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Fort Saint Vrain HTGR (Th/U carbide) Fuel Characteristics for Disposal Criticality Analysis



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L. L. Taylor

January 2001

**Idaho National Engineering and Environmental Laboratory
Idaho Falls, Idaho 83415**

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January 2001

**National Spent Nuclear Fuel Program
Document Preparer**

Date: _____

**National Spent Nuclear Fuel Program
Project Manager/Technical Lead**

Date: _____

**National Spent Nuclear Fuel Program
Quality Assurance Technical Specialist**

Date: _____

**National Spent Nuclear Fuel Program
Program Support Manager**

Date: _____

**National Spent Nuclear Fuel Program
Manager**

Date: _____

ABSTRACT

DOE-owned spent nuclear fuels encompass many fuel types. In an effort to facilitate criticality analysis for these various fuel types, they were categorized into eight characteristic fuel groups with emphasis on fuel matrix composition. Out of each fuel group, a representative fuel type was chosen for analysis as a bounding case within that fuel group. Generally, burnup data, fissile enrichments and total fuel mass govern the selection of the representative or candidate fuel within that group.

For the HTGR group, the Fort Saint Vrain (FSV) reactor fuel has been chosen for the evaluation of viability for waste co-disposal. The FSV reactor was operated by Public Service of Colorado as a licensed power reactor. The FSV fuel employs a U/Th carbide matrix in individually pyrolytic carbon-coated particles. These individual particles are in turn coated with silicon carbide (SiC) and contained within fuel compacts, that are in turn embedded in graphite blocks that comprised the structural core of the reactor.

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TERMS AND ACRONYMS

Terms

burnup - is a measure of the amount of fissile material consumed before the fuel element is removed from the reactor

converter reactor - a nuclear reactor which yields (on an atom-for-atom basis) nearly as many new fissile atoms in a breeding cycle as are fissioned in the reactor.

fertile - material, that after neutron capture(s) and decay, becomes fissionable

fissile - materials which will undergo fission with neutrons of any energy

Acronyms / Abbreviations

BOL - beginning-of-life

DOE - Department of Energy

EOL - end-of-life

FHU - Fuel Handling Unit

FSV - Ft. St. Vrain

FSVR – Ft. St. Vrain reactor

HTGR - High Temperature Gas Cooled Reactor

ICPP - Idaho Chemical Processing Plant

INEEL - Idaho National Engineering and Environmental Laboratory

INTEC – Idaho Nuclear Technology & Engineering Center (formerly ICPP)

MTHM - metric ton heavy metal

NRC – Nuclear Regulatory Commission

PIE - post-irradiation examination

SNF - spent nuclear fuel

SRP - Savannah River Plant

TBD - to be determined

TBV - to be verified

1. INTRODUCTION

1.1 Fort Saint Vrain High Temperature Gas Cooled Reactor, FSVR

The AEC, now the Department of Energy (DOE), contracted with power companies and with Gulf General Atomics to jointly develop the commercial HTGR (High Temperature Gas Reactor). These HTGRs were based on the thorium fuel cycle in which fissile ^{233}U is produced from ^{232}Th 'fertile' material. Most of the stored carbide fuels came from two reactors, Peach Bottom 1 and Fort Saint Vrain (FSVR). A listing of graphite-based fuels is shown in Appendix A. All spent fuel discharged prior to December 31, 1988, is located at Idaho Nuclear Technology and Engineering Center (INTEC). Fuel removed from the FSVR core in 1989 and 1990 remains on-site at Ft. St. Vrain in temporary storage.

The Fort Saint Vrain HTGR (located in Platteville, Colorado) operated under a NRC license from 1974 to 1989, and was the nation's only commercial reactor of this type. The coolant gas was helium. The reactor had a rated power of 842 MW(t), but ran well below that rating for much of its lifetime. The plant had a net capacity of 330 MW. The core consisted of 1482 hexagonal fuel elements stacked in 6 layers. The initial core contained 774 kg of uranium at 93.5 % enrichment and 15,905 kg of thorium.[Ref. 4]

2. REACTOR FUEL INFORMATION

2.1 ANALYSIS PARAMETERS

2.1.1 DOE SNF Canister

A standard canister design has been proposed for use in the packaging, transport, and disposal of DOE SNF fuels. SNF canisters will be available in two lengths (10-ft and 15-ft) and two diameters (18-in. and 24-in.) (DOE 1998). Canisters of the smaller diameter are just large enough to accommodate the FSVR hexagonal fuel elements and, still provide a radial gap of minimum 14 mm. This characteristic recommends the 18-in canisters as the choice for the disposal of FSVR type of SNF. The 10-ft canister can accommodate three stacked FSV blocks, and a 15-ft canister can accommodate five stacked blocks. The use and modeling of the 15-ft canisters should represent a bounding case for fissile loading and provides an infinite cylinder model construct for criticality analysis.

The conceptual design for the DOE SNF canister is shown in Figure 2-1 [Ref. 14, pages 4 to 6 and Appendix A]. It is a right circular cylinder of stainless steel (Type316L). The canister must be able to stand vertically when placed on a flat surface after being loaded with the SNF. The dimensions for the DOE SNF canister are 457.2 mm (18.00-in.) outer diameter with a 9.525 mm (0.375-in.) wall thickness. The minimum inner diameter of the canister is 430 mm (16.93-in.). The minimum internal length of the canister is 2540 mm (100-in.) and the nominal overall length is 3000 mm (118.11-in.). The canister maximum total weight is 2270 kg. There is a curved-bottom, carbon steel rupture disk that varies in thickness from 15.24 mm (0.6-in) to 50.8 mm (2.0-in) at the top and bottom boundaries of the canister.

The 10-foot canister can take a load of maximum three FSVR fuel elements. The gap between the impact plate and a three-fuel elements stack is ≤ 168 mm. In the case that the 15-foot canister is used, the load is maximum five elements, with a corresponding axial gap ≤ 152 mm. Taking into consideration the small axial and radial gaps and, the interlocking features of FSVR fuel elements (described in paragraph 2.1.2.1), it has been assessed that no canister internals are needed for fuel separation within the package. A cross-sectional view of a FSVR fuel element stack inside the DOE SNF canister is shown in Fig. 2-2.

2.1.2 Fort Saint Vrain HTGR SNF

FSVR fuel consists of small particles (spheres of the order of 0.5-mm diameter) of uranium oxide or carbide. The particles are coated with multiple, thin layers of pyrolytic carbon (pyrocarbon) and silicon carbide, which serve as tiny pressure vessels to contain fission products and the U/Th carbide matrix. In FSVR fuel elements, the coated particles are bound in a carbonized matrix, which forms fuel rods or 'compacts' that are loaded into large hexagonal graphite prisms. The large graphite prisms (or blocks) are the physical forms that are handled in reactor loading and unloading operations, and which will be loaded into the SNF standard canisters. The solid graphite fuel form is capable of operating at very high temperatures, up to approximately 1200°C during normal reactor operation and up to 1600°C during short-term, severe accidents.

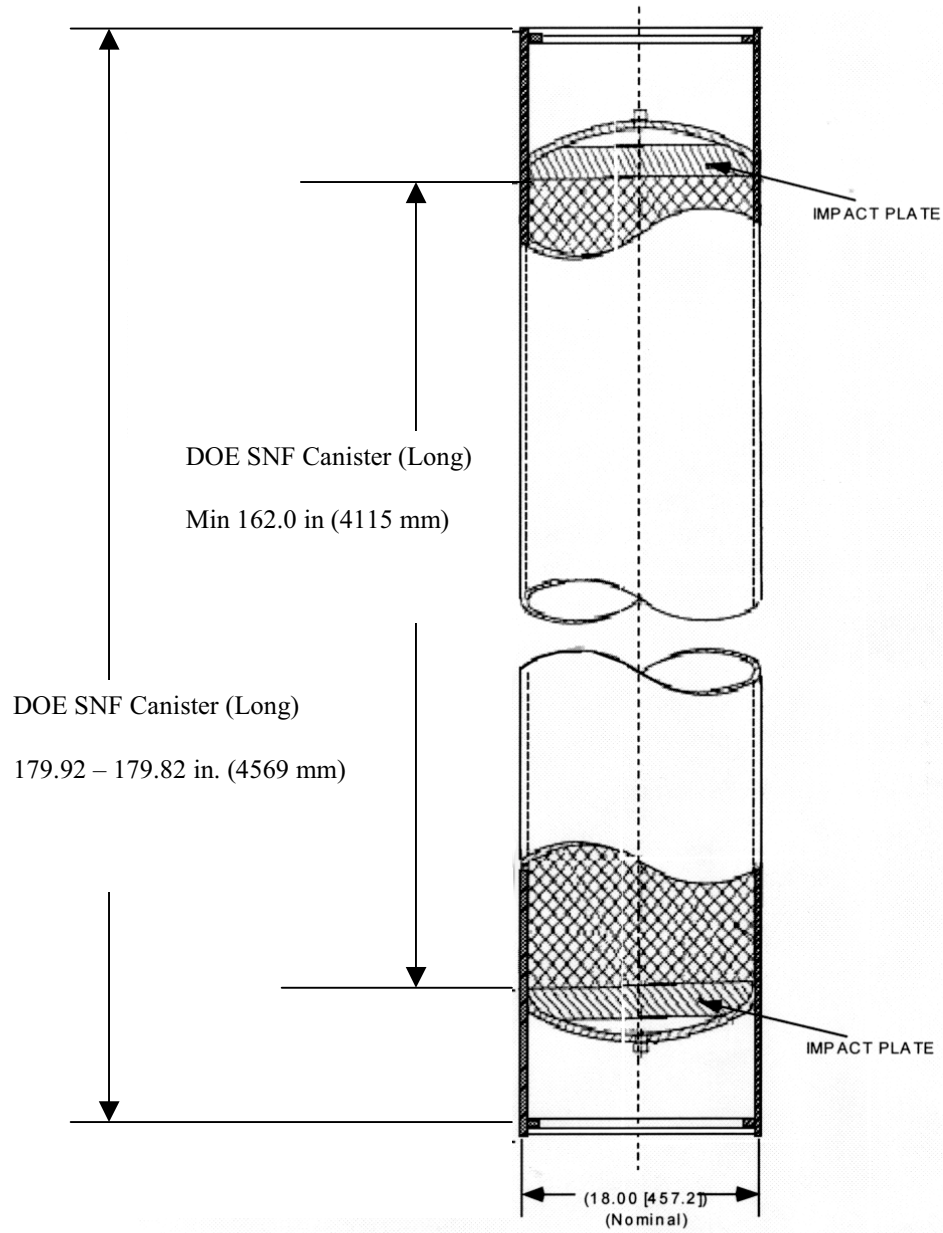


Figure 2-1. DOE SNF Canister Section View

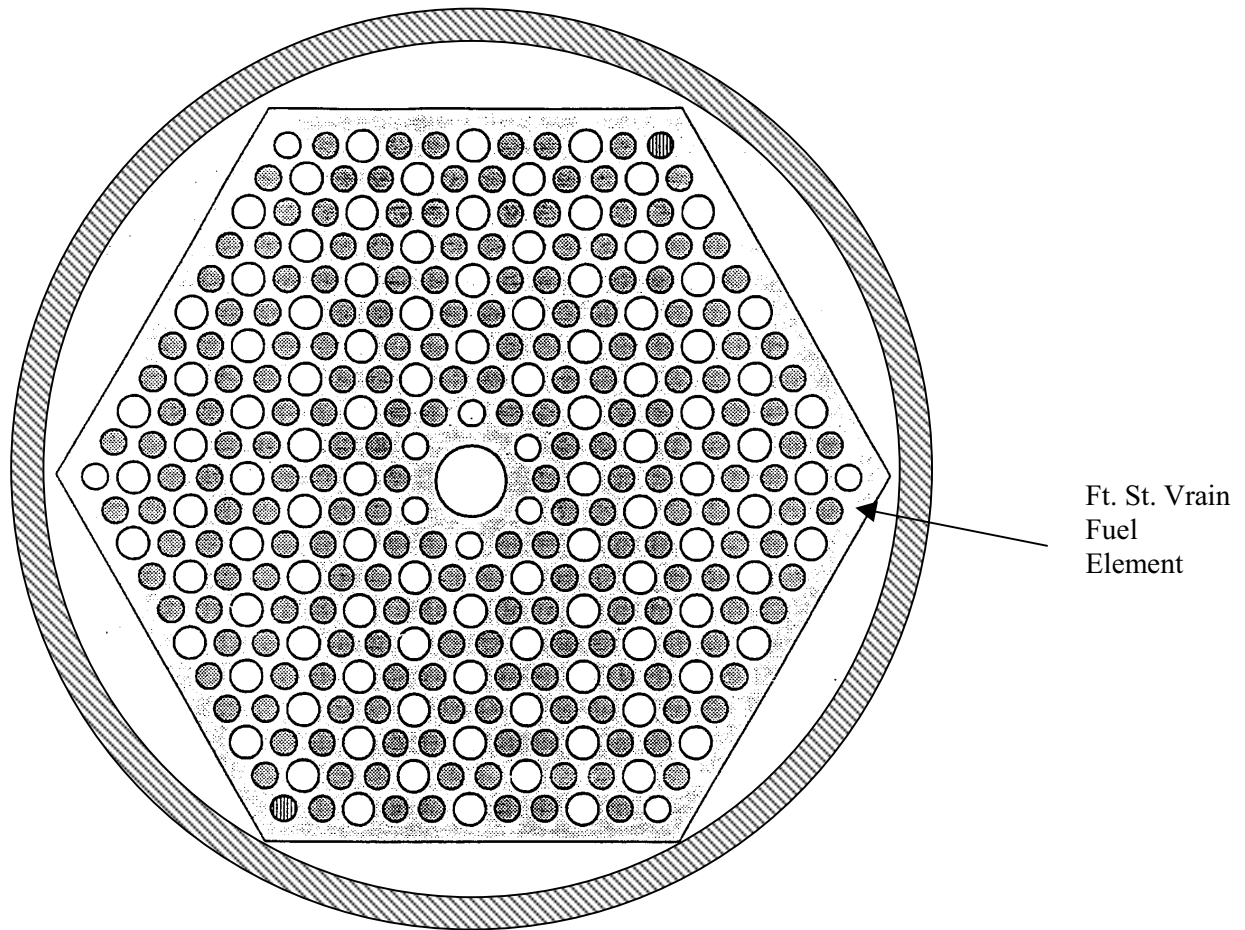


Figure 2-2. Cross-sectional Sketch of a FSVR Element in the DOE SNF Canister.

2.1.2.1 Fuel Element Characteristics - There are four main types of FSVR fuel elements: standard elements, control elements, bottom control elements, and neutron source elements with the neutron sources removed. All four types are made of graphite and have the same external dimensions but differ in: weight, number of coolant holes, reactivity holes, and neutron source holes. No metallic components are present in the fuel elements. Descriptions of the physical characteristics of each element are shown in Table 2-1 [Ref. 4, p.4.2-1 to 4.2-21].

Table 2-1. Physical Characteristics of FSVR Fuel Elements

Characteristics	Control Element	Bottom Control Element	Standard Element
Approximate Weight (with fuel compacts/matrix, kg)	109	111	128
Graphite body (kg)	85	94	86
Number of coolant holes (12.700 mm and 15.875 mm dia.)	57	57	108
Number of Fuel Holes (12.70 mm dia.)	120	120	210
Fuel Hole Pitch (mm)	18.796	18.796	18.796
Number of Control Rod Drive Holes (101.60 mm dia.)	2	2	0
Number of Reserve Shutdown Holes (95.25 mm)	1	1	0

Note: The characteristics of the Standard Fuel Elements are also applicable to the Neutron Source Fuel Elements.

The FSVR graphite blocks for the initial core were machined from H-327 graphite manufactured by Great Lakes Carbon Corporation as 863.6 mm (34-in.) long by 457.2 mm (18-in.) diameter 'logs'. The graphite was produced from needle coke filler material, pitch blend, and additives processed to minimize impurity content (see Table 2-2). [Ref. 16, pg. 2-5]

Table 2-2. Impurity Content of H-327 Graphite [Ref. 16, pg. 2-6]

Element	Impurity Level (ppm)	Upper 95/95 Tolerance Limit* (ppm)
Ash	130.0	330.0
Boron	1.0	3.0
Iron	20.0	75.0
Calcium	30.0	60.0
Sulfur	3.0	8.0
Lithium	0.1	0.5

* The 95/95 tolerance levels stipulate that 95% of the material is within the tolerance interval with 95% confidence.

The FSVR fuel element (Fig. 2-3) is hexagonal in cross section with dimensions of 360.60 mm (14.172-in.) across flats by 792.988 mm (31.22-in.) high. The active fuel is contained in an array of small-diameter holes, which are parallel with the coolant channels, and occupy alternating positions in a triangular array within the graphite structure. The fuel holes are drilled from the top face of the element to within about 7.62 mm (0.3-in.) of the bottom face. A cemented graphite plug that is 12.7 mm (0.5-in.) long is used to close the top of each fuel channel after the fuel compacts were installed. [Ref. 19, pg. 6-2] The fuel holes in all elements are 12.70 mm (0.50-in.) diameter. The bonded rods (also referred as 'fuel compacts') of coated fuel particles are stacked within the hole, which is sealed with a graphite plug cemented into place. These rods had a nominal dimension of 12.5 mm (0.49-in.). [Ref. 15, pg. 2-1] In a standard fuel block, at least one fuel block used 3130 compacts to distribute the heavy metals throughout the block. [Ref. 18, pg. 2-1] A representative layout of how compacts might

be stacked in any given fuel channel is shown in Figure 2-4. The fuel holes and coolant channels are distributed on a triangular array of about 18.796 mm (0.74-in.) pitch spacing.

The control fuel element is similar to the standard fuel elements, but contains enlarged channels for the two control rods and the reserve shutdown absorber material. The control rod channels have a 246.888 mm (9.72-in.) centerline spacing and a diameter of 101.6 mm (4.00-in.). The reserve shutdown channel has a diameter of 95.25 mm (3.75-in.).

All of the standard elements have 12.7 mm (0.5-in.) diameter holes in each of their six corners for possible insertion of burnable poison rods. All of the control and bottom control elements have similar holes on four corners for burnable poison rods. The burnable poison rods are 50.8 mm (2.00-in) long and 11.43 mm (0.45-in.) in diameter, and are made of boron carbide particles in a carbon matrix. They are added as required and did not always fill the complete hole.

The lateral alignment of the six-layered fuel element column in the core is maintained by a system of three graphite dowels located on the top face of each element. A normal coolant channel passes through the center of each dowel. The dowels are threaded into the graphite structure and affixed with carbonaceous cement. Height of the dowels measured from the block surface is 22.225 mm (0.875-in.). The bottom side of all fuel blocks have three dowel sockets for interlocking with the block underneath (Figure 2-3).

The fuel blocks are made of nuclear grade graphite, type H-327 (needle-coke graphite) or type H-451 (near-isotropic graphite), manufactured by Great Lakes Carbon Company. Dowels and plugs used in the fuel element are of the same type of graphite as the element. Some physical characteristics of H-327 and H-451 types are shown in Table 2-3.

Table 2-3. Physical Characteristics of Graphite Types H-327 and H-451 [Ref.11]

Characteristic	H-327	H-451
Maximum Grain Size (mm)	1.651 (0.065-in.)	1.651 (0.065-in.)
Apparent Density (g/cm ³)	1.72	1.75
Tensile Strength (psi)	1000	1800
Thermal Conductivity (Btu/ft·hr·°F)	90	100
Modulus of Elasticity (psi)	2.3x10 ⁶	1.7x10 ⁶

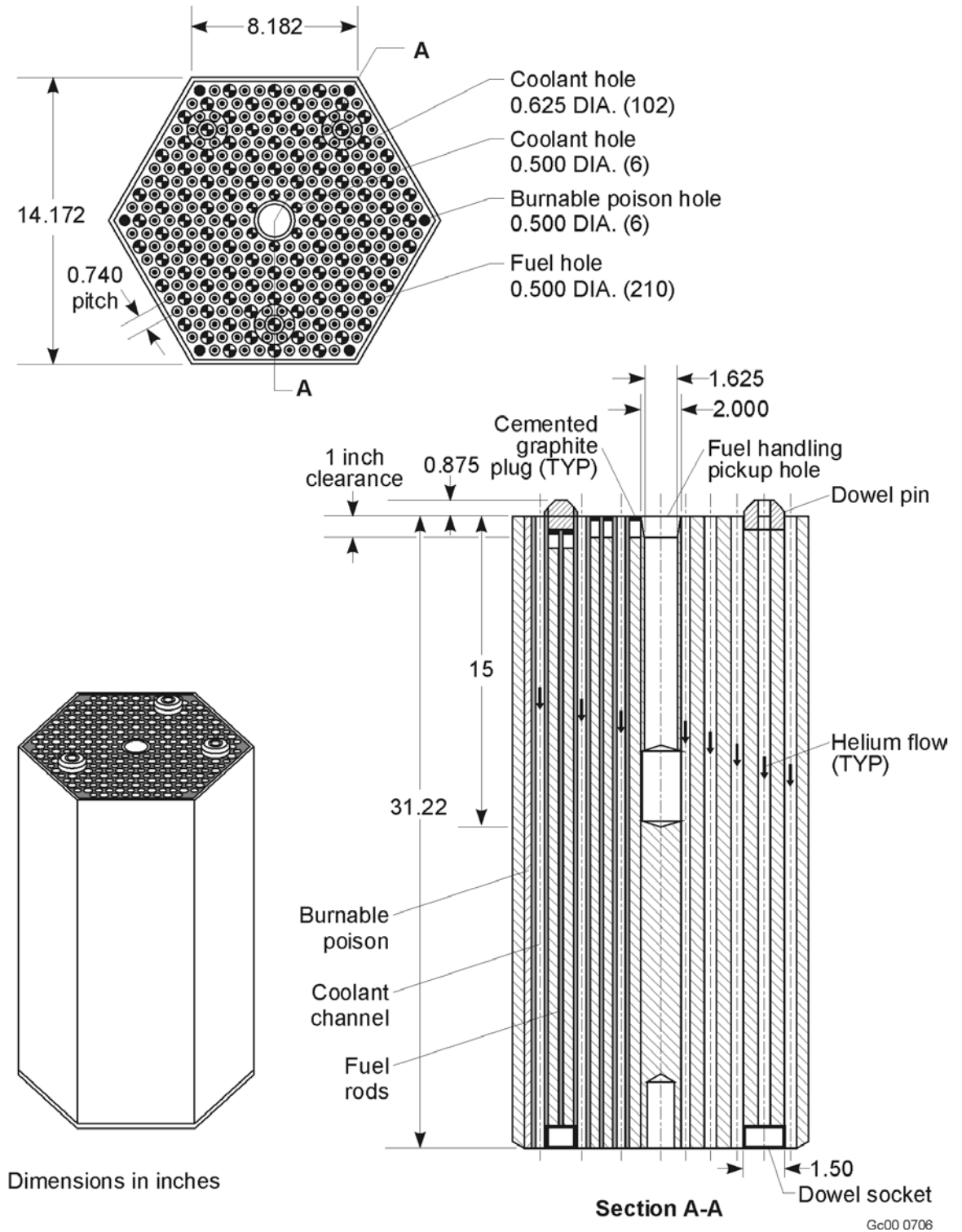
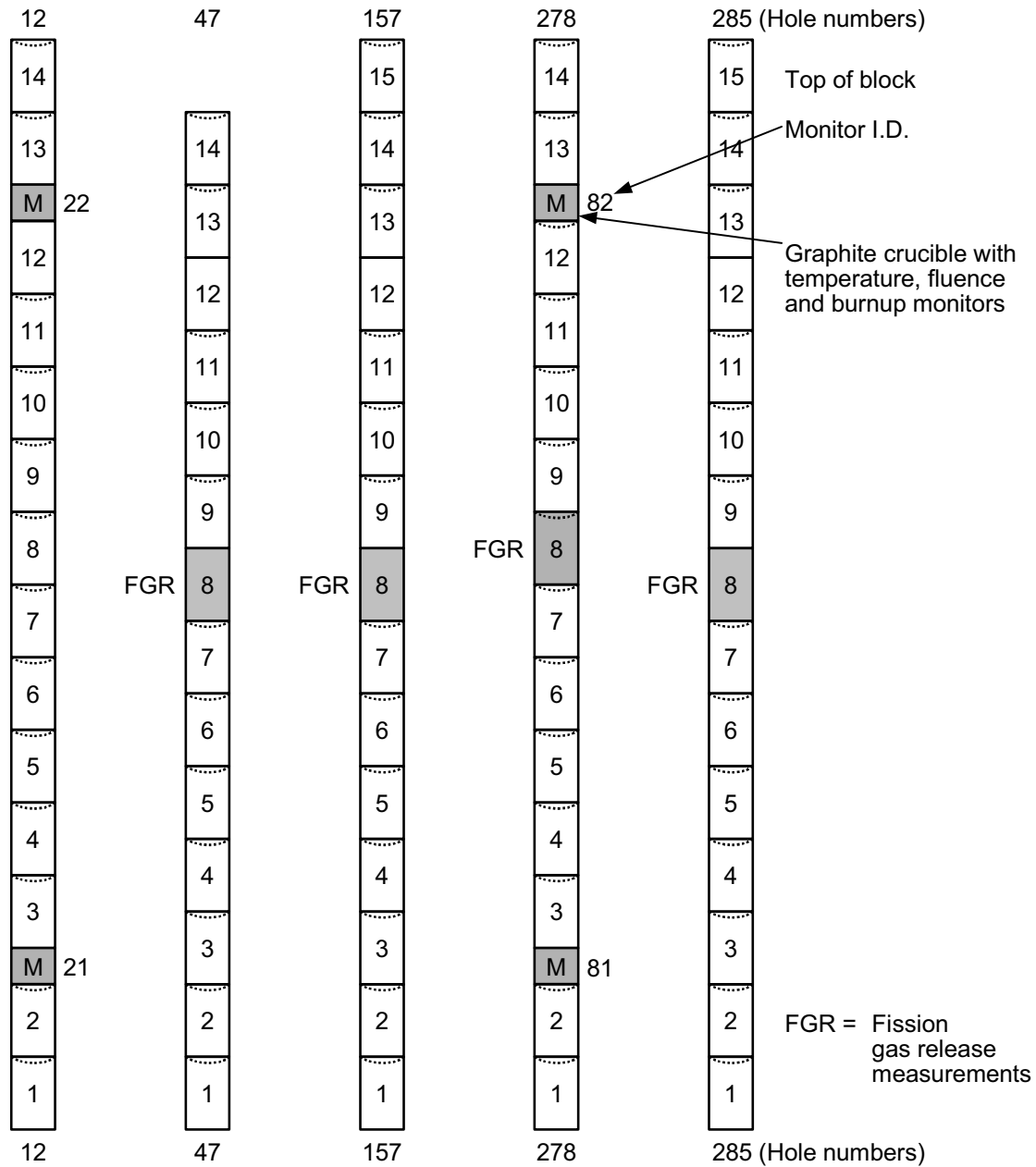
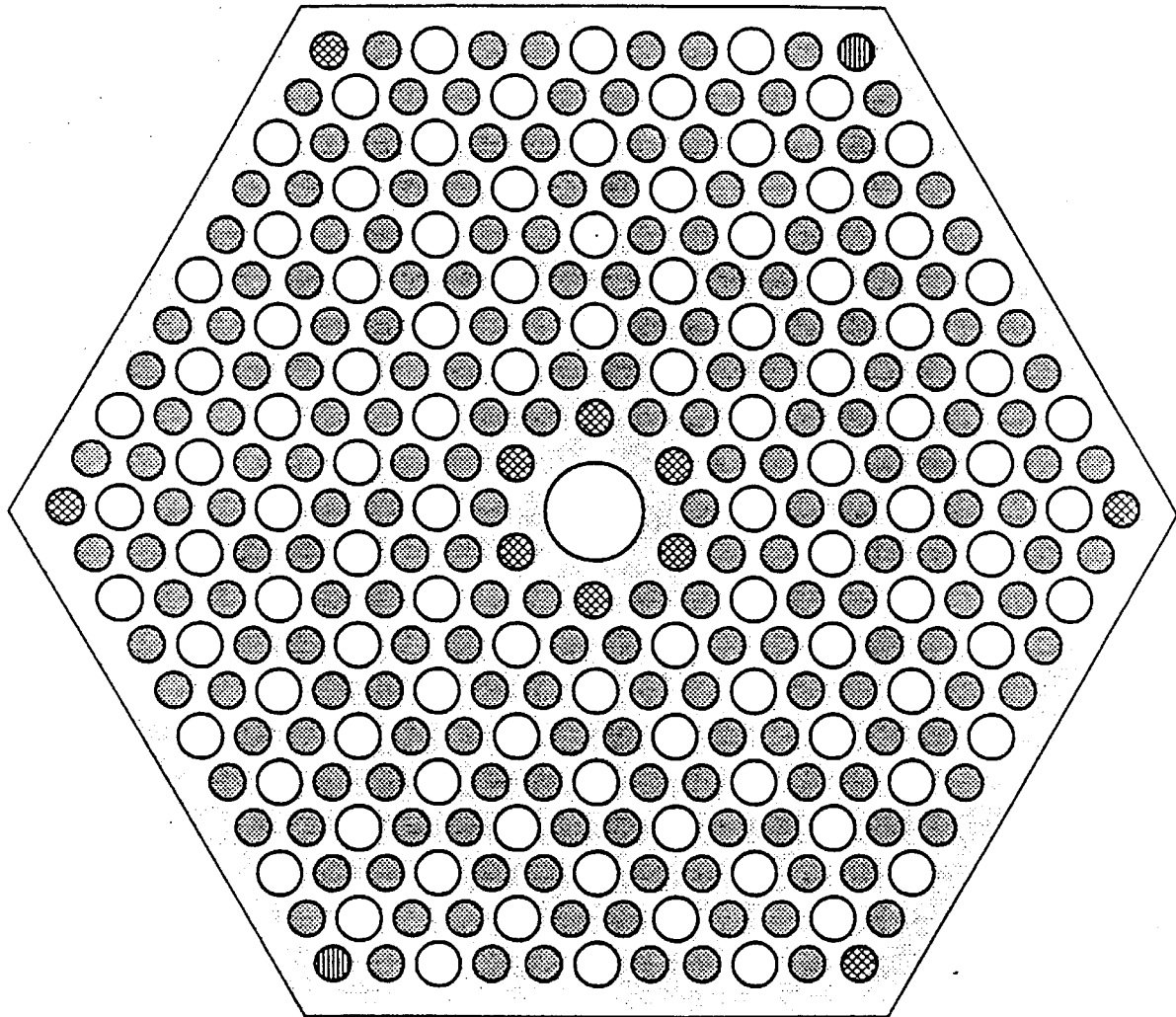


Figure 2-3. Standard FSVR Fuel Element [Ref. 18, pg. 2-6]



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Figure 2-4. Fuel Compact Positioning for Selected Fuel Channels within a Post-Irradiation FSV Fuel Block [Ref. 18, pg. 2-9]



- - void/coolant channel (0.625" dia)
- ⊗ - void/coolant channel (0.5" dia)
- - fuel (0.5" diameter)
- ▨ - poison (0.5" diameter)
- ▒ - graphite

Figure 2-5. Cross Section of Standard FSVR Fuel Element

Based on the apparent (production) densities reported in Table 2-3 and a reported amorphous carbon density (maximum) of 2.1 [Ref. 5], there is a corresponding calculated porosity of the fuel block of 16.67% and 18.10% for H-451 and H-327 materials respectively. The 18.10% porosity would be used to calculate the maximum water uptake in a block for criticality modeling. Calculating void space within the fuel channels must also account for the interstitial gap between the respective fuel compacts themselves, the compact diameter vs. the fuel channel diameter, and the porosity of the compacts themselves. As a simplifying assumption, the irregularities in the flat surfaces and the cusp on the top end of each compact can be accounted for by modeling with a fuel channel that was bored completely through and neglecting the graphite filler plug installed in the top of each fuel channel. The interstitial gap used to calculate void space between the compacts of 12.5 mm (0.49-in.) diameter and the fuel channel of 12.7 mm (0.50-in.) diameter represents a maximum gap. The fabrication techniques used materials similar to the graphite blocks, but the allowable macroporosity was specified $\leq 45\%$ for the compacts [Ref. 8, pg. 5-17]. The calculation for the displaced volume of the compacts also assumed a fuel column length of 15 compacts per fuel channel. In combination, these additive voids yield a calculated 'porosity' or void volume of 50.76% within each fuel channel. While irradiation may have altered the properties of the compacts, the original displaced volume would remain the same within each sealed fuel channel.

2.1.2.2 Fuel Particles Characteristics - The fissile and fertile fuel particles are TRISO-coated microspheres of uranium and thorium dicarbide. As shown in Figure 2-6, each fuel particle consists of a spherical kernel covered with four main layers of coating material plus a thin intermediate seal coating.

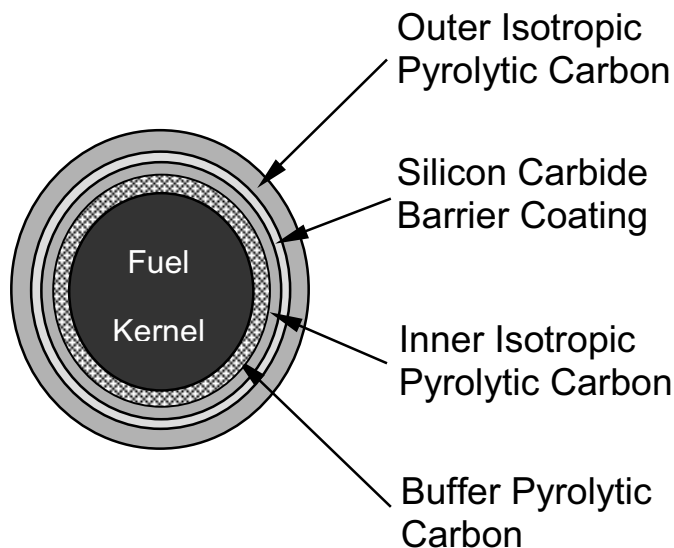


Figure 2-6. Cross-sectional View of Fertile and Fissile Fuel Particles Used in FSVR.

There are many reported fissile loadings reported for the ‘maximum’ fuel load per fuel handling unit (FHU) for FSV fuel. The General Atomics FSV fuel specification [Ref. 8] identifies a BOL maximum uranium loading of 1485 gms with a specified 93.15 ± 0.15 % enrichment in ^{235}U . This results in a nominal 1383.3 gms of ^{235}U ($1485 * 0.9315$).

The graphite reactors are generally considered to be ‘converter’ reactors, where a near-equivalent of fissile atoms are produced as are consumed. In the case of both Peach Bottom and Ft. St. Vrain reactors, this conversion resulted from the production of ^{233}U from ^{232}Th . Where ^{233}U is known to be ‘more reactive’ than an equivalent gram quantity of ^{235}U , it would be reasonable to account for ^{233}U EOL values in addition to any ^{235}U BOL values (since the DOE SNF is not taking burnup credits).

The average content of fissile/fertile species at BOL was 11.3 kg ^{232}Th /fuel block and 0.5 kg ^{235}U /fuel block. Specific data, on a block by block basis as published by Public Service of Colorado database, indicates a BOL range of ^{235}U fissile loading values of 131.4 to 1256.61 gm, with a computed average of 574.4 gm; see Appendix B [Ref. 16]. The maximum uranium (total U and fissile @ 93.15% ^{235}U enrichment) was 1485 grams per fuel block. [Ref. 8, pg. 6-26]

Selection of the appropriate fissile loading is paramount to criticality analysis, particularly given the variations of fissile loads used in previous analyses, both for fissile material accountability and storage/transportation issues for spent FSV fuels. The production of ^{233}U is proportional to the ThO_2 loading and burnup, and inversely proportional to the UO_2 loading in a given FHU, i.e. lower ^{233}U production associated with higher ^{235}U loading). This is shown in Table 2-4. Hypothetical, conservative values have been used for fissile loads in previous criticality evaluation and safeguards reporting for this fuel. For future analyses, more realistic values should be justified and employed.

Table 2-4. Fissile Load Limits for FSV Fuel Blocks

^{235}U , g (BOL)	^{238}U , g (BOL)	^{235}U % enrich.	Total U, g (BOL)	^{233}U , g (EOL)	^{239}Pu , g (EOL) ^b	^{232}Th , kg (EOL) ^c	Footnotes:
1256.61	76.94	94.230	1333.55	135.79 (max)	2.39 (max)	10.856	a, b, c, d
1244.95	76.23	94.230	1321.18	134.63 (max)	2.43 (max)	10.856	a, b, c, d
1172	0	100.000	1172	239.63 (max)	2.39 (max)	10.856	a, b, c, d, h
1170.46	73.8	94.069	1244.26	207.45 (max)	2.36 (max)	10.856	a, b, c, d
1170.24	73.8	94.068	1244.04	221.73 (max)	2.59 (max)	10.856	a, b, c, d
1168	0	100.000	1168	248.95 (max)	2.38 (max)	10.856	a, b, c, d, h
1167	0	100.000	1167	249.71 (max)	2.39 (max)	10.856	a, b, c, d, h
1164	0	100.000	1164	178.83 (max)	2.19 (max)	10.856	a, b, c, d, h

²³⁵ U, g (BOL)	²³⁸ U, g (BOL)	²³⁵ U % enrich.	Total U, g (BOL)	²³³ U, g (EOL)	²³⁹ Pu, g (EOL) ^b	²³² Th, kg (EOL) ^c	Footnotes:
1163	0	100.000	1163	244.70 (max)	2.19 (max)	10.856	a, b, c, d, h
1042	0	100.000	1042	233.75 (max)	1.71 (max)	10.856	a, b, c, d, h
1026.28	62.840	94.230	1089.12	130.62 (max)	1.81 (max)	10.856	a, b, c, d
1020.70	62.500	94.230	1083.2	132.78 (max)	1.82 (max)	10.856	a, b, c, d
1017.54	62.300	94.231	1079.84	131.54 (max)	1.91 (max)	10.856	a, b, c, d
444.33	27.790	94.114	472.12	274.86 (max)	0.87	10.856	a, b, c, d, i
1309	91	93.5	1400	---	---	10.856	e, j
1400	78.02	94.43	1478.02	---	---	10.856	f, j
1279.83	94.11	93.15	1373.94	---	---	10.694	g, j

- a. Base case - FSV fuel spec. [Ref. 8]
- b. Maximum reported ²³⁹Pu in any FSV FHU
- c. Typical EOL value for ²³²Th associated with more highly ²³⁵U loaded FHU
- d. From PSC data base [Ref. 16]
- e. GADR-55 (Shipping Criticality) [Ref. 19]
- f. GAMD-10493 (GA criticality safety report) [Ref. 2]
- g. GA-910055 (Nuclear Safety of FSV ISFSI) [Ref. 20]
- h. Unreconciled ²³⁸U value; PSC database does show ²³⁹Pu which indicates ²³⁸U presence [Ref. 16]
- i. Fissile loading in source FHU for maximum ²³³U [Ref. 16]
- j. Fissile values reported in previous criticality analyses for FSV blocks

For purposes of modeling criticality, it is always the goal to describe and analyze for the most reactive configuration. To this end, it will be necessary to identify the most reactive isotopic mixture given the blended quantities of ²³³U and ²³⁵U in the FSV spent fuels. To establish a base-case fissile load limit per fuel block, there are three apparent combinations and one hypothetical set of values that should be analyzed for reactivity. The first three combinations derive from the BOL ²³⁵U (maximum) and EOL ²³³U (associated maximum) and a similar construct reported in the PSC database. The

following four isotopic combinations should be evaluated and compared for maximum k_{eff} in the same MCNP model.

