS plant and at substantial cost savings. Since SIS is, according to DOE, really an insurance policy, and is therefore unlikely ever to be needed, concerns about turning LLNL into a production center should be minimal. The DEIS completely ignores this alternative.

* Direct Use of Fuel Grade Plutonium in Warheads: Fuel-grade plutonium could be used directly in nuclear warheads without further processing in SIS. For more than a decade strategic warheads have been designed to insure that they will not be rendered ineffective by the neutron flux of ABM warheads, or other warheads aimed at the same target (e.g., where two warheads of a MIRVed missile are aimed at the same target). Fuel-grade plutonium could be substituted for weapon-grade plutonium in modern strategic warheads with this design requirement without additional weapons testing.[20]

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[20] Such warheads are designed so that their fission primary is not susceptible to pre-initiation of the nuclear chain reaction. The most straight forward way to do this -- and presumably US strategic warheads are designed in this fashion -- is to design the primary such that the chain reaction is initiated at the moment the fissile material becomes critical, and achieve the desired primary yield through deuterium-tritium boosting. The higher spontaneous fission rate of fuel-grade plutonium would not effect such a design. The only design difference would be due to the small adjustment in the ratio of plutonium to uranium in the primary due to the small increase in the critical mass of fuel grade plutonium over weapon-grade.

C. At a Minimum a Decision to Build SIS Should Be Deferred

We have shown that the U.S. has a more than adequate current and future plutonium supply and production capacity without construction of an SIS facility. But assuming for the sake of argument that it was determined that an SIS facility might be needed at some point in the future, the question becomes whether we should commit to construction now? Viewed from a risk-benefit perspective the inescapable answer is no. By deferring a commitment to construction of an SIS facility pending the outcome of the START negotiations, we run no national security risks and stand to benefit from substantial cost savings.

As we have explained, a START treaty would free up a quantity of weapon-grade plutonium more than two and one-half times as large as the entire output of the SIS plant over its entire seven to eight year mission. In such a circumstance a fiscally-constrained Congress would be hard-pressed to justify further development of SIS. Given the lack of a national security justification for early commitment, economics alone dictates that any commitment to construct SIS should await the outcome of the current START negotiations. In our view any commitment to construct an SIS facility should be deferred for at least one to three years.

What effect would a deferral of one or more years would have on national security? If we achieve a START agreement the answer is none. If no agreement is reached the answer is still none. Assuming the output of the SIS plant is three-quarters of a ton annually, a one year deferral would delay the availability of a quantity of plutonium equivalent to less than one percent of the total plutonium stockpile. The plutonium made availabile as a result of INF -- which represents a windfall not considered in previous assessments of the need for SIS -- alone provides an ample cushion to defer a decision for three years. DOE Undersecretary Salgado recently admitted "that a two year moratorium on plutonium production 'would not have a negative impact' on national defense."[21] A one year deferral promises a cost saving in FY89 of several tens of millions of dollars.

Conclusion

There is no national security reason to develop the SIS facility. Congress should eliminate funding for construction of the plant. At a minimum, Congress should defer any commitment to construction of SIS pending the outcome of the START negotiations.

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[21] Washington Post, February 28, 1988 at A4.

Appendix I: Effect of INF and START on the NEED for SIS

The current U.S. stockpile of weapon-grade plutonium is about 100 metric tons (MT).[1] About 85 percent of this material is in weapons and the remainder available for weapons. The number of warheads in the U.S. stockpile at the end of 1986 was 23,400.[2] Thus, warheads in the current stockpile contains about 3.6 kilograms (kg) of plutonium on average.[3] On average newer warheads, with high yield-to-weight and yield-to-volume can be expected to contain somewhat more plutonium than older warheads. Assuming the INF Treaty is ratified by the Senate this year, some 520 W50, W84, and W85 warheads will be withdrawn from the active inventory over the 3 year period FY 1989-91. Thus, it is reasonable to assume that 1.8 metric tons (MT) of weapon-grade plutonium will be available from this source, or 600 kilograms per year in FY 1989, 90, and 91.

Assuming the START treaty is signed in 1989 and ratified in the following year, we can anticipate a net reduction of some 4000 warheads to occur over the six year period FY 1991-96. Thus, it is reasonable to assume that an additional 14 MT of plutonium will be made available, or 2.4 MT per year during FY 1991-96.

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[1] A metric ton equals 1000 kilograms.

[2] HASC No. 100-12, FY 1988/89 DOE, p. 48.

[3] 85,000 kilograms/23,400 weapons = ~ 3.6 kilograms.

As shown in the summary Table 1, INF and START produce two and one-half times as much plutonium as SIS and twice as fast. Thus, if a START Treaty is negotiated the SIS Project looks ridiculous. A more sensible approach is to ask whether existing contingencies permit a postponement of the commitment to the SIS project for at least one year in order to determine whether the START Treaty can be successfully negotiated. The answer is clearly yes.