1. BOL ^{235}U = 1256.61 gm, EOL ^{233}U = 135.79 gm (from PSC database)
2. BOL ^{235}U = 1172.0 gm, EOL ^{233}U = 239.63 gm (from PSC database); there should be a 'defacto' ^{238}U composition of at least 73.8 gm (from adjacent U group loading in database) since ^{235}U was never available in the 100% enrichments inferred in the PSC database
3. BOL ^{235}U = 1168 gm, EOL ^{233}U = 248.95 gm (from PSC database); use a 'defacto' ^{238}U composition of at least 73.8 gm
4. Total U = 1485.0 gm @ 93.15 % enrichment (from FSV specification); use 1485.0 gm BOL ^{235}U as maximum case and EOL ^{233}U + ^{238}U = 0.0 gm

The kernel dimensions, coating designations, and coating thickness for the fissile and fertile particles are listed in Table 2-5.

Table 2-5. FSVR Fuel Particle Characteristics (all dimensions are in μm)

Parameter	Fissile		Fertile		Reference
Th:U	3.6:1, 4.25:1		All Th		
Kernel Composition	(Th:U) C_2		ThC_2		
	Small	Large	Small	Large	
Average fuel kernel diameter	140	225	375	525	[Ref.3]
	100-275		300-500		[Ref.4]
	220		490		[Ref.10]
Average Coating Thickness					
Seal layer	<5		<5		[Ref.4]
Buffer carbon layer	50	50	50	50	[Ref.3]
	45-110		45-65		[Ref.4]
	50		50		[Ref.10]
Isotropic carbon layer	20	20	20	20	[Ref.3]
	20-30		20-40		[Ref.4]
	20		20		[Ref.10]
SiC layer	20	20	20	20	[Ref.3]
	20-30		20-30		[Ref.4]
	20		20		[Ref.10]
Isotropic carbon layer	30	40	40	50	[Ref.3]
	≥ 25		≥ 30		[Ref.4]
	30		30		[Ref.10]
Average coated fuel diameter	380	485	635	805	[Ref.3]
	460		730		[Ref.4]
	460		730		[Ref.10]

The various coatings applied to the outside of the fuel matrix are installed using vapor deposition from some combination of gases in a heated fluidized bed. In the case of the application of SiC on a pyrolytically-coated fuel particle, methyltrichlorosilane (CH_3SiCl_3) is fed into the fluidized-bed reactor at temperatures $\geq 1450^\circ\text{C}$ and $\leq 1700^\circ\text{C}$. Coating thicknesses are controlled for a sample mean value of 20-30 μm , and the target density layer is $\geq 3.18 \text{ g/cm}^3$ [Ref. 8, Section 4.3.3.2]; theoretical density of SiC is 3.217 g/cm^3 [Ref. 5, pg. 4-105].

Theoretical density of ThC_2 is 8.96 g/cm^3 [Ref. 5, p.121] and that of UC_2 is 11.28 g/cm^3 [Ref. 5, p.125]. Production (fuel particle kernels) densities are $\geq 8.8 \text{ g/cm}^3$ [Ref. 8, p. 4-6].

The porosity of the fuel matrix material can be calculated using the definition formula:

$$\text{Porosity (\%)} = (\text{TD} - \text{PD}) \cdot 100 / \text{TD},$$

where:

TD = theoretical density and, PD = production density of the respective U and Th materials.

For example, using the Th/U ratio equal to 3.6, $\text{TD} = (3.6 \cdot 8.96 + 1.0 \cdot 11.28) / (3.6 + 1.0) = 9.464 \text{ g/cm}^3$ and maximum porosity = 7.016 %. For a Th/U ratio equal to 4.25, $\text{TD} = 9.402 \text{ g/cm}^3$ and porosity = 6.403 %.

2.1.2.3 Fuel Rods Characteristics - A fuel rod is a column of coated fuel particles bonded together by a binder matrix. Fuel rods are cylinders 12.5 mm (0.49-in.) in diameter and 49.276 mm (1.94-in.) long [Ref. 18, pg. 2-1]. The chemical characteristics can be varied considerably depending upon blending ratios of the fuel kernels. For initial core loading, and the first reload segment, the FSVR fuel rod design utilized a homogeneous mixture of a graphite filler material and carbonized coal tar pitch as the binder. Beginning with the second reload (segment 8), petroleum-derived pitch was used as the binder, and isotropic shim particles, nominally 800 microns in diameter, were used to accommodate differences in heavy metal loading within the compacts. [Ref. 7] Hot injection molding process is the reference process for FSVR fuel rod fabrication.

The fuel rods and their individual fissile gram loading of U-235 were controlled by the fuel blend number (Table 2-6) used during the extrusion process. Similarly, the fissile distributions within the individual fuel blocks were used to 'sculpt' the fuel block loading to effect reactor core flux leveling.

Table 2-6. Total Uranium and Thorium Loading for Fuel Blends [Ref. 8, pgs. 6-27 and 6-28]

Fuel Blend	Uranium (kg)	Thorium (kg)
1	105.6	2905
2	80.5	2596
3	39.2	636
4	28.9	544
5	88.8	1324
6	65.9	1158

Fuel Blend	Uranium (kg)	Thorium (kg)
7	111.6	1446
8	84.4	1287
9	36.2	720
10	25.8	599
11	32.1	549
12	23.7	474
13	50.5	1733
14	56.7	658
15	33.6	494
16	50.8	494
17	30.1	372
18	12.2	258
19	60.3	640.7
20	36.4	514.4
21	34.5	302.2
22	20.5	247.9
23	24.3	320.2
24	14.5	248.8
25	---	---
26	64.6	640.7
27	39	514.4
28	36.9	302.2
29	21.9	247.9
30	26	320.4
31	15.5	248.9
32	69.648	629.198
33	39.791	504.134
34	39.686	294.716
35	22.483	244.959
36	28.196	309.923
37	15.429	243.575

The individual fuel compact fissile loading in a fuel block may have incorporated either a single or binary fuel mix number as shown in the following table. The data in Table 2-7 incorporates prescribed fissile loading from the General Atomics (GA) FSV Fuel Specification (for the first core).

The silicon (Si) content per fuel rod is 1.30 g [Ref. 4, pg. 4.2-15]. Using the SiC formula weight of 40.07, the total silicon carbide mass would be 1.85 g (based on atomic weight of Si = 28.086) [Ref. 5]. Based on typical data for fuel compact production, the following breakdowns are reported: [Ref. 4, pg. 4.2-15]

Table 2-7. Fuel Compact Compositions

	'Compact' Composition (gms)			Analysis basis
	Reported ^a	Reported ^b 'most reactive'	Nominal ^c	
Thorium (as ThC ₂)	2.7	3.594	3.610 ^e	3.447 ⁱ
Uranium (as ²³⁵ UC ₂) (total U)	0.1	0.419 0.449	0.184 0.197 ^f	0.474 ^d ---
Si (as SiC)	0.8	1.479	0.8 ^g	0.8 ^g
Carbon (pyrolytic coating)	4.1	---	4.1 ^g	4.1 ^g
(compact matrix)	---	---	---	3.8575 ^j
Carbide(s) (fuel matrix)	0.8	---	0.393 ^h	0.399 ^h
(SiC layer) ^k	0.341	---	0.341	0.341

- a. Ref. 4, pg. 4.2-14; listed weights were deemed approximate
- b. Ref. 19, pg. 6-6 (based on 3130 compacts per fuel assembly)
- c. Calculated based on heavy metal averages from FSV database with 3130 compacts per fuel assembly
- d. Calculated based on 1485 gm max. total U (BOL); assumed 100% U-235 enrichment
- e. Based on typical (max) 11300 gm Th (BOL)
- f. Based on ave. 575 gm U-235 (BOL) [617.3 gm total U]
- g. Based on assumption of uniform coating on particles
- h. Calculated from ThC₂ and UC₂ masses (per compact)
- i. Based on 10789.97 gm Th (EOL), and 3130 compacts per fuel assembly
- j. Calculated based on weight differences between loaded assemblies & block weight (Table 2-1), and components
- k. Calculated as a percentage of SiC from reported pure Si mass

Post-irradiation destructive examination was conducted on selected fuel compacts from a single fuel element 1-0743. [Ref. 18] The fuel element experienced a burnup of 6.2% fissile and 0.3% fertile (from U-233 during the transmutation of Th-232). The analysis reported ~ 0.3% of the fissile and 0.2% of the fertile microspheres were failed. These failures were due to manufacturing defects such as no coating, cracks, thin coatings, etc. About 3% of the compacts were broken; most of them were likely broken by the disassembly process involved by pushing them out from the bottom of the fuel block. [Ref. 15, pg. 2.9]

2.1.2.4 Fuel Block Characteristics - The mechanical properties of the H-451 are different from those of the initial H-327 due to the use of near-isotropic petroleum-coke filler material. The mechanical properties that determine the element stresses, stress-strain margins, and element deformations for the two types of graphite are discussed in the following sections. [Ref. 17, Sec. 2-4, pg. 2-4]

2.1.2.4.1 Elastic Modulus - The axial modulus of H-451 is typically lower than that of H-327 graphite at all fluence levels and therefore, for a given strain rate, the axial stresses in H-451 graphite are lower than those in H-327 graphite elements. The radial modulus of H-451 graphite is higher than that of H-327, but its effect on H-451 stress is compensated for by the higher radial strength of H-451 graphite. [Ref. 17, Table 4-3 & 4-9]

Table 2-8. Elastic Modulus of Unirradiated Graphite @ 25°C

Orientation	Mean Elastic Modulus	
	H-451 graphite @ 25°C [kPa (10 ⁶ psi)] ^(a)	H-327 graphite @ 25°C [kPa (10 ⁶ psi)]
Axial	7,928,905 (1.15)	10,342,050 (1.5)
Radial	6,894,700 (1.00)	4,136,820 (0.6)

(a) Elastic modulus measured as the mean slope of the stress-strain curve between 689 kPa (100 psi) and 6894 kPa (1000 psi) during the second loading of a specimen which was first loaded to 6894 kPa (1000 psi) and then unloaded to 689 kPa (100 psi).

2.1.2.4.2 Tensile Strength - The tensile strengths for both the H-327 and H-451 graphite are given in Table 2-9. It can be seen that the strength of H-451 graphite in both the radial and axial directions is higher than that of the H-327 graphite. [Ref. 17, pg 4-2, 4-13, & 4-18]

Table 2-9. Ultimate Tensile Strength of Unirradiated Graphite Types at 25°C.

Orientation	Mean UTS	
	H-451 graphite @ 25°C [kPa (psi)]	H-327 graphite @ 25°C [kPa (psi)]
Axial	13,583 (1,970)	11,238 (1,630)
Radial	10,756 (1,560)	6,481 (940)

2.1.2.4.3 Ultimate Compressive Strength - The ultimate compressive strength (UCS) is $\geq 48,263$ kPa (7000 psi) for both the axial and radial directions in the H-451 type graphite. [Ref. 17, pg. 4-2] For the H-327 graphite, the UCS is recorded at $\geq 27,579$ kPa (4000 psi). [Ref. 17, pg. 4-8]

2.1.2.4.4 Creep Properties - The steady state creep behavior of both graphite types is similar, with H-451 having slightly lower values of creep strain.

2.1.2.4.5 Irradiation Induced Creep [Ref. 17, pg. 4-3] - Irradiation-induced creep for both tensile and compressive stress in the near-isotropic H-451 is described by the following equation:

$$\epsilon_{cr} = 0.91 * 10^{-6} * \sigma [1 - \exp(-5 * 10^{-20} * \phi)] * \exp(1.72 * 10^{-3} * T - 0.83) + 10^{-27} * \sigma * \phi \exp(0.321 + 7.48 * 10^{-4} * T)$$

2.1.2.4.6 Irradiation-Induced Dimensional Change - Operating stresses are produced within the graphite elements by strains due to differential irradiation-induced dimensional changes across the element. These radiation-induced dimensional changes occur at neutron fluxes above $10E25$ neutrons/m²; below those fluxes, there is no indication of appreciable dimensional change. [Ref. 17, pg. 2-4 and 4-7, and Tables 4-1 & 4-7]

The permanent strain (ϵ^o) due to irradiation-induced dimensional change has been expressed in terms of average irradiation temperature (T_ϕ) and fast neutron fluence (ϕ) for near-isotropic graphite. The irradiation strain (ϵ^o) is expressed by the polynomial in the following equation, which is valid for irradiations between 300 and 1500°C and to fast neutron fluxes of $8 * 10^{25}$ ($E > 29$ fJ)_{HTGR} :

$$\begin{aligned} \epsilon^o = & (C_1 + C_2 T_\phi + C_3 T_\phi^2 + C_4 T_\phi^3 + C_5 T_\phi^4) * \phi + \\ & (C_6 + C_7 T_\phi + C_8 T_\phi^2 + C_9 T_\phi^3 + C_{10} T_\phi^4) * \phi^2 + \\ & (C_{11} + C_{12} T_\phi + C_{13} T_\phi^2 + C_{15} T_\phi^3 + C_{15} T_\phi^4) * \phi^3 \end{aligned}$$

where:

ϵ^o = irradiation-induced strain (dimensional change, $\Delta l/l$) (%),

ϕ = HTGR fast neutron fluence (10^{25} n/m²) ($E \geq 29$ fJ)_{HTGR},

T_ϕ = Average irradiation temperature (°C),

C_i = coefficients determined for each orientation of specific graphite type; coefficients listed as follows (Table 2-10).

Table 2-10. Coefficients for Irradiation Strain Polynomial

	H-451		H-327	
	Axial	Radial	Axial	Radial
C ₁	0.87602	1.00882	-6.901536	0.122708
C ₂	-6.7267E-03	-7.1516E+02	2.14790E-02	2.25189E-03
C ₃	1.4811E-05	1.5042E-05	-2.09455E-05	-8.42109E-06
C ₄	-1.2398E-08	-1.1972E-08	6.15816E-09	9.41604E-09
C ₅	3.2775E-12	3.0122E-12	0	-3.60083E-12
C ₆	-0.1704	0.14614	0.71838	-0.265774
C ₇	1.0653E-03	9.3781E-04	-2.0942E-03	5.31424E-04
C ₈	-2.1542E-06	-1.9262E-06	1.7924E-06	3.44720E-06
C ₉	1.5310E-09	1.3731E-09	-4.8543E-10	4.27347E-09
C ₁₀	-3.2367E-13	-2.7741E-13	0	1.62954E-12
C ₁₁	2.3725E-03	2.7693E-03	-3.5696E-03	7.25128E-02
C ₁₂	9.2058E-06	1.4285E-05	6.0536E-06	-1.64812E-04
C ₁₃	0	1.6247E-08	0	0
C ₁₄	2.7754E-11	1.0803E-11	0	2.04765E-10
C ₁₅	-1.6930E-14	1.2287E-14	0	-1.08765E-13

2.1.2.4.7 Thermal Strains - While radiation-induced strains make the major contributions to the operating stresses within the graphite elements, the thermal strains contribute strongly to the shutdown stresses. The thermal expansion of H-451 graphite is about 30% and 100% higher than that of H-327 graphite in the radial and axial directions, respectively for all temperatures of interest. [Ref. 17, pg. 2-5]

2.1.2.4.8 Thermal Conductivity [Ref. 17, pg. 4-4] - The thermal conductivity of near-isotropic graphite considers the dependence of thermal conductivity (K) on the current measurements of temperature (T_c) and on the past history of irradiation temperature (T_i) and fast neutron fluence (ϕ).

The thermal conductivity as a function of current measurement temperature can be considered as a superposition of three temperature-dependent resistance mechanisms through the equation

$$K(T_c) = 1/\alpha \left[\frac{1}{K_U(T_c)} + \frac{b}{K_b'(T_c)} + \frac{d}{K_d'(T_c)} \right] \quad Eq.2-1$$

where:

α ≡ is a porosity-tortuosity factor,

K_U(T_c) ≡ is the crystallite conductivity with Umklapp processes dominating,

b $\equiv 1/L_a$ is the inverse of the crystallite boundary scattering,

$K_b'(T_c) \equiv (K_B/L_a)(T_c)$ is the effect of the grain boundary scattering,

d $\equiv C_d S_V^2$ is an irradiation damage parameter

$K_d'(T_c) \equiv (K_D C_D S_V^2)(T_c)$ is the effect of the irradiation damage

All the above quantities are given as known input data in the following tables with one exception: the irradiation damage parameter, d. As will be shown, one can solve for the parameter d by comparing conductivities before and after irradiation.

Table 2-11. Temperature-Dependent Conductivity Components [Ref. 17, pg. 4-15]

Units = (cal/cm-s-°C) * (Scale Factor)

Component	Umklapp	Grain Boundary	Irradiation Damage
Scale Factor:	1	b (10^4 cm^{-1})	d (immaterial)
Temperature ^(a) °C	$K_U(T)$	$K_b'(T)$	$K_d'(T)$
-173	93.5	2.88	4.46
-123	48.8	5.95	3.835
73	12.8	9.6	3.21
23	6.38	13.25	3.115
27(RT)	4.79	16.65	3.02
77	3.56	19.58	3.13
127	2.9	22.5	3.24
177	2.56	24.75	3.375
227	2.22	27	3.51
277	2.065	28.65	3.585
327	1.91	30.3	3.66
377	1.775	31.5	3.72
427	1.64	32.7	3.78
477	1.56	33.7	3.83
527	1.48	34.7	3.88
577	1.41	35.1	3.895
627	1.34	35.5	3.91
677	1.285	35.75	3.925
727	1.23	36	3.94
777	1.165	36	3.94
827	1.1	36	3.94

Component	Units = (cal/cm-s-°C) * (Scale Factor)		
	Umklapp	Grain Boundary	Irradiation Damage
Scale Factor:	1	b (10 ⁴ cm ⁻¹)	d (immaterial)
Temperature ^(a) °C	K _u (T)	K _b '(T)	K _d '(T)
877	1.055	36	3.94
927	1.01	36	3.94
977	0.975	36	3.94
1027	0.94	36	3.94
1077	0.91	36	3.94
1127	0.88	36	3.94
1177	0.86	36	3.94
1227	0.84	36	3.94
1277	0.82	36	3.94
1327	0.8	36	3.94
1377	0.783	36	3.94
1427	0.765	36	3.94
1477	0.753	36	3.94
1527	0.74	36	3.94

(a) The temperature points are equally spaced in order to facilitate the linear interpolation.

Table 2-12. Material Constants for Calculation of Near-Isotropic Graphite Thermal Conductivity [Ref. 17, pg. 4-16]

Symbol	Ref. Eq.	Value		Units(a)
		Axial	Radial	
A	2-5	-0.3059	-0.3059	10 ²⁵ n/m ²
B	2-5	9.58E-04	9.58E-04	10 ²⁵ n/m ² -°C
C	2-6	-3.317	-3.43	
D	2-6	1.21E-03	1.22E-03	°C ⁻¹
a	2-1	5.334	5.707	
b	2-1	5.192	6.165	10 ⁴ cm ⁻¹

(a) Neutron fluence units (10²⁵ n/m²) are in terms of HTGR fast fluence (E > 29 fJ)_{HTGR}

2.1.2.4.9 Thermal Conductivity, Unirradiated [Ref. 17, pg. 4-4] - For unirradiated material, the damage parameter, d , is zero. So the Eq. 2-1 in section 2.1.4.4.7 reduces to:

$$K_o(T_c) = 1/\alpha \left[\frac{1}{K_U(T_c)} + \frac{b}{K_b'(T_c)} \right] \quad Eq.2-2$$

2.1.2.4.10 Thermal Conductivity, Isothermal Irradiation [Ref. 17, pg. 4-5] - The damage parameter d can be found by comparing the unirradiated and irradiated conductivities at one particular measurement temperature. Room temperature (RT) is conveniently taken to be the reference temperature.

$$d = \frac{K_d'(RT)}{\alpha} \left[\frac{1}{K_i(RT)} - \frac{1}{K_o(RT)} \right] \quad Eq.2-3$$

where:

$K_o(RT)$ = unirradiated room temperature conductivity, found by evaluating Eq. 2.3 at $T_c = RT$,

$K_i(RT)$ = irradiated room-temperature conductivity found by the procedure shown in Section 2.1.4.4.10

2.1.2.4.11 Thermal Conductivity, Nonisothermal Irradiation [Ref. 17, pg. 4-5]

1. Divide the irradiation period into n isothermal intervals. The irradiation temperature during interval I is T_i . The fluence at the start of the interval is $(\Phi)_{i-1}$, and the fluence at the end of the interval is $(\Phi)_i$.
2. At the start of the first interval, the room-temperature conductivity is initialized to $K_o(RT)$ through Eq. 2-2.
3. At the end of the interval I , the room-temperature irradiated conductivity is given by the recursive formula:

$$K_i(RT) = K_{sat}^{RT}(T_i) + [K_{i-1}(RT) - K_{sat}^{RT}(T_i)] \exp \frac{-(\Phi)_i - (\Phi)_{i-1}}{\tau(T_i)} \quad Eq. 2-4$$

where:

$$\tau(T_i) = A + B T_i \quad Eq. 2-5$$

$$K_{sa}^{RT}(T_i) = \exp(C + D T_i) \quad Eq. 2-6$$

ϕ = fast neutron fluence (10^{25} n/m²) ($E \geq 29$ fJ)_{HTGR},

τ = relaxation time in units of fluence,

$$K_{sat}^{RT} = \text{saturation value of the room (temperature) conductivity}$$

A, B, C, D = constants given in Table 2-12

4. Calculate the conductivity at the assumed current temperature Tc by applying Eq. 2-2 and 2-3.

2.1.2.4.12 Thermal Expansion - The thermal strain versus temperature for near-isotropic H-451 graphite is presented in Table 2-13.

Table 2-13. Thermal Expansion of H-451 Graphite

Temperature (°C)	Thermal Strain (10 ⁻³ cm/cm)	
	Axial	Radial
25	0	0
100	0.26	0.32
150	0.42	0.52
200	0.6	0.74
250	0.8	0.95
300	1	1.2
350	1.2	1.43
400	1.42	1.68
450	1.65	1.93
500	1.88	2.19
550	2.12	2.46
600	2.35	2.75
650	2.6	3.03
700	2.83	3.32
750	3.1	3.58
800	3.35	3.88
850	3.58	4.16
900	3.84	4.41
950	4.1	4.73
1000	4.33	5.06
1050	4.6	5.32
1100	4.88	5.62
1150	5.14	5.91
1200	5.42	6.23

Temperature (°C)	Thermal	Strain
	(10 ⁻³ cm/cm)	
	Axial	Radial
1250	5.7	6.53
1300	6	6.85
1350	6.3	7.16
1400	6.6	7.5
1450	6.9	7.85
1500	7.24	8.2
1550	7.55	8.52
1600	7.9	8.9

2.1.2.4.13 Specific Heat [Ref. 17, pg. 4-6] - The specific heat of both H-327 and H-451 graphite over the temperature range 0° to 2700°C is given by the following equation, which is accurate to ± 5% of the mean. [Ref. 17, pg. 4-1 & 4-6]

$$C_p = 0.54212 - 2.42667 * 10^{-6} * T - 90.2725 * T^{-1} - 4.34493 * 10^4 * T^{-2} + 1.59309 * 10^7 * T^{-3} - 1.43688 * 10^9 * T^{-4}$$

2.1.2.4.14 Bulk Density - The mean bulk density for the H-451 block material is 1.74 Mg/m³ [Ref. 17, pg. 4-1] and 1.77 Mg/m³ [Ref. 17, pg. 4-7] for the H-327 block material.

Literature values vary for carbon, depending on whether the material is considered to be graphite (2.267 g/cc) or amorphous (1.8 to 2.1 g/cc). [Ref. 5, pg. 4-37]

2.1.2.4.15 Poisson's Ratio [Ref. 17, pg. 4-3 & 4-8] - The Poisson's ratio (ν) for H-451 graphite subjected to tensile strain is given as:

$$\nu = 0.118 (\pm 0.01)$$

Similarly, the Poisson's ratio (ν) for H-327 graphite strain is given as:

$$\nu = 0.1 \text{ to } 0.15$$

2.1.2.4.16 Irradiation Creep Behavior [Ref. 17, pg. 4-3] - Irradiation-induced creep for both tensile and compressive stresses in near-isotropic graphite is described by the following equation:

$$\epsilon_{cr} = 0.91 * 10^{-6} * \sigma * [1 - \exp(-5 * 10^{-20})] \exp(1.72 * 10^{-3} T - 0.83) + 10^{-27} \sigma * \Phi \exp(0.3212 + 7.48 * 10^{-4} T)$$

where:

ϵ_{cr} = total uniaxial creep strain (cm/cm)

σ = applied uniaxial stress (kPa)

Φ = fast neutron fluence (n/m²) ($E > 29$ eV)_{HTGR}

T = irradiation temperature ($^{\circ}\text{C}$)

The above equation is valid for tensile and compressive stresses at irradiation temperatures between 500°C and 1200°C , fast neutron fluences up to 10^{26} n/m², and creep strain up to $2.5 * 10^{-2}$ cm/cm in tension and $2 * 10^{-2}$ cm/cm in compression. The steady-state creep strain (2nd term in above equation) is a true plastic strain, whereas the transient creep strain is quasi-elastic and is recovered over an interval of $\sim 2 * 10^{23}$ n/m² if the stress is reduced during irradiation.

2.1.3 Thermal

The maximum operating temperature for the DOE SNF canister when it is not inside any other container (by itself, in a 25°C (77°F) calm air environment) is 148.9°C (300°F), and 315.5°C (600°F) after placement within another enclosed container, e.g., a storage industry canister for interim storage, etc. The determination of the operating temperature requires the knowledge of the decay heat of the FSVR fuel elements and the heat transfer conditions in its given environment. The decay heat given as a function of decay time is shown in Appendix D (Table D-1). The data was prepared with ORIGEN-S computer program. [Ref. 6, p. 26] The values shown are the highest among the nine fuel segments, therefore conservative for the decay heat calculations. Fifteen years is the estimated minimum decay time for FSVR fuel at INEEL that will be considered for insertion into the DOE SNF canister.

ORIGEN-S inputs required some assumptions to allow burnup calculations. A weighted-average, thermal neutron flux used a calculated $5.81\text{E}+13$ n/cm²-sec based at 80% power in Cycle 4. The ORIGEN-S runs were performed using an average thermal flux, and to obtain heat generation rates and curie contents, a peaking factor was needed for the ORIGEN results. Various maximum peaking factors could be determined based on which cycle was chosen; a weighted peaking factor of 1.76 was finally applied to the ORIGEN results. [Ref. 6, pgs 4-7] Applying this factor to the ORIGEN-S base data instead of applying it to the ORIGEN-S input thermal flux for all the runs was shown to be conservative. Using this information as applied to the Cycle 4 fuels, benchmark calculations were also performed for fuel segments 1, 2, and 3 decay heat curves provided by GA for the spent fuel shipping criteria. These comparative results are shown in Figure 2-7. [Ref. 6, pg. 23] The maximum fuel block decay heat curve appears in Figure 2-8. [Ref. 6, pg. 24] Use of 805 watts per SNF canister loaded with 5 maximally burned fuel elements (year 2000) would represent the bounding case value associated with a single SNF canister intended for loading in a waste package.

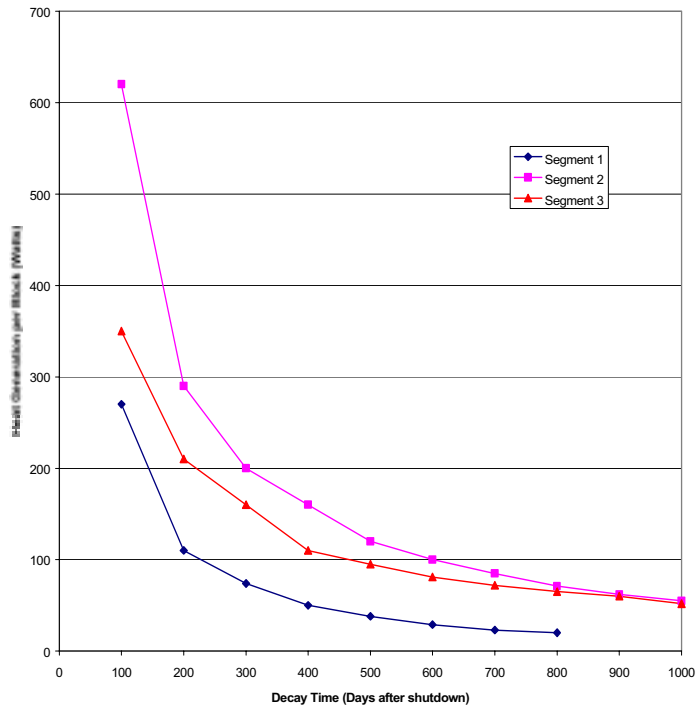


Figure 2-7. GA Decay Heat Curves for Segments 1 (174 EFPD), 2 (363 EFPD) and 3 (658 EFPD)
[Ref. 6, pg. 23]

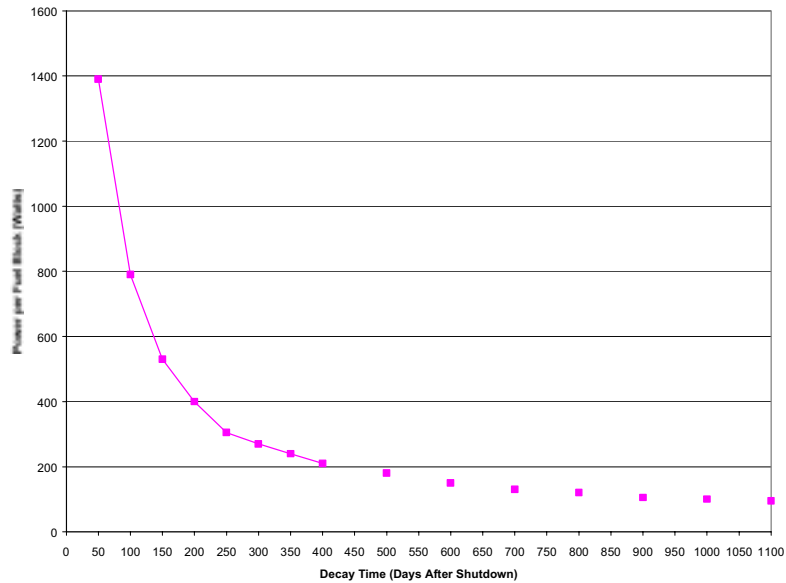


Figure 2-8. Maximum Decay Heat for a Spent Fuel Block [Ref. 6, pg. 24]

Table 2-14. FSVR Fuel Burnup Data

Segment #	Date of Discharge	Reported Burnup (MWD/Fuel Element)
1	2/1/79	72.3
2	5/13/81	142.9
3	1/2/84	310.7
4	8/18/89	527.79
5	8/18/89	511.9
6	8/18/89	527.7
7	8/18/89	507.44
8	8/18/89	416.4
9	8/18/89	223.63

As shown in Table 2-14, the maximum reported burnup was attained by segment 4 of 527.79 MWD/fuel element. [Ref. 21]

2.1.4 Shielding Source Term

The shielding evaluation considers the energy dependent neutron and gamma source of the irradiated fuel to determine the dose rate at some point external to the DOE SNF canister and/or Waste Package. This section lists estimates of the spatial source distribution and the source particle magnitudes.

2.1.4.1 FSVR Photon/Neutron Spectra - The total photon spectrum for the activation products, actinides, and fission products is given in Table 2-15. The overall neutron source is given in Table 2-16. Both sources are taken from the ORIGEN cases supporting the data in Ref. 6. The sources are provided as a function of decay time for the highest burnup FSVR fuel element. This assembly provides the bounding decay heat values. Since the source terms are directly related to the decay heat, this data will also bound the source terms from other types of FSVR elements. The available data is necessarily limited to the elapsed times and energy levels selected for analysis (after reactor shutdown) associated with the ORIGEN outputs. Gamma source values beyond 750 days must necessarily be calculated or extrapolated from the data in Table 2-15.

Table 2-15. Total Gamma Source (Photon/Sec) for the Maximum Burnup FSVR Element [Ref. 6]

Mean Energy (MeV)	Gamma Source as a Function of Decay Time per Single Fuel Element, days					
	0	100	150	350	550	750
3.00E-01	3.27E+13	2.58E+13	2.31E+13	1.55E+13	1.08E+13	7.93E+12
6.50E-01	4.68E+14	3.27E+14	2.90E+14	2.20E+14	1.86E+14	1.62E+14
1.13E+00	9.15E+12	8.01E+12	7.56E+12	6.18E+12	5.21E+12	4.50E+12
1.57E+00	4.22E+12	3.63E+12	3.38E+12	2.57E+12	1.99E+12	1.57E+12
2.00E+00	3.11E+12	2.44E+12	2.16E+12	1.33E+12	8.18E+11	5.04E+11
2.40E+00	5.58E+10	4.49E+10	4.03E+10	2.62E+10	1.71E+10	1.12E+10
2.80E+00	6.86E+09	5.58E+09	5.03E+09	3.34E+09	2.22E+09	1.48E+09
3.25E+00	7.81E+08	6.46E+08	5.88E+08	4.04E+08	2.77E+08	1.90E+08
3.75E+00	3.44E+05	2.85E+05	2.59E+05	1.78E+05	1.22E+05	8.38E+04
4.25E+00	7.70E-07	7.73E-07	7.74E-07	7.79E-07	7.84E-07	7.88E-07
4.75E+00	3.86E-07	3.88E-07	3.88E-07	3.91E-07	3.93E-07	3.95E-07
5.50E+01	2.86E-07	2.87E-07	2.88E-07	2.90E-07	2.92E-07	2.95E-07

Neutron levels, both spontaneous and alpha-n, are very much a function of the longer-lived actinides. Given the longer half-lives associated with the actinides relative to those of fission or activation products, only slight decreases in neutron level is indicated. Both quantity and energy levels decrease with time as shown in Table 2-16.

Table 2-16. Overall Neutron Source from Alpha-n and Spontaneous Fission for the Maximum Burnup FSVR Fuel Element [Ref. 6]

Total (ALPHA-N plus Spontaneous Fission) Neutron Source Spectrum as a Function of Time per Single Fuel Element (neutrons/sec)			
Boundaries (MeV)	Discharge	1.0 year	2.0 years
6.43-20.00	3.812E+03	3.372E+03	3.165E+03
3.00-6.43	5.263E+04	4.649E+04	4.400E+04
1.85-3.00	7.086E+04	6.491E+04	6.262E+04
1.40-1.85	3.274E+04	2.982E+04	2.852E+04
0.90-1.40	3.961E+04	3.560E+04	3.373E+04
0.40-0.90	4.067E+04	3.615E+04	3.403E+04
0.10-0.40	7.931E+03	7.039E+03	6.622E+03
0.00-0.10	0.000E+00	0.000E+00	0.000E+00
Total	2.483E+05	2.234E+05	2.127E+05

3. REFERENCES

1. ORNL 1992. *Characteristics of Potential Repository Wastes*. DOE/RW-0184-R1 Volume 1. Oak Ridge, Tennessee. (M&O TIC-204940)
2. Baxter, A.M. and Malakhof, V., "A Summary of Nuclear Criticality Safety for the Ft. St. Vrain HTGR Fuel", GAMD-10493, Gulf General Atomic, April 1971
3. Ft. St. Vrain Independent Fuel Storage Installation Safety Analysis Report, Section 3, Docket No. 72-09, INEL, Rev. 0, December 1996
4. Characteristics of Potential Repository Wastes, DOE/RW-0184-R1, Vol.2, ORNL, July 1992
5. Dean, John A., Lange's Handbook of Chemistry, 13th Ed., McGraw Hill, New York, NY, 1985
6. Ft. St. Vrain Decay Heat Analysis for Spent Fuel, EE-DEC-0023, Rev. A, June 1990
7. Ft. St. Vrain Nuclear Generating Station: Updated Final Safety Analysis Report, Appendix A
8. FSV Fuel Specification, GA-1484, (Rev10/82), GA Technologies Inc., February 1985
9. Company correspondence, DOE-ID to Exxon Nuclear, Ft. St. Vrain Fuel Data; Fuel Receipt Criteria, Part A, March 1982
10. Company correspondence, RJK-07094, The Chemical Reactivity of ICPP Stored ThC₂-UC₂ Fuels, July 1994
11. Company correspondence, MBP-3-93, Physical Characteristics of Graphite Types H-451 and H-047, February 1993
12. Integrated National Spent Fuel Database -Total FSV Inventory for PA Work, 1999
13. Russell, L.E., et al, Carbides in Nuclear Energy, Vol. 1 and Vol. 2, Macmillan & Co., London, 1964
14. INEEL 1998. Preliminary Design Specification for Department of Energy Standardized Spent Nuclear Fuel Canisters, Volume I – Design Specification. DOE/SNF/REP-011, REV. 3 (Aug. 1999). Idaho Falls, Idaho: INEEL. TIC: 239252
15. PNNL-11365, Marschman, S.C., et al, Characterization Plan for Fort St. Vrain and Peach Bottom Graphite Fuels, September 1993
16. Public Service of Colorado, Ft. St. Vrain Fuel Database
17. GLP-5588, Safety Analysis Report Use of H-451 Graphite in Fort St. Vrain Fuel Elements, Gulf General Atomic, December 1977

18. GA-A16258/UC-77, Saurwein, J. J., Miller, C.M., and Young, C.A., Postirradiation Examination and Evaluation of Fort Saint Vrain Fuel Element 1-0743, General Atomic Company, May 1981
19. GADR-55, Volume II, Consolidated Design Report for the Model FSV-1A Package; Section 6.0 – Criticality Evaluation, Rev. 0, Public Service Company of Colorado, Aug. 1989
20. Report # 910055, Nuclear Safety of FSV ISFISI, GA Technologies, April 1990
21. Private communication with R. J. Kirkham, (spreadsheet) GWS1C.xls

Appendix A: HTGR Fuel Group Summary

A.1. HTGR Fuel Group Summary

Table 3-1 provide a description of the various HTGR fuel types and an estimate of the quantity of each type that may ultimately be received for disposal [reference: Integrated National Spent Fuel Database, as of April 28, 1999].

Table 3-1. HTGR Fuel Group Summary

Site	Fuel Name	Fuel Compound	Clad	FHU	Mass (kg)	Effective Enrich %	Fissile (kg)	U Mass (kg)	MTHM	Avg. Burnup MWd/MTHM
Ft.St.Vrain Plattville, CO	FSVR	ThC ₂ -UC ₂	Graphite	1464	187,392.0	77.73400	640.84	822.50	14.73	42000
INEEL/ICPP	FSVR	ThC ₂ -UC ₂	Graphite	744	95,232.0	83.60600	257.78	308.33	8.62	16000
INEEL/ICPP	ROVER	U Carbide	None	65	260.0	93.02375	111.42	119.78	0.12	unirradiated
INEEL/ICPP	ROVER	U Carbide	None	2164	2,164.0	93.14690	137.79	147.93	0.15	unirradiated
INEEL/ICPP	Peach Bottom Unit1 Core2	ThC ₂ -UC ₂	Graphite	786	32,226.0	72.68044	89.06	122.53	1.25	72717
INEEL/ICPP	Peach Bottom Unit1 Core1	ThC ₂ -UC ₂	Graphite	796	32,636.0	85.73079	173.89	202.27	1.61	30795
INEEL/ICPP	Peach Bottom Unit1 Core1	ThC ₂ -UC ₂	Graphite	18	738.0	85.73076	3.93	4.57	0.04	30795
GA, San Diego, CA	GA HTGR Fuel	ThCO-UCO	Graphite	2	30.0	80.61923	0.14	0.17	0.00	
ORR, ORNL	Peach Bottom Unit1 Core2 Tests	ThC ₂ -UC ₂	Graphite	24	782.4	77.68126	2.60	3.34	0.03	

Appendix B: Public Service of Colorado

Fort St. Vrain Fuel Data Base

The following information was generated and maintained in a database by PSC during the operation of the FSV reactor.

This information was derived from a QA-approved computer system with its attendant software. The original purpose of the database was initially intended to maintain an accountability of the heavy metals in the reactor fuels as they experienced irradiation and changes in the fissile material inventory, both depletion of U-235 and increases in U-233.

Subsequent to maintaining this accountability in support of reactor operation, this information now forms the basis of reporting stored fuel inventories in a NRC-licensed spent fuel storage facility. Additionally, these values will also form a basis for the fissile concentrations used in the proposed criticality analyses for FSV fuels.

The proposed approach for utilizing this data in any criticality analysis is to determine the fissile loading in a spent fuel canister by the following formula:

$$\text{Fissile content} = {}^{235}\text{U (BOL)} + {}^{233}\text{U (EOL)} + {}^{239}\text{Pu (EOL)}$$

Additionally, the analysis will include EOL values for any reported ${}^{232}\text{Th}$ and ${}^{238}\text{U}$ quantities, as these materials should be retained in the system due to their low solubilities.

Element N	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_U235	BOL_Fis_U238	BOL_Fert_Th232	BOL_Fis_U235	BOL_Fis_U238	Total	Th232	BOL_Fert_Th232	BOL_Fis_U235	BOL_Fis_U238	Tot EOL_Fis_U233	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss of BOL
1	1-1966	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6174.3	4751.02	49	37.71	86.71	0.05	1006.22	73.91	1.32	1.93	250.39	40.96	209.43	16.67	
2	1-4034	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6146.86	4729.88	68.84	52.97	121.81	0.13	914.47	72.58	2.46	2.22	242.14	57.85	284.49	22.64	
3	1-4056	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6167.35	4753.41	46.56	58.64	82.42	0.14	915.89	74.08	1.85	1.85	240.72	38.99	201.83	16.06	
4	1-4242	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6135.04	4720.76	76.74	58.05	135.79	0.19	879.03	73.67	3.08	2.39	377.58	64.52	313.06	17.86	
5	1-4273	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6169.97	4747.77	52.21	40.18	92.39	0.09	868.25	73.87	1.5	2.01	265.36	43.69	224.67	17.88	
6	1-4391	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6135.04	4747.77	76.74	59.05	135.79	0.19	868.25	73.67	3.08	2.39	377.58	64.52	313.06	17.88	
7	1-4539	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6174.3	4751.02	49	37.71	86.71	0.05	1006.22	73.91	1.32	1.77	250.39	37.38	198.68	15.89	
8	1-4601	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6143.26	4727.24	71.63	55.12	126.75	0.15	910.79	72.88	2.61	2.31	345.82	60.04	285.78	22.74	
9	1-4887	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6150.26	4732.59	66.24	50.97	117.21	0.11	920.68	72.78	2.3	2.14	345.82	55.41	290.52	22.32	
10	1-5382	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6151.41	4733.49	65.81	50.84	116.45	0.11	933.54	72.74	2.28	2.28	323.46	55.2	268.26	21.35	
11	1-5382	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6151.41	4733.49	65.81	50.84	116.45	0.11	933.54	72.74	2.28	2.2	313.07	52.71	260.36	20.72	
12	1-6055	9	9/30/94	6230.43	4794.21	11024.64	1266.61	76.94	6169.97	4747.77	51.8	39.81	91.61	0.06	979.09	72.99	1.49	1.99	265.86	43.29	222.57	17.88	
13	1-2473	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6086.31	4677	76.13	58.5	134.63	0.19	870.88	71.27	3.05	2.37	374.07	63.92	310.15	24.91	
14	1-2473	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6086.31	4677	76.13	58.5	134.63	0.19	870.88	71.27	3.05	2.37	374.07	63.92	310.15	24.91	
15	4-2211	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	72.52	55.73	126.25	0.16	892.46	71.15	2.79	2.43	352.49	60.85	291.54	23.42	
16	4-2211	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	72.52	55.73	126.25	0.16	892.46	71.15	2.79	2.43	352.49	60.85	291.54	23.42	
17	5-2701	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6094.46	4683.39	71.06	54.61	125.67	0.13	919.33	71.86	2.41	2.35	325.62	57.1	268.52	21.57	
18	5-4006	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6094.46	4683.39	71.06	54.61	125.67	0.13	919.33	71.86	2.41	2.35	325.62	57.1	268.52	21.57	
19	5-4006	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6094.46	4683.39	71.06	54.61	125.67	0.13	919.33	71.86	2.41	2.35	325.62	57.1	268.52	21.57	
20	5-5354	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	72.52	55.73	126.25	0.16	892.46	71.15	2.79	2.43	352.49	60.95	291.54	23.42	
21	5-5433	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6125.25	4706.95	48.62	37.86	85.98	0.06	979.09	72.99	1.49	1.99	265.86	40.57	225.29	17.67	
22	5-5606	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6125.25	4706.95	48.62	37.86	85.98	0.06	979.09	72.99	1.49	1.91	248.06	40.57	207.49	16.67	
23	5-5606	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6094.46	4683.39	71.06	54.61	125.67	0.13	902.34	71.71	2.59	2.29	342.61	59.49	283.12	22.74	
24	5-5606	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6094.46	4683.39	71.06	54.61	125.67	0.13	902.34	71.71	2.59	2.43	352.49	60.95	291.54	23.42	
25	5-5606	9	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	72.52	55.73	126.25	0.16	892.46	71.15	2.79	2.39	346.92	99.97	648.95	55.20	
26	1-4065	7	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	152.88	86.75	238.63	1.85	425.08	58.37	10.83	2.39	746.92	99.97	648.95	55.20	
27	1-4065	7	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6092.22	4681.59	152.88	86.75	238.63	1.85	425.08	58.37	10.83	2.2	746.92	99.97	648.95	55.20	
28	1-4065	7	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6071.95	4491.52	152.88	86.75	238.63	1.85	425.08	58.37	10.83	2.2	746.92	99.97	648.95	55.20	
29	1-4065	7	9/30/94	6180.94	4749.74	10930.68	1244.95	76.23	6071.95	4491.52	152.88	86.75	238.63	1.85	425.08	58.37	10.83	2.2	746.92	99.97	648.95	55.20	
30	1-2865	8	9/30/94	11324.88	11501	11720.00	1172.00	0	7162.99	4984.59	117.48	81.37	208.36	0.1	573	65.03	7.71	2.35	597.48	91.43	506.03	43.23	
31	1-4054	8	9/30/94	11324.88	11501	11720.00	1172.00	0	7162.99	4984.59	117.48	81.37	208.36	0.1	573	65.03	7.71	2.35	597.48	91.43	506.03	43.23	
32	1-4061	8	9/30/94	11324.88	11501	11720.00	1172.00	0	7162.99	4984.59	117.48	81.37	208.36	0.1	573	65.03	7.71	2.35	597.48	91.43	506.03	43.23	
33	1-4685	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
34	1-4685	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
35	1-5089	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
36	1-5176	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
37	1-5176	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
38	1-5278	8	9/30/94	11324.88	11501	11720.00	1172.00	0	6666.4	4352.7	16.01	75.52	191.53	0.77	603.74	65.82	6.7	2.35	566.72	84.57	482.15	41.19	
39	1-2744	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6741.62	4388.76	88.7	57.74	146.44	0.28	737.38	68.1	3.77	2.26	433.08	63.77	369.31	31.55	
40	1-2744	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6741.62	4388.76	88.7	57.74	146.44	0.28	737.38	68.1	3.77	2.26	433.08	63.77	369.31	31.55	
41	1-3335	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6621.05	4341.38	119.83	78.58	198.41	0.92	571.55	65.39	3.58	2.15	432.89	61.89	371	31.70	
42	1-3335	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6621.05	4341.38	119.83	78.58	198.41	0.92	571.55	65.39	3.58	2.22	598.69	88.07	510.62	43.63	
43	1-4684	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6614.52	4337.06	128.28	84.11	212.39	1.05	569.15	64.55	8.32	2.59	601.09	95.02	506.07	43.24	
44	1-5353	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6614.52	4337.06	128.28	84.11	212.39	1.05	569.15	64.55	8.32	2.35	597.6	91.38	506.22	43.26	
45	1-5378	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6614.52	4337.06	128.28	84.11	212.39	1.05	569.15	64.55	8.32	2.45	642.09	99.47	542.62	46.37	
46	1-5378	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6627.22	4376.78	95.89	62.87	158.76	0.38	703.57	67.41	4.21	2.36	466.67	69.74	398.93	33.92	
47	1-5424	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6627.22	4376.78	95.89	62.87	158.76	0.38	703.57	67.41	4.21	2.49	570.64	88.03	482.61	41.24	
48	1-5428	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6675.22	4365.57	119.56	78.39	197.95	0.82	599.6	65.42	7.15	2.45	642.09	99.47	542.62	46.37	
49	1-5725	8	9/30/94	11268.7	11268.7	11268.7	11268.7	73.8	6675.22	4365.57	119.56	78.39	197.95	0.82	599.6	65.42	7.15	2.45	642.09	99.47	542.62	46.37	
50	1-5913																						

Appendix B

Element	Element N	Date	BOL_Fis_T Th232	Total Th232	BOL_Fis_U238 U235	BOL_Fis_T U238	EOL_Fis_T U238	EOL_Fis_T U235	Tot EOL_Fis U238	EOL_Fert_ U235	EOL_Fis U238	EOL_Fis U235	EOL_Fis Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss of BOL
72	15178	7	930094	11454	1163.00	0	7037.56	3687.19	166.49	244.7	372.41	57.46	11.73	700.59	102.13	688.46	69.20
73	5-0364	7	930094	11725	1042.00	0	7855.58	3822.62	114.22	166.9	486.44	55.73	4.5	545.56	58.82	486.74	46.71
74	5-1481	7	930094	11725	1042.00	0	7741.32	3869.9	194.68	226.32	329.71	52.51	9.36	712.29	82.51	629.78	60.44
75	5-1483	7	930094	11725	1042.00	0	7640.83	3615.8	120.28	57.75	466.33	52.51	5.12	163	97.56	62.22	49.28
76	5-1857	7	930094	11725	1042.00	0	7741.25	3959.87	159.69	70.87	224.56	2.01	326.89	162	715.11	81.62	633.49
77	5-168	7	930094	11725	1042.00	0	7741.25	3959.87	159.69	73.77	233.75	51.94	10.24	164	747.72	85.65	662.07
78	5-5690	7	930094	11725	1042.00	0	7764.15	3857.16	83.83	66.79	130.62	58.94	2.44	171	692.07	78.72	603.29
79	114103	9	930094	7015.2	10930.68	62.84	6910.72	3880.47	52.74	29.44	82.18	60.52	1.01	147	208.26	31.92	268.43
80	114166	9	930094	7015.2	10930.68	62.84	6954.92	3881.77	52.74	29.44	82.18	60.52	1.01	147	208.26	31.92	268.43
81	114173	9	930094	7015.2	10930.68	62.84	6954.92	3881.77	52.74	29.44	82.18	60.52	1.01	147	208.26	31.92	268.43
82	114184	9	930094	7015.2	10930.68	62.84	6910.72	3880.47	52.74	29.44	82.18	60.52	1.01	147	208.26	31.92	268.43
83	114091	9	930094	6968.87	10867.68	62.5	6838.69	3834.31	85.08	47.7	132.78	59.08	2.02	156	289.66	34.69	245.06
84	114045	9	930094	6946.48	10840.68	62.5	6838.69	3834.31	85.08	47.7	132.78	59.08	2.02	156	289.66	34.69	245.06
85	114143	9	930094	6946.48	10840.68	62.5	6907.62	3861.33	85.08	47.7	132.78	59.08	2.02	156	289.66	34.69	245.06
86	114172	9	930094	6966.23	10860.33	62.5	6966.23	3858.53	85.08	47.7	132.78	59.08	2.02	156	289.66	34.69	245.06
87	114185	9	930094	6966.23	10860.33	62.5	6966.23	3858.53	85.08	47.7	132.78	59.08	2.02	156	289.66	34.69	245.06
88	113023	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
89	113042	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
90	113075	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
91	113076	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
92	113101	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
93	113103	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
94	113112	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
95	113151	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
96	113171	9	930094	6923.27	10805.4	62.3	6863.34	3848.57	52.03	29.17	81.2	60.03	1.01	141	214.44	31.59	182.85
97	113132	9	930094	7184.91	10555.96	62.13	7074.46	3814.54	70.89	39.75	110.64	58.16	2.55	176	265.19	43.27	221.92
98	113153	9	930094	7184.91	10555.96	62.13	7074.46	3814.54	70.89	39.75	110.64	58.16	2.55	176	265.19	43.27	221.92
99	14012	9	930094	7140.61	10111.86	62.13	7098.01	3830.15	65.17	35.11	100.28	58.16	1.37	168	230.4	192.24	18.95
100	14023	9	930094	6965.67	10363.72	62.13	6855.38	3826.16	69.62	37.74	107.36	58.16	1.37	166	252.33	40.97	213.36
101	14081	9	930094	7184.91	10155.96	62.13	7079.91	3813.39	69.62	37.74	107.36	58.16	1.37	166	252.33	40.97	213.36
102	14083	9	930094	7184.91	10155.96	62.13	7079.91	3813.39	69.62	37.74	107.36	58.16	1.37	166	252.33	40.97	213.36
103	14094	9	930094	7184.91	10155.96	62.13	7129.74	3818.3	69.62	37.74	132.12	58.16	1.67	181	315.84	50.47	265.37
104	14114	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
105	15032	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
106	15044	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
107	15051	9	930094	7184.91	10155.96	62.13	7074.46	3814.54	70.89	39.75	110.64	58.16	2.55	176	265.19	43.27	221.92
108	15054	9	930094	7184.91	10155.96	62.13	7074.46	3814.54	70.89	39.75	110.64	58.16	2.55	176	265.19	43.27	221.92
109	15065	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
110	15071	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
111	15082	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
112	15105	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
113	15116	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
114	15123	9	930094	6965.67	10363.72	62.13	6907.18	3839.36	50.22	27.91	73.43	58.79	1.9	174	280.2	44.32	235.88
115	15132	9	930094	6965.67	10363.72	62.13	6907.18	3839.36	50.22	27.91	73.43	58.79	1.9	174	280.2	44.32	235.88
116	15135	9	930094	6965.67	10363.72	62.13	6907.18	3839.36	50.22	27.91	73.43	58.79	1.9	174	280.2	44.32	235.88
117	15136	9	930094	6965.67	10363.72	62.13	6907.18	3839.36	50.22	27.91	73.43	58.79	1.9	174	280.2	44.32	235.88
118	15143	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
119	15144	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
120	15165	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
121	15166	9	930094	7184.91	10155.96	62.13	7098.52	3821.8	69.62	37.74	123.56	60.06	0.82	179	315.84	50.47	265.37
122	15174	9	930094	6965.67	10363.72	62.13	6863.34	3828.41	65.64	36.48	102.12	58.16	1.47	174	280.2	44.32	235.88
123	133035	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
124	133046	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
125	133071	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
126	133074	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
127	13315	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
128	13126	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
129	134106	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
130	134123	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
131	134131	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
132	134142	9	930094	6862.7	10111.44	1008.79	6786.34	3794.7	78.44	43.89	122.43	58.17	1.14	149	221.76	33.6	188.16
133	5-5264	7	930094	12003	0	12003	8247.54	3382.67	144.12	59.11	203.23	59.51	1.01	133	31.33	606.18	61.67
134	5-5263	7	930094	12003	0	12003	8340.75	3420.93	116.03	46.06	156.36	53.04	3.9	123	501.29	51.19	480.17
135	5-5363	7	930094	11927	0	11927	8340.75	3420.93	116.03	46.06	156.36	53.04	3.9	123	501.29	51.19	480.17

Element	Element Seg	Date	BOL_Fis_T Th232	Total Th232	BOL_Fis_Th232	EOL_Fert_Th232	EOL_Fis_T h232	EOL_Fis_Th232	EOL_Fert_Th232	EOL_Fis_U233	Tot EOL_Fis U233	EOL_Fert_U233	EOL_Fis_U233	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss
143	1-4-623	8	930094	10517.31	0	10517.31	0	6718.41	3644.39	78.44	42.55	120.99	0.18	645.94	57.12	2.37	1.72	323.55	46.64	276.91	28.56
144	1-4-633	8	930094	10517.31	0	10517.31	0	6694.73	3631.49	91.31	49.53	140.84	0.32	581.33	56.33	3.55	1.77	388.16	54.65	333.51	34.40
145	1-4-622	7	930094	11193	0	11193	0	7497.23	3286.82	161.85	70.96	232.81	1.99	328.67	48.03	9.91	1.73	634.53	81.6	559.93	57.33
146	1-4-128	14022	7	930094	11193	0	11193	7524.13	3286.61	155.2	68.04	225.24	1.57	366.39	48.6	7.96	1.86	594.61	77.85	516.76	53.77
147	1-4-506	14506	7	930094	11193	0	11193	7996.52	3330.37	121.61	53.32	174.93	0.72	433.03	50.76	4.91	1.55	527.97	59.78	468.19	48.92
148	1-4-584	15384	7	930094	11193	0	11193	7612.52	3330.37	116.8	51.21	168.01	0.57	472	51.13	4.3	1.66	489	57.17	431.83	44.94
149	1-4-578	15728	7	930094	11193	0	11193	7497.23	3286.82	161.85	70.96	232.81	1.99	328.67	48.03	9.91	1.73	632.53	81.6	550.93	57.33
150	1-4-578	15728	7	930094	11193	0	11193	7472.53	3275.98	164.4	72.07	236.47	1.99	290.81	47.49	9.77	1.64	670.19	83.48	586.71	61.05
151	1-4-511	14511	7	930094	11112	0	11112	7522.37	3330.7	120.34	53.29	173.63	0.67	446.95	50.79	4.77	1.63	513.05	59.89	453.36	47.23
152	1-5-752	15752	7	930094	11112	0	11112	7406.21	3279.27	120.34	53.29	173.63	0.67	446.95	50.79	4.77	1.63	513.05	59.89	453.36	47.23
153	1-4-604	16064	7	930094	11112	0	11112	7447.26	3297.43	153.61	68.02	221.63	1.55	366.26	48.58	7.94	1.86	593.74	77.82	516.92	58.77
154	1-5-730	15730	7	930094	11001	0	11001	7417.8	3314.42	121.97	54.5	176.47	0.75	428.1	51.41	4.91	1.61	527.9	61.21	466.69	48.74
155	1-5-692	15692	7	930094	11038	0	11038	7457.94	3314.15	122.23	54.32	176.55	0.72	436.61	50.41	5.01	1.65	519.39	60.98	458.41	47.95
156	1-4-078	15678	8	930094	10929.72	0	10929.72	7172.1	3591.61	85.75	42.94	128.89	0.21	626.65	56.19	2.48	1.71	329.28	47.13	282.15	29.52
157	1-4-215	14215	8	930094	10929.72	0	10929.72	7075.38	3543.35	134.19	67.2	201.39	1.06	456.13	53.05	6.55	1.97	499.8	75.72	424.08	44.36
158	1-4-549	14549	8	930094	10929.72	0	10929.72	7118.38	3564.67	115.95	58.06	174.01	0.57	531.82	54.41	4.59	1.94	424.11	64.59	359.52	37.61
159	1-4-563	14563	8	930094	10929.72	0	10929.72	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48	69.77	400.71	41.52
160	1-4-646	14646	8	930094	10929.72	0	10929.72	7088.35	3549.64	127.95	64.07	192.02	0.92	467.89	53.49	5.99	1.88	488.04	71.94	416.1	43.53
161	1-5-342	15342	8	930094	10929.72	0	10929.72	7039.41	3525.13	144.59	72.41	217	1.56	366.44	52.14	8.13	1.76	569.49	82.3	487.19	50.97
162	1-5-415	15415	8	930094	10929.72	0	10929.72	7119.19	3565.08	115.95	58.06	174.01	0.56	536.64	54.41	4.55	1.96	419.29	64.57	354.72	37.11
163	1-5-727	15727	8	930094	10929.72	0	10929.72	7172.42	3591.71	85.75	42.94	128.89	0.21	628.44	56.2	2.47	1.72	327.49	47.1	280.39	29.33
164	1-4-034	16034	8	930094	10970.64	0	10970.64	7141.24	3551.01	125.32	62.92	187.64	0.79	490.14	53.81	5.4	1.82	464.87	69.54	395.33	41.40
165	1-4-696	161696	8	930094	10970.64	0	10970.64	7098.81	3530	140.98	70.11	211.09	1.17	416.09	52.55	7.32	1.71	538.92	79.2	458.72	48.14
166	1-1-631	11631	8	930094	10970.64	0	10970.64	7112.58	3536.74	134.98	67.12	202.1	1.35	431.02	53.01	6.68	1.72	538.92	75.52	448.47	46.96
167	1-1-708	11708	8	930094	10970.64	0	10970.64	7110.99	3545.27	135.82	67.44	203.06	1.18	428.72	52.94	6.77	1.72	526.29	75.93	459.36	47.16
168	1-2-343	12343	8	930094	10970.64	0	10970.64	7139.53	3545.27	129.78	64.54	194.32	0.93	464.91	53.98	6.06	1.87	490.1	72.97	417.63	43.73
169	1-2-849	12849	8	930094	10970.64	0	10970.64	7131.56	3546.25	128.73	64.01	192.74	0.92	467.44	53.44	5.98	1.87	487.57	71.86	416.71	43.53
170	1-2-869	12869	8	930094	10970.64	0	10970.64	7095.8	3528.41	141.45	70.34	211.79	1.37	405.96	52.49	7.52	1.76	549.45	79.82	469.63	49.20
171	1-2-955	12955	8	930094	10970.64	0	10970.64	7197.36	3540.31	133.9	66.58	200.48	1.06	447.55	53.07	6.58	1.89	507.46	75.05	432.41	45.28
172	1-4-274	14274	8	930094	10970.64	0	10970.64	7196.2	3536.43	96.53	48	144.53	0.34	571.76	55.53	3.27	1.73	363.25	53	330.25	34.58
173	1-4-274	14274	8	930094	10970.64	0	10970.64	7109.39	3560.03	135.62	67.44	203.06	1.18	428.72	52.94	6.77	1.72	526.29	75.93	459.36	47.16
174	1-4-979	14979	8	930094	10970.64	0	10970.64	7087.88	3524.52	144.34	71.78	216.12	1.49	393.12	52.25	7.95	1.78	561.89	81.51	480.38	50.30
175	1-5-097	15097	8	930094	10970.64	0	10970.64	7196.2	3536.43	96.53	48	144.53	0.34	571.76	55.53	3.27	1.73	363.25	53	330.25	34.58
176	1-5-143	15143	8	930094	10970.64	0	10970.64	7118.86	3539.84	134.47	66.87	202.9	1.08	446.21	53.03	6.68	1.92	508.8	75.47	433.33	45.37
177	1-6-007	16007	8	930094	10970.64	0	10970.64	7115.56	3538.33	135.51	67.39	202.9	1.08	443.52	53.03	6.68	1.92	508.8	75.47	433.33	45.37
178	1-6-010	16010	8	930094	10970.64	0	10970.64	7118.86	3539.84	134.47	66.87	202.9	1.08	446.21	53.03	6.68	1.92	508.8	75.47	433.33	45.37
179	1-4-057	14057	7	930094	11004	0	11004	7365.3	3279.14	147.46	65.65	213.11	1.52	353.53	48.51	7.66	1.7	601.47	75.01	526.46	55.37
180	1-0-913	10913	11082	7	930094	11062	0	7390.96	3263.12	158.88	68.81	224.87	2.02	307.73	47.68	9.99	1.65	646.27	79.45	566.82	59.42
181	1-4-011	14011	7	930094	11106	0	11106	7531.83	3261.29	132.85	54.32	178.17	0.76	427.65	50.21	5.08	1.6	525.35	61	464.35	48.73
182	1-5-615	15615	115815	7	930094	11106	0	7435.65	3261.01	156.8	68.77	225.57	2.03	307.53	47.65	8.98	1.65	645.47	79.4	566.07	59.40
183	1-2-331	12331	12331	7	930094	11108	0	7381.33	3231.68	171.39	58.74	246.43	3.11	246.17	46.21	11.33	1.69	705.83	88.06	617.77	64.89
184	1-4-152	14152	7	930094	11108	0	11108	7552.94	3306.83	118.56	51.91	170.47	0.6	462.11	50.55	4.46	1.68	489.89	58.05	431.84	45.36
185	1-4-732	14732	7	930094	11108	0	11108	7542.8	3302.4	121.77	53.31	175.08	0.69	440.82	50.3	4.81	1.61	511.18	59.73	451.45	47.42
186	1-5-288	15288	7	930094	11108	0	11108	7542.8	3302.4	121.77	53.31	175.08	0.69	440.82	50.3	4.81	1.61	511.18	59.73	451.45	47.42
187	1-5-300	15300	7	930094	11108	0	11108	7448.95	3261.27	157.8	69.09	226.89	1.88	327.64	47.84	8.52	1.66	624.36	79.27	545.09	57.26
188	1-5-307	15307	7	930094	11108	0	11108	7448.95	3261.27	157.8	69.09	226.89	1.88	327.64	47.84	8.52	1.66	624.36	79.27	545.09	57.26
189	1-5-654	15654	7	930094	11108	0	11108	7423.56	3250.13	154.96	68.85	226.11	1.87	327.12	47.72	8.65	1.72	624.88	79.22	545.66	57.32
190	1-5-692	15692	7	930094	11108	0	11108	7557.55	3308.84	115.96	50.77	166.73	0.57	467.96	50.69	4.26	1.64	484.04	56.67	427.37	44.89
191	1-0-971	10971	8	930094	10970.64	0	10970.64	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48	69.77	400.71	41.52
192	1-2-960	12960	8	930094	10970.64	0	10970.64	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48	69.77	400.71	41.52
193	1-2-974	12974	8	930094	10970.64	0	10970.64	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48	69.77	400.71	41.52
194	1-4-119	14119	8	930094	10970.64	0	10970.64	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48	69.77	400.71	41.52
195	1-4-155	14155	8	930094	10970.64	0	10970.64	7096.48	3553.66	124.82	62.51	187.33	0.8	485.45	53.84	5.46	1.8	470.48			

Element	Element N	Element Seg	Date	BOL Fert			BOL Fis			BOL Fis - BOL Fis - U238 - U235			BOL Fert - U238 - U235			Total Th232	BOL Fert - U238 - U235 - Th232	EOL Fert - U238 - U235 - h232	EOL Fis - U238 - U235 - h232	EOL Fis - U238 - U235 - h232	Tot EOL Fis - U238 - U235	EOL Fis - U238 - U235 - h232	EOL Fis - U238 - U235	EOL Fis - U238 - U235	EOL Fis - Pu239 - Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss
				h232	h232	h232	h232	h232	h232	h232	h232	h232	h232	h232	h232														
214-1-2313	9	930/04	9	930/04	12684.6	950.48	65.2	8945.53	3590.31	82.64	129.73	0.19	666.94	55.15	1.86	293.54	40.37	253.17	26.64										
215-1-5372	9	930/04	9	930/04	12684.6	950.48	58.2	8946.77	3592.39	89.44	123.24	0.17	666.04	55.24	1.76	282.44	39.03	243.41	25.61										
216-1-3775	9	930/04	9	930/04	12684.6	950.48	58.2	8955.15	3576.91	96.07	134.53	0.24	615.96	56.04	1.32	334.92	41.19	293.02	30.83										
217-1-0466	9	930/04	9	930/04	11175	949.00	0	7504.77	3240.82	173.14	247.91	3.14	246.3	40.04	11.29	703.7	87.75	616.95	64.91										
218-1-0451	9	930/04	9	930/04	11175	949.00	0	7520.77	3241.96	164.72	235.85	2.24	289.66	47.04	9.62	627.86	82.51	545.35	57.70										
219-1-0965	9	930/04	9	930/04	11175	949.00	0	7568.14	3289.26	161.75	69.59	2307.4	1.96	321.14	47.41	8.92	627.86	82.51	545.35	57.70									
220-1-1623	9	930/04	9	930/04	11175	949.00	0	7552.41	3261.45	124.83	53.91	178.74	0.73	433.33	50.03	4.97	627.86	82.51	545.35	57.70									
221-1-1635	9	930/04	9	930/04	11175	949.00	0	7552.41	3261.45	152.38	65.81	218.19	1.48	383.43	48.23	7.56	627.86	82.51	545.35	57.70									
222-1-2205	9	930/04	9	930/04	11175	949.00	0	7466.19	3224.21	167.13	239.3	32.76	246.32	46.36	10.72	627.86	82.51	545.35	57.70										
223-1-1900	9	930/04	9	930/04	9022.35	3619.35	58.09	8917.13	3574.91	86.65	121.41	0.19	617.75	55.37	1.78	330.91	37.68	293.23	30.91										
224-1-4073	9	930/04	9	930/04	9022.35	3619.35	58.09	8917.13	3574.91	86.65	121.41	0.19	617.75	55.37	1.78	330.91	37.68	293.23	30.91										
225-1-5372	9	930/04	9	930/04	9022.35	3619.35	58.09	8923.3	3579.62	79.7	111.67	0.16	636.45	55.54	1.59	312.21	35.82	276.39	29.13										
226-1-4810	9	930/04	9	930/04	9022.35	3619.35	58.09	8923.3	3579.62	79.7	111.67	0.16	636.45	55.54	1.59	312.21	35.82	276.39	29.13										
227-1-0056	9	930/04	9	930/04	9022.35	3619.35	58.09	8923.3	3579.62	79.7	111.67	0.16	636.45	55.54	1.59	312.21	35.82	276.39	29.13										
228-1-0253	9	930/04	9	930/04	11119	945.00	0	7474.78	3229.9	160.8	69.48	230.28	2.07	308.79	47.07	9.1	636.21	80.29	555.92	58.83									
229-1-0779	9	930/04	9	930/04	11119	945.00	0	7474.78	3229.9	160.8	69.48	230.28	2.07	308.79	47.07	9.1	636.21	80.29	555.92	58.83									
230-1-2050	9	930/04	9	930/04	11119	945.00	0	7479.02	3231.73	158.04	68.29	226.33	1.88	324.45	47.33	8.58	627.86	82.51	545.35	57.70									
231-1-2251	9	930/04	9	930/04	11162	945.00	0	7493.14	3231.63	165.74	71.21	236.95	2.51	278.07	46.61	8.68	627.86	82.51	545.35	57.70									
232-1-2318	9	930/04	9	930/04	11119	945.00	0	7590.46	3279.88	119.15	68.11	170.64	0.6	458.35	50.14	4.43	627.86	82.51	545.35	57.70									
233-1-2508	9	930/04	9	930/04	11119	945.00	0	7487.89	3255.52	157.61	225.72	1.86	325.28	47.39	8.54	619.72	78.36	541.36	57.29										
234-1-2948	9	930/04	9	930/04	11162	945.00	0	7512.92	3246.38	151.59	65.5	217.09	1.48	361.81	48	7.52	619.72	78.36	541.36	57.29									
235-1-102	9	930/04	9	930/04	11162	945.00	0	7521.26	3231.73	158.1	71.21	236.95	2.51	278.07	46.61	8.68	627.86	82.51	545.35	57.70									
236-1-4523	9	930/04	9	930/04	11162	945.00	0	7521.26	3231.73	158.1	71.21	236.95	2.51	278.07	46.61	8.68	627.86	82.51	545.35	57.70									
237-1-4234	9	930/04	9	930/04	11162	945.00	0	7521.26	3231.73	158.1	71.21	236.95	2.51	278.07	46.61	8.68	627.86	82.51	545.35	57.70									
238-1-5666	9	930/04	9	930/04	11162	945.00	0	7469.1	3202.31	167.19	71.84	239.03	0.6	452.38	50.29	4.28	627.86	82.51	545.35	57.70									
239-1-5707	9	930/04	9	930/04	11162	945.00	0	7469.1	3202.31	167.19	71.84	239.03	0.6	452.38	50.29	4.28	627.86	82.51	545.35	57.70									
240-1-1236	9	930/04	9	930/04	11097	940.00	0	7586.99	3265.82	159.99	48.93	165.92	0.6	450.28	50.05	4.26	627.86	82.51	545.35	57.70									
241-1-0075	9	930/04	9	930/04	11097	940.00	0	7576.42	3261.26	121.21	52.18	175.39	0.68	437.63	48.73	4.67	627.86	82.51	545.35	57.70									
242-1-4105	9	930/04	9	930/04	11097	940.00	0	7576.42	3261.26	121.21	52.18	175.39	0.68	437.63	48.73	4.67	627.86	82.51	545.35	57.70									
243-1-4217	9	930/04	9	930/04	11097	940.00	0	7584.53	3256.15	126.23	52.63	174.9	0.7	435.2	49.66	4.75	627.86	82.51	545.35	57.70									
244-1-267	9	930/04	9	930/04	11097	940.00	0	7593.7	3230	150.23	64.67	180.57	0.8	416.43	49.42	5.2	627.86	82.51	545.35	57.70									
245-1-4711	9	930/04	9	930/04	11097	940.00	0	7564.53	3256.15	126.23	52.63	174.9	0.7	435.2	49.66	4.75	627.86	82.51	545.35	57.70									
246-1-5248	9	930/04	9	930/04	11097	940.00	0	7481.77	3220.51	157.48	67.79	225.27	1.85	323.77	49.42	5.2	627.86	82.51	545.35	57.70									
247-1-5777	9	930/04	9	930/04	11097	940.00	0	7479.83	3219.68	188.45	68.21	226.66	1.89	323.77	49.42	5.2	627.86	82.51	545.35	57.70									
248-1-5837	9	930/04	9	930/04	11097	940.00	0	7573.43	3259.74	121.24	52.19	173.43	0.68	423.85	49.68	4.8	627.86	82.51	545.35	57.70									
249-1-0029	9	930/04	9	930/04	935.90	935.90	57.31	8710.43	3546.63	51.55	20.99	72.54	0.03	741.95	55.78	0.65	193.95	22.6	171.35	18.31									
250-1-0029	9	930/04	9	930/04	935.90	935.90	57.31	8662.06	3532.3	72.3	29.44	101.74	0.01	674.58	55.04	1.16	261.32	31.85	229.47	24.52									
251-1-1773	9	930/04	9	930/04	935.90	935.90	57.31	8692.21	3539.12	65.17	26.53	91.7	0.02	686.85	55.27	1.04	261.32	31.85	229.47	24.52									
252-1-1846	9	930/04	9	930/04	935.90	935.90	57.31	8671.21	3533.22	75.39	30.7	106.09	0.17	686.85	55.27	1.04	261.32	31.85	229.47	24.52									
253-1-4002	9	930/04	9	930/04	935.90	935.90	57.31	8701.04	3542.82	68.89	23.98	93.98	0.02	723.29	55.49	1.08	212.61	25.9	186.71	19.95									
254-1-4055	9	930/04	9	930/04	935.90	935.90	57.31	8671.84	3531.04	77.83	31.69	109.52	0.14	631.29	54.92	1.48	212.61	25.9	186.71	19.95									
255-1-4086	9	930/04	9	930/04	935.90	935.90	57.31	8701.28	3542.93	67.94	23.59	93.98	0.02	704.64	55.59	0.84	212.61	25.9	186.71	19.95									
256-1-103	9	930/04	9	930/04	935.90	935.90	57.31	8696.47	3541.02	62.81	25.57	86.38	0.06	723.32	55.31	0.94	212.61	25.9	186.71	19.95									
257-1-4331	9	930/04	9	930/04	935.90	935.90	57.31	8664.98	3529.03	81.3	33.11	114.41	0.21	623.42	54.72	1.64	312.48	35.91	276.57	29.55									
258-1-5731	9	930/04	9	930/04	935.90	935.90	57.31	8694.33	3524.11	90.39	36.81	127.2	0.21	617.72	54.29	1.98	312.48	35.91	276.57	29.55									
259-1-5610	9	930/04	9	930/04	935.90	935.90	57.31	8697.02	3541.23	62.46	25.43	87.89	0.06	724.61	55.32	0.93	312.48	35.91	276.57	29.55									
260-1-5619	9	930/04	9	930/04	935.90	935.90	57.31	8707.42	3545.42	53.41	21.75	75.16	0.04	721.61	55.75	0.72	214.3	23.39	190.91	20.40									
261-1-4349	9	930/04	9	930/04	935.90	935.90	57.31	8694.33	3524.11	90.39	36.81	127.2	0.21	617.72	54.29	1.98	214.3	23.39	190.91	20.40									
262-1-0356	9	930/04	9	930/04	935.90	935.90	57.31	8739.96	3480.68	102.22	48.15	125.83	0.19	620.93	54.9	2.28	311.01	23.39	190.91	20.40									
263-1-4045	9	930/04	9	930/04	935.90	935.90	57.31	8694.33	3524.11	90.39	36.81	127.2	0.21	617.72	54.29	1.98	311.01	23.39	190.91	20.40									
264-1-3968	9	930/04	9	930/04	935.90	935.90	57.31	8739.96	3480.68	102.22	48.15	125.83	0.19	620.93	54.9	2.28	311.01	23.39	190.91	20.40									
265-1-4866	9	930/04	9	930/04	935.90	935.90	57.31	8739.96	3480.68	102.22	48.15	125.83	0.19	620.93	54.9	2.28	311.01	23.39	190.91	20.40									
266-1-5203	9	930/04	9	930/04	935.90	935.90	57.31	8739.96	3480.68	102.22	48.15	125.83	0.19	620.93	54.9	2.28	311.01	23.39	190.91	20.40									
267-1-5745	9	930/04	9	930/04	935.90	935.90	57.31	8694.33	3524.11	90.39																			