Table 1

Plutonium Available from INF and START
Compared to Plutonium from SIS[1]

FY	Weapon-Grade Plutonium (Metric Tons)				
	INF	START	SIS	Cumulative (INF+START)	Cumulative SIS
1989	0.60	-	-	0.60	0
1990	0.60	-	-	1.20	0
1991	0.60	2.40	-	4.20	0
1992	0	2.40	-	6.60	0
1993	0	2.40	-	9.00	0
1994	0	2.40	-	11.40	0
1995	0	2.40	0.25	13.80	.25
1996	0	2.40	0.50	16.20	.75
1997	0	0	0.70	16.20	1.45
1998	0	0	0.70	16.20	2.15
1999	0	0	0.70	16.20	2.85
2000	0	0	0.70	16.20	3.55
2001	0	0	0.70	16.20	4.25
2002	0	0	0.70	16.20	4.95
2003	0	0	0.70	16.20	5.65
2004	0	0	0.10	16.20	5.75
2005	0	0	0	16.20	5.75
2006	0	0	0	16.20	5.75
TOTAL	1.80	14.40	5.75	16.20	5.75

[1] Assumes blending stops when SIS becomes operational in 1995.

Table 2

INVENTORY OF DOE FUEL GRADE PLUTONIUM FOR BLENDING

FY	SRP Reactors Producing Supergrade Pu[a]	Annual Supergrade Pu Produced[b] (Kg)	Annual Supergrade Pu Separated[c] (Kg)	Annual Fuel Grade Pu Required[d]	Available Fuel-Grade Pu Inventory[e] (kg)
1981	0.60	248	0	0	
1982	1.00	538	393	196	
1983	2.00	1,070	804	402	9,200
1984	2.00	943	1,007	503	8,697
1985	2.00	977	960	480	8,217
1986	3.00	1,101	1,039	520	7,697
1987	1.25	533	817	409	7,289
1988	.50	231	382	191	7,098
1989	.00	0	116	58	7,040
1990	.00	0	0	0	7,040
1991	.90	486	243	122	6,918
1992	1.80	972	729	365	6,554
1993	1.43	773	872	436	6,118
1994	1.30	702	737	369	5,749
1995	1.43	770	736	368	5,381
1996	1.30	701	735	368	5,013
1997	1.78	964	832	416	4,597
1998	1.78	964	964	482	4,115
1999	1.78	964	964	482	3,634
2000	1.78	964	964	482	3,152
2001	1.78	964	964	482	2,670
2002	1.78	964	964	482	2,188
2003	1.78	964	964	482	1,706
2004	1.78	964	964	482	1,225
2005	1.78	964	964	482	743
2006	1.78	964	964	482	261

(footnotes on next page)

FOOTNOTES to Table 2

a Assumes C-Reactor permanently shutdown in FY 1986. P-, K-, and L-Reactors available for tritium and supergrade plutonium (3% Pu-240) production. Reactors operating at 50% power in FY 1987-8. No plutonium production at SRP in FY 1989-90. For FY 1986-99 the number of reactors dedicated to tritium production is given in J.S. Allender and L.M. Macafee, "Economic Analysis of the Fuel Production Facility," OPST -84, -420, pp.5,24 and based on the projected tritium requirements given in the 1984 Nuclear Weapons Stockpile Memorandum. Tritium requirements after FY 1992 are reduced in proportion to the number of warheads withdrawn from the stockpile as a consequence of INF and START.

b See Nuclear Weapons Databook, Volume II, U.S. Nuclear Warhead Production, Ballinger publ. Co., 1987 (in press), p. 63.

c Assumes 6 month cooling period.

d Assumes Blending 2 parts supergrade Pu (3% Pu-200) and 1 part fuel grade Pu (12% Pu-240).

e Assumes 31 March 1983 inventory of 16.13 MT, of which some 4 MT is of British origin and unavailable for weapons, 2.9 MT is in FFTF fuel and unavailable due to cancellation of PFM at PUREX. Very little of the British origin plutonium is in FFTF fuel. See Nuclear Weapons Databook, Volume II, p. 77. Available inventory assumes SIS technology is not available.

Table 3

INVENTORY OF DOE FUEL-GRADE PLUTONIUM FOR SIS[a]

FY	Annual Fuel-Grade Pu Required[b] (Kg)	Available Fuel-Grade Pu Inventory[c] (Kg)
1994		5,749
1995	250	5,131
1996	500	4,263
1997	700	3,147
1998	700	1,965
1999	700	784
2000	700	-398

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a Assumes blending continues after SIS becomes operational in 1995.

b Assumes plant capacity of 3 MT. Start-up capacity of 0.25, 0.50, 0.70, full in years 1 through 4 respectively.

c Inventory in FY 1994 from Table 1.