Element	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total	BOL_Fert_Th232	BOL_Fis_Th232	BOL_Fis_U238	EOL_Fert_Th232	EOL_Fis_Th232	EOL_Fert_U233	EOL_Fis_U233	Tot EOL_Fis_U233	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease	Net Loss - % of BOL
285 5-4171	54371	8 930094	12529.44	0	12529.44	876.22	876.22	55.25	8961.51	3260.94	133.68	48.61	182.19	1.11	343.23	50.11	4.93	1.06	532.89	54.6	476.39	54.60
286 5-5252	55252	8 930094	12529.44	0	12529.44	876.22	876.22	55.25	8974.95	3265.84	135.76	49.41	185.19	0.9	384.46	50.13	4.67	1.27	481.74	55.35	426.39	48.66
287 5-5260	55260	8 930094	12529.44	0	12529.44	876.22	876.22	55.25	9037.75	3268.14	136.17	49.55	185.72	0.97	460.74	50.17	2.68	1.02	415.48	41.18	374.3	42.72
288 5-5339	55339	8 930094	12529.44	0	12529.44	876.22	876.22	55.25	8970.28	3264.14	136.17	49.55	185.72	0.97	388.26	50.01	4.75	1.23	487.96	55.53	432.43	49.35
289 5-5908	55908	8 930094	12529.44	0	12529.44	876.22	876.22	55.25	9040.87	3269.85	136.17	49.55	185.72	0.97	483.13	51.6	2.63	1.17	383.09	41.8	341.29	38.95
290 5-4037	54037	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9041.73	3269.85	136.17	49.55	185.72	0.97	483.13	51.6	2.63	1.17	383.09	41.8	341.29	38.95
291 5-4487	54487	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9070.83	3293.52	136.17	49.55	185.72	0.97	483.13	51.6	2.63	1.17	383.09	41.8	341.29	38.95
292 5-4537	54537	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9070.83	3293.52	136.17	49.55	185.72	0.97	483.13	51.6	2.63	1.17	383.09	41.8	341.29	38.95
293 5-4731	54731	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9061.82	3290.45	136.17	49.55	185.72	0.97	503.35	52.2	2.07	1.33	349.67	41.94	307.73	35.13
294 5-5229	55229	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8943.05	3247.35	136.17	49.55	185.72	0.97	526.27	51.53	2.5	1.33	349.67	41.94	307.73	35.13
295 5-5269	55269	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8961.86	3259.37	136.17	49.55	185.72	0.97	503.35	52.2	2.07	1.33	349.67	41.94	307.73	35.13
296 5-5279	55279	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8961.86	3259.37	136.17	49.55	185.72	0.97	503.35	52.2	2.07	1.33	349.67	41.94	307.73	35.13
297 5-5315	55315	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8961.86	3259.37	136.17	49.55	185.72	0.97	503.35	52.2	2.07	1.33	349.67	41.94	307.73	35.13
298 5-5418	55418	8 ORIGIN	12545.04	0	12545.04	875.94	875.94	55.24	9003.81	3269.36	126.5	45.57	171.07	0.82	385.09	50.6	4.14	1.06	490.85	50.77	440.08	50.24
299 5-5418	55418	8 ORIGIN	12545.04	0	12545.04	875.94	875.94	55.24	12545.04	0	0	0	0	0	0	0	0	0	0	0	0	0.00
300 5-5607	55607	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	12545.04	0	0	0	0	0	875.94	55.24	0	0	0	0	0	0.00
301 5-5650	55650	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8997.47	3267.06	126.11	45.79	190.25	0.87	425.81	49.88	4.61	1.42	450.13	56.71	393.42	44.91
302 5-6054	56054	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8997.47	3267.06	126.11	45.79	190.25	0.87	425.81	49.88	4.61	1.42	450.13	56.71	393.42	44.91
303 5-6081	56081	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9064.8	3291.52	101.63	36.91	136.54	0.31	508.24	51.76	2.45	1.95	510.58	50.92	459.66	52.48
304 5-6081	56081	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	8990.3	3264.49	129.37	46.98	176.35	0.97	361.81	50.41	4.43	0.99	367.74	40.56	327.14	37.35
305 5-6084	56084	8 930094	12545.04	0	12545.04	875.94	875.94	55.24	9044.4	3284.15	111.08	40.33	151.41	0.44	471.31	51.28	4.3	1.2	404.63	44.53	360.1	41.11
306 8-0150	80150	7 930094	7783.3	3322.12	11105.42	871.35	871.35	54.63	8961.24	3253.93	150.72	64.73	205.45	1.22	381.59	49.21	5.63	1.42	494.35	61.78	432.57	49.38
307 8-0210	80210	7 930094	7783.3	3322.12	11105.42	871.35	871.35	54.63	7458.75	3183.59	158.67	57.73	226.4	2.89	248.06	45.78	10.48	1.94	623.29	80.15	543.14	62.33
308 5-0657	56057	8 930094	12101.66	0	12101.66	826.24	826.24	51.68	8634.26	3209.85	119.4	44.02	169.88	0.74	375.42	49.86	3.87	0.99	484.23	50.64	438.35	50.64
309 1-0544	10544	5 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6943.71	3557.33	155.66	79.7	235.26	2.69	222.5	43.16	10.45	1.58	693.74	91.73	512.01	61.97
310 1-0955	10955	5 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6943.71	3557.33	155.66	79.7	235.26	2.69	222.5	43.16	10.45	1.58	693.74	91.73	512.01	61.97
311 1-2680	12680	5 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6969.42	3565.95	151.97	77.86	228.83	2.37	232.54	43.66	8.81	1.55	593.7	89.55	504.45	61.05
312 1-0071	10071	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	7040.27	3606.82	127.84	65.3	193.34	1.17	212.03	45.68	6.46	1.42	512.21	73.38	438.83	53.11
313 1-1069	11069	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6933.63	3552.28	157.08	80.48	237.56	2.84	314.03	42.94	10.82	1.58	613.87	92.88	520.99	63.06
314 1-1735	11735	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6999.14	3565.33	150.02	72.86	226.88	3.39	229.14	43.7	9.63	1.49	597.1	87.99	509.12	61.62
315 1-2287	11287	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6907.05	3538.59	160.43	82.19	242.62	3.38	188.29	42.41	11.66	1.56	637.95	95.41	542.54	65.66
316 1-2862	12862	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6907.05	3538.59	160.43	82.19	242.62	3.38	188.29	42.41	11.66	1.56	637.95	95.41	542.54	65.66
317 1-2864	12864	6 930094	7259.03	3718.97	10978	826.24	826.24	51.68	6950.58	3560.97	155.58	79.71	235.29	2.54	229.93	43.37	10.19	1.59	596.31	91.49	504.82	61.10
318 1-1645	11645	6 930094	7230	3898	10928	821.58	821.58	51.33	6879.35	3518.64	159.42	81.54	240.96	3.35	186.61	42.19	11.51	1.52	634.97	94.57	540.4	65.78
319 1-2928	12928	1 211799	7146.19	3693.81	10840	820.65	820.65	51.33	7064.85	3533.67	150.71	77.9	228.61	2.61	211.88	42.19	9.99	1.45	608.77	89.34	519.43	63.29
320 1-0454	10454	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6799.42	3514.48	155.61	80.3	240.9	3.35	226.88	42.7	10.48	1.65	591.93	92.43	499.5	61.00
321 1-0633	11063	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6828.66	3529.69	150.02	77.55	227.57	2.76	204.92	42.99	10.13	1.41	615.73	93.59	540.59	65.87
322 1-1063	11063	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6828.66	3529.69	150.02	77.55	227.57	2.76	204.92	42.99	10.13	1.41	615.73	93.59	540.59	65.87
323 1-1063	11063	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6828.66	3529.69	150.02	77.55	227.57	2.76	204.92	42.99	10.13	1.41	615.73	93.59	540.59	65.87
324 1-1427	11427	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6796.91	3513.22	158.95	82.16	241.11	3.38	184.86	42.08	11.73	1.58	635.79	95.47	540.32	65.84
325 1-1833	11833	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6796.91	3513.22	158.95	82.16	241.11	3.38	184.86	42.08	11.73	1.58	635.79	95.47	540.32	65.84
326 1-2117	12117	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6796.91	3513.22	158.95	82.16	241.11	3.38	184.86	42.08	11.73	1.58	635.79	95.47	540.32	65.84
327 1-2803	12803	4 930094	7146.19	3693.81	10840	820.65	820.65	51.33	6836.38	3533.67	150.71	77.9	228.61	2.61	211.88	42.19	9.99	1.45	608.77	89.34	519.43	63.29
328 1-2668	12668	5 930094	7370.58	3685.42	11056	818.79	818.79	51.21	7050.96	3525.64	160.6	80.3	240.9	3.35	226.88	42.7	10.48	1.65	591.93	92.43	499.5	61.00
329 1-0016	10016	6 930094	7370.58	3685.42	11056	818.79	818.79	51.21	7050.96	3525.64	160.6	80.3	240.9	3.35	226.88	42.7	10.48	1.65	591.93	92.43	499.5	61.00
330 1-2697	12697	6 930094	7370.58	3685.42	11056	818.79	818.79	51.21	7148.45	3574.29	129.81	64.91	194.72	1.19	311.2	45.27	6.4	1.41	507.59	72.72	434.87	53.11
331 1-2483	12483	6 930094	7370.58	3685.42	11056	818.79	818.79	51.21	7148.45	3574.29	129.81	64.91	194.72	1.19	311.2	45.27	6.4	1.41	507.59	72.72	434.87	53.11
332 1-1724	11724	5 930094	7271.35	3668.65	10940	811.34	811.34	50.98	6960.21													

Element	Element N	Date	BOL_Fert_Th232	BOL_Fis_Th232	BOL_Fis_Th232	BOL_Fert_h232	BOL_Fis_h232	Total Th232	BOL_Fert_Th232	BOL_Fis_Th232	EOI_Fert_Th232	EOI_Fis_Th232	EOI_Fert_U235	EOI_Fis_U235	EOI_Fert_U238	EOI_Fis_U238	EOI_Fis_Np237	EOI_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss
498-4-2523	4	9/30/94	8024.35	3148.75	11173	689.56	43.75	7801.66	3061.43	136.63	53.61	190.24	1.03	284.86	39.04	4.98	1.23	414.7	59.92	354.88	60.73	
499-5-0317	5	9/30/94	9578.25	3148.75	12727	689.56	43.75	9341.43	3070.92	135.32	44.49	179.61	1.07	245.49	40	4.09	0.84	454.07	49.42	404.65	57.84	
500-5-1240	5	9/30/94	9578.25	3148.75	12727	689.56	43.75	9341.43	3070.92	135.32	44.49	179.61	1.07	245.49	40	4.09	0.84	454.07	49.42	404.65	57.84	
501-5-2040	5	9/30/94	9578.25	3148.75	12727	689.56	43.75	9341.43	3070.92	135.32	44.49	179.61	1.07	245.49	40	4.09	0.84	454.07	49.42	404.65	57.84	
502-1-0035	8	9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
504-1-1422	11422	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
505-1-2956	12956	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
506-1-0040	14040	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
507-1-0099	14099	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
508-1-4275	14275	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
509-1-4307	14307	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
510-1-4923	14923	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
511-1-4965	14965	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
512-1-4978	14978	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
513-1-5244	15244	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
514-1-5578	15578	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
515-1-5866	15866	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
516-1-6008	16008	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
517-1-6079	16079	8/9/30/94	9005.4	0	9005.4	688.13	44.02	6169.88	2988.26	110.95	46.6	157.55	0.87	289.99	39.37	4.44	1.01	408.14	52.05	356.09	51.01	
518-1-0990	10990	1	2/11/79	9071.63	3140.37	12212	687.69	43.64	9006.36	3038.14	170.36	53.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99
519-1-0943	10943	3	3/31/86	9071.63	3140.37	12212	687.69	43.64	9006.36	3038.14	170.36	53.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99
520-1-0877	10877	3	3/31/86	9071.63	3140.37	12212	687.69	43.64	9006.36	3038.14	170.36	53.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99
521-1-1378	11378	3	3/31/86	9071.63	3140.37	12212	687.69	43.64	9006.36	3038.14	170.36	53.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99
522-1-1584	11584	3	3/31/86	9071.63	3140.37	12212	687.69	43.64	9006.36	3038.14	170.36	53.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99
523-1-0874	10874	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
524-1-1855	11855	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
525-1-2431	12431	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
526-1-2655	12655	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
527-1-2960	12960	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
528-1-4882	14882	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
529-1-5046	15046	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
530-1-5136	15136	8	9/30/94	9239.4	0	9239.4	686.83	43.94	6482.12	126.85	30.24	105.09	0.16	427.26	41.41	1.63	0.82	269.57	32.69	236.88	33.99	
531-5-0448	50448	4	9/30/94	9497.02	3131.98	11382	685.83	43.52	8025.66	3064.79	138.1	191.91	1.06	288.83	38.81	4.82	1.23	407	58.86	348.14	50.03	
532-4-2740	42740	6	9/30/94	9497.02	3131.98	11382	685.83	43.52	8025.66	3064.79	138.1	191.91	1.06	288.83	38.81	4.82	1.23	407	58.86	348.14	50.03	
533-1-1403	11403	3	3/31/86	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
534-1-0419	10419	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
535-1-0338	10338	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
536-1-1234	11234	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
537-1-1729	11729	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
538-1-1672	11672	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
539-1-2365	12365	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
540-1-2799	12799	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
541-1-2799	12799	4	9/30/94	9377.6	3119.4	12497	693.04	43.35	9064.66	3015.31	177.86	53.94	194.64	1.14	271.31	38.57	5.2	1.23	421.73	60.37	361.36	52.14
542-5-2006	52006	5	9/30/94	9028.79	3115.21	12144	692.10	43.29	8605.73	2992.45	158.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99	
543-5-2673	52673	5	9/30/94	9028.79	3115.21	12144	692.10	43.29	8605.73	2992.45	158.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99	
544-5-2885	52885	5	9/30/94	9028.79	3115.21	12144	692.10	43.29	8605.73	2992.45	158.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99	
545-5-0845	50845	6	9/30/94	9028.79	3115.21	12144	692.10	43.29	8605.73	2992.45	158.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99	
546-5-1060	51060	6	9/30/94	9028.79	3115.21	12144	692.10	43.29	8605.73	2992.45	158.11	191.65	1.05	282.21	41.41	4.14	1.97	465.02	67.22	397.85	55.99	
547-1-0944	10944	7	9/30/94	8579	0	8579	692.00	0	5875.98	2360.52	125.44	50.38	175.82	1.77	184.04	34.83	6.55	0.98	470.89	57.91	413.99	60.46
548-1-1181	11181	7	9/30/94	8579	0	8579	692.00	0	5875.98	2360.52	125.44	50.38	175.82	1.77	184.04	34.83	6.55	0.98	470.89			

Element	Element N	Element Seg	Date	BOL_Fis_Th232	BOL_Fis_Th233	Total Th232	BOL_Fis_Th233	BOL_Fis_Th235	BOL_Fis_Th238	BOL_Fert_Th232	BOL_Fert_Th233	BOL_Fert_Th235	BOL_Fert_Th238	EOL_Fis_Th232	EOL_Fis_Th233	EOL_Fis_Th235	EOL_Fis_Th238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	Net Loss - % of BOL
569	1-5000	7	9/30/04	15000	8679	8620	0	6085.61	2403.09	91.98	36.29	128.15	0.43	311.5	37.31	2.75	380.5	39.83	0.79	380.5	39.83	340.67	49.23
570	1-0663	7	9/30/04	16063	8670	8620	0	6072.66	2403.64	91.98	36.41	128.39	0.45	307.72	37.3	2.82	384.28	40.03	0.8	384.28	40.03	344.25	49.75
571	5-0273	5	9/30/04	50273	11944	688.36	43.05	8497.16	2976.37	168.96	58.15	228.01	0.99	271.42	36.85	7.69	402.27	67.94	1.1	402.27	67.94	449.02	65.23
572	4-0655	6	9/30/04	40855	8046.75	687.45	43	7828.69	3010.35	135.79	52.22	168.01	0.86	185.16	38.47	4.76	430.54	58.21	1.23	430.54	58.21	344.06	50.05
573	1-4020	12	9/30/04	10220	3031686	9707.95	3090.05	9415.7	2897.03	172.25	58.63	227.08	1.6	255.98	37.94	6.34	447.79	66.15	1.11	447.79	66.15	369.15	53.77
574	1-2820	10	9/30/04	12920	986.52	686.52	42.94	9383.99	2896.03	184.12	58.61	242.73	2.05	238.73	37.37	5.45	447.79	66.15	1.2	447.79	66.15	381.64	55.59
575	1-2677	12	9/30/04	12677	986.52	686.52	42.94	9383.99	2896.03	184.12	58.61	242.73	2.05	238.73	37.37	5.45	447.79	66.15	1.2	447.79	66.15	381.64	55.59
576	1-0617	10	9/30/04	8239.33	3081.67	11321	684.65	7868.47	2942.54	180.91	67.86	248.57	3.27	129.49	34.68	10.77	515.83	78.13	1.3	515.83	78.13	473.48	69.16
577	5-5341	7	9/30/04	55341	9549	680.00	0	6929.63	2344.37	118.36	40.02	173.9	1.63	227.13	35.84	4.13	452.87	44.93	0.76	452.87	44.93	407.94	59.99
578	5-5302	5	9/30/04	55302	9534	679.00	0	6862.95	2326.3	129.88	44.04	173.9	1.63	227.13	35.84	4.13	452.87	44.93	0.76	452.87	44.93	407.94	59.99
579	1-1458	7	9/30/04	1458	9634	679.00	0	9000.77	2937.29	122.8	41.59	164.39	1.22	210.31	35.55	4.54	468.69	46.88	0.75	468.69	46.88	421.81	62.12
580	1-1458	7	9/30/04	1458	9634	679.00	0	9000.77	2937.29	122.8	41.59	164.39	1.22	210.31	35.55	4.54	468.69	46.88	0.75	468.69	46.88	421.81	62.12
581	1-0666	7	9/30/04	10666	9822.68	682.68	42.41	9822.68	2937.29	122.8	41.59	164.39	1.22	210.31	35.55	4.54	468.69	46.88	0.75	468.69	46.88	421.81	62.12
582	1-0065	10	9/30/04	10065	11335	678.13	42.41	7943.11	2927.17	177.41	65.38	242.79	2.63	197.07	35.73	8.24	481.06	74.96	1.34	481.06	74.96	406.1	59.89
583	1-0185	10	9/30/04	10185	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
584	1-0432	10	9/30/04	10432	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
585	1-1102	11	9/30/04	11102	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
586	1-1370	11	9/30/04	11370	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
587	1-1537	11	9/30/04	11537	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
588	1-2476	12	9/30/04	12476	11335	678.13	42.41	8032.93	2960.26	145.66	53.68	198.34	1.29	247.83	37.52	5.45	430.3	60.29	1.16	430.3	60.29	370.01	54.56
589	5-0748	5	9/30/04	50748	9112.68	682.68	42.41	8778.29	2940.31	159.58	52.11	207.69	2.48	150.46	37.11	6.62	527.67	59.62	0.89	527.67	59.62	468.05	69.02
590	5-0969	5	9/30/04	50969	9112.68	682.68	42.41	8778.29	2940.31	159.58	52.11	207.69	2.48	150.46	37.11	6.62	527.67	59.62	0.89	527.67	59.62	468.05	69.02
591	5-4130	7	9/30/04	54130	9496	678.00	0	6948.3	2358.4	94.84	32.19	127.03	0.41	307.27	36.93	2.35	370.73	35.22	0.68	370.73	35.22	335.51	49.49
592	5-5377	7	9/30/04	55377	9505	678.00	0	6827	2315.94	94.84	32.19	127.03	0.41	307.27	36.93	2.35	370.73	35.22	0.68	370.73	35.22	335.51	49.49
593	5-5274	7	9/30/04	55274	9510	677.00	0	6972.37	2360.08	91.09	30.83	121.92	0.35	319.56	37.06	2.14	408.59	60.81	0.68	408.59	60.81	323.79	47.83
594	1-1117	7	9/30/04	11117	12695	674.41	42.18	9376.66	2946.68	172.12	54.09	228.86	1.62	260.65	37.11	5.54	413.76	61.5	1.23	413.76	61.5	352.26	52.23
595	1-2400	12	9/30/04	12400	12695	674.41	42.18	9376.66	2946.68	172.12	54.09	228.86	1.62	260.65	37.11	5.54	413.76	61.5	1.23	413.76	61.5	352.26	52.23
596	1-2465	12	9/30/04	12465	12695	674.41	42.18	9376.66	2946.68	172.12	54.09	228.86	1.62	260.65	37.11	5.54	413.76	61.5	1.23	413.76	61.5	352.26	52.23
597	4-1894	4	9/30/04	41894	9563.84	3027.16	42.06	9758.58	2916.24	153.15	40.44	173.25	0.54	355.44	38.9	2.8	519.27	59.48	1.11	519.27	59.48	459.79	66.37
598	5-0788	5	9/30/04	50788	9563.84	3027.16	42.06	9758.58	2916.24	153.15	40.44	173.25	0.54	355.44	38.9	2.8	519.27	59.48	1.11	519.27	59.48	459.79	66.37
599	1-0287	10	9/30/04	10287	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
600	1-0309	10	9/30/04	10309	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
601	1-0540	10	9/30/04	10540	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
602	1-0662	10	9/30/04	10662	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
603	1-0950	10	9/30/04	10950	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
604	1-1188	11	9/30/04	11188	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
605	1-2278	12	9/30/04	12278	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
606	1-2303	12	9/30/04	12303	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
607	1-2564	12	9/30/04	12564	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
608	1-2595	12	9/30/04	12595	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
609	1-2686	12	9/30/04	12686	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
610	1-0246	10	9/30/04	10246	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
611	1-0425	10	9/30/04	10425	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
612	1-0331	10	9/30/04	10331	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
613	1-0355	10	9/30/04	10355	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
614	1-0403	10	9/30/04	10403	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
615	1-0465	10	9/30/04	10465	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
616	1-0520	10	9/30/04	10520	11419	672.54	42.06	7976.4	2877.31	191.16	68.96	260.12	4.05	145.48	34.33	6.61	458.47	78.67	0.92	458.47	78.67	456	67.80
617	1-0933																						

Element	Element N	Element Seg	Date	BOL_Fis_Th232	BOL_Fis_h232	Total Th232	BOL_Fis_U235	BOL_Fis_U238	Th232	EOL_Fis_Th232	EOL_Fis_h232	EOL_Fis_Tot_U233	EOL_Fis_U233	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease	% of BOL
640	2-5722	8	9/30/94	6429.78	0	6429.78	666.71	42.04	3768.81	2462.94	73.59	48.15	121.74	0.75	277.07	36.57	388.74	54.78	332.96	60.09
641	2-4084	8	9/30/94	6445.08	0	6445.08	666.15	42.01	3778.18	2469.73	73.43	47.81	121.24	0.81	283.86	36.59	402.29	54.31	347.98	52.24
642	2-4129	8	9/30/94	6445.08	0	6445.08	666.15	42.01	3778.18	2469.73	73.43	47.81	121.24	0.81	283.86	36.59	402.29	54.31	347.98	52.24
643	2-0659	8	9/30/94	6412.77	0	6412.77	665.93	41.99	3763.34	2468.54	60.89	39.92	100.81	0.36	343.94	37.77	383.72	44.16	277.27	41.64
644	2-2067	8	9/30/94	6412.77	0	6412.77	665.93	41.99	3763.34	2468.54	60.89	39.92	100.81	0.36	343.94	37.77	383.72	44.16	277.27	41.64
645	5-0776	8	9/30/94	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
646	5-0818	4	9/30/94	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
647	5-1244	4	9/30/94	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
648	5-5684	7	9/30/94	10076	0	10076	663.00	0	7510.5	2291.5	118.44	36.14	154.58	1.02	208.11	35.37	454.89	40.42	414.47	62.51
649	5-5685	7	9/30/94	10076	0	10076	663.00	0	7510.5	2291.5	118.44	36.14	154.58	1.02	208.11	35.37	454.89	40.42	414.47	62.51
650	5-0266	3	3/31/86	10127.92	2960.08	13088	657.64	41.13	9876.61	2886.63	154.2	45.07	199.27	1.12	266.92	37.28	390.72	49.97	340.75	51.81
651	5-0723	3	3/31/86	10127.92	2960.08	13088	657.64	41.13	9876.61	2886.63	154.2	45.07	199.27	1.12	266.92	37.28	390.72	49.97	340.75	51.81
652	5-0805	3	3/31/86	10127.92	2960.08	13088	657.64	41.13	9876.61	2886.63	154.2	45.07	199.27	1.12	266.92	37.28	390.72	49.97	340.75	51.81
653	5-2275	5	5/22/75	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
654	5-4097	7	9/30/94	10608	0	10608	657.00	0	8065.39	2276.39	116.66	32.93	149.59	0.94	206.12	35.42	450.88	36.66	414.22	63.05
655	5-4542	5	5/4/92	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
656	5-5241	1	10/619	8072.62	2297.78	10370.4	657.00	0	8140.06	2297.46	118.35	25.55	116.08	0.31	199.57	35.33	328.28	37.13	420.3	63.97
657	5-5273	7	9/30/94	10665	0	10665	657.00	0	8202.62	2297.78	88.5	24.79	113.29	0.28	311.37	35.33	457.43	37.13	420.3	63.97
658	5-5371	5	5/3/71	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
659	5-5683	5	5/8/03	10608	0	10608	657.00	0	8018.63	2263.2	127.47	35.98	163.45	1.51	160.72	34.77	423	40.78	455.5	69.33
660	5-5685	5	5/8/03	10608	0	10608	657.00	0	8018.63	2263.2	127.47	35.98	163.45	1.51	160.72	34.77	423	40.78	455.5	69.33
661	5-0656	6	9/30/94	10641	0	10641	656.00	0	8013.91	2253.47	91.39	25.79	117.18	0.32	301.16	36.46	465.84	27.94	327.9	49.91
662	5-0656	6	9/30/94	10641	0	10641	656.00	0	8013.91	2253.47	91.39	25.79	117.18	0.32	301.16	36.46	465.84	27.94	327.9	49.91
663	5-0656	6	9/30/94	10641	0	10641	656.00	0	8013.91	2253.47	91.39	25.79	117.18	0.32	301.16	36.46	465.84	27.94	327.9	49.91
664	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
665	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
666	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
667	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
668	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
669	5-0722	7	9/30/94	10696	0	10696	655.00	0	8061.4	2259.87	129.27	36.41	165.88	1.66	162.21	34.83	453.81	39.98	453.81	69.18
670	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
671	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
672	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
673	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
674	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
675	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
676	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
677	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
678	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
679	5-0917	5	9/30/94	9534.23	2909.77	12444	646.46	40.43	9168.61	2806.49	151.5	46.24	197.74	2.44	132	35.86	514.46	52.71	467.75	71.45
680	1-0040	6	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
681	1-0955	10	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
682	1-1441	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
683	1-1441	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
684	1-1441	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
685	1-1644	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
686	1-1713	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
687	1-1855	4	9/30/94	9217.62	2901.38	10119	644.60	40.32	9826.44	2784.33	142.4	57.24	199.64	2.18	162.89	34.71	485.24	43.39	395.01	61.10
688	5-1598	5	5/15/98	9639.57	2989.43	12629	664.16	41.54	9363.33	2911.53	140.4	43.54	183.94	1.22	220.96	37.79	358.65	50.99	307.67	49.48
689	5-0334	5	9/30/94	9664.2	2888.8	12553	641.80	40.14	9348.68	2793.29	151.91	45.41	197.32	2.11	146.21	35.92	486.05	51.49	444.56	69.27
690	5-0853	6	9/30/94	9664.2	2888.8	12553	641.80	40.14	9348.68	2793.29	151.91	45.41	197.32	2.11	146.21	35.92	486.05	51.49	444.56	69.27
691	5-2568	6	9/30/94	9822.39	2884.61	12707	639.84	40.02	7435.85	2765.55	169.95	62.52	235.47	3.82	120.07	32.92	458.39	50.79	444.8	69.31
692	1-0288	4	9/30/94	7829.58	2880.42	10710	639.94	40.02	7389.59	2718.88	170	62.94	235.47	3.82	120.07	32.92	458.39	50.79	444.8	69.31
693	1-0421	4	9/30/94	7829.58	2880.42	10710	639.94	40.02	7389.59	2718.88	170	62.94	235.47	3.82	120.07	32.92	458.39	50.79	444.8	69.31
694	1-0473	4	9/30/94	7829.58	2880.42	10710	639.94	40.02	7389.59	27										

Appendix B

Element	Element N	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fis_U238	Th232_U238	EOL_Fert_U232	EOL_Fis_U232	Total_U232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	Net Loss - % of BOL	
711.5-2089	50099	1	29179	9470.74	2855.26	12236	634.35	39.68	9303.5	2831.97	65.5	19.75	85.25	0.07	465.73	38.49	0.61	168.62	20.97	147.65	23.28
712.1-0418	10418	5	930094	7069.74	2855.26	9225	634.35	39.68	6746.67	2723.6	148.23	58.87	206.1	2.75	140.65	33.43	7.89	483.5	68.77	424.73	66.96
713.1-1842	50258	5	930094	9470.74	2855.26	12326	634.35	39.68	6751.94	2742.56	148.29	59.87	206.16	2.75	140.65	33.43	7.89	483.5	68.77	424.73	66.96
714.5-0258	51179	5	930094	9470.74	2855.26	12326	634.35	39.68	6959.62	2742.56	163.52	49.3	212.82	2.95	123.55	34.51	6.53	507.77	58.12	449.65	70.88
716.5-2289	52289	5	930094	9470.74	2855.26	12326	634.35	39.68	9116.42	2748.44	167.99	50.96	216.25	3.02	126.98	34.37	6.73	496.82	55.85	441.17	69.55
717.1-0834	10834	6	930094	7072.74	2855.26	9928	634.35	39.68	6748.91	2723.73	148.03	59.76	207.79	2.84	137.53	34.73	6.1	496.82	55.85	441.17	69.55
718.1-1827	10827	6	930094	7072.74	2855.26	9928	634.35	39.68	6748.91	2723.73	148.03	59.76	207.79	2.84	137.53	34.73	6.1	496.82	55.85	441.17	69.55
719.1-2639	12639	6	930094	9470.74	2855.26	12326	634.35	39.68	9076.72	2735.88	166.96	50.33	217.28	3.37	114.4	34.17	7	496.82	55.85	441.17	69.55
721.5-1160	51160	6	930094	9470.74	2855.26	12326	634.35	39.68	9076.72	2735.88	166.96	50.33	217.28	3.37	114.4	34.17	7	496.82	55.85	441.17	69.55
722.1-0936	10936	6	930094	7073.93	2851.07	9905	632.42	39.62	6739.49	2717.6	147.69	59.7	207.39	2.92	134.62	33.27	7.96	498.8	58.26	444.83	70.12
723.1-0445	10445	5	930094	7060.13	2846.87	9907	632.49	39.56	6741.26	2720.72	143.14	57.72	200.86	2.6	138.84	33.56	7.51	492.66	66.57	423.49	67.96
724.1-0483	10483	5	930094	7060.13	2846.87	9907	632.49	39.56	6741.26	2720.72	143.14	57.72	200.86	2.6	138.84	33.56	7.51	492.66	66.57	423.49	67.96
725.1-1765	11765	5	930094	7060.13	2846.87	9907	632.49	39.56	7467.49	2704.3	168.63	61.07	229.7	3.86	118.25	32.1	6.24	492.66	66.57	423.49	67.96
726.1-2029	12029	5	930094	7060.13	2846.87	9907	632.49	39.56	7467.49	2704.3	168.63	61.07	229.7	3.86	118.25	32.1	6.24	492.66	66.57	423.49	67.96
727.1-0866	10866	6	930094	7861.13	2846.87	10708	632.49	39.56	7419.64	2754.86	176.23	63.82	240.05	4.84	205.2	34.86	5.5	492.66	66.57	423.49	67.96
728.1-1139	11139	6	930094	7861.13	2846.87	10708	632.49	39.56	7419.64	2754.86	176.23	63.82	240.05	4.84	205.2	34.86	5.5	492.66	66.57	423.49	67.96
729.1-1263	11263	6	930094	7861.13	2846.87	10708	632.49	39.56	7607.13	2754.86	140.69	50.95	191.64	1.48	208.2	31.79	10.34	492.66	66.57	423.49	67.96
730.1-1236	11236	6	930094	7861.13	2846.87	10708	632.49	39.56	7607.13	2754.86	140.69	50.95	191.64	1.48	208.2	31.79	10.34	492.66	66.57	423.49	67.96
731.1-2448	12448	6	930094	7060.13	2846.87	9907	632.49	39.56	7604.45	2753.94	138.45	50.14	188.59	1.53	196.8	34.87	5.47	435.69	56.58	379.11	59.94
732.1-2400	12400	6	930094	7060.13	2846.87	9907	632.49	39.56	7604.45	2753.94	138.45	50.14	188.59	1.53	196.8	34.87	5.47	435.69	56.58	379.11	59.94
733.1-1089	11089	6	930094	7752.28	2821.72	10574	626.90	39.21	7492.6	2727.18	144.1	51.54	193.86	1.61	196.19	34.71	5.72	435.69	56.58	379.11	59.94
734.1-1100	11100	6	930094	7752.28	2821.72	10574	626.90	39.21	7492.6	2727.18	144.1	51.54	193.86	1.61	196.19	34.71	5.72	435.69	56.58	379.11	59.94
735.1-1174	11174	6	930094	7752.28	2821.72	10574	626.90	39.21	7371.22	2683.03	169.36	61.63	230.95	3.79	121.51	32.15	9.3	435.69	56.58	379.11	59.94
736.1-1214	11214	6	930094	7752.28	2821.72	10574	626.90	39.21	7371.22	2683.03	169.36	61.63	230.95	3.79	121.51	32.15	9.3	435.69	56.58	379.11	59.94
737.1-1710	11710	6	930094	7752.28	2821.72	10574	626.90	39.21	7306.59	2680.23	169.37	61.65	231.02	4.96	89.96	31.48	10.18	435.69	56.58	379.11	59.94
738.1-1763	11763	6	930094	7752.28	2821.72	10574	626.90	39.21	7323.1	2685.49	172.32	62.79	235.31	4.64	100.73	31.6	10.95	435.69	56.58	379.11	59.94
739.1-1769	11769	6	930094	7752.28	2821.72	10574	626.90	39.21	7371.22	2685.49	169.36	61.65	231.01	4.64	125.36	32.27	9.17	435.69	56.58	379.11	59.94
740.1-1907	11907	6	930094	7752.28	2821.72	10574	626.90	39.21	7371.22	2685.49	169.36	61.65	231.01	4.64	125.36	32.27	9.17	435.69	56.58	379.11	59.94
741.1-2363	12363	6	930094	7752.28	2821.72	10574	626.90	39.21	7306.59	2680.23	169.37	61.65	231.02	4.96	89.96	31.48	10.18	435.69	56.58	379.11	59.94
742.1-2533	12533	6	930094	7752.28	2821.72	10574	626.90	39.21	7367.51	2680.46	165.26	60.15	225.41	3.74	118.32	32.29	9.07	435.69	56.58	379.11	59.94
743.1-2812	12812	6	930094	7752.28	2821.72	10574	626.90	39.21	7367.51	2680.46	165.26	60.15	225.41	3.74	118.32	32.29	9.07	435.69	56.58	379.11	59.94
744.1-0924	10924	4	930094	7377.47	2817.53	10195	625.97	39.15	7098.72	2711.05	142.76	54.52	197.28	1.92	175.26	34.02	6.13	450.71	61.55	389.16	62.17
745.1-1019	11019	4	930094	7377.47	2817.53	10195	625.97	39.15	7098.72	2711.05	142.76	54.52	197.28	1.92	175.26	34.02	6.13	450.71	61.55	389.16	62.17
746.1-2395	12395	6	930094	7377.47	2817.53	10195	625.97	39.15	7137.38	2725.85	132.56	50.63	183.19	1.36	205.23	34.73	4.99	448.79	56.46	364.28	58.19
747.1-2784	12784	4	930094	7377.47	2817.53	10195	625.97	39.15	7098.72	2711.05	142.76	54.52	197.28	1.92	175.26	34.02	6.13	450.71	61.55	389.16	62.17
748.1-2009	12009	4	930094	7314.86	2809.14	10124	624.10	39.03	7038.88	2671.31	141.57	54.37	195.94	1.89	176.65	33.89	6.08	447.45	61.35	386.1	61.87
749.1-0218	10218	5	930094	7717.86	2809.14	10527	624.10	39.03	7339.21	2671.31	162.9	59.29	222.19	3.64	118.88	32.25	8.84	435.69	56.58	379.11	59.94
750.1-1879	11879	5	930094	7717.86	2809.14	10527	624.10	39.03	7339.21	2671.31	162.9	59.29	222.19	3.64	118.88	32.25	8.84	435.69	56.58	379.11	59.94
751.1-2635	12635	5	930094	7717.86	2809.14	10527	624.10	39.03	7339.21	2671.31	162.9	59.29	222.19	3.64	118.88	32.25	8.84	435.69	56.58	379.11	59.94
752.1-13043	13043	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6403.34	2351.15	65.19	23.94	89.13	0.11	428.16	36.48	1.04	195.78	25.74	170.04	27.25
753.1-13066	13066	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6403.34	2351.15	65.19	23.94	89.13	0.11	428.16	36.48	1.04	195.78	25.74	170.04	27.25
754.1-13066	13066	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6434.7	2362.68	42.48	15.6	58.08	0.03	491.57	37.17	0.45	132.37	16.64	168.39	26.99
755.1-13105	13105	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6403.69	2351.29	65	23.87	88.87	0.1	432.15	36.47	1.03	191.79	25.68	166.11	26.62
756.1-13123	13123	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6410.88	2353.9	60.36	22.16	82.52	0.08	446.57	36.63	0.87	177.37	23.78	153.59	24.62
757.1-13125	13125	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6430.83	2361.25	45.55	16.73	62.28	0.03	485.24	37.07	0.51	138.7	17.87	120.83	19.37
758.1-13146	13146	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6386.08	2344.81	76.3	28.01	104.31	0.13	399.84	36.07	1.46	208.22	27.81	180.41	28.91
759.1-14093	14093	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6386.08	2344.81	76.3	28.01	104.31	0.13	399.84	36.07	1.46	208.22	27.81	180.41	28.91
760.1-14102	14102	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6429.85	2360.9	46.15	16.95	63.1	0.04	480.19	37.17	0.45	132.37	16.84	115.73	18.55
761.1-14102	14102	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6434.7	2362.68	42.48	15.6	58.08	0.03	491.57	37.17	0.45	132.37	16.84	115.73	18.55
762.1-14115	14115	9	930094	6483.11	2380.45	8863.56	623.94	38.2	6416.76	2359.86	60.14	22.08	82.22	0.08	443.8	36.62	0.89	177.37	23.78	153.59	24.62
763.1-14124	14124	9	930094	6483.11	238																

Appendix B

Element	Element	Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fert_Th232	EOL_Fis_Th232	EOL_Fert_Th232	EOL_Fis_U235	EOL_Fert_U235	EOL_Fis_U238	EOL_Fert_U238	EOL_Fis_Pu239	EOL_Fert_Pu239	Depletion	Fissile Additions	Net Loss - Decrease	% of BOL			
853	1-1205	5	9/30/94	2704.32	10973	10973	600.82	37.58	8004.49	2617.92	142.81	46.71	189.52	1.54	187.08	33.24	187.08	1.54	413.74	52.65	361.09	60.10	
854	1-1204	5	9/30/94	2704.32	10973	10973	600.82	37.58	8000.3	2616.55	147.08	48.11	195.2	1.59	189.52	33.11	189.52	1.59	411.3	54.36	356.94	59.41	
855	2-388	5	9/30/94	2704.32	10973	10973	600.82	37.58	7996.7	2615.39	145.96	47.74	193.72	1.64	183.12	33.09	183.12	1.64	417.7	53.96	363.74	60.54	
856	2-4059	8	9/30/94	6112.26	0	6112.26	598.85	37.76	3779.49	2555.99	40.27	24.04	64.31	0.05	446.25	35.56	446.25	0.05	152.6	26.23	126.37	21.10	
857	2-4087	8	9/30/94	6112.26	0	6112.26	598.85	37.76	3743.13	2530.52	58.79	35.09	93.88	0.3	322.62	34.19	322.62	0.3	276.23	39.08	237.15	39.60	
858	2-5350	24087	8	9/30/94	6112.26	0	598.85	37.76	3736.86	2230.52	61.05	36.44	97.49	0.36	302.6	33.96	302.6	0.36	296.25	40.8	255.45	42.66	
859	5-1068	5	9/30/94	2670.78	13813	13813	593.37	37.11	10680.71	2605.91	185.83	38.04	193.87	1.26	220.69	33.98	220.69	1.26	372.68	42.17	330.51	55.70	
860	5-1030	52430	3	9/30/94	7962.41	10629	592.43	37.05	7690.33	2575.47	144.87	48.52	198.31	1.24	217.6	32.48	217.6	1.24	375.77	43.2	332.57	56.05	
861	1-1371	11371	4	9/30/94	7962.41	10629	592.43	37.05	7699.88	2577.67	142.32	47.66	189.98	1.71	175.31	32.61	175.31	1.71	417.12	54.98	362.14	61.13	
862	1-2129	12129	4	9/30/94	7962.41	10629	592.43	37.05	7699.88	2577.67	142.32	47.66	189.98	1.63	175.31	32.61	175.31	1.63	414.47	53.9	360.57	60.86	
863	1-2497	12910	4	9/30/94	7962.41	10629	592.43	37.05	7699.88	2577.67	142.32	47.66	189.98	1.71	175.31	32.61	175.31	1.71	414.47	53.9	360.57	60.86	
864	1-2910	12910	4	9/30/94	7962.41	10629	592.43	37.05	7699.88	2577.67	142.32	47.66	189.98	1.63	175.31	32.61	175.31	1.63	414.47	53.9	360.57	60.86	
865	1-4817	14817	4	9/30/94	7962.41	10629	592.43	37.05	7701.83	2579.3	139.63	46.76	186.39	1.56	180.92	32.7	180.92	1.56	411.51	52.74	358.77	60.56	
866	1-5115	15115	4	9/30/94	7962.41	10629	592.43	37.05	7701.83	2579.3	139.63	46.76	186.39	1.56	180.92	32.7	180.92	1.56	411.51	52.74	358.77	60.56	
867	4-0463	40463	3	9/31/86	9526.57	2641.43	12168	586.85	36.7	9328.07	2586.39	133.69	37.07	170.76	0.65	280.48	40.78	280.48	0.65	306.37	42.95	265.59	45.26
868	4-0981	40981	3	9/31/86	9526.57	2641.43	12168	586.85	36.7	9328.07	2586.39	133.69	37.07	170.76	0.65	280.48	40.78	280.48	0.65	306.37	42.95	265.59	45.26
869	4-2339	42339	3	9/31/86	9526.57	2641.43	12168	586.85	36.7	9328.07	2586.39	133.69	37.07	170.76	0.65	280.48	40.78	280.48	0.65	306.37	42.95	265.59	45.26
870	1-1092	10192	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9251.29	2544.99	175.2	48.2	223.4	1.8	201.7	33.68	201.7	1.8	304.48	41.61	262.87	44.79
871	1-067	1067	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9251.29	2544.99	175.2	48.2	223.4	1.8	201.7	33.68	201.7	1.8	304.48	41.61	262.87	44.79
872	1-1063	11063	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9224.92	2537.73	181.51	49.93	231.44	2.23	180.77	31.73	180.77	2.23	403.28	56.72	346.56	59.34
873	1-1204	11204	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9224.92	2537.73	181.51	49.93	231.44	2.23	180.77	31.73	180.77	2.23	403.28	56.72	346.56	59.34
874	1-1410	11410	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9204.73	2532.18	183.63	50.52	234.15	2.56	166.22	31.47	166.22	2.56	417.83	57.65	360.18	61.67
875	1-2206	12206	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9218.67	2536.01	184.14	50.66	234.8	2.3	180.38	32.01	180.38	2.3	403.69	57.61	346.08	59.26
876	1-2521	12521	3	9/31/86	9556.15	2628.85	12185	584.05	36.53	9218.67	2536.01	184.14	50.66	234.8	2.3	180.38	31.6	180.38	2.3	403.69	57.61	346.08	59.26
877	5-0958	50958	5	9/30/94	8534.15	2628.85	11163	584.05	36.53	8268.11	2546.3	143.27	44.13	187.4	1.52	178.15	32.62	178.15	1.52	403.69	57.61	346.08	59.26
878	5-1754	51754	5	9/30/94	8534.15	2628.85	11163	584.05	36.53	8268.11	2546.3	143.27	44.13	187.4	1.52	178.15	32.62	178.15	1.52	403.69	57.61	346.08	59.26
879	5-2465	52465	5	9/30/94	8534.15	2628.85	11163	584.05	36.53	8192.37	2523.57	157.63	48.55	206.18	2.62	128.73	31.59	128.73	2.62	455.32	55.44	399.88	68.47
880	5-3953	53953	6	9/30/94	8534.15	2628.85	11163	584.05	36.53	8199.26	2525.66	155.97	48.05	204.02	2.53	129.78	31.72	129.78	2.53	464.27	54.83	399.44	66.39
881	5-1469	51469	6	9/30/94	8534.15	2628.85	11163	584.05	36.53	8284.45	2549.66	143.44	44.19	187.63	1.54	174.47	32.62	174.47	1.54	464.27	54.83	399.44	66.39
882	5-2446	52446	6	9/30/94	8534.15	2628.85	11163	584.05	36.53	8284.45	2549.66	143.44	44.19	187.63	1.54	174.47	32.62	174.47	1.54	464.27	54.83	399.44	66.39
883	215021	215021	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3951.48	2205.5	45.36	19.26	192.6	1.76	160.6	32.41	160.6	1.76	420.45	50.91	369.54	63.27
884	215042	215042	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3951.48	2205.5	45.36	19.26	192.6	1.76	160.6	32.41	160.6	1.76	420.45	50.91	369.54	63.27
885	215045	215045	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3926.85	2212.39	25.01	13.96	38.97	0.11	497.4	34.26	497.4	0.11	123.52	20.93	102.59	17.59
886	215061	215061	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3926.85	2212.39	25.01	13.96	38.97	0.11	497.4	34.26	497.4	0.11	123.52	20.93	102.59	17.59
887	215101	215101	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3949.89	2204.61	50.09	27.96	78.05	0.15	376.2	33.59	376.2	0.15	70.72	30.57	17.15	30.34
888	215115	215115	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3935.96	2196.82	44.95	25.69	70.04	0.1	409.35	33.66	409.35	0.1	140.56	21.39	119.17	20.41
889	215126	215126	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3930.93	2193.97	47.7	26.15	70.04	0.04	409.35	33.66	409.35	0.04	140.56	21.39	119.17	20.41
890	215151	215151	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3949.89	2204.61	50.09	27.96	78.05	0.15	376.2	33.59	376.2	0.15	70.72	30.57	17.15	30.34
891	215166	215166	9	9/30/94	3991.41	2227.77	6219.18	583.92	35.75	3951.48	2205.5	45.36	19.26	192.6	1.76	160.6	32.41	160.6	1.76	420.45	50.91	369.54	63.27
892	5-1068	51068	5	9/30/94	10157.34	2624.66	12782	583.12	36.47	9797.43	2531.67	162.29	41.94	204.23	2.55	115.48	33.46	115.48	2.55	476.95	53.45	323.5	53.28
893	5-2983	52983	5	9/30/94	10157.34	2624.66	12782	583.12	36.47	9797.43	2531.67	162.29	41.94	204.23	2.55	115.48	33.46	115.48	2.55	476.95	53.45	323.5	53.28
894	5-1993	51993	5	9/30/94	10167.53	2620.47	12788	582.19	36.41	9800.65	2525.91	161.32	41.58	202.9	2.65	112.54	32.35	112.54	2.65	465.6	47.76	418.88	72.01
895	5-2960	52960	5	9/30/94	10167.53	2620.47	12788	582.19	36.41	9800.65	2525.91	161.32	41.58	202.9	2.65	112.54	32.35	112.54	2.65	465.6	47.76	418.88	72.01
896	5-0992	50992	6	9/30/94	10167.53	2620.47	12788	582.19	36.41	9782.09	2521.14	162.89	41.98	204.87	2.95	102.09	32.15	102.09	2.95	468.05	47.74	422.31	72.54
897	5-1200	51200	6	9/30/94	10167.53	2620.47	12779	582.19	36.41	9773.15	2521.06	163.1	42.07	205.17	2.96	102.09	32.15	102.09	2.96	479.52	48.18	431.34	74.09
898	5-0892	50892	3	9/31/86	10929.92	2612.08	13542	580.32	36.3	10750.73	2578.15	110.43	26.48	136.91	0.35	292.99	34.82	292.99	0.35	288.27	28.56	259.71	44.68
899	5-0731	50731	3	9/31/86	10929.92	2612.08	13542	580.32	36.3	10765.71	2578.84	112.23	26.82	139.05	0.38	295.08	34.52	295.08	0.38	284.85	28.94	266.3	45.89
900	5-0954	50954	3	9/31/86	10929.92	2612.08	13542	580.32	36.3	10773.64	2574.73	109.1	26.07	135.17	0.33	295.47	34.6	295.47	0.33				

Element	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fis_U238	EOL_Fert_Th232	EOL_Fis_Th232	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease	% of BOL				
905 E-0007	4	9/30/94	8234.23	2661.77	10796	569.15	35.6	7691.09	2454.99	122.83	47.55	200.38	2.75	115.69	30.68	6.16	0.74	453.47	54.45	390.02	70.11
906 S-1127	5	9/30/94	8207.23	2561.77	10769	569.15	35.6	7691.09	2462.61	149.85	46.78	196.63	2.33	130.7	30.99	5.69	0.73	438.45	53.2	385.25	67.69
997 I-4015	7	9/30/94	8490	0	8490	569.00	0	6168.24	1924.64	134.46	41.99	176.47	2.74	102.66	28.07	4.81	0.75	486.32	49.22	417.1	73.30
998 I-4020	7	9/30/94	8490	0	8490	569.00	0	6230.25	1945.25	124.89	38.99	163.88	1.59	151.06	29.09	4.81	0.75	417.94	44.5	373.44	65.63
999 I-4074	7	9/30/94	8397	0	8397	569.00	0	6192.44	1927.98	133.42	41.68	175.16	2.2	126	28.43	5.87	0.77	443	48.32	394.68	69.36
1000 I-4169	7	9/30/94	8397	0	8397	569.00	0	6089.63	1937.48	123.42	42.24	175.66	2.43	115.23	28.21	6.21	0.77	453.77	49.22	404.55	71.10
1001 I-4459	7	9/30/94	8490	0	8490	569.00	0	6143.59	1945.09	123.4	39.07	162.47	1.52	103.74	29.11	4.76	0.71	415.26	44.54	370.72	65.15
1002 I-4468	7	9/30/94	8397	0	8397	569.00	0	6160.48	1923.48	137.83	43.04	180.87	2.79	154.18	27.97	6.66	0.8	464.82	50.5	414.32	72.82
1003 I-4483	7	9/30/94	8490	0	8490	569.00	0	6260.71	1948.72	119.92	37.44	157.36	1.13	183.98	29.53	4.54	0.7	385.02	42.19	342.83	60.25
1004 I-4526	7	9/30/94	8490	0	8490	569.00	0	6236.65	1954.17	123.36	39.52	161.88	1.43	161.35	29.22	4.54	0.69	407.65	43.75	363.9	63.95
1005 I-4578	7	9/30/94	8490	0	8490	569.00	0	6206.85	1937.46	126.58	39.52	166.1	1.97	126.59	28.81	5.29	0.67	442.41	45.48	396.93	69.76
1006 I-5293	7	9/30/94	8490	0	8490	569.00	0	6314.24	1971.49	98.84	30.86	129.7	0.56	229.23	30.53	2.57	0.6	339.77	34.03	305.74	53.73
1007 I-5411	7	9/30/94	8397	0	8397	569.00	0	6126.44	1939.64	126.93	40.19	167.12	1.8	140.24	28.83	5.24	0.73	428.76	46.16	382.6	67.24
1008 I-5669	7	9/30/94	8397	0	8397	569.00	0	6240.67	1975.82	91.55	28.98	120.53	0.41	252.36	30.81	2.16	0.59	316.64	31.73	284.91	50.07
1009 I-5671	7	9/30/94	8490	0	8490	569.00	0	6260.71	1954.72	119.92	37.44	157.36	1.13	183.98	29.53	4.05	0.7	385.02	42.19	342.83	60.25
1010 I-5700	7	9/30/94	8490	0	8490	569.00	0	6206.54	1937.86	128.8	40.22	169.02	1.96	129.41	28.76	5.4	0.71	439.59	46.33	393.26	69.11
1011 I-5724	7	9/30/94	8397	0	8397	569.00	0	6137.76	1943.25	127.07	40.23	167.3	1.6	155.22	28.94	5	0.75	413.78	45.98	367.8	64.64
1012 I-5875	7	9/30/94	8490	0	8490	569.00	0	6321.18	1973.61	95.47	29.81	125.28	0.51	232.86	30.7	2.39	0.57	336.14	32.77	303.37	53.32
1013 I-6078	7	9/30/94	8490	0	8490	569.00	0	6292.67	1964.75	103.99	32.47	136.46	0.79	194.37	30.27	3.06	0.56	374.63	36.09	338.54	59.50
1014 I-1363	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6959.14	2494.04	109.86	39.37	149.23	0.68	233.58	32.54	3.05	0.67	346.63	43.09	291.54	51.31
1015 I-2316	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6954.74	2492.47	111.53	39.97	151.5	0.72	230.04	32.47	3.13	0.66	338.17	43.76	294.41	51.81
1016 I-2387	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6976.87	2500.4	102.83	36.85	139.68	0.52	254.56	32.85	2.55	0.63	313.65	40.03	273.62	48.15
1017 I-2472	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6984.6	2503.15	100.04	35.85	135.89	0.46	263.17	32.99	2.39	0.63	305.04	38.87	266.17	46.84
1018 I-4572	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6984.74	2492.47	111.53	39.97	151.5	0.72	230.04	32.47	3.13	0.66	338.17	43.76	294.41	51.81
1019 I-4983	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6954.74	2492.47	111.53	39.97	151.5	0.72	230.04	32.47	3.13	0.66	338.17	43.76	294.41	51.81
1020 I-5891	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6954.74	2492.47	111.53	39.97	151.5	0.72	230.04	32.47	3.13	0.66	338.17	43.76	294.41	51.81
1021 I-6004	4	9/30/94	7136.43	2557.57	9694	568.21	35.54	6954.74	2492.47	111.53	39.97	151.5	0.72	230.04	32.47	3.13	0.66	338.17	43.76	294.41	51.81
1022 I-7077	10707	9/30/94	7443.42	2557.57	10006.99	568.21	35.54	7270.11	2486.02	111.65	38.33	149.98	0.66	236.91	32.63	2.9	0.65	331.3	41.88	289.42	50.94
1023 I-2485	12485	9/30/94	7443.42	2557.57	10006.99	568.21	35.54	7268.03	2485.29	113.54	38.98	152.52	0.67	239.48	32.57	2.95	0.66	328.73	42.59	286.14	50.36
1024 I-2688	12688	9/30/94	7443.42	2557.57	10006.99	568.21	35.54	7268.03	2485.29	113.54	38.98	152.52	0.67	239.48	32.57	2.95	0.66	328.73	42.59	286.14	50.36
1025 I-2212	12212	9/30/94	7449.42	2557.57	10006.99	568.21	35.54	7259.9	2492.5	116.11	39.98	155.97	0.75	229.97	32.45	3.13	0.65	338.24	43.64	294.6	51.85
1026 I-4014	14014	9/30/94	8326	0	8326	568.00	0	6147.72	1966.84	99.15	31.72	130.87	0.64	215.21	30.39	2.8	0.6	352.79	35.12	317.67	55.93
1027 I-4030	14030	9/30/94	8326	0	8326	568.00	0	6037.78	1931.65	131.15	41.96	173.11	2.13	127	28.4	5.89	0.78	414.33	48.83	392.57	69.08
1028 I-4147	14147	9/30/94	8326	0	8326	568.00	0	6066.04	1940.73	127.85	40.9	168.75	1.65	153.67	28.81	5.16	0.77	414.33	48.83	392.57	69.08
1029 I-4474	14474	9/30/94	8326	0	8326	568.00	0	6037.78	1931.65	131.15	41.96	173.11	2.13	127	28.4	5.89	0.78	414.33	48.83	392.57	69.08
1030 I-5321	15321	9/30/94	8313	0	8313	568.00	0	6051.87	1936.2	123.42	39.49	162.91	1.92	126.48	28.79	5.29	0.67	441.52	45.45	396.07	69.73
1031 I-5410	15410	9/30/94	8313	0	8313	568.00	0	6062.3	1948.31	116.68	37.37	154.05	1.26	166.31	29.41	4.22	0.66	401.69	42.25	359.44	63.28
1032 I-5493	15493	9/30/94	8326	0	8326	568.00	0	6062.3	1948.31	116.68	37.37	154.05	1.26	166.31	29.41	4.22	0.66	401.69	42.25	359.44	63.28
1033 I-5737	15737	9/30/94	8326	0	8326	568.00	0	6037.82	1939.67	123.6	39.54	163.14	1.73	139.37	28.91	5.06	0.69	428.63	45.29	383.34	67.49
1034 I-5771	15771	9/30/94	8326	0	8326	568.00	0	6170.71	1974.21	130.15	41.64	171.79	2.14	125.88	28.4	5.86	0.77	442.12	48.27	393.85	69.34
1035 I-6070	16070	9/30/94	8326	0	8326	568.00	0	6141.57	1964.86	100.84	32.26	121.24	0.42	251.02	30.73	2.23	0.61	316.98	32.23	284.75	50.13
1036 I-6073	16073	9/30/94	8326	0	8326	568.00	0	6147.72	1966.84	99.15	31.72	130.87	0.64	215.21	30.39	2.8	0.6	352.79	35.12	317.67	55.93
1037 I-0285	10285	3	3/31/86	2553.38	12068	567.28	35.48	9183.01	2464.39	185.29	49.73	235.02	2.26	175.68	30.72	5.61	1	384.77	56.34	328.43	57.90
1038 I-0873	10873	3	3/31/86	2553.38	12068	567.28	35.48	9176.8	2462.72	184.2	49.43	233.63	2.26	175.68	30.72	5.61	1	384.77	56.34	328.43	57.90
1039 I-0948	10948	3	3/31/86	2553.38	12068	567.28	35.48	9151.01	2457.41	190.82	51.21	242.03	2.65	162.78	30.48	6.23	1.02	404.5	58.46	346.04	61.00
1040 I-1228	11228	3	3/31/86	2553.38	12068	567.28	35.48	9173.13	2461.74	183.69	49.29	232.98	2.33	170.45	30.71	5.69	0.93	396.83	55.91	349.92	61.00
1041 I-1336	11336	3	3/31/86	2553.38	12068	567.28	35.48	9111.27	2445.14	191.96	51.52	243.48	3.48	131.25	30.01	6.91	0.92	436.03	59.35	376.68	66.40
1042 I-1397	11397	3	3/31/86	2553.38	12068	567.28	35.48	9176.8	2462.72	184.2	49.43	233.63	2.26	175.68	30.72	5.61	0.94	391.6	55.01	335.59	59.16
1043 I-1918	11918	3	3/31/86	2553.38	12068	567.28	35.48	9166.5	2468.01	182.27	48.92	231.19	1.95	191.7	30.96	5.26	0.97	375.58	55.15	320.43	56.49
1044 I-1988	11988	3	3/31/86	2553.38	12068	567.28	35.48	9151.01	2457.41	190.82	51.21	242.03	2.65	162.78	30.48	6.23	1.02	404.5	58.46	346.04	61.00
1045 I-2351	12351	3	3/31/86	2553.38	12068	567.28	35.48	9196.5	2468.01	183.69	49.29	232.98	2.33	170.45	30.71	5.69	0.93	396.83	55.91	349.92	61.00
1046 I-2447	12447	3	3/31/86	2553.38	12068	567.28	35.48	9167.23	2460.16	186.11	48.92	236.06	2.49	187.89	30.63	5.9	0.97	389.39	56.82	342.57	56

Element	Element Seg	Date	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fis_U238	BOL_Fert_Th232	EOL_Fis_Th232	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease % of BOL					
1137 5-2064	4	9/30/94	2456.95	11432	545.96	34.14	8682.5	2371.41	147.76	40.45	186.21	2.08	124.55	30.37	4.63	0.59	421.31	45.87	376.64	68.82
1138 1-0041	5	9/30/94	7372.24	8255	544.93	34.08	6994.02	2326.93	158.19	52.63	210.62	3.69	92.11	28.2	7.77	0.89	452.83	61.29	391.54	71.85
1139 1-0724	5	9/30/94	7372.24	8255	544.93	34.08	7016.69	2331.54	158.67	52.79	211.46	3.38	107.44	28.45	7.36	0.89	437.49	61.04	376.45	69.08
1140 1-0759	5	9/30/94	7372.24	8255	544.93	34.08	7008.29	2331.68	157.06	52.25	209.31	3.38	99.78	28.38	7.43	0.87	445.15	60.55	384.6	70.58
1141 1-0875	5	9/30/94	7372.24	8255	544.93	34.08	7008.29	2331.68	157.06	52.25	209.31	3.38	99.78	28.38	7.43	0.87	445.15	60.55	384.6	70.58
1142 1-1195	5	9/30/94	7372.24	8255	544.93	34.08	7008.29	2331.68	157.06	52.25	209.31	3.38	99.78	28.38	7.43	0.87	445.15	60.55	384.6	70.58
1143 1-0387	6	9/30/94	7372.24	8255	544.93	34.08	6994.77	2342.58	154.11	51.89	205.8	2.76	121.61	28.8	6.73	0.86	423.32	59.28	364.04	66.80
1144 1-0389	6	9/30/94	7372.24	8255	544.93	34.08	6994.77	2342.58	154.11	51.89	205.8	2.76	121.61	28.8	6.73	0.86	423.32	59.28	364.04	66.80
1145 1-0631	6	9/30/94	7372.24	8255	544.93	34.08	7035.3	2340.62	153.8	51.17	204.97	2.86	116.94	28.73	6.77	0.87	428.99	58.77	369.37	67.78
1146 1-0864	6	9/30/94	7372.24	8255	544.93	34.08	7035.3	2340.62	153.8	51.17	204.97	2.86	116.94	28.73	6.77	0.87	428.99	58.77	369.37	67.78
1147 1-1407	6	9/30/94	7372.24	8255	544.93	34.08	6963.19	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1148 1-2322	12322	6	9/30/94	7372.24	8255	544.93	7011.15	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1149 1-2467	12467	6	9/30/94	7372.24	8255	544.93	7011.15	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1150 1-1430	11430	4	9/30/94	7372.24	8255	543.06	7245.32	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1151 1-1111	11111	4	9/30/94	7372.24	8255	543.06	7245.32	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1152 1-1781	111781	4	9/30/94	7372.24	8255	543.06	7245.32	2335.32	152.53	51.16	203.69	3.18	103.41	28.58	7.09	0.84	441.52	59.09	382.43	70.18
1153 5-0803	50803	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1154 5-0803	50803	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1155 5-0861	50861	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1156 5-0861	50861	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1157 5-1845	51845	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1158 5-2504	52504	5	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1159 5-0679	50679	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1160 5-0741	50741	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1161 5-1047	51047	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1162 5-1024	51024	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1163 5-1863	51863	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1164 5-1864	51864	6	9/30/94	8917.63	11362	543.06	8917.63	2339.38	106.93	29.31	136.24	2.29	134.32	28.43	7.12	0.84	437.03	59.39	377.64	69.54
1165 1-2023	10203	4	9/30/94	7392.01	8255	540.00	0	2337.13	147.99	48.77	166.76	2.25	133.86	29.16	2.01	0.46	307.93	32.77	275.16	50.67
1166 2-1900	21900	3	9/30/94	7392.01	8255	540.00	0	2337.13	147.99	48.77	166.76	2.25	133.86	29.16	2.01	0.46	307.93	32.77	275.16	50.67
1167 5-0427	50427	3	9/30/94	7392.01	8255	540.00	0	2337.13	147.99	48.77	166.76	2.25	133.86	29.16	2.01	0.46	307.93	32.77	275.16	50.67
1168 1-2032	10232	5	9/30/94	7435.4	8933	539.34	33.73	7077	2310.6	52.25	185.96	1.36	166.28	31.01	3.14	0.51	390.45	44.44	346.01	64.08
1169 1-2033	10233	5	9/30/94	7435.4	8933	539.34	33.73	7077	2310.6	52.25	185.96	1.36	166.28	31.01	3.14	0.51	390.45	44.44	346.01	64.08
1170 1-0802	10802	5	9/30/94	7435.4	8933	539.34	33.73	7073.3	2309.38	51.85	210.65	3.3	102.29	28.14	7.32	0.86	437.05	60.43	370.22	69.08
1171 1-2897	12897	5	9/30/94	7435.4	8933	539.34	33.73	7073.3	2309.38	51.85	210.65	3.3	102.29	28.14	7.32	0.86	437.05	60.43	370.22	69.08
1172 1-2409	12409	5	9/30/94	7435.4	8933	539.34	33.73	7073.3	2309.38	51.85	210.65	3.3	102.29	28.14	7.32	0.86	437.05	60.43	370.22	69.08
1173 1-0321	10321	6	9/30/94	7705.59	10249	538.41	33.67	7055.94	2303.71	51.53	215.38	3.49	99.74	27.91	7.69	0.88	448.18	60.66	387.52	71.85
1174 1-2811	11281	6	9/30/94	7705.59	10249	538.41	33.67	7055.94	2303.71	51.53	215.38	3.49	99.74	27.91	7.69	0.88	448.18	60.66	387.52	71.85
1175 1-1665	11665	6	9/30/94	7705.59	10249	538.41	33.67	7055.94	2303.71	51.53	215.38	3.49	99.74	27.91	7.69	0.88	448.18	60.66	387.52	71.85
1176 2-2058	22058	6	9/30/94	7705.59	10249	538.41	33.67	7055.94	2303.71	51.53	215.38	3.49	99.74	27.91	7.69	0.88	448.18	60.66	387.52	71.85
1177 2-2268	22268	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1178 2-4131	24131	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1179 2-4527	24527	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1180 2-5728	25728	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1181 2-5728	25728	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1182 2-6074	26074	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1183 2-6074	26074	7	9/30/94	6249	0	6249	0	4214.61	182.81	36.03	117.99	1.63	136.35	26.28	6.13	0.91	400.65	40.72	353.45	65.82
1184 1-2507	12507	6	9/30/94	7612.17	10023	535.61	33.5	7306.01	2312.31	39.74	130.13	2.04	119.67	26.02	6.39	0.92	417.33	47.05	370.28	68.95
1185 1-0032	10032	4	9/30/94	7531.36	9938	534.68	33.44	7298.02	2312.31	48.57	147.42									

Element	Element Seg	Date	Th232	BOL_Fis_T	BOL_Fis_h232	Total	BOL_Fis	BOL_Fis_h232	Th232	EOL_Fert_U238	EOL_Fis_T	EOL_Fis_U238	EOL_Fis_h232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_h232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_h232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_h232	Depletion	Fissile	Net Loss - Decrease	% of BOL	
1208 5-0683	5	9/30/94	50693	9514.13	2389.87	11904	530.95	33.21	9194.87	2309.61	146.34	183.1	209.87	2.08	111.59	29.87	183.1	209.87	2.08	111.59	29.87	4.12	0.5	419.36	41.33	377.98	71.19
1209 5-1855	5	9/30/94	51935	9506.13	2389.87	11896	530.95	33.21	9193.99	2311.24	146.07	182.79	29.86	1.98	113.4	29.86	182.79	29.86	1.98	113.4	29.86	4.1	0.51	417.55	41.33	376.22	70.86
1210 5-2760	5	9/30/94	52389	9514.13	2389.87	11904	530.95	33.21	9196.71	2312.59	146.44	183.22	29.9	2.05	117.69	29.9	183.22	29.9	2.05	117.69	29.9	4.12	0.5	419.36	41.4	377.66	71.17
1211 5-0789	5	9/30/94	50709	9514.13	2389.87	11896	530.95	33.21	9196.79	2312.59	146.46	183.22	30.01	1.92	117.87	30.01	183.22	30.01	1.92	117.87	30.01	3.93	0.49	413.08	40.77	372.31	70.12
1212 5-0988	5	9/30/94	50988	9514.13	2389.87	11904	530.95	33.21	9181.2	2306.24	147.94	185.1	29.76	2.27	103.97	29.76	185.1	29.76	2.27	103.97	29.76	4.32	0.5	427.98	41.97	385.57	72.62
1213 5-1365	5	9/30/94	51365	9514.13	2389.87	11904	530.95	33.21	9182.48	2306.55	147.79	184.91	29.76	2.26	103.97	29.76	184.91	29.76	2.26	103.97	29.76	4.34	0.51	427.98	41.97	385.01	72.51
1214 1-1813	5	9/30/94	51813	9747	529.09	12187	529.09	33.09	7070.86	2286.22	147.31	194.94	28.86	2.11	135.27	28.86	194.94	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1215 5-1661	5	9/30/94	51661	9747	529.09	12187	529.09	33.09	7069.28	2285.7	143.76	193.59	28.86	2.11	135.27	28.86	193.59	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1216 1-1881	5	9/30/94	51881	9747	529.09	12187	529.09	33.09	7069.28	2285.7	143.76	193.59	28.86	2.11	135.27	28.86	193.59	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1217 5-0638	5	9/30/94	50638	9747	529.09	12187	529.09	33.09	7069.28	2285.7	143.76	193.59	28.86	2.11	135.27	28.86	193.59	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1218 5-1419	5	9/30/94	51419	9747	529.09	12187	529.09	33.09	7069.28	2285.7	143.76	193.59	28.86	2.11	135.27	28.86	193.59	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1219 1-10824	5	9/30/94	510824	9747	529.09	12187	529.09	33.09	7069.28	2285.7	143.76	193.59	28.86	2.11	135.27	28.86	193.59	28.86	2.11	135.27	28.86	5.6	0.75	393.82	53.98	339.84	64.23
1220 1-10975	5	9/30/94	510975	9747.71	2377.29	11125	528.16	33.03	8528.74	2317.24	147.36	176.1	30.29	1.45	143.18	30.29	176.1	30.29	1.45	143.18	30.29	3.29	0.46	400.78	37.99	346.75	65.54
1221 1-1872	5	9/30/94	51872	9747.71	2377.29	11125	528.16	33.03	8528.74	2317.24	147.36	176.1	30.29	1.45	143.18	30.29	176.1	30.29	1.45	143.18	30.29	3.29	0.46	400.78	37.99	346.75	65.54
1222 1-10975	5	9/30/94	510975	9747.71	2377.29	11125	528.16	33.03	8528.74	2317.24	147.36	176.1	30.29	1.45	143.18	30.29	176.1	30.29	1.45	143.18	30.29	3.29	0.46	400.78	37.99	346.75	65.54
1223 1-1872	5	9/30/94	51872	9747.71	2377.29	11125	528.16	33.03	8528.74	2317.24	147.36	176.1	30.29	1.45	143.18	30.29	176.1	30.29	1.45	143.18	30.29	3.29	0.46	400.78	37.99	346.75	65.54
1224 1-10975	5	9/30/94	510975	9747.71	2377.29	11125	528.16	33.03	8528.74	2317.24	147.36	176.1	30.29	1.45	143.18	30.29	176.1	30.29	1.45	143.18	30.29	3.29	0.46	400.78	37.99	346.75	65.54
1225 1-2048	5	9/30/94	52048	9779.71	2377.29	12157	525.37	32.86	8988.26	2303.53	138.29	176.22	29.8	0.95	123.39	29.8	176.22	29.8	0.95	123.39	29.8	3.15	0.68	411.98	41.76	270.22	51.43
1226 5-1556	5	9/30/94	51556	9755.29	2364.71	12120	525.37	32.86	8988.26	2303.53	138.29	176.22	29.8	0.95	123.39	29.8	176.22	29.8	0.95	123.39	29.8	3.15	0.68	411.98	41.76	270.22	51.43
1227 5-2837	5	9/30/94	52837	9617.1	0	9617.1	523.61	33.03	7469.66	1958.36	99	25.95	30.81	1.93	20.81	30.81	25.95	30.81	1.93	20.81	30.81	3.79	0.49	404.36	39.8	384.56	69.39
1228 5-2227	5	9/30/94	52227	9617.1	0	9617.1	523.61	33.03	7429.31	1947.73	117.38	148.15	30.11	0.81	210.14	30.11	148.15	30.11	0.81	210.14	30.11	2.79	0.59	413.47	34.15	279.32	53.35
1229 5-2234	5	9/30/94	52234	9617.1	0	9617.1	523.61	33.03	7445.14	1951.9	103.81	131.03	30.61	0.71	192.98	30.61	131.03	30.61	0.71	192.98	30.61	2.35	0.44	410.15	27.75	282.4	57.41
1230 5-5236	5	9/30/94	52526	9617.1	0	9617.1	523.61	33.03	7464.33	1956.91	96.86	122.05	30.88	0.53	213.46	30.88	122.05	30.88	0.53	213.46	30.88	1.95	0.44	410.15	27.75	282.4	57.41
1231 5-5336	5	9/30/94	52536	9617.1	0	9617.1	523.61	33.03	7433.33	1948.82	112.73	149.29	30.79	0.79	198.06	30.79	149.29	30.79	0.79	198.06	30.79	2.7	0.53	425.55	32.79	292.76	55.91
1232 5-5462	5	9/30/94	52542	9617.1	0	9617.1	523.61	33.03	7478.67	1960.72	91.73	115.78	31.04	1.7	233.71	31.04	115.78	31.04	1.7	233.71	31.04	1.7	0.41	289.9	26.16	263.74	50.37
1233 5-6080	5	9/30/94	52680	9617.1	0	9617.1	523.61	33.03	7461.07	1956.09	101.8	128.49	30.89	0.54	227.98	30.89	128.49	30.89	0.54	227.98	30.89	2.07	0.48	285.65	29.24	266.41	50.88
1234 5-5243	5	9/30/94	525243	9617.1	0	9617.1	523.61	33.03	7529.21	1972.64	72.39	18.88	31.8	1.08	172.67	31.8	18.88	31.8	1.08	172.67	31.8	1.6	0.52	360.83	34.66	316.07	60.86
1235 5-5254	5	9/30/94	525254	9617.1	0	9617.1	523.61	33.03	7451.93	1956.66	101.61	125.25	30.7	0.64	314.98	30.7	125.25	30.7	0.64	314.98	30.7	2.21	0.43	208.62	20.56	188.26	35.95
1236 5-5326	5	9/30/94	525326	9617.1	0	9617.1	523.61	33.03	7426.19	1953.85	113.89	143.75	30.21	0.88	189.93	30.21	143.75	30.21	0.88	189.93	30.21	2.81	0.51	334.04	33.16	294.39	56.22
1237 5-5394	5	9/30/94	525394	9617.1	0	9617.1	523.61	33.03	7465.39	1956.68	104.22	131.54	30.6	0.65	247	30.6	131.54	30.6	0.65	247	30.6	2.05	0.55	276.6	29.92	246.68	47.11
1238 5-5681	5	9/30/94	525681	9617.1	0	9617.1	523.61	33.03	7532.25	1974.73	66.27	83.64	31.74	0.12	315.49	31.74	83.64	31.74	0.12	315.49	31.74	0.79	0.37	208.11	18.53	189.58	36.21
1239 5-7685	5	9/30/94	527685	9617.1	0	9617.1	523.61	33.03	7451.75	1953.64	105.02	132.55	30.57	0.61	216.68	30.57	132.55	30.57	0.61	216.68	30.57	2.24	0.48	306.92	30.25	276.67	52.84
1240 5-6841	5	9/30/94	526841	9617.1	0	9617.1	523.61	33.03	7403.47	1940.98	125.26	185.1	31.11	1.11	184.99	31.11	185.1	31.11	1.11	184.99	31.11	3.33	0.59	338.61	36.76	301.85	57.65
1241 5-5856	5	9/30/94	525856	9617.1	0	9617.1	523.61	33.03	7424.39	1946.46	109.52	138.23	30.97	0.93	170.12	30.97	138.23	30.97	0.93	170.12	30.97	2.74	0.44	353.48	31.69	321.59	61.42
1242 5-5881	5	9/30/94	525881	9617.1	0	9617.1	523.61	33.03	7483.31	1951.91	89.95	113.53	31.11	0.38	239.11	31.11	113.53	31.11	0.38	239.11	31.11	1.61	0.41	284.49	28.6	258.89	49.44
1243 5-6077	5	9/30/94	526077	9617.1	0	9617.1	523.61	33.03	7445.3	1951.37	111.82	141.14	30.33	0.68	222.97	30.33	141.14	30.33	0.68	222.97	30.33	2.46	0.55	300.63	32.33	288.3	51.24
1244 5-1633	5	9/30/94	51633	9725.87	2352.13	12078	522.57	32.88	8986.66	2273.09	150.61	187.03	29.3	2.32	101.6	29.3	187.03	29.3	2.32	101.6	29.3	4.26	0.5	420.97	41.18	379.79	72.68
1245 5-1865	5	9/30/94	51865	9725.87	2352.13	12078	522.57	32.88	8986.66	2273.09	150.61	187.03	29.3	2.32	101.6	29.3	187.03	29.3	2.32	101.6	29.3	4.26	0.5	420.97	41.18	379.79	72.68
1246 1-1878	5	9/30/94	51878	9741.87	2352.13	12078	522.57	32.88	9388.43	2270.53	150.43	186.81	29.31	2.15	103.95	29.31	186.81	29.31	2.15	103.95	29.31	4.27	0.51	420.62	41.16	379.46	72.61
1247 1-0545	5	9/30/94	510545	9741.87	2352.13	12078	522.57	32.88	9121.19	2257.45	147.44	194.18	28.21	0.53	130.52	28.21	194.18	28.21	0.53	130.52	28.21	5.53	0.73	392.05	53	339.05	64.88
1248 1-0504	5	9/30/94	510504	9741.87	2352.13																						

Element	Element N	Date	BOL_Fis_Th232	BOL_Fis_Th233	BOL_Fis_Th235	BOL_Fis_Th238	BOL_Fis_Th239	Total Th232	Total Th233	Total Th235	Total Th238	Total Th239	EOL_Fis_Th232	EOL_Fis_Th233	EOL_Fis_Th235	EOL_Fis_Th238	EOL_Fis_Th239	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease % of BOL	
1270	12505	9/30/94	7461.8	2310.2	9772	513.26	32.17	7186.76	2218.87	192.51	2.09	131.47	27.70	5.28	0.71	381.79	51.5	330.29	64.35				
1280	80065	5/13/81	10593.77	6.06	10665.83	513.17	32.17	10647.49	2218.87	94.22	0.13	361.49	30.93	0.7	0.62	151.68	1.37	150.31	29.29				
1281	80091	9/30/94	10593.77	6.06	10665.83	513.17	32.17	10647.49	2218.87	94.22	0.13	361.49	30.93	0.7	0.62	151.68	1.37	150.31	29.29				
1282	5-1068	9/30/94	9728.99	2306.01	12035	512.32	32.04	9696.75	2266.45	133.4	1.62	146.78	27.92	5.21	0.83	366.39	6.16	360.23	70.20				
1283	5-1069	9/30/94	9625.99	2306.01	11932	512.32	32.04	9496.25	2266.45	133.4	1.62	146.78	27.92	5.21	0.83	366.39	6.16	360.23	70.20				
1284	5-1070	9/30/94	9625.99	2306.01	11932	512.32	32.04	9496.25	2266.45	133.4	1.62	146.78	27.92	5.21	0.83	366.39	6.16	360.23	70.20				
1285	5-1071	9/30/94	9625.99	2306.01	11932	512.32	32.04	9496.25	2266.45	133.4	1.62	146.78	27.92	5.21	0.83	366.39	6.16	360.23	70.20				
1286	5-1072	9/30/94	9625.99	2306.01	11932	512.32	32.04	9496.25	2266.45	133.4	1.62	146.78	27.92	5.21	0.83	366.39	6.16	360.23	70.20				
1287	80206	3/31/86	10703.15	129.02	10832.17	510.39	79.63	9281.91	4.89	164.47	1.26	182.53	25.18	3	0.69	327.88	3.78	324.1	63.50				
1288	80125	9/30/94	10703.15	129.02	10832.17	510.39	79.63	9281.91	4.89	164.47	1.26	182.53	25.18	3	0.69	327.88	3.78	324.1	63.50				
1289	1-2529	3/31/86	8915.57	2293.43	11209	509.53	31.87	8696.36	2235.5	140.6	0.93	208.79	28.98	2.98	0.66	499.41	0.43	498.98	97.76				
1290	24010	9/30/94	8915.57	2293.43	11209	509.53	31.87	8696.36	2235.5	140.6	0.93	208.79	28.98	2.98	0.66	499.41	0.43	498.98	97.76				
1291	24010	9/30/94	8915.57	2293.43	11209	509.53	31.87	8696.36	2235.5	140.6	0.93	208.79	28.98	2.98	0.66	499.41	0.43	498.98	97.76				
1292	1-1095	3/31/86	8929.76	2289.24	11219	508.64	32.08	8711.97	2187.42	85.03	37.8	178.65	27.64	4.67	0.66	300.74	39.81	286.93	51.21				
1293	1-1095	9/30/94	8929.76	2289.24	11219	508.64	32.08	8711.97	2187.42	85.03	37.8	178.65	27.64	4.67	0.66	300.74	39.81	286.93	51.21				
1294	1-1095	9/30/94	8929.76	2289.24	11219	508.64	32.08	8711.97	2187.42	85.03	37.8	178.65	27.64	4.67	0.66	300.74	39.81	286.93	51.21				
1295	2-4642	3/31/86	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1296	2-4642	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1297	1-1029	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1298	1-1149	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1299	1-1149	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1300	1-1149	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1301	5-1683	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1302	5-1683	9/30/94	8503.76	2289.24	10793	508.60	31.81	8360.9	2250.78	101.69	27.38	209.96	28.93	1.52	0.54	300.19	39.73	260.46	40.93				
1303	1-0669	3/31/86	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1304	1-1023	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1305	1-1940	3/31/86	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1306	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1307	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1308	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1309	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1310	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1311	5-1401	9/30/94	8928.72	2268.28	11197	503.94	31.52	8790.92	2231.75	104.05	0.27	282.13	29.92	1.34	0.56	226.98	28.44	198.51	39.39				
1312	6-5402	9/30/94	7136.04	0	7136.04	498.47	31.43	5103.46	1866.7	64.89	0.33	243.01	29.15	1.88	0.63	255.46	26.09	228.37	46.01				
1313	6-5402	9/30/94	7136.04	0	7136.04	498.47	31.43	5103.46	1866.7	64.89	0.33	243.01	29.15	1.88	0.63	255.46	26.09	228.37	46.01				
1314	5-1739	3/31/86	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1315	5-2833	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1316	1-1259	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1317	1-1259	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1318	1-1259	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1319	1-1259	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1320	1-1259	9/30/94	9500.81	2201.19	11702	489.04	30.59	9253.84	2149.29	151.03	34.99	161.82	27.64	3.31	0.57	327.22	38.87	288.35	58.96				
1321	1-1096	9/30/94	7499.39	1888.61	9688	486.24	30.41	7314.21	2134.56	115.54	33.72	149.26	27.89	2.63	0.57	289.52	37.07	252.45	51.61				
1322	1-1096	9/30/94	7499.39	1888.61	9688	486.24	30.41	7314.21	2134.56	115.54	33.72	149.26	27.89	2.63	0.57	289.52	37.07	252.45	51.61				
1323	1-1096	9/30/94	7499.39	1888.61	9688	486.24	30.41	7314.21	2134.56	115.54	33.72	149.26	27.89	2.63	0.57	289.52	37.07	252.45	51.61				
1324	1-1096	9/30/94	7499.39	1888.61	9688	486.24	30.41	7314.21	2134.56	115.54	33.72	149.26	27.89	2.63	0.57	289.52	37.07	252.45	51.61				
1325	1-1759	9/30/94	7499.39																				

Element	Element N	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total Th232	BOL_Fert_h232	BOL_Fis_h232	BOL_Fert_Th232	BOL_Fis_Th232	EOL_Fert_U233	EOL_Fis_U233	Tot EOL_Fis_U233	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease % of BOL	
																					3
1350 5-1065	51095	3	3/31/86	9347.74	11507	2159.26	30	9145.16	2124.37	129.18	39.84	159.02	0.7	204.13	27.70	2.19	0.51	275.59	32.54	243.05	60.66
1351 5-1148	51148	3	3/31/86	9347.74	11507	2159.26	30	9212.29	2128.12	98.09	22.86	129.75	0.25	205.7	28.56	1.15	0.45	214.02	24.26	189.76	39.55
1352 5-1249	51249	3	3/31/86	9347.74	11507	2159.26	30	9271.24	2128.12	98.09	22.86	129.75	0.25	205.7	28.56	1.15	0.45	214.02	24.26	189.76	39.55
1353 5-1353	51353	3	3/31/86	9347.74	11507	2159.26	30	9327.74	2100.91	148.78	32.03	160.81	1.35	146.85	28.61	2.99	0.47	202.94	35.49	237.38	61.99
1354 5-1359	51359	3	3/31/86	9347.74	11507	2159.26	30	9385.4	2110.22	132.54	30.06	163.16	0.79	195.29	27.69	2.26	0.52	202.62	33.5	250.63	52.25
1355 1-0133	10133	3	9/30/94	7073.12	2150.88	9224	29.89	6666.76	2027.33	148.58	45.06	193.24	4.32	57.24	24.4	7.25	0.77	420.62	53.08	290.63	76.91
1356 1-1300	11300	3	9/30/94	7073.12	2150.88	9224	29.89	6666.45	2033.91	149.98	45.61	192.59	3.91	66.6	24.6	7.02	0.77	411.26	53.4	357.86	74.89
1357 1-1392	11392	3	9/30/94	7073.12	2150.88	9224	29.89	6666.45	2033.91	149.98	45.61	192.59	3.91	66.6	24.6	7.02	0.77	411.26	53.4	357.86	74.89
1358 1-1579	11579	3	9/30/94	7073.12	2150.88	9224	29.89	6666.45	2033.91	149.98	45.61	192.59	3.91	66.6	24.6	7.02	0.77	411.26	53.4	357.86	74.89
1359 1-1752	11752	3	9/30/94	7073.12	2150.88	9224	29.89	6666.45	2033.91	149.98	45.61	192.59	3.91	66.6	24.6	7.02	0.77	411.26	53.4	357.86	74.89
1360 1-2007	12007	3	9/30/94	7073.12	2150.88	9224	29.89	6666.45	2033.91	149.98	45.61	192.59	3.91	66.6	24.6	7.02	0.77	411.26	53.4	357.86	74.89
1361 1-1042	11042	6	9/30/94	7073.12	2150.88	9224	29.89	6662.16	2025.91	148.17	45.06	195.64	4.22	59.9	24.32	7.27	0.78	417.96	53.67	364.29	76.23
1362 1-1157	11157	6	9/30/94	7073.12	2150.88	9224	29.89	6662.16	2025.91	148.17	45.06	195.64	4.22	59.9	24.32	7.27	0.78	417.96	53.67	364.29	76.23
1363 1-1157	11157	6	9/30/94	7073.12	2150.88	9224	29.89	6662.16	2025.91	148.17	45.06	195.64	4.22	59.9	24.32	7.27	0.78	417.96	53.67	364.29	76.23
1364 1-1049	10849	3	9/30/94	7628.31	2146.69	9775	29.83	7410.9	2085.5	124.88	35.45	194.91	3.9	66.23	24.59	6.99	0.76	411.63	53.2	358.43	75.01
1365 1-2299	12299	6	9/30/94	7628.31	2146.69	9775	29.83	7439.68	2093.6	117.47	33.06	150.53	1.01	163.55	27.02	3.12	0.54	313.38	36.8	274.58	57.57
1366 1-2025	10225	6	9/30/94	7628.31	2146.69	9775	29.83	7439.68	2093.6	117.47	33.06	150.53	1.01	163.55	27.02	3.12	0.54	313.38	36.8	274.58	57.57
1367 1-0257	10257	6	9/30/94	7029.51	2142.49	9172	29.77	6645.94	2025.56	148.54	45.27	193.81	3.88	65.97	24.49	6.97	0.75	410.03	52.93	367.04	75.01
1368 1-0402	10402	6	9/30/94	7628.31	2142.49	9172	29.77	7433.73	2084.9	122.16	34.26	156.42	0.87	175.82	27.11	2.78	0.54	300.18	37.67	262.51	55.15
1369 1-0402	10402	6	9/30/94	7628.31	2142.49	9172	29.77	7433.73	2084.9	122.16	34.26	156.42	0.87	175.82	27.11	2.78	0.54	300.18	37.67	262.51	55.15
1370 1-0361	10361	5	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1371 1-1466	11466	5	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1372 1-2405	12405	5	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1373 1-1368	11368	5	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1374 1-1443	11443	6	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1375 1-2114	12114	6	9/30/94	7054.09	2129.91	9184	29.68	11703.73	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1376 5-2550	52550	3	3/31/86	10693.47	12815	2121.53	29.48	10448.43	2072.92	141.11	42.61	188.72	2.43	116.35	26.62	3.78	0.52	357.12	4.39	352.73	74.50
1377 2-0780	20780	4	9/30/94	4434.47	6556	471.34	29.48	4229.47	2023.67	89.07	42.61	131.68	1.82	99.61	24.66	6.1	0.78	371.73	49.51	322.22	69.64
1378 2-1477	21477	4	9/30/94	4434.47	6556	471.34	29.48	4229.47	2023.67	89.07	42.61	131.68	1.82	99.61	24.66	6.1	0.78	371.73	49.51	322.22	69.64
1379 2-1539	21539	4	9/30/94	4434.47	6556	471.34	29.48	4229.47	2023.67	89.07	42.61	131.68	1.82	99.61	24.66	6.1	0.78	371.73	49.51	322.22	69.64
1380 2-1011	20011	5	9/30/94	4434.47	6556	471.34	29.48	4231.41	2024.37	89.6	42.87	132.47	1.87	91.45	24.59	6.24	0.82	374.1	49.93	324.17	68.78
1381 2-1811	21811	5	9/30/94	4434.47	6556	471.34	29.48	4231.41	2024.37	89.6	42.87	132.47	1.87	91.45	24.59	6.24	0.82	374.1	49.93	324.17	68.78
1382 1-0897	10897	5	9/30/94	7023.86	2113.14	9137	29.36	6666.63	2011.71	140.46	42.26	182.72	2.98	78.43	26	3.88	0.76	310.11	41.57	268.54	56.97
1383 1-1326	11326	5	9/30/94	7023.86	2113.14	9137	29.36	6666.63	2011.71	140.46	42.26	182.72	2.98	78.43	26	3.88	0.76	310.11	41.57	268.54	56.97
1384 1-1762	11762	5	9/30/94	7023.86	2113.14	9137	29.36	6666.63	2011.71	140.46	42.26	182.72	2.98	78.43	26	3.88	0.76	310.11	41.57	268.54	56.97
1385 1-2426	12426	5	9/30/94	7023.86	2113.14	9137	29.36	6666.63	2011.71	140.46	42.26	182.72	2.98	78.43	26	3.88	0.76	310.11	41.57	268.54	56.97
1386 1-1265	11265	5	9/30/94	7023.86	2113.14	9137	29.36	6666.63	2011.71	140.46	42.26	182.72	2.98	78.43	26	3.88	0.76	310.11	41.57	268.54	56.97
1387 1-1902	11902	6	9/30/94	7023.86	2113.14	9137	29.36	6690.02	2012.69	141.61	42.61	182.72	2.92	89.63	24.86	5.81	0.66	388.52	49.08	339.44	72.30
1388 1-2273	12273	6	9/30/94	7023.86	2113.14	9137	29.36	6690.02	2012.69	141.61	42.61	182.72	2.92	89.63	24.86	5.81	0.66	388.52	49.08	339.44	72.30
1389 1-2469	12469	6	9/30/94	7023.86	2113.14	9137	29.36	6690.02	2012.69	141.61	42.61	182.72	2.92	89.63	24.86	5.81	0.66	388.52	49.08	339.44	72.30
1390 1-0306	50306	3	3/31/86	10652.05	12761	2108.95	29.3	10403.14	2059.67	140.97	27.91	168.88	1.06	153.02	27.23	2.33	0.38	315.52	30.63	284.89	60.80
1391 5-0190	50190	3	3/31/86	10652.05	12761	2108.95	29.3	10403.14	2059.67	140.97	27.91	168.88	1.06	153.02	27.23	2.33	0.38	315.52	30.63	284.89	60.80
1392 5-0190	50190	3	3/31/86	10652.05	12761	2108.95	29.3	10403.14	2059.67	140.97	27.91	168.88	1.06	153.02	27.23	2.33	0.38	315.52	30.63	284.89	60.80
1393 5-1801	51801	3	3/31/86	10782.24	12283	2104.76	29.25	10042.6	2079.27	92.02	19.03	111.05	0.18	270.27	28.13	0.85	0.37	197.34	20.25	177.09	37.87
1394 1-0894	10894	4	9/30/94	7037.24	2104.76	9142	29.25	6701.89	2004.47	140.63	42.06	182.69	2.94	79.55	24.77	5.73	0.64	388.06	48.43	339.63	72.63
1395 1-2545	12545	4	9/30/94	7037.24	2104.76	9142	29.25	6701.89	2004.47	140.63	42.06	182.69	2.94	79.55	24.77	5.73	0.64	388.06	48.43	339.63	72.63
1396 1-2789	12789	4	9/30/94	7037.24	2104.76	9142	29.25	6692.91	2001.77	143.2	42.83	186.03	3.11	75.82	24.66	5.98	0.67	391.79	49.48	342.31	73.20
1397 1-2535	12535	4	9/30/94	7037.24	2104.76	9142	29.25	6692.91	2001.77	143.2	42.83	186.03	3.11	75.82	24.66	5.98	0.67	391.79	49.48	342.31	73.20
1398 5-2031	52031	3	3/31/86	10603.43	12704	2100.57	29.19	10382.5	2052.84	139.07	27.55	168.62	0.99	157.46	27.18	2.23	0.39	309.22	30.17	279.05	59.79
1399 1-0306	10306	4	9/30/94	7116.43	12106.57	9217	29.19	6739.74	2005.03	142.98	44.67	185.18	2.69	88.84</							

Element	Element N	Element Seg	Date	BOL Fert_Th232	BOL Fert_h232	Total Th232	BOL Fis_U235	BOL Fis_U238	EOL Fert_Th232	EOL Fert_h232	EOL Fis_T U232	EOL Fis_U232	Tot EOL Fis_U232	EOL Fert_U235	EOL Fis_U235	EOL Fis_U238	EOL Fis_Np237	EOL Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease % of BOL	
1421-2-0102	20102	6	9/30/94	4232.55	2054.45	6287	466.43	28.85	4033.49	1957.35	85.74	41.62	127.36	1.88	88.63	23.82	5.99	0.74	367.8	48.35	318.45	69.99
1422-2-1232	21232	6	9/30/94	4232.55	2054.45	6287	466.43	28.85	4033.21	1957.63	85.45	41.46	126.93	1.86	88.8	23.85	5.92	0.73	367.63	48.13	319.5	70.00
1423-2-1603	21603	6	9/30/94	4232.55	2054.45	6287	466.43	28.85	4087.72	1963.21	76.66	37.22	113.9	1.83	92.26	24.91	6.06	0.78	364.17	48.59	278.14	69.94
1424-2-1933	21933	6	9/30/94	4232.55	2054.45	6287	466.43	28.85	4035.88	1959.66	86.01	41.72	127.66	1.79	93.78	23.84	5.98	0.77	364.17	48.59	316.58	69.14
1425-2-5154	25154	6	9/30/94	4232.55	2054.45	6287	466.43	28.85	4037.33	1959.69	85.94	41.72	127.66	1.79	93.78	23.84	5.98	0.77	364.17	48.59	316.58	68.83
1426-2-0199	10199	2	5/13/81	1100.75	2050.25	3151	455.50	28.49	1094.46	2021.39	117.75	21.75	139.5	0.21	264.74	26.97	1.17	0.61	190.76	23.53	167.23	36.71
1427-1-0515	10515	2	5/13/81	1100.75	2050.25	3151	455.50	28.49	1097.06	2026.22	102.71	18.97	121.68	0.18	290.68	27.21	0.86	0.58	164.82	20.41	144.41	31.70
1428-1-2759	12759	2	5/13/81	1100.75	2050.25	3151	455.50	28.49	1097.06	2026.22	102.71	18.97	121.68	0.18	290.68	27.21	0.86	0.58	164.82	20.41	144.41	31.70
1429-2-1859	21859	6	9/30/94	4076.75	2050.25	6127	455.50	28.49	3933.18	1978.05	74.36	37.63	111.75	0.96	132.91	24.82	4.35	0.73	322.59	42.27	280.12	61.50
1430-1-0175	10175	2	5/13/81	1100.75	2050.25	3151	455.50	28.49	1097.06	2026.22	102.71	18.97	121.68	0.18	290.68	27.21	0.86	0.58	164.82	20.41	144.41	31.70
1431-1-0419	10419	2	5/13/81	1059.13	2041.87	3101	453.64	28.37	1091.35	2014.97	111.76	20.39	132.39	0.6	182.41	24.82	1.06	0.6	182.41	22.29	160.12	35.30
1432-1-1961	11961	2	5/13/81	1059.13	2041.87	3101	453.64	28.37	1092.2	2005.68	134.52	26	160.32	0.5	240.1	26.43	1.67	0.66	213.54	22.49	185.21	40.83
1433-1-0424	10424	1	2/1/79	1082.23	2037.67	3169	452.71	28.31	1071.67	2017.79	88.49	16.66	105.15	0.11	319.55	25.25	1.4	0.65	198.68	26.33	172.53	38.03
1434-1-0612	10612	2	5/13/81	1082.23	2037.67	3169	452.71	28.31	1071.67	2017.79	88.49	16.66	105.15	0.11	319.55	25.25	1.4	0.65	198.68	26.33	172.53	38.03
1435-1-1571	11571	2	5/13/81	1082.23	2037.67	3169	452.71	28.31	1071.67	2017.79	88.49	16.66	105.15	0.11	319.55	25.25	1.4	0.65	198.68	26.33	172.53	38.03
1436-1-1571	11571	2	5/13/81	1082.23	2037.67	3169	452.71	28.31	1071.67	2017.79	88.49	16.66	105.15	0.11	319.55	25.25	1.4	0.65	198.68	26.33	172.53	38.03
1437-1-0308	10308	2	5/13/81	9905.52	2033.48	11939	451.78	28.26	9696.69	1990.61	141.64	29.08	170.72	0.72	212.11	26.02	2.14	0.66	239.67	31.88	207.79	45.99
1437-1-0538	10538	2	5/13/81	9905.52	2033.48	11939	451.78	28.26	9696.69	1990.61	141.64	29.08	170.72	0.72	212.11	26.02	2.14	0.66	239.67	31.88	207.79	45.99
1438-1-2777	12777	2	5/13/81	9905.52	2033.48	11939	451.78	28.26	9696.69	1990.61	141.64	29.08	170.72	0.72	212.11	26.02	2.14	0.66	239.67	31.88	207.79	45.99
1439-5-0129	50129	3	3/1/86	10748.52	2033.48	12782	451.78	28.26	10549.4	1995.81	126.37	23.91	150.28	0.59	186.23	26.67	1.61	0.35	265.55	25.87	239.68	53.05
1440-5-2416	52416	3	3/1/86	10748.52	2033.48	12782	451.78	28.26	10549.4	1995.81	126.37	23.91	150.28	0.59	186.23	26.67	1.61	0.35	265.55	25.87	239.68	53.05
1441-1-0015	10015	5	9/30/94	10792.52	2033.48	12826	451.78	28.26	10521	1982.33	164.23	30.94	195.17	1.16	171.99	25.59	2.89	0.68	279.79	34.51	245.28	54.29
1442-1-0310	10310	5	9/30/94	10792.52	2033.48	12826	451.78	28.26	10519.62	1982.07	164.45	30.98	195.43	1.17	170.07	25.59	2.91	0.68	281.71	34.57	247.14	54.70
1443-1-2904	12904	5	9/30/94	10675.52	2033.48	12709	451.78	28.26	10293.89	1928.42	119.69	41.85	261.54	5.69	66.54	23.11	6.97	0.79	395.24	49.61	335.63	74.29
1444-1-2798	142798	2	5/13/81	10841.71	2029.29	12671	450.85	28.2	10585.23	1981.28	165.91	31.05	198.96	1.08	189.36	25.72	2.6	0.65	281.49	34.3	227.19	50.39
1445-1-1770	141770	2	5/13/81	10841.71	2029.29	12671	450.85	28.2	10585.23	1981.28	165.91	31.05	198.96	1.08	189.36	25.72	2.6	0.65	281.49	34.3	227.19	50.39
1446-1-0413	10413	2	5/13/81	10809.11	2020.9	12630	448.98	28.08	10412.24	1983.4	140.18	26.7	168.88	0.56	232.91	26.05	1.8	0.69	337.01	29.19	289.58	64.23
1447-1-2843	1472843	5	9/30/94	11246.1	2020.9	13267	448.98	28.08	10964.26	1970.25	175.07	31.46	206.53	1.18	178.8	25.38	2.98	0.74	272.18	35.18	237	52.79
1448-1-0686	10686	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10450.05	1966.69	210.31	41.45	230.46	3.22	110.2	23.85	5.46	0.83	337.85	46.44	291.41	65.04
1449-1-0708	10708	5	9/30/94	11384.29	2016.71	13371	448.05	28.02	11069	1986.05	177.07	41.45	230.46	3.22	110.2	23.85	5.46	0.83	337.85	46.44	291.41	65.04
1450-1-1453	11453	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1451-1-1723	11723	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1452-1-2141	12141	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1453-1-2454	12454	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1454-1-2808	12808	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1455-1-2915	12915	5	9/30/94	10594.29	2016.71	12581	448.05	28.02	10484.83	1937.4	207.02	39.52	246.54	3.12	110.8	23.89	5.33	0.79	337.25	45.94	291.61	65.88
1456-4-2464	42464	1	2/1/79	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1457-1-1659	11659	5	9/30/94	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1458-1-1855	11855	5	9/30/94	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1459-5-1865	51865	3	3/1/86	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1460-5-2001	52001	3	3/1/86	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1461-5-2349	52349	3	3/1/86	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1462-1-0537	10537	1	2/1/79	11021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1463-1-2255	112255	5	9/30/94	1021.87	2004.13	32026	445.26	27.85	10960.67	1985.09	88.2	16.04	104.24	0.02	358.9	27.26	0.23	0.39	86.36	10.59	75.77	17.02
1464-1-0681	10681	1	2/1/79	10774.06	1999.94	12774	444.33	27.79	10636.16	1974.34	109.4	20.31	129.71	0.24	186.62	26.42	0.95	0.58	163.75	21.84	141.91	31.94
1465-1-0276	10276	2	5/13/81	11007.06	1999.94	13007	444.33	27.79	10746.67	1952.63	168.44	30.61	198.05	1.1	186.62	25.35	2.56	0.64	257.71	33.81	223.9	50.39
1466-1-0688	10688	2	5/13/81	10649.06	1999.94	12649	444.33	27.79	10438.86	1960.46	145.62	27.35	172.97	0.66	218.5	25.72	1.9	0.61	225.83	29.86	195.97	44.10
1467-1-0727	10727	2	5/13/81	11007.06	1999.94	13007	444.33	27.79	10804.87	1963.2	144.97	26.34	169.72	0.54	232.81	25.79	1.77	0.69	211.52	29.86	182.72	41.12
1468-1-0736	10736	2	5/13/81	10649.06	1999.94	12649	444.33	27.79	10807.04													

Element	Element	Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fert_U238	EOL_Fert_Th232	EOL_Fis_Th232	Tot_EOL_Fis_U233	EOL_Fert_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile	Net Loss - % of BOL
1492	12068		5/13/81	10834.45	1891.55	12626	442.46	27.67	10814.77	1951.17	152.41	180.43	216.88	25.53	0.66	205.58	30.69	194.89
1493	12156		5/13/81	10677.45	1891.55	12569	442.46	27.67	10474.56	1964.75	106.75	128.15	261.7	26.28	0.57	180.76	22.02	158.74
1494	12233		5/13/81	10617.45	1891.55	12509	442.46	27.67	10493	1970.21	96.24	116.67	282.36	26.43	0.53	160.76	19.84	140.26
1495	12306		5/13/81	10517.45	1891.55	12409	442.46	27.67	10504.02	1976.28	87.08	108.14	292.34	26.56	0.5	150.12	18.31	131.81
1496	12415		5/13/81	10384.45	1891.55	12266	442.46	27.67	10598.26	1984.14	159.54	168.87	304.12	25.38	0.46	136.34	22.25	206.09
1497	14716		5/13/81	10345.45	1891.55	12226	442.46	27.67	10621.27	1992.37	29.33	178.45	222.26	25.58	0.64	220.2	32.93	190.27
1498	50785		2/1/79	11333.64	1987.36	13321	441.53	27.62	11295.92	1997.34	41.9	43.25	371.53	27.21	0.29	70	7.77	62.23
1499	50785		2/1/79	11333.64	1987.36	13321	441.53	27.62	11295.92	1980.74	35.2	41.37	383.42	27.28	0.26	58.11	6.53	51.58
1500	10047		5/13/81	10556.64	1987.36	12954	441.53	27.62	10835.41	1960.61	103.11	121.8	283.15	26.34	0.86	158.38	20.14	138.24
1501	10047		5/13/81	10556.64	1987.36	12954	441.53	27.62	10835.41	1960.61	103.11	121.8	283.15	26.34	0.86	158.38	20.14	138.24
1502	11084		5/13/81	10556.64	1987.36	12954	441.53	27.62	10772.31	1952.15	139.64	164.94	233.69	25.73	0.63	177.71	22.19	155.52
1503	11084		5/13/81	10556.64	1987.36	12954	441.53	27.62	10772.31	1952.15	139.64	164.94	233.69	25.73	0.63	177.71	22.19	155.52
1504	11128		5/13/81	10556.64	1987.36	12954	441.53	27.62	10428.51	1963.24	100.94	119.94	279.3	26.33	0.89	162.23	20.48	141.75
1505	11128		5/13/81	10556.64	1987.36	12954	441.53	27.62	10428.51	1963.24	100.94	119.94	279.3	26.33	0.89	162.23	20.48	141.75
1506	11021		5/13/81	10966.64	1987.36	12954	441.53	27.62	10808.46	1968.7	120.61	142.47	262.36	26.07	0.61	179.17	23.64	155.53
1507	11021		5/13/81	10966.64	1987.36	12954	441.53	27.62	10808.46	1968.7	120.61	142.47	262.36	26.07	0.61	179.17	23.64	155.53
1508	11021		5/13/81	10966.64	1987.36	12954	441.53	27.62	10763.14	1950.48	144.9	171.16	229.05	25.62	1.77	212.48	28.71	183.77
1509	11021		5/13/81	10966.64	1987.36	12954	441.53	27.62	10763.14	1950.48	144.9	171.16	229.05	25.62	1.77	212.48	28.71	183.77
1510	11516		5/13/81	10556.64	1987.36	12544	441.53	27.62	10427.49	1963.05	101.44	120.54	270.26	26.32	0.91	164.27	20.6	143.67
1511	11516		5/13/81	10556.64	1987.36	12544	441.53	27.62	10427.49	1963.05	101.44	120.54	270.26	26.32	0.91	164.27	20.6	143.67
1512	11797		5/13/81	10966.64	1987.36	12954	441.53	27.62	10772.31	1952.67	139.64	164.94	233.69	25.73	1.6	201.38	27.52	173.86
1513	11797		5/13/81	10966.64	1987.36	12954	441.53	27.62	10772.31	1952.67	139.64	164.94	233.69	25.73	1.6	201.38	27.52	173.86
1514	12017		5/13/81	10966.64	1987.36	12954	441.53	27.62	10841.05	1964.16	100.34	118.52	287.64	26.39	0.81	179.58	20.4	153.89
1515	12017		5/13/81	10966.64	1987.36	12954	441.53	27.62	10841.05	1964.16	100.34	118.52	287.64	26.39	0.81	179.58	20.4	153.89
1516	12199		5/13/81	10966.64	1987.36	12954	441.53	27.62	10767.35	1961.25	143.09	169.02	234.89	25.63	1.7	206.84	28.31	178.33
1517	12199		5/13/81	10966.64	1987.36	12954	441.53	27.62	10767.35	1961.25	143.09	169.02	234.89	25.63	1.7	206.84	28.31	178.33
1518	12281		5/13/81	10556.64	1987.36	12544	441.53	27.62	10435.75	1964.16	96.59	114.77	267.86	26.39	0.81	163.64	19.58	134.31
1519	12281		5/13/81	10556.64	1987.36	12544	441.53	27.62	10435.75	1964.16	96.59	114.77	267.86	26.39	0.81	163.64	19.58	134.31
1520	12371		5/13/81	10966.64	1987.36	12954	441.53	27.62	10810.43	1958.7	120.64	142.5	262.36	26.07	0.61	179.17	23.64	155.53
1521	12371		5/13/81	10966.64	1987.36	12954	441.53	27.62	10810.43	1958.7	120.64	142.5	262.36	26.07	0.61	179.17	23.64	155.53
1522	12535		5/13/81	10966.64	1987.36	12954	441.53	27.62	10455.86	1968.39	167.13	187.42	195.64	25.19	2.51	206.84	33.42	222.47
1523	12535		5/13/81	10966.64	1987.36	12954	441.53	27.62	10455.86	1968.39	167.13	187.42	195.64	25.19	2.51	206.84	33.42	222.47
1524	12560		5/13/81	10971.64	1987.36	12959	441.53	27.62	10849	1968.11	83.08	98.72	305.46	26.82	0.79	196.07	16.75	119.32
1525	12560		5/13/81	10971.64	1987.36	12959	441.53	27.62	10849	1968.11	83.08	98.72	305.46	26.82	0.79	196.07	16.75	119.32
1526	12857		5/13/81	10556.64	1987.36	12544	441.53	27.62	10455.86	1968.39	83.08	98.72	305.46	26.82	0.59	158.07	16.75	119.32
1527	12857		5/13/81	10556.64	1987.36	12544	441.53	27.62	10455.86	1968.39	83.08	98.72	305.46	26.82	0.59	158.07	16.75	119.32
1528	10204		2/1/79	10937.83	1983.17	12821	440.60	27.56	10827.77	1962.31	94.37	112.19	301.76	28.44	0.67	138.84	18.43	120.41
1529	10204		2/1/79	10937.83	1983.17	12821	440.60	27.56	10827.77	1962.31	94.37	112.19	301.76	28.44	0.67	138.84	18.43	120.41
1530	10499		2/1/79	10937.83	1983.17	12821	440.60	27.56	10828.62	1963.37	91.02	107.52	307.4	26.48	0.63	133.2	17.68	115.52
1531	10499		2/1/79	10937.83	1983.17	12821	440.60	27.56	10828.62	1963.37	91.02	107.52	307.4	26.48	0.63	133.2	17.68	115.52
1532	10983		2/1/79	10937.83	1983.17	12821	440.60	27.56	10808.2	1959.67	104.61	123.58	287.89	26.48	0.84	152.71	20.4	132.31
1533	10983		2/1/79	10937.83	1983.17	12821	440.60	27.56	10808.2	1959.67	104.61	123.58	287.89	26.48	0.84	152.71	20.4	132.31
1534	11331		2/1/79	10937.83	1983.17	12821	440.60	27.56	10829.3	1963.49	90.52	106.93	308.03	26.48	0.62	132.57	17.58	114.99
1535	11331		2/1/79	10937.83	1983.17	12821	440.60	27.56	10829.3	1963.49	90.52	106.93	308.03	26.48	0.62	132.57	17.58	114.99
1536	11658		2/1/79	10937.83	1983.17	12821	440.60	27.56	10803.63	1958.74	107.37	128.84	280.49	26.24	0.9	160.11	20.96	138.12
1537	11658		2/1/79	10937.83	1983.17	12821	440.60	27.56	10803.63	1958.74	107.37	128.84	280.49	26.24	0.9	160.11	20.96	138.12
1538	12237		2/1/79	10937.83	1983.17	12821	440.60	27.56	10833.63	1963.36	83.44	98.57	319.59	26.86	0.52	121.01	16.19	104.85
1539	12237		2/1/79	10937.83	1983.17	12821	440.60	27.56	10833.63	1963.36	83.44	98.57	319.59	26.86	0.52	121.01	16.19	104.85
1540	12755		2/1/79	10937.83	1983.17	12821	440.60	27.56	10857.01	1968.51	70.78	83.61	339.69	26.74	0.5	100.91	13.7	87.21
1541	12755		2/1/79	10937.83	1983.17	12821	440.60	27.56	10857.01	1968.51	70.78	83.61	339.69	26.74	0.5	100.91	13.7	87.21
1542	14381		2/1/79	10937.83	1983.17	12821	440.60	27.56	10847.76	1966.84	77.28	91.29	325.87	26.67	0.45	114.73	14.96	99.77
1543	14381		2/1/79	10937.83	1983.17	12821	440.60	27.56	10847.76	1966.84	77.28	91.29	325.87	26.67	0.45	114.73	14.96	99.77
1544	14877		2/1/79	10937.83	1983.17	12821	440.60	27.56	10808.2	1959.67	104.61	123.58	287.89	26.48	0.59	152.71	20.4	132.31
1545	14877		2/1/79	10937.83	1983.17	12821	440.60	27.56	10808.2	1959.67	104.61	123.58	287.89	26.48	0.59	152.71	20.4	132.31
1546	14987		5/13/81	10743.83	1983.17	12727	440.60	27.56	10524.2	1942.63	151.57	179.55	279.55	25.29	1.99	162.24	30.61	193.53
1547	14987		5/13/81	10743.83	1983.17	12727	440.60	27.56	10524.2	1942.63	151.57	179.55	279.55	25.29	1.99	162.24	30.61	193.53
1548	10890		2/1/79	10356.22	1974.78	12331	438.74	27.44	10245.54	1953.68	91.12	108.5	299.08	26.31	0.64	139.66	10.45	121.05
1549	10890		2/1/79	10356.22	1974.78	12331	438.74	27.44	10245.54	1953.68	91.12	108.5	299.08	26.31	0.64	139.66	10.45	121.05
1550	11021		2/1/79	10850.22	1974.78	12331	438.74	27.44	10298.72	1963.82	51.54	61.37	353.64	26.86	0.23	85.1	10.45	74.65
1551																		

Element	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	BOL_Fis_T_Th232	EOL_Fert_Th232	EOL_Fis_T_Th232	EOL_Fis_Th232	Tot_EOL_Fis_Th232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss			
1563 1-0478	1	2/1/79	1112.37	146.63	13062	433.15	27.09	11024.81	1934.26	75.85	13.31	89.16	0.06	337.06	26.25	0.41	106.09	14.21	91.88	21.21	
1564 1-0494	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10994.76	1928.99	96.96	17.01	113.97	0.15	285.91	25.99	0.67	137.24	18.21	119.03	27.46	
1565 1-0743	1	2/1/79	1112.37	146.63	12777	433.15	27.09	10680.69	1928.25	114.24	20.57	134.81	0.28	263.76	25.7	1.01	169.39	22.14	147.25	34.00	
1566 1-1069	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10993.62	1928.75	97.77	17.15	114.92	0.18	295.27	25.98	0.68	137.88	18.36	119.52	27.59	
1567 1-1147	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10993.71	1928.16	92.48	16.22	108.7	0.13	302.2	26.03	0.62	130.95	17.38	113.57	26.23	
1568 1-1253	1	2/1/79	1112.37	146.63	12777	433.15	27.09	10995.8	1925.94	104.87	18.88	114.47	0.21	292.57	25.97	0.69	140.58	18.32	122.26	28.22	
1569 1-1349	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10996.26	1928.9	96.76	16.98	113.74	0.15	291.53	25.96	0.69	157.32	20.25	137.07	31.64	
1570 1-1440	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10992.13	1928.53	98.01	17.19	115.2	0.16	288.16	25.98	0.71	141.65	18.2	123.45	28.50	
1571 1-1450	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10996.26	1928.9	96.76	16.98	113.74	0.15	291.53	25.96	0.69	141.65	18.2	123.45	28.50	
1572 1-1585	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10992.13	1928.53	98.01	17.19	115.2	0.16	288.16	25.98	0.71	144.99	18.43	122.56	29.22	
1573 1-1624	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10996.26	1928.9	96.76	16.98	113.74	0.15	291.53	25.96	0.69	144.99	18.43	122.56	29.22	
1574 1-1624	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10992.13	1928.53	98.01	17.19	115.2	0.16	288.16	25.98	0.71	144.99	18.43	122.56	29.22	
1575 1-1676	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10996.26	1928.9	96.76	16.98	113.74	0.15	291.53	25.96	0.69	144.99	18.43	122.56	29.22	
1576 1-1676	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10992.13	1928.53	98.01	17.19	115.2	0.16	288.16	25.98	0.71	144.99	18.43	122.56	29.22	
1577 1-1622	1	2/1/79	1112.37	146.63	13062	433.15	27.09	11016.08	1932.73	81.88	14.37	96.25	0.08	314.65	26.19	0.48	118.5	15.32	103.18	23.82	
1578 1-2485	1	2/1/79	1112.37	146.63	13062	433.15	27.09	11016.08	1932.73	81.88	14.37	96.25	0.08	314.65	26.19	0.48	118.5	15.32	103.18	23.82	
1579 1-2674	1	2/1/79	1112.37	146.63	13062	433.15	27.09	11024.81	1934.26	75.85	13.31	89.16	0.06	327.06	26.25	0.41	106.09	14.21	91.88	21.21	
1580 1-2935	1	2/1/79	1112.37	146.63	13062	433.15	27.09	10970.14	1924.67	112.83	19.8	132.63	0.25	273.53	26.26	0.92	159.62	21.29	138.33	31.94	
1581 5-1468	1	2/1/79	11206.37	1949.63	13943	433.15	27.09	11945.69	1941.91	43.13	7.01	50.14	0.01	357.67	26.74	0.23	75.48	7.36	68.12	15.73	
1582 1-1266	2	5/1/381	11112.37	146.63	13156	433.15	27.09	11027.75	1918.55	132.36	23.03	155.39	0.39	243.11	25.45	1.33	190.04	24.93	165.11	38.12	
1583 1-2423	2	5/1/381	11112.37	146.63	13062	433.15	27.09	10987.46	1927.83	99.94	17.53	117.47	0.16	284.11	25.92	0.78	149.04	18.89	130.15	30.05	
1584 1-2536	2	5/1/381	11112.37	146.63	13062	433.15	27.09	10986.42	1925.78	106.78	18.73	125.51	0.2	272	25.82	0.89	161.15	20.2	140.95	32.54	
1585 1-0666	1	2/1/79	10982.57	1945.43	12798	432.22	27.03	10723.45	1923.01	101.1	18.12	119.22	0.18	283.04	25.85	0.77	149.18	19.42	129.76	30.02	
1586 1-1264	1	2/1/79	10988.57	1945.43	12844	432.22	27.03	10772.92	1923.01	101.53	18.12	119.65	0.18	283.04	25.85	0.77	149.18	19.42	129.76	30.02	
1587 1-1345	1	2/1/79	10781.57	1945.43	12703	432.22	27.03	10630.99	1923.01	103.98	18.8	123.78	0.21	274.3	25.81	0.83	157.92	20.15	137.77	31.87	
1588 5-2579	1	2/1/79	11797.57	1945.43	13743	432.22	27.03	11734.64	1935.06	55.84	9.21	68.05	0.03	340.63	26.53	0.21	91.29	9.74	81.55	18.87	
1589 1-0771	1	2/1/79	10951.76	1941.24	12883	431.28	26.97	10878.17	1928.2	64.52	11.44	75.96	0.04	332.57	26.28	0.31	98.71	12.16	86.53	20.06	
1590 1-1215	1	2/1/79	10951.76	1941.24	12893	431.28	26.97	10867.1	1928.23	72.8	12.9	65.7	0.06	319.75	26.17	0.4	111.53	13.77	97.76	22.67	
1591 1-1764	1	5/1/381	10753.76	1941.24	12695	431.28	26.97	10533.93	1901.56	151.71	27.39	179.1	0.71	211.86	24.85	1.95	119.4	29.97	169.43	43.92	
1592 1-1760	1	5/1/381	10752.76	1941.24	12734	431.28	26.97	10580.4	1903.05	148.48	26.71	175.19	0.65	216.64	24.93	1.85	119.4	29.97	169.43	43.92	
1593 1-1820	2	5/1/381	10752.76	1941.24	12695	431.28	26.97	10580.4	1903.05	148.48	26.71	175.19	0.65	216.64	24.93	1.85	119.4	29.97	169.43	43.92	
1594 4-0930	40930	1	5/1/381	10752.76	1941.24	12695	431.28	26.97	10580.4	1903.05	148.48	26.71	175.19	0.65	216.64	24.93	1.85	119.4	29.97	169.43	43.92
1595 5-2813	52813	1	2/1/79	11308.95	1937.05	13246	430.35	26.92	11241.17	1925.44	59.94	10.27	70.21	0.26	257.69	25.99	1.04	159.19	17.87	151.92	35.23
1596 5-1388	51388	2	5/1/381	11289.95	1937.05	13227	430.35	26.92	11177.97	1917.84	89.52	10.48	0.12	280.17	25.97	0.61	150.18	16.41	133.77	31.08	
1597 5-1417	51417	1	2/1/79	11289.95	1937.05	13227	430.35	26.92	11126.7	1909.04	120.56	14.12	0.5	191.1	25.51	1.14	22.32	166.78	39.22	117.9	
1598 5-1722	51722	2	5/1/381	11289.95	1937.05	13227	430.35	26.92	11126.7	1909.04	120.56	14.12	0.5	191.1	25.51	1.14	22.32	166.78	39.22	117.9	
1599 5-1912	51912	2	5/1/381	11289.95	1937.05	13227	430.35	26.92	11126.7	1909.04	120.56	14.12	0.5	191.1	25.51	1.14	22.32	166.78	39.22	117.9	
1600 1-0448	10448	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1601 1-0457	10457	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1602 1-0552	10552	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1603 1-0599	10599	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1604 1-1116	11116	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1605 1-1183	11183	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1606 1-1301	11301	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1607 1-1669	11669	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1608 1-1782	11782	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.74
1609 1-1894	11894	1	2/1/79	10798.14	1932.86	12731	429.42	26.86	10710.49	1917.17	74.74	13.38	88.12	0.47	313.18	26.03	0.43	116.24	14.28	101.96	23.7

Element	Element N	Date	BOL_Fert_Th232	BOL_Fis_Th232	BOL_Fert_h232	BOL_Fis_h232	Total Th232	BOL_Fert_h232	BOL_Fis_h232	BOL_Fert_Th232	BOL_Fis_Th232	Total EOL_Fis_U233	EOL_Fert_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss
1634	10191	3/31/86	8233.3	10141	423.83	26.51	7027.01	1836.73	188.04	36.82	194.66	2.12	108.70	23.17	4.25	0.6	315.04	41.47	273.57	64.55
1635	10667	3/31/86	8233.3	10141	423.83	26.51	7951.79	1842.47	183.81	38.64	189.45	1.73	123.29	23.38	3.81	0.6	298.54	40.05	258.49	60.99
1636	11673	3/31/86	8233.3	10141	423.83	26.51	7927.01	1836.73	185.04	38.62	194.66	2.12	106.79	23.17	4.25	0.6	315.04	41.47	273.57	64.55
1637	12839	3/31/86	8233.3	10141	423.83	26.51	7934.98	1838.58	194.71	35.85	190.56	1.95	111.96	23.27	3.99	0.56	311.87	40.4	271.47	62.71
1638	12946	3/31/86	8233.3	10141	423.83	26.51	7940.25	1839.88	195.37	36	191.37	1.91	117.48	23.28	3.98	0.6	306.35	40.58	265.77	62.71
1639	14304	3/31/86	8233.3	10141	423.83	26.51	7949.79	1842.47	193.81	35.46	188.51	1.82	118.17	23.33	3.98	0.56	305.66	39.87	265.79	62.71
1640	14318	3/31/86	8233.3	10141	423.83	26.51	7949.79	1842.47	193.81	35.46	188.51	1.82	118.17	23.33	3.98	0.6	306.35	40.58	265.77	62.71
1641	15152	3/31/86	8233.3	10141	423.83	26.51	7949.79	1842.47	193.81	35.46	188.51	1.82	118.17	23.33	3.98	0.56	305.66	39.87	265.79	62.71
1642	15217	3/31/86	8233.3	10141	423.83	26.51	7949.79	1842.47	193.81	35.46	188.51	1.82	118.17	23.33	3.98	0.56	305.66	39.87	265.79	62.71
1643	15187	2/51/81	11561.49	1903.51	4422.90	26.46	11424.39	1840.69	104.28	17.17	121.45	0.21	247.86	25.41	0.79	0.38	175.04	18.34	156.7	37.05
1644	52165	2/17/79	11809.69	1898.31	421.97	26.39	11737.06	1889.3	64.88	8.99	64.88	0.02	340.82	25.88	0.2	0.33	81.15	9.52	71.63	20.98
1645	52736	2/17/79	11809.69	1898.31	421.97	26.39	11737.06	1889.3	64.88	8.99	64.88	0.02	340.82	25.88	0.2	0.33	81.15	9.52	71.63	20.98
1646	52736	2/17/79	11809.69	1898.31	421.97	26.39	11737.06	1889.3	64.88	8.99	64.88	0.02	340.82	25.88	0.2	0.33	81.15	9.52	71.63	20.98
1647	52736	2/17/79	11809.69	1898.31	421.97	26.39	11737.06	1889.3	64.88	8.99	64.88	0.02	340.82	25.88	0.2	0.33	81.15	9.52	71.63	20.98
1648	52736	2/17/79	11809.69	1898.31	421.97	26.39	11737.06	1889.3	64.88	8.99	64.88	0.02	340.82	25.88	0.2	0.33	81.15	9.52	71.63	20.98
1649	52436	1/21/79	11962.07	1890.93	420.11	26.28	11893.4	1880.07	60.36	9.54	69.9	0.03	324.96	25.26	0.9	0.36	197.4	19.05	178.35	42.36
1650	52436	1/21/79	11962.07	1890.93	420.11	26.28	11893.4	1880.07	60.36	9.54	69.9	0.03	324.96	25.26	0.9	0.36	197.4	19.05	178.35	42.36
1651	12810	6/9/00/94	7422.07	9313	420.11	26.28	7188.23	1831.36	123.03	31.34	154.37	1.25	118.61	23.79	3.82	0.42	301.5	10.08	85.07	20.25
1652	12810	6/9/00/94	7422.07	9313	420.11	26.28	7188.23	1831.36	123.03	31.34	154.37	1.25	118.61	23.79	3.82	0.42	301.5	10.08	85.07	20.25
1653	10155	6/9/00/94	7422.07	9313	420.11	26.28	7200.73	1834.54	121.98	31.08	153.06	1.26	130.75	23.79	2.84	0.44	289.36	34.78	266.72	63.49
1654	10155	6/9/00/94	7422.07	9313	420.11	26.28	7200.73	1834.54	121.98	31.08	153.06	1.26	130.75	23.79	2.84	0.44	289.36	34.78	266.72	63.49
1655	11193	1/11/79	11851.46	13734	418.24	26.16	11796.46	1830.89	127.37	31.51	155.21	1.27	117.75	23.68	3.06	0.43	302.36	35	267.36	63.64
1656	10541	1/21/79	11851.46	13734	418.24	26.16	11796.46	1830.89	127.37	31.51	155.21	1.27	117.75	23.68	3.06	0.43	302.36	35	267.36	63.64
1657	10428	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1658	10530	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1659	10530	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1660	10530	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1661	10530	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1662	10530	3/31/86	8368.46	1882.54	418.24	26.16	8185.34	1841.35	117.7	26.48	144.18	0.6	177.78	24.27	1.88	0.43	240.46	28.79	211.67	50.61
1663	14705	4/47/50	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1664	14705	4/47/50	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1665	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1666	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1667	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1668	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1669	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1670	12805	6/9/00/94	7395.46	1882.54	418.24	26.16	7173.44	1826.03	122.29	31.13	153.42	1.11	129.41	23.67	2.87	0.43	288.83	34.45	254.38	60.82
1671	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1672	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1673	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1674	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1675	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1676	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1677	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1678	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1679	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1680	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1681	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1682	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1683	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1684	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1685	10969	2/24/87	11992.42	1871.84	418.24	26.16	11992.42	1871.84	124.22	31.62	158.84	1.23	121.49	23.57	3.04	0.44	296.75	35.1	261.65	62.56
1686	10969	2/24/87	11992.42	1871.8																

Element	Element	Seg	Date	BOL_Fis_T Th232	Total Th232	BOL_Fis U235	BOL_Fis U238	EOL_Fert Th232	EOL_Fert U238	EOL_Fis U235	EOL_Fis U238	EOL_Fis Pu239	EOL_Fis Pu237	EOL_Fis Pu239	Depletion	Fissile Additions	Net Loss - Decrease	% of BOL
1776 1-0589	10359	2	5/13/81	9455.41	1622.59	360.49	22.55	9233.9	1584.58	140.07	24.19	165.16	20.75	144.33	216.16	26.5	189.66	52.61
1777 5-0700	50700	2	5/13/81	1187.41	1622.59	360.49	22.55	11066.92	1605.12	83.25	13.52	106.77	21.79	217.21	143.28	14.55	128.93	35.77
1778 5-0851	50850	2	5/13/81	1187.41	1622.59	360.49	22.55	11066.92	1605.12	83.25	13.52	106.77	21.79	217.21	143.28	14.55	128.93	35.77
1779 5-0980	50980	2	5/13/81	1187.41	1622.59	360.49	22.55	11066.92	1605.12	83.25	13.52	106.77	21.79	217.21	143.28	14.55	128.93	35.77
1780 5-1039	51039	2	5/13/81	1187.41	1622.59	360.49	22.55	11066.92	1605.12	83.25	13.52	106.77	21.79	217.21	143.28	14.55	128.93	35.77
1781 5-2353	52353	1	2/17/79	11736.6	1618.4	3355	22.49	11701.37	1618.4	32.74	4.51	37.25	0	309.45	50.11	4.71	45.4	12.63
1782 2-1945	21945	5	9/30/94	4474.6	1618.4	3355	22.49	4211.15	1623.1	92.6	33.49	126.09	3.05	41.34	318.22	39.92	278.3	77.40
1783 5-0001	50001	2	5/13/81	11624.18	1605.82	3320	22.31	11517.25	1591.05	84.33	11.85	95.98	0.11	224.38	132.38	12.3	120.08	33.66
1784 2-0548	20548	6	9/30/94	4470.18	1605.82	3320	22.31	4148.94	1510.71	92.07	15.04	121.77	0.24	197.11	315.45	39.95	275.5	77.22
1785 1-0251	11251	2	5/13/81	11003.7	1593.24	353.97	22.12	11225.33	1581.33	106.73	16.88	140.34	0.36	193.29	160.68	20.77	142.66	40.09
1786 1-1305	11305	2	5/13/81	9687.76	1593.24	353.97	22.12	9529.49	1567.22	116.89	19.22	136.11	0.11	193.29	160.68	20.77	138.91	39.53
1787 1-1367	11367	2	5/13/81	10037.76	1593.24	353.97	22.12	9829.66	1556.14	149	23.65	172.65	0.39	140.77	160.68	20.77	138.91	39.53
1788 1-1367	11367	2	5/13/81	10037.76	1593.24	353.97	22.12	9829.66	1556.14	149	23.65	172.65	0.39	140.77	160.68	20.77	138.91	39.53
1789 1-0001	10001	5	9/30/94	9521.76	1593.24	353.97	22.12	9073.23	1518.2	183.9	30.77	214.87	1.89	213.2	35.74	264.57	187.24	52.90
1790 1-0189	10189	5	9/30/94	9521.76	1593.24	353.97	22.12	8984	1502.71	183.94	32.45	226.39	1.81	213.2	35.74	264.57	187.24	52.90
1791 1-0833	10833	5	9/30/94	9449.76	1593.24	353.97	22.12	8912.76	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1792 1-0658	10658	5	9/30/94	9521.76	1593.24	353.97	22.12	8984	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1793 1-1173	11173	5	9/30/94	9521.76	1593.24	353.97	22.12	8984	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1794 1-1237	11237	5	9/30/94	9449.76	1593.24	353.97	22.12	8912.76	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1795 1-1242	11242	5	9/30/94	9449.76	1593.24	353.97	22.12	8912.76	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1796 1-1360	11360	5	9/30/94	9521.76	1593.24	353.97	22.12	9070.6	1517.83	187.72	31.41	219.13	4.02	54.54	299.42	262.08	74.04	24.97
1797 1-1507	11507	5	9/30/94	9521.76	1593.24	353.97	22.12	9070.6	1517.83	187.72	31.41	219.13	4.02	54.54	299.42	262.08	74.04	24.97
1798 1-1672	11672	5	9/30/94	9449.76	1593.24	353.97	22.12	8912.76	1502.71	186.07	33.06	229.13	5.81	37.95	316.02	38.56	277.46	78.29
1799 1-2060	12060	5	9/30/94	9521.76	1593.24	353.97	22.12	9070.6	1517.83	187.72	31.41	219.13	4.02	54.54	299.42	262.08	74.04	24.97
1800 1-2450	12450	6	9/30/94	9521.76	1593.24	353.97	22.12	9070.6	1517.83	187.72	31.41	219.13	4.02	54.54	299.42	262.08	74.04	24.97
1801 2-2739	22739	6	9/30/94	4473.76	1593.24	353.97	22.12	4227.7	1505.62	93.61	33.34	138.95	2.69	44.33	304.67	268.09	74.32	24.97
1802 5-1887	51887	1	2/17/79	1110.95	1588.05	353.04	22.08	11061.23	1581.94	44.77	6.4	51.17	0.01	285.23	67.81	6.11	17.31	17.31
1803 2-2882	22882	4	9/30/94	3973.95	1588.05	353.04	22.08	3638.72	1534.97	70.71	28.27	96.98	0.82	101.69	195.7	2.94	62.17	62.17
1804 5-0104	51014	1	2/17/79	1104.14	1588.05	353.04	22.08	10982.83	1576.35	52.51	7.54	60.05	0.23	214.53	21.64	0.23	77.58	77.58
1805 1-0172	10172	2	5/13/81	9783.14	1588.05	353.04	22.08	9585.13	1552.78	52.51	7.54	60.05	0.23	214.53	21.64	0.23	77.58	77.58
1806 1-0250	10250	2	5/13/81	9300.33	1580.67	1088.1	21.96	9122.09	1552.78	124.83	21.22	146.05	1.53	172.36	204.8	1.53	164.35	46.68
1807 1-0284	10284	2	5/13/81	9300.33	1580.67	1088.1	21.96	9122.09	1552.78	124.83	21.22	146.05	1.53	172.36	204.8	1.53	164.35	46.68
1808 1-0351	10351	2	5/13/81	9300.33	1580.67	1088.1	21.96	9082.46	1543.64	138.66	23.57	162.23	0.86	140.6	258.2	184.76	52.61	
1809 2-2197	22197	4	9/30/94	3989.33	1580.67	5520	21.96	3767.72	1511.79	76.52	30.7	107.22	1.41	71.26	277.62	244.73	69.69	
1810 2-2644	22644	4	9/30/94	3989.33	1580.67	5520	21.96	3767.72	1511.79	76.52	30.7	107.22	1.41	71.26	277.62	244.73	69.69	
1811 2-2236	22236	5	9/30/94	4329.53	1576.47	5867	21.91	3817.84	1508.22	77.5	30.61	108.11	1.41	72.61	18.78	3.93	40.81	69.27
1812 2-1365	21365	5	9/30/94	4329.53	1576.47	5867	21.91	3817.84	1508.22	77.5	30.61	108.11	1.41	72.61	18.78	3.93	40.81	69.27
1813 2-1505	21505	9	9/30/94	3707.67	1335.39	5043.06	21.43	3659.82	1318.17	38.3	12.8	52.1	0.06	240.69	20.5	0.55	26.05	75.11
1814 2-1507	21507	9	9/30/94	3707.67	1335.39	5043.06	21.43	3659.82	1318.17	38.3	12.8	52.1	0.06	240.69	20.5	0.55	26.05	75.11
1815 2-1508	21508	9	9/30/94	3707.67	1335.39	5043.06	21.43	3659.82	1318.17	38.3	12.8	52.1	0.06	240.69	20.5	0.55	26.05	75.11
1816 2-1510	21510	9	9/30/94	3707.67	1335.39	5043.06	21.43	3659.82	1318.17	38.3	12.8	52.1	0.06	240.69	20.5	0.55	26.05	75.11
1817 2-1512	21512	9	9/30/94	3707.67	1335.39	5043.06	21.43	3659.82	1318.17	38.3	12.8	52.1	0.06	240.69	20.5	0.55	26.05	75.11
1818 1-0162	10162	2	5/13/81	10018.72	1572.28	11591	21.85	9872.42	1549.32	110.19	17.29	127.48	0.13	208.9	141.12	17.82	123.5	35.28
1819 1-1690	11690	1	2/17/79	10004.91	1568.09	11573	21.79	9921.9	1555.08	70.4	11.03	81.43	0.07	249.79	20.71	0.88	129.84	37.17
1820 5-0610	50610	1	2/17/79	10004.91	1568.09	11573	21.79	11326.61	1552.94	34.52	4.76	39.28	0.15	297.53	21.57	0.34	98.59	24.95
1821 1-0393	10393	3	5/13/81	10004.91	1568.09	11573	21.79	9858.81	1545.19	110.04	17.25	127.29	0.27	200.37	206.6	0.88	129.49	37.17
1822 2-0437	20437	4	9/30/94	3928.91	1568.09	5497	21.79	3793.28	1513.95	70.5	28.14	98.64	0.83	99.94	248.44	31.47	216.97	62.28
1823 2-2539	22539	7	9/30/94	11276.11	1563.89	12840	21.73	11167.62	1548.85	86.05	16.98	102.87	0.65	109	126.27	12.64	113.63	32.70
1824 6-4507	64507	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1825 6-4507	64507	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1826 6-4507	64507	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1827 6-5701	65701	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1828 6-5716	65716	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1829 6-5716	65716	7	9/30/94	7468	0	7468	347.00	6083.02	1203.04	85.89	13.93	97.98	0.11	221.18	208	18.96	219.04	63.12
1830 1-1177	101177	1	2/17/79	11233.3	1559.7	7468	0	11237.74	1552.03	101.16	20	121.16	1.49	79.41	267.59	23.21	248.38	70.43
1831 1-1212	101212	2	5/13/81	10239.49	1555.51	11795	21.61	10046.72	1532	115.26	6.91	56.97	0.02	280.61	65.91	0.14	65.91	16.92
1832 1-2869	12869	6	9/30/94	10239.49	1555.51	11795	21.61	10046.72	1532	115.26	6.91	56.97	0.02	280.61	65.91	0.14	65.91	16.92
1833 1-1544	11544	1	2/17/79	10036.68	1551.32	11958	21.56	9925.86	1533.88	104.65	14.01	104.66	0.15	220.26	20.71	0.57	124.39	31.76
1834 1-1741	11741	1	2/17/79	10036.68	1551.32	1195												

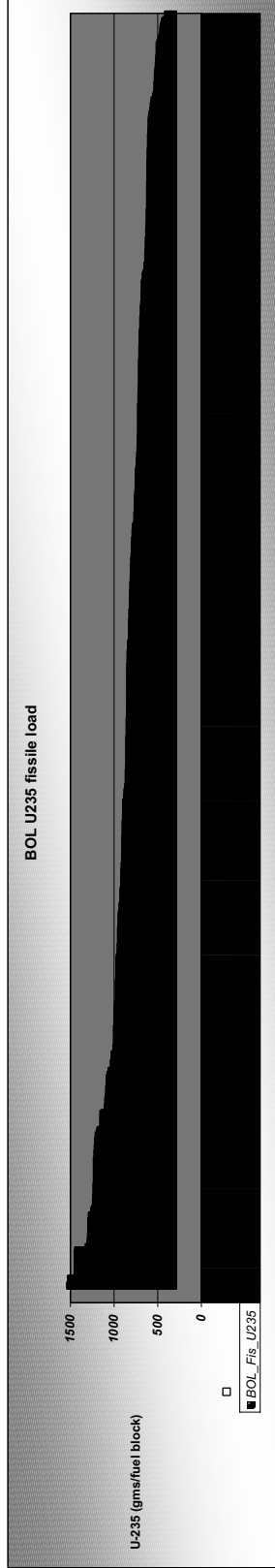
Element	Element	Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fis_U238	EOL_Fert_Th232	EOL_Fis_Th232	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss of BOL	
1918	1-2368	1	2/1/79	10372.42	21.03	10393.55	1508.05	35.18	5.13	40.31	0.01	289.7	20.77	0.08	145.7	5.4	41.17	12.24	
1919	1-0702	2	5/13/81	10369.42	21.03	10390.23	1495.94	95.17	13.97	108.14	0.15	212.81	20.18	0.59	123.46	14.9	108.56	32.28	
1920	1-0587	1	5/13/81	10372.42	21.03	10393.55	1495.94	95.17	13.97	108.14	0.15	212.81	20.18	0.59	123.46	14.9	108.56	32.28	
1921	1-0239	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1922	1-0239	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1923	1-1186	1	2/1/79	10110.61	1509.39	11620	335.34	20.97	9.68	77.63	0.05	248.2	20.43	0.27	86.14	10.24	75.9	21.93	
1924	1-1877	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1925	1-2068	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1926	1-2243	1	2/1/79	10114.61	1509.39	11624	335.34	20.97	9.68	77.63	0.05	248.2	20.43	0.27	86.14	10.24	75.9	21.93	
1927	1-2773	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1928	1-2873	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1929	1-2952	1	2/1/79	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1930	1-1708	2	5/13/81	10114.61	1509.39	11624	335.34	20.97	9.68	77.63	0.05	248.2	20.43	0.27	86.14	10.24	75.9	21.93	
1931	1-0887	1	5/13/81	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1932	1-4361	1	5/13/81	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1933	1-4634	1	5/13/81	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1934	5-1963	1	5/13/81	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1935	5-2946	1	5/13/81	10588.61	1509.39	1208	335.34	20.97	10.42	75.41	0.04	249.63	20.5	0.27	86.44	10.16	76.28	22.68	
1936	2-2424	2	3/31/86	5422	1501	6923	333.48	20.86	113.41	146.81	0.82	115.21	18.66	2.5	0.5	18.27	27.59	190.68	57.18
1937	2-2781	2	3/31/86	5414	1501	6915	333.48	20.86	113.41	146.81	0.82	115.21	18.66	2.5	0.5	18.27	27.59	190.68	57.18
1938	1-0705	1	2/1/79	10484.19	1496.81	11981	332.55	20.8	5.81	46.51	0.01	279.08	20.5	0.1	53.47	6.11	47.36	14.24	
1939	5-0279	1	2/1/79	11243.19	1496.81	12740	332.55	20.8	11213.23	1492.82	28.15	291.96	20.63	0.04	40.59	40.59	36.68	11.03	
1940	5-0365	1	2/1/79	11243.19	1496.81	12740	332.55	20.8	11213.23	1492.82	28.15	291.96	20.63	0.04	40.59	40.59	36.68	11.03	
1941	5-0375	1	2/1/79	11243.19	1496.81	12740	332.55	20.8	11213.23	1492.82	28.15	291.96	20.63	0.04	40.59	40.59	36.68	11.03	
1942	1-0342	1	5/13/81	10971.19	1496.81	11468	332.55	20.8	1123.07	1493.88	21.1	301.54	20.68	0.03	31.01	2.91	28.1	8.45	
1943	1-0911	1	5/13/81	10156.19	1496.81	11693	332.55	20.8	9751.92	1463.9	0.79	164.74	19.22	1.62	0.39	191.75	23.51	168.24	50.59
1944	1-2731	2	5/13/81	10342.19	1496.81	11859	332.55	20.8	10268.42	1486.13	63.21	247.11	20.3	0.25	85.44	9.67	78.77	22.78	
1945	5-0826	2	5/13/81	11305.19	1496.81	12802	332.55	20.8	11239.11	1488.06	57.04	250.06	20.43	0.17	82.49	7.92	74.57	22.42	
1946	5-1864	2	5/13/81	11243.19	1496.81	12740	332.55	20.8	11689.84	1487.05	8.29	241.61	20.39	0.21	90.94	6.7	82.24	24.73	
1947	5-2181	2	5/13/81	11243.19	1496.81	12740	332.55	20.8	11689.84	1487.05	8.29	241.61	20.39	0.21	90.94	6.7	82.24	24.73	
1948	2-2263	2	3/31/86	5438.19	1496.81	6935	332.55	20.8	5225.87	1437.82	104.49	258.79	20.42	0.18	73.76	7.04	66.72	20.06	
1949	2-2815	2	3/31/86	5438.19	1496.81	6935	332.55	20.8	5225.87	1437.82	104.49	258.79	20.42	0.18	73.76	7.04	66.72	20.06	
1950	1-1893	1	5/13/81	10282.38	1492.62	11775	331.61	20.74	1237.5	1482.7	97.04	267.1	20.8	0.52	221.02	30.04	190.98	57.43	
1951	1-0143	1	5/13/81	10347.38	1492.62	11840	331.61	20.74	1026.78	1481.64	65.76	250.13	20.35	0.26	81.48	10.12	71.36	21.52	
1952	1-0649	1	5/13/81	10995.38	1492.62	11488	331.61	20.74	9762.58	1457.85	148.37	213.88	19.09	0.39	105.26	12.11	93.15	28.09	
1953	1-0711	1	5/13/81	10303.38	1492.62	11876	331.61	20.74	10265.86	1475.72	92.1	233.57	20.13	0.3	126.76	14.09	112.67	33.98	
1954	1-0381	1	5/13/81	10153.38	1492.62	11696	331.61	20.74	10115.36	1479.74	73.53	233.57	20.13	0.35	98.04	11.4	86.64	26.13	
1955	1-1852	1	5/13/81	10282.38	1492.62	11876	331.61	20.74	10265.86	1475.72	92.1	233.57	20.13	0.3	126.76	14.09	112.67	33.98	
1956	1-1043	1	2/1/79	10290.58	1488.42	11779	330.68	20.68	10239.82	1481.08	45.73	233.57	20.13	0.28	93.11	10.62	82.49	24.88	
1957	1-1949	1	2/1/79	10302.58	1488.42	11791	330.68	20.68	10258.18	1482.01	40.65	233.57	20.13	0.21	54.21	6.17	48.04	14.53	
1958	1-1985	1	2/1/79	10302.58	1488.42	11791	330.68	20.68	10258.18	1482.01	40.65	233.57	20.13	0.21	54.21	6.17	48.04	14.53	
1959	1-0951	1	5/13/81	10331.58	1488.42	11820	330.68	20.68	10249.73	1476.55	69.5	233.57	20.13	0.3	92.85	10.58	82.27	24.88	
1960	1-1694	1	5/13/81	10631.58	1488.42	12120	330.68	20.68	10512.73	1471.79	93.32	233.57	20.13	0.3	92.85	10.58	82.27	24.88	
1961	1-1649	1	2/1/79	10280.77	1484.23	11765	329.75	20.62	10119.93	1471.79	37.61	233.57	20.13	0.19	50.59	5.77	44.82	13.59	
1962	1-2143	1	2/1/79	10380.77	1484.23	11865	329.75	20.62	10234.36	1477.53	42.25	233.57	20.13	0.2	57.05	6.41	50.64	15.36	
1963	1-2284	1	2/1/79	10380.77	1484.23	11865	329.75	20.62	10234.36	1477.53	42.25	233.57	20.13	0.2	57.05	6.41	50.64	15.36	
1964	1-0715	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1965	1-0891	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1966	1-1923	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1967	1-2189	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1968	1-2119	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1969	1-2362	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1970	1-2665	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1971	1-2758	1	2/1/79	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1972	1-0492	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1973	1-0612	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1974	1-1030	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1975	1-1361	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1976	1-1361	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1977	1-2458	1	5/13/81	10314.96	1480.04	11795	328.82	20.57	10289.96	1476.31	24.7	233.57	20.13	0.26	86.18	9.83	76.35	23.15	
1978	2-1707	2	3/31/86	5449.96	1480.04	6930	328.82												

Element	Element	Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fis_U235	BOL_Fis_U238	EOL_Fert_Th232	EOL_Fis_Th232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Loss - Decrease	% of BOL
1999 1-2783	12763	2	5/13/81	1483.27	1483.27	11626	325.09	20.33	10062.9	1448.89	80.89	11.66	92.65	0.1	216.03	19.66	109.06	12.37	96.69
1999 1-0411	10411	1	2/1/79	9912.82	1459.08	11372	324.16	20.27	9636.63	1447.7	66.5	9.79	76.29	0.05	236.77	19.72	85.39	10.37	78.02
1999 1-0851	10851	1	2/1/79	9912.82	1459.08	11372	324.16	20.27	9636.63	1447.7	66.5	9.79	76.29	0.05	236.77	19.72	85.39	10.37	78.02
1999 1-0904	10904	1	2/1/79	9912.82	1459.08	11372	324.16	20.27	9636.63	1447.7	66.5	9.79	76.29	0.05	236.77	19.72	85.39	10.37	78.02
1999 1-1108	11108	1	2/1/79	9912.82	1459.08	11372	324.16	20.27	9636.63	1447.7	66.5	9.79	76.29	0.05	236.77	19.72	85.39	10.37	78.02
1999 1-1279	12719	1	2/1/79	9912.82	1459.08	11372	324.16	20.27	9636.63	1447.7	66.5	9.79	76.29	0.05	236.77	19.72	85.39	10.37	78.02
1999 2-1120	21120	3	3/31/86	5407.92	1459.08	6867	324.16	20.27	5175.11	1410.73	101	27.25	128.25	1.15	101.83	17.17	222.33	30.76	191.57
1999 2-1519	21519	3	3/31/86	5407.92	1459.08	6867	324.16	20.27	5175.11	1410.73	101	27.25	128.25	1.15	101.83	17.17	222.33	30.76	191.57
1999 2-1778	21778	3	3/31/86	5407.92	1459.08	6867	324.16	20.27	5175.11	1410.73	101	27.25	128.25	1.15	101.83	17.17	222.33	30.76	191.57
1999 2-4001	24001	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
1999 2-4107	24107	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
2000 2-4512	24512	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
2001 2-5702	25702	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
2002 2-5708	25708	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
2003 2-5786	25786	7	9/30/94	4827	0	4827	324.00	0	3579.12	1118.28	61.55	19.23	80.78	0.4	112.31	16.38	200.9	21.32	178.58
2004 2-2642	12642	1	2/1/79	10162.12	1454.88	11617	323.23	20.22	10127.44	1449.92	32.32	4.63	36.95	0.06	280.04	19.98	107.46	25	228.11
2005 1-1015	11015	1	2/1/79	10119.12	1454.88	11574	323.23	20.22	10127.44	1449.92	32.32	4.63	36.95	0.06	280.04	19.98	107.46	25	228.11
2006 1-1136	11136	1	2/1/79	10211.31	1450.69	11662	322.30	20.16	10113.67	1436.82	81.4	11.56	92.96	0.1	222.39	19.47	107.46	25	228.11
2007 1-1669	11669	2	5/13/81	10288.31	1450.69	11739	322.30	20.16	10113.67	1436.82	81.4	11.56	92.96	0.1	222.39	19.47	107.46	25	228.11
2008 2-5399	25399	2	5/13/81	10288.31	1450.69	11739	322.30	20.16	10113.67	1436.82	81.4	11.56	92.96	0.1	222.39	19.47	107.46	25	228.11
2009 2-5773	25773	1	2/1/79	10288.31	1450.69	11739	322.30	20.16	10113.67	1436.82	81.4	11.56	92.96	0.1	222.39	19.47	107.46	25	228.11
2010 1-1032	11032	9	9/30/94	4284.88	1221.5	5506.38	320.17	19.6	4246.64	1211.17	30.27	8.63	38.9	0.3	227.18	19.07	107.46	25	228.11
2011 1-0553	10553	2	5/13/81	10535.08	1433.92	11969	318.57	19.98	10052.89	1430.99	45.16	6.43	51.59	0.02	259.91	19.65	107.46	25	228.11
2012 1-1939	11939	5	9/30/94	10699.66	1421.34	12121	315.78	19.75	10347.45	1428.15	78.27	10.65	88.92	0.08	220.99	19.31	107.46	25	228.11
2013 1-2068	12068	5	9/30/94	10699.66	1421.34	12121	315.78	19.75	10347.45	1428.15	78.27	10.65	88.92	0.08	220.99	19.31	107.46	25	228.11
2014 1-2442	12442	5	9/30/94	10699.66	1421.34	12121	315.78	19.75	10347.45	1428.15	78.27	10.65	88.92	0.08	220.99	19.31	107.46	25	228.11
2015 1-2469	12469	5	9/30/94	10699.66	1421.34	12121	315.78	19.75	10347.45	1428.15	78.27	10.65	88.92	0.08	220.99	19.31	107.46	25	228.11
2017 1-2628	12628	5	9/30/94	10699.66	1421.34	12121	315.78	19.75	10347.45	1428.15	78.27	10.65	88.92	0.08	220.99	19.31	107.46	25	228.11
2019 3-4018	34018	9	9/30/94	2657.12	1863.78	3740.9	310.28	19.07	2658.37	1791.59	16.99	7.67	24.36	0.01	249.63	18.57	107.46	25	228.11
2020 2-1888	21888	4	9/30/94	4159.82	1396.18	5556	305.53	19.1	3972.11	1333.86	83.51	28.03	111.54	1.58	61.9	16.49	107.46	25	228.11
2021 2-1940	21940	6	9/30/94	4229.78	1375.22	5605	305.53	19.11	4041.04	1333.86	84.74	27.95	112.29	1.46	62.17	16.27	107.46	25	228.11
2022 2-2743	22743	5	9/30/94	4279.97	1371.03	5651	304.60	19.05	4098.35	1311.88	87.52	28.1	115.82	1.46	61.99	16.27	107.46	25	228.11
2023 2-0942	20942	6	9/30/94	4279.97	1371.03	5651	304.60	19.05	4098.35	1311.88	87.52	28.1	115.82	1.46	61.99	16.27	107.46	25	228.11
2024 2-1449	21449	5	9/30/94	4196.16	1366.84	5563	303.67	18.99	4000	1302.94	87.14	27.41	111.55	1.46	61.99	16.27	107.46	25	228.11
2025 2-1552	21552	4	9/30/94	4258.55	1358.45	5617	301.81	18.88	4124.97	1315.85	87.14	27.41	111.55	1.46	61.99	16.27	107.46	25	228.11
2026 2-4469	24469	2	5/13/81	4785.63	1298.12	6083.75	298.27	18.8	3634.44	1108.64	58.7	18.41	71.11	108.64	17.11	107.46	25	228.11	
2027 2-4509	24509	8	9/30/94	4739.43	1298.12	6083.75	298.27	18.8	3634.44	1108.64	58.7	18.41	71.11	108.64	17.11	107.46	25	228.11	
2028 6-4101	64101	8	9/30/94	5462.1	1316.52	6778.63	298.27	18.8	3634.44	1108.64	58.7	18.41	71.11	108.64	17.11	107.46	25	228.11	
2029 6-4101	64101	8	9/30/94	5462.1	1316.52	6778.63	298.27	18.8	3634.44	1108.64	58.7	18.41	71.11	108.64	17.11	107.46	25	228.11	
2030 2-2233	22233	4	9/30/94	4249.32	1341.68	5591	298.08	18.64	4088.22	1290.82	84.85	26.79	111.64	1.1	63.59	16.21	107.46	25	228.11
2031 2-4584	24584	8	9/30/94	4751.83	1337.49	6089.32	297.15	18.58	4852.56	1300.77	80.14	21.48	101.62	0.66	105.88	16.83	107.46	25	228.11
2032 2-1028	21028	3	3/1/86	4989.51	1337.49	6327	297.15	18.58	4852.56	1300.77	80.14	21.48	101.62	0.66	105.88	16.83	107.46	25	228.11
2033 2-0461	20461	1	2/1/79	4251.51	1337.49	5589	292.49	18.29	4707.8	1278.59	79.61	21.82	101.23	0.94	82.3	16.38	107.46	25	228.11
2034 2-1726	21726	3	3/1/86	4847.48	1316.52	6164	289.70	18.12	4705.45	1275.06	68.54	18.59	87.11	0.36	124.73	16.75	107.46	25	228.11
2035 2-0642	20642	4	9/30/94	4812.06	1303.94	6116	289.70	18.12	4705.45	1275.06	68.54	18.59	87.11	0.36	124.73	16.75	107.46	25	228.11
2036 2-2536	22536	8	9/30/94	4812.06	1303.94	6116	289.70	18.12	4705.45	1275.06	68.54	18.59	87.11	0.36	124.73	16.75	107.46	25	228.11
2037 3-5086	35086	8	9/30/94	3840.9	3840.9	0	289.68	18.27	2698.99	1088.24	30.84	12.46	43.3	0.08	167.23	17.24	107.46	25	228.11
2038 3-5670	35670	8	9/30/94	3840.9	3840.9	0	289.68	18.27	2698.99	1088.24	30.84	12.46	43.3	0.08	167.23	17.24	107.46	25	228.11
2039 3-2411	32411	7	9/30/94	3566	0	3566	289.00	0	2490.12	1005.88	34.13	13.79	41.37	0.07	173.48	17.3	107.46	25	228.11
2040 2-1909	21909	5	9/30/94	4367.25	1298.75	5667	288.76	18.06	4215.75	1264.22	81.22	24.17	106.39	0.9	84.92	15.94	107.46	25	228.11
2041 2-2429	22429	5	9/30/94	4367.25	1298.75	5667	288.76	18.06	4215.75	1264.22	81.22	24.17	106.39	0.9	84.92				

Element	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	BOL_Fis_Th232	BOL_Fert_Th232	EOL_Fert_Th232	EOL_Fis_Th232	Tot EOL_Fis_Th232	EOL_Fert_U235	EOL_Fis_U235	EOL_Fert_U238	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% Loss
2060 2-1860	5	9/30/94	6450.19	1146.81	7599	6324.75	1126.47	88.25	15.72	103.97	0.32	130.62	14.74	1.09	0.43	124.61	17.34	107.37	42.07
2061 2-1862	5	9/30/94	6212.19	1146.81	7361	6025.76	1114.35	110.82	20.49	131.31	0.92	92.22	14.14	2.05	0.45	163.01	22.99	140.02	94.86
2062 2-0065	20085	2/1/79	6020.38	1444.62	7165	5957.61	1132.69	51.17	9.73	60.9	0.08	166.93	15.3	0.38	0.27	85.37	10.38	74.99	23.40
2063 2-0211	20211	2/1/79	6020.38	1444.62	7165	5958.88	1133.39	25.24	4.8	30.04	0.01	215.39	15.63	0.09	0.19	38.91	5.08	33.83	13.30
2064 2-0066	20086	2/1/79	6020.38	1444.62	7165	5948.06	1141.06	17.7	3.36	70.21	0.13	155.35	15.19	0.52	0.29	96.95	12.03	86.92	34.18
2065 2-0068	20088	2/1/79	6020.38	1444.62	7165	6001.66	1136.11	38.46	7.31	45.77	0.03	227.51	15.71	0.25	0.16	26.79	3.57	23.22	9.13
2066 2-2102	22102	2/1/79	6020.38	1444.62	7165	5975.64	1132.56	51.56	9.31	68.31	0.03	189.94	15.49	0.21	0.23	66.35	7.75	58.6	23.04
2067 2-2260	22260	2/1/79	6020.38	1444.62	7165	5957.18	1132.56	51.56	9.31	68.31	0.03	189.94	15.49	0.21	0.23	66.35	7.75	58.6	23.04
2068 2-2548	22548	2/1/79	6020.38	1444.62	7165	5946.46	1130.57	58.33	11.09	69.42	0.12	157.64	15.18	0.51	0.31	96.66	11.91	84.75	29.45
2069 2-2663	22663	2/1/79	6020.38	1444.62	7165	5947.33	1130.73	57.5	10.93	68.43	0.12	156.82	15.22	0.49	0.28	97.48	11.7	85.78	33.33
2070 2-2800	22800	2/1/79	6020.38	1444.62	7165	5975.35	1136.06	38.75	7.37	46.12	0.03	188.41	15.47	0.22	0.24	85.89	7.83	58.06	22.83
2071 7-1992	71992	9/30/94	5471	0	5471	4504.7	884.49	47.81	9.39	57.2	0.15	115.84	14.07	0.62	0.18	137.16	10.19	126.97	50.19
2072 2-0298	20298	2/1/79	6119.93	1136.23	7397	6119.93	1110.5	90.79	16.48	107.27	0.58	103.81	14.49	1.37	0.34	148.63	18.19	130.44	51.67
2073 2-0415	20415	2/1/79	6290.77	1136.23	7397	6117.16	1120.05	66.36	12.04	78.4	0.17	141.93	14.98	0.65	0.29	110.51	12.98	97.53	38.63
2074 2-0532	20532	2/1/79	6152.78	1136.23	7397	6152.78	1116.64	75.66	13.73	89.39	0.29	125.42	14.81	0.88	0.31	127.02	14.92	112.1	44.41
2075 2-0806	20806	2/1/79	6196.1	1136.23	7397	6196.1	1124.5	51.74	9.39	61.13	0.07	164.09	15.2	0.38	0.27	88.35	10.04	78.31	31.02
2076 2-2084	22084	2/1/79	6164.82	1136.23	7397	6164.82	1118.82	71.62	13.01	84.67	0.19	146.26	14.86	0.7	0.34	106.18	14.05	92.13	36.50
2077 2-2531	22531	2/1/79	6158.57	1136.23	7397	6158.57	1117.69	72.92	13.23	86.15	0.25	130.18	14.84	0.83	0.33	122.26	14.39	107.87	42.73
2078 2-2851	22851	2/1/79	6151.37	1136.23	7397	6151.37	1116.38	76.08	13.81	89.89	0.3	123.6	14.82	0.88	0.29	128.84	14.98	113.86	45.10
2079 2-2884	22884	2/1/79	6037.77	1136.23	7174	5715.62	1075.61	120.76	22.73	143.49	3.42	30.48	12.94	3.93	0.43	221.96	27.09	194.87	77.19
2080 2-0455	20455	2/1/79	5847.96	1132.04	6980	5797.29	1122.23	42.55	8.24	50.79	0.05	177.11	15.23	0.28	0.27	74.39	8.79	65.6	23.99
2081 2-2158	21518	2/1/79	5847.96	1132.04	6980	5801.59	1123.07	39.57	7.66	47.23	0.04	183	15.23	0.26	0.26	68.5	8.16	60.34	23.99
2082 2-2385	22385	2/1/79	5847.96	1132.04	6980	5812.56	1125.65	29.41	5.69	35.1	0.01	199.37	15.41	0.13	0.21	52.13	6.03	46.1	18.33
2083 2-0518	20518	2/1/79	6041.96	1132.04	7174	5939.26	1112.8	75.65	14.17	89.82	0.26	135.05	14.72	0.88	0.38	116.45	15.43	101.02	40.17
2084 3-2015	32015	9/30/94	6008.96	1132.04	4041	6043.04	1107.93	40.08	15.6	58.68	0.2	109.68	14.63	1.07	0.25	141.82	16.92	124.9	49.66
2085 2-0047	20047	2/1/79	6068.34	1132.66	7192	6043.04	1118.97	23.51	4.35	27.86	0.01	215.91	15.36	0.19	0.19	33.73	4.81	28.12	11.66
2086 2-0732	20732	2/1/79	5882.34	1123.66	7016	5823.09	1110.45	55.1	10.51	66.61	0.11	157.26	14.95	0.46	0.29	92.38	11.26	81.12	32.49
2087 3-0069	30069	4	9/30/94	3003.54	1194.46	2357.72	1095.3	41.44	15.45	56.69	0.22	105.46	14.45	1.09	0.25	143.23	16.79	126.44	50.84
2088 2-2187	22187	2/1/79	6154.92	1111.08	7266	6100.72	1101.29	45.43	8.2	53.63	0.03	172.96	14.94	0.29	0.27	73.89	8.76	65.13	26.38
2089 2-2769	22769	2/1/79	6154.92	1111.08	7266	6089.33	1099.24	53.31	9.62	62.93	0.03	167.82	14.8	0.38	0.31	79.03	10.31	68.72	27.84
2090 2-1131	21131	2/1/79	6374.5	1098.5	7473	6264.67	1079.57	78.32	13.5	91.82	0.28	128.77	14.29	0.81	0.3	115.28	14.61	100.67	41.25
2091 2-2129	21299	2/1/79	6374.5	1098.5	7473	6249.05	1079.57	88.78	11.85	80.63	0.19	133.67	14.48	0.62	0.26	110.38	12.75	97.63	40.00
2092 2-1835	21835	2/1/79	6374.5	1098.5	7473	6220.87	1072.03	95.19	16.4	111.59	0.69	93.37	13.96	1.42	0.31	150.72	18.13	132.59	54.33
2093 2-2693	22693	2/1/79	6374.5	1098.5	7473	6285.95	1079.78	79.5	13.7	93.2	0.28	129.23	14.3	0.86	0.35	114.82	14.91	99.91	40.94
2094 6-1715	61715	2/1/79	7371.89	1090.11	8462	7269.87	1077.96	61.9	9.15	71.05	0.12	138	14.63	0.4	0.18	104.19	9.73	94.46	39.00
2095 6-0209	60209	3	3/31/86	7371.89	1090.11	7195.54	1064.04	88.7	14.6	113.3	0.42	75.03	14.03	1.31	0.21	167.16	16.12	151.04	62.36
2096 6-0961	60961	3	3/31/86	7371.89	1090.11	7234.36	1069.78	86.78	12.83	99.61	0.42	97.31	14.27	1.33	0.21	144.88	13.93	130.95	54.07
2097 6-0988	60988	4	9/30/94	7371.89	1090.11	7192.25	1063.54	99.42	14.7	114.12	0.79	75.4	14	1.33	0.21	166.79	16.24	150.55	62.16
2098 6-2593	62593	4	9/30/94	7371.89	1090.11	7143.06	1056.28	109.62	16.21	125.83	1.12	54.51	13.69	1.83	0.23	187.68	18.27	169.41	69.95
2099 6-0732	60732	5	9/30/94	7371.89	1090.11	7169.25	1060.16	104.72	15.49	120.21	1.12	65.74	13.77	1.68	0.27	176.45	17.44	159.01	65.66
2100 3-1432	31432	8	9/30/94	3642.48	0	2672.75	897.62	36.24	12.17	48.41	0.16	114.49	14.08	0.24	0.24	125.54	13.28	112.26	46.77
2101 3-4585	34585	8	9/30/94	3642.48	0	2691.09	903.79	28.1	9.44	37.54	0.05	153.98	14.38	0.44	0.27	86.05	10.15	75.9	31.62
2102 3-5347	35347	8	9/30/94	3706.81	0	2751.12	892.74	33.93	11.01	44.94	0.12	127.84	14.08	0.68	0.24	110.21	11.93	98.28	41.29
2103 6-2966	62966	4	9/30/94	7343.85	1069.15	7097.17	1032.23	114.58	16.68	131.26	1.82	47.65	13.33	2.15	0.27	189.88	19.1	170.78	71.90
2104 6-0937	60937	5	9/30/94	7343.85	1069.15	7097.17	1032.23	114.58	16.3	128.27	1.65	46.57	13.33	1.99	0.24	190.96	18.53	172.43	72.59
2105 6-0985	60985	5	9/30/94	7343.85	1069.15	7074.17	1029.9	116.87	17.01	133.88	2.07	42.54	13.1	2.33	0.28	194.99	19.62	175.37	73.83
2106 6-0729	60729	6	9/30/94	7343.85	1069.15	7106.31	1034.57	110.95	16.15	127.1	1.53	50.24	13.38	1.87	0.23	187.29	18.25	169.04	71.17
2107 6-0935	60935	6	9/30/94	7343.85	1069.15	7080.71	1030.83	116.36	16.94	133.3	1.98	45.1	13.13	2.25	0.27	192.43	19.46	172.97	72.82
2108 6-1065	61065	6	9/30/94	7343.85	1069.15	7148.64	1040.72	102.94	14.99	117.93	1.04	67.97	13.55	1.56	0.26	169.56	16.81	152.75	64.31
2109 3-2612	32612	7	9/30/94	3527	0	2624.83	820.14	39.16	12.24	51.4	0.23	89.73	12.77	1.03	0.22	146.27	13.49	132.78	56.26
2110 3-4146	34146	7	9/30/94	3527	0	2617.24	817.78	41.28	12.9										

Element	Element N	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total Th232	BOL_Fis_T h232	BOL_Fert_Th232	EOL_Fis_T h232	EOL_Fert_Th232	EOL_Fis_U233	EOL_Fert_U233	Tot EOL_Fis_U233	EOL_Fis_U235	EOL_Fert_U235	EOL_Fis_U238	EOL_Fert_U238	EOL_Fis_Np237	EOL_Fert_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	% of BOL
2131	20265	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4562.77	1002.51	81.67	17.94	99.61	0.84	67.09	12.88	1.79	0.26	162.99	19.99	143	62.15	
2132	20577	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2133	21044	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2134	21044	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2135	21069	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2136	21069	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2137	31996	3	3/31/86	4713.39	1035.61	5749	230.08	14.39	4515.02	992.02	86.85	19.52	106.37	1.6	42.2	12.87	2.53	0.29	187.88	22.34	165.54	71.95	
2138	32600	5	9/30/94	3126.93	1002.07	4129	222.63	13.92	3055.49	979.17	45.36	15.22	62.72	0.35	78.35	12.88	1.26	0.22	144.28	16.7	127.58	57.31	
2139	32698	6	9/30/94	3126.93	1002.07	4129	222.63	13.92	3055.49	979.17	45.36	15.22	62.72	0.35	78.35	12.88	1.26	0.22	144.28	16.7	127.58	57.31	
2140	32658	6	9/30/94	3126.93	1002.07	4129	222.63	13.92	3055.49	979.17	45.36	15.22	62.72	0.35	78.35	12.88	1.26	0.22	144.28	16.7	127.58	57.31	
2141	75789	8	9/30/94	3987.6	0	3987.6	217.86	13.73	3119.15	821.34	28.11	7.4	58.25	0.19	101.74	12.89	1.05	0.22	132.53	15.65	116.88	52.50	
2142	30898	8	3/31/86	3512.05	955.95	4468	212.38	13.28	3462.99	942.57	36.62	10.02	46.84	0.09	119.37	12.66	0.48	0.16	89.04	7.91	81.13	37.24	
2143	32850	3	9/30/94	3512.05	955.95	4468	212.38	13.28	3462.99	942.57	36.62	10.02	46.84	0.09	119.37	12.66	0.48	0.16	89.04	7.91	81.13	37.24	
2144	24277	22477	5	9/30/94	5391.79	916.21	6310	204.00	12.76	5093.31	86.81	9.89	123.72	3.18	19.63	10.54	3.07	0.31	184.37	21.38	162.99	79.90	
2145	3-0923	30923	4	9/30/94	914.02	4032	203.07	12.7	3045.93	892.89	44.83	13.14	57.97	0.26	80.67	11.75	0.97	0.19	122.4	14.3	108.1	53.23	
2146	3-1889	31889	4	9/30/94	914.02	4032	203.07	12.7	3045.93	892.89	44.83	13.14	57.97	0.26	80.67	11.75	0.97	0.19	122.4	14.3	108.1	53.23	
2147	2-2761	22761	5	9/30/94	5409.17	909.83	6319	202.14	12.64	5169.11	869.46	100.58	117.5	2.01	31.39	10.88	2.37	0.26	170.75	19.55	151.2	74.80	
2148	2-2028	20228	2	5/13/81	5593.37	905.63	6419	201.20	12.58	5429.04	891.78	100.01	70.96	0.18	105.3	11.96	0.54	0.2	95.9	10.75	85.15	42.32	
2149	2-1520	21520	1	2/1/79	6114.56	901.44	7016	200.27	12.53	6051.76	892.18	50.84	7.5	58.34	0.08	129.58	12.09	0.29	19	70.69	7.98	31.31	
2150	2-1520	21520	1	2/1/79	6114.56	901.44	7016	200.27	12.53	6051.76	892.18	50.84	7.5	58.34	0.08	129.58	12.09	0.29	19	70.69	7.98	31.31	
2151	3-2421	32421	6	9/30/94	2908.52	880.48	3789	195.61	12.23	2822.23	854.32	45.97	13.92	59.89	0.44	55.09	11.14	0.28	88.47	11.11	77.36	38.63	
2152	3-0900	30900	4	9/30/94	2959.91	872.09	3832	193.75	12.12	2872.47	846.32	46.59	13.73	60.32	0.45	54.39	11.04	0.28	140.52	15.39	125.13	63.97	
2153	2-1468	21468	1	2/1/79	5955.68	855.32	6811	190.03	11.89	5910.98	848.9	38.27	5.5	43.77	0.03	138.18	11.59	0.15	139.36	15.18	124.18	64.09	
2154	2-1324	21324	1	2/1/79	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2155	2-2198	22198	1	2/1/79	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2156	2-0600	20600	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2157	2-0655	20655	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2158	2-1533	21533	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2159	2-1533	21533	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2160	2-1570	21570	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2161	2-1570	21570	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2162	2-2801	22801	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2163	2-2893	22893	2	5/13/81	5740.07	846.93	6587	188.16	11.77	5719.22	843.71	20.22	2.98	43.77	0.03	138.18	11.59	0.15	51.85	11.51	46.04	24.23	
2164	2-1529	21529	2	5/13/81	5778.26	842.74	6621	187.23	11.71	5682.18	828.73	67.68	77.55	0.23	92.57	11.07	0.58	0.16	94.66	10.63	84.03	44.88	
2165	2-0827	20827	1	2/1/79	5442.84	830.16	6273	184.44	11.54	5394.63	822.81	40.32	6.15	46.47	0.04	127.78	11.19	0.2	116	56.66	6.51	50.15	
2166	2-2029	22029	1	2/1/79	5442.84	830.16	6273	184.44	11.54	5394.63	822.81	40.32	6.15	46.47	0.04	127.78	11.19	0.2	116	56.66	6.51	50.15	
2167	2-2722	22722	1	2/1/79	5442.84	830.16	6273	184.44	11.54	5394.63	822.81	40.32	6.15	46.47	0.04	127.78	11.19	0.2	116	56.66	6.51	50.15	
2168	2-2733	22733	1	2/1/79	5442.84	830.16	6273	184.44	11.54	5394.63	822.81	40.32	6.15	46.47	0.04	127.78	11.19	0.2	116	56.66	6.51	50.15	
2169	2-0980	20980	1	2/1/79	5996.41	817.59	6814	181.64	11.36	5959.64	812.57	22.89	3.49	26.38	0.01	153.73	11.35	0.06	141.49	4.66	36.83	20.28	
2170	7-2499	72499	3	9/30/94	5396.38	796.62	6193	176.98	11.07	5324.04	787.4	46.76	6.92	53.88	0.1	96.85	10.68	0.32	80.13	7.36	72.77	41.12	
2171	7-1652	71652	4	9/30/94	5396.38	796.62	6193	176.98	11.07	5324.04	787.4	46.76	6.92	53.88	0.1	96.85	10.68	0.32	80.13	7.36	72.77	41.12	
2172	7-1451	71451	1	2/1/79	5296.92	763.08	6059	169.53	10.6	5277.45	761.71	9.05	1.31	10.36	0.0	154.1	10.55	0.01	154.3	9.57	8.86	49.07	
2173	7-1670	71670	2	5/13/81	5296.92	763.08	6059	169.53	10.6	5277.45	761.71	9.05	1.31	10.36	0.0	154.1	10.55	0.01	154.3	9.57	8.86	49.07	
2174	7-1630	71630	5	9/30/94	5340.92	763.08	6104	169.53	10.6	5251.73	750.33	58.29	8.33	66.62	0.24	129.36	10.45	0.07	97.45	8.99	36.64	21.61	
2175	7-0807	70807	6	9/30/94	5340.92	763.08	6104	169.53	10.6	5251.73	750.33	58.29	8.33	66.62	0.24	129.36	10.45	0.07	97.45	8.99	36.64	21.61	
2176	3-0787	30787	3	3/31/86	3445.31	754.69	4200	167.67	10.49	3385.55	741.61	41.51	50.6	0.1	89.71	9.97	0.53	87.3	8.71	85.09	50.19		
2177	3-1719	31719	3	3/31/86	3445.31	754.69	4200	167.67	10.49	3385.55	741.61	41.51	50.6	0.1	89.71	9.97	0.53	87.3	8.71	85.09	50.19		
2178	3-1766	31766	3	3/31/86	3445.31	754.69	4200	167.67	10.49	3385.55	741.61	41.51	50.6	0.1	89.71	9.97	0.53	87.3	8.71	85.09	50.19		
2179	3-1759	31759	3	3/31/86	3445.31	754.69	4200	167.67	10.49	3385.55	741.61	41.51	50.6	0.1	89.71	9.97	0.53	87.3	8.71	85.09	50.19		
2180	3-0919	30919	1	2/1/79	3928.55	692.45	4621	147.18	9.21	3910.66	659.44	16.18	19.91	0.08	119.94	9.07	0.05	108	27.24	2.86	16.56		
2181	3-1814	31814	2	5/13/81	3928.55	692.45	4621	147.18	9.21	3910.66	659.44	16.18	19.91	0.08	119.94	9.07	0.05	108					

Element	Element Seg	Date	BOL_Fert_Th232	BOL_Fis_Th232	Total_Th232	BOL_Fert_U235	BOL_Fis_U235	EOL_Fert_Th232	EOL_Fis_Th232	EOL_Fert_U235	EOL_Fis_U235	Tot EOL_Fis_U235	EOL_Fis_U238	EOL_Fis_Np237	EOL_Fis_Pu239	Depletion	Fissile Additions	Net Fiss. Decrease	Net Loss - % of BOL			
2202	8-0199	80199	7	9/30/94	0	0	0	0	0	0	15.53	0	15.53	0.26	19.67	3.38	0.74	0.12	-19.67	0.86	-20.53	NA



	(gms BOL ²³⁵ U)
Sum	1264927.5
Average	574.44462
High value	1256.61
Low value	131.34

Appendix C: Uranium/Thorium Fuel Loading - Product Specification

Table C-1. Uranium and Thorium Loading for Fuel Elements [Ref. 8, pgs. 6-20 to 6-26]

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Fuel elements	101	1	470	437.81	12941	12941
90-R1801-110	102	2	361	336.27	11652	11652
	103	3	663	617.58	10757	10757
	104	4	493	459.23	9276	9276
	105	5	751	699.56	11198	11198
	106	6	562	523.50	9871	9871
	107	7	860	801.09	11140	11140
	108	8	655	610.13	9987	9987
	109	9	612	570.08	12177	12177
	110	10	440	409.86	10213	10213
	111	11	742	691.17	12687	12687
	112	12	552	514.19	11034	11034
Control rod elements	113	1	268	249.64	7363	7363
90-R1801-210	114	2	206	191.89	6630	6630
	115	3	377	351.18	6121	6121
	116	4	280	260.82	5278	5278
	117	5	427	397.75	6371	6371
	118	6	320	298.08	5616	5616
	119	7	489	455.50	6338	6338
	120	8	373	347.45	5682	5682
	121	9	348	324.16	6928	6928
	122	10	250	232.88	5811	5811
	123	11	422	393.09	7218	7218
	124	12	314	292.49	6278	6278

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*	
Short control rod elements 90-R1801-310	125	2	150	139.73	4844	4844	
	126	4	905	843.01	3856	3856	
	127	6	234	217.97	4103	4103	
	128	8	272	253.37	4152	4152	
	129	10	183	170.46	4246	4246	
	130	12	229	213.31	4587	4587	
Fuel element 90-R1801-410	131	1	470	437.81	12941	12941	
	132	5	751	699.56	11198	11198	
	133	7	869	809.47	11140	11140	
	134	9	612	570.08	12177	12177	
	135	11	742	691.17	12687	12687	
Fuel elements with buffer 90-R1801-510	136	1	318	---	8751	---	
			13	118	406.13	4781	13532
	137	2	245	---	7880	---	
			13	139	357.70	4781	12661
	138	7	582	---	7534	---	
			13	139	671.61	4781	12315
	139	8	443	---	6753	---	
			13	139	542.13	4781	11534
	140	11	502	---	8579	---	
			13	139	597.09	4781	13360
141	12	373	---	7462	---		
		13	139	476.93	4781	12243	

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
90-RI801-520	142	1	376	---	10338	---
		13	86	430.35	2970	13308
	143	2	289	---	9309	---
		13	86	349.31	2970	12279
	144	7	687	---	8900	---
		13	86	720.05	2970	11870
	145	8	524	---	7978	---
		13	86	568.22	2970	10948
	146	11	593	---	10135	---
		13	86	632.49	2970	13105
147	12	441	---	8815	---	
	13	86	490.90	2970	11785	
90-R1801-530	148	1	260	---	7140	---
		13	193	421.97	6620	13760
	149	2	199	---	6429	---
		13	193	365.15	6620	13049
	150	7	474	---	6146	---
		13	193	621.31	6620	12766
	151	8	361	---	5510	---
		13	193	516.05	6620	12130
	152	11	409	---	7000	---
		13	193	560.76	6620	13620
153	12	304	---	6088	---	
	13	193	462.96	6620	12708	

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
90-R1801-540	154	1	318	---	8751	---
		13	139	425.70	4781	13532
	155	2	245	---	7880	---
		13	139	357.70	4781	12661
	156	7	582	---	7534	---
		13	139	671.61	4781	12315
	157	8	443	---	6753	---
		13	139	542.13	4781	11534
	158	11	502	---	8579	---
		13	139	597.09	4781	13360
159	12	373	---	7462	---	
	13	139	476.93	4781	12243	
90-R1801-550	160	1	260	---	7164	---
		13	193	421.97	6591	13755
	161	2	199	---	6452	---
		13	193	365.15	6591	13043
	162	7	475	---	6168	---
		13	193	622.24	6591	12759
	163	8	362	---	5529	---
		13	193	516.98	6591	12120
	164	11	410	---	7025	---
		13	193	561.69	6591	13616
165	12	305	---	6110	---	
	13	193	463.89	6591	12701	

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Control rod elements with buffer composition 90-R1801-610	166	13	245	228.22	8402	8402
Short control rod elements with buffer composition 90-R1801-710	167	13	179	166.74	6139	6139
Surveillance fuel elements 90-R1801-810	168	1	470	437.81	12941	12941
	169	2	361	336.27	11652	11652
	170	3	663	617.58	10757	10757
	171	4	493	459.23	9276	9276
	171	5	751	699.56	11198	11198
	173	6	562	523.50	9871	9871
	174	9	612	570.08	12177	12177
Surveillance control elements 90-R1801-820	175	10	440	409.86	10213	10213
	176	1	268	249.64	7363	7363
	177	5	427	397.75	6371	6371
Surveillance fuel elements with buffer composition 90-R1801-830	178	9	348	324.16	6928	6928
	179	7	474	---	6146	---
	180	11	409	---	7000	---
		13	193	560.76	6620	13620

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Neutron source fuel element 90-R1801-120	181	5	751	699.56	11198	11198
Fuel elements 90-R1802-110	182	14	959	893.31	11130	11130
	183	15	573	533.75	8421	8421
	184	16	1,174	1093.58	11418	11418
	185	17	701	652.98	8660	8660
Control rod elements 90-R1802-210	186	14	546	508.60	6333	6333
	187	15	326	303.67	4791	4791
	188	16	668	622.24	6497	6497
	189	17	399	371.67	4927	4927
Bottom control rod element 90-R1802-310	190	17	291	271.07	3600	3600
	191	15	238	221.70	3500	3500
Control rod element 90-R1802-610	192	18	355	330.68	7505	7505
Bottom control rod element 90-R1802-710	193	18	259	241.26	5483	5483
Fuel element assembly with buffer 90-R1802-510	194	16	794	---	77122	---
		18	202	927.77	4271	81393
	195	17	474	---	5856	---
		18	202	629.69	4271	10127

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Fuel element assembly with buffer 1-0-R1802-520	196	16 18 17 18	938 125 560 125	--- 990.18 --- 638.08	9121 2653 6918 2653	--- 11774 --- 9571
Fuel element assembly with buffer 90-R1802-530	198 199	16 18 17 18	648 280 387 280	--- 864.43 --- 621.31	6300 5913 4778 5913	--- 12213 --- 10691
Fuel element assembly with buffer 90-R1802-540	200 201	16 18 17 18	794 202 474 202	--- 927.77 --- 629.69	7722 4271 5856 4271	--- 11993 --- 10127
Fuel element assembly with buffer 90-R1802-550	202 203	16 18 17 18	650 278 388 278	--- 864.43 --- 620.38	6322 5888 4794 5888	--- 12210 --- 10682
Fuel element assembly with neutron source Location 90-R1802-120	204	14	959	893.31	11130	11130
FSV fuel test element numbers FTE-7 and FTE-8 90-R1802-190	209	14	940	875.61	11105	11105

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Fuel elements	210	19	1,021	951.06	10837	10837
90-R1803-110	211	20	620	577.53	8770	8770
	212	21	1,259	1172.76	11025	11025
	213	22	755	703.28	9145	9145
	214	18	42	---	884	---
		19	953	926.84	10110	10994
Control rod elements	215	19	581	541.20	6166	6166
90-RI803-210	216	20	353	328.82	4990	4990
	217	21	716	666.95	6273	6273
	218	14	509	---	5900	---
		19	39	510.46	415	6315
Fuel element assembly with neutron source location	219	18	42	---	884	---
90-R1803-120		19	953	926.84	10110	10994
Bottom control rod element	220	20	258	240.33	3646	3646
90-RI803-310	221	22	314	292.49	3802	3802
Fuel element assembly	222	23	946	881.20	12465	12465
90-R1803-510	223	24	567	528.16	9741	9741
Control rod element	224	23	538	501.15	7092	7092
90-R1803-610	225	24	323	300.87	5542	5542

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Bottom control rod element 90-R1803-710	226	24	236	219.83	4049	4049
Fuel elements 90-R1804-110						
(a)	227	26	1,093	1018.13	10837	10837
(a)	228	27	664	618.52	8770	8770
(b)	229	28	1,347	1254.73	11025	11025
(b)	230	29	808	752.65	9145	9145
(b)	231	30	1,012	942.68	12465	12465
(b)	232	31	608	566.35	9741	9741
Control rod elements 90-R1804-210						
(a)	233	26	622	579.39	6166	6166
(a)	234	27	378	352.11	4990	4990
(b)	235	28	766	713.53	6273	6273
(b)	236	29	460	428.49	5903	5903
(b)	237	30	576	536.54	7092	7092
(b)	238	31	346	322.30	5542	5542
Bottom control rod elements 90-R1804-310						
(a)	239	27	276	257.09	3646	3646
(b)	240	29	336	312.98	3802	3802
(b)	241	31	253	235.67	4049	4049

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Fuel element with neutron source 90-R1804-120 (b)	242	28	1,347	1254.73	11025	11025
Fuel Element	243	32	1,200	1117.80	10837	10837
90-R1805-110	244	33	692	644.60	88770	88770
	245	34	1,485	1383.28	11025	11025
	246	35	839	781.53	9145	9145
	247	36	1,137	1059.12	12497	12497
	248	37	617	574.74	9741	9741
	249	32	1,126	---	10172	---
		26	67	1111.28	664	10836
	250	33	650	---	8232	---
		27	41	643.67	5381	13613
	251	34	1,394	---	10349	---
		28	83	1375.83	676	11025
	252	35	788	---	8585	---
		29	50	780.60	561	9146
	253	36	1,067	---	11731	---
		30	62	1051.66	764	12495
	254	37	579	---	9143	---
		31	37	573.80	597	9740

Element Description and Assembly Drawing Number	Assembly Type Number	Fuel Blend Number	Uranium Load in Each Element (g)*	BOL U-235 in Each Element @ 93.15 % (g)*	Thorium Load in Each Element (g)*	BOL Th Load in Each Element (g)*
Control Rod Elements	255	32	683	636.21	6166	6166
90-R1805-210	256	33	394	367.01	4990	4990
	257	34	845	787.12	6273	6273
	258	35	478	445.26	5203	5203
	259	36	647	602.68	7110	7110
	260	37	351	326.96	5542	5542
Bottom Control Rod Elements	261	33	288	268.27	3646	3646
9-R1805-310	262	35	349	325.09	3802	3802
	263	37	256	238.46	4049	4049
Fuel Element with Neutron Source 90-R1805-120	264	32	1,200	1117.80	10837	10837

(a)Graphite H-451.

(b)Graphite H-327.

*For two blend elements the loading is given for each blend.

Appendix D: FSVR Fuel Element Maximum Thermal Power

Table D-1. FSVR Fuel Element Maximum Thermal Power [Ref. 12]

Isotope	half-life (years) ^c	Thermal (watts/Ct) ^d	Spent Fuel Database -		Fission Products Isotope Report 2010 & 2030 Data									
			86 @ Ft. St. Vrain 14.72945		85 @ INEEL 8.6243		year 2000		year 2010		year 2020		year 2030	
			(total curies) (by calculation) ^a	(total watts)	(total curies) (from template) ^b	(total watts)	(total curies) (by calculation) ^a	(total watts)	(total curies) (from template) ^b	(total watts)	(total curies) (by calculation) ^a	(total watts)	(total curies) (from template) ^b	(total watts)
C-14	8.73E+03	2.93E-04	6.5303E+01	1.9153E-02	6.5251E+01	1.9138E-02	6.5199E+01	1.9123E-02	6.5093E+01	1.9123E-02	6.5093E+01	1.9123E-02	6.5093E+01	1.9092E-02
Cl-36	3.01E+05	1.475E-03	7.6987E-01	1.1356E-03	7.6985E-01	1.1355E-03	7.6983E-01	1.1355E-03	7.6983E-01	1.1355E-03	7.6983E-01	1.1355E-03	7.6982E-01	1.1355E-03
Ni-59	7.60E+04	3.972E-05	5.3717E-00	2.1336E-04	5.3712E+00	2.1334E-04	5.3707E-00	2.1332E-04	5.3702E+00	2.1332E-04	5.3702E+00	2.1332E-04	5.3702E+00	2.1330E-04
Ni-63	1.00E+02	1.008E-04	1.4557E+02	1.4673E-02	1.3582E+02	1.3691E-02	1.2673E+02	1.2774E-02	1.1826E+02	1.2774E-02	1.1826E+02	1.2774E-02	1.1826E+02	1.1921E-02
Se-79	6.50E+04	2.490E-04	8.3091E-00	2.0690E-03	8.3082E+00	2.0687E-03	8.3073E-00	2.0685E-03	8.3064E+00	2.0685E-03	8.3064E+00	2.0685E-03	8.3064E+00	2.0683E-03
Sr-90	2.91E+01	1.161E-03	1.1956E+06	1.3881E+03	9.422E+05	1.0939E+03	7.4252E+05	8.6206E+02	5.7928E+05	7.4252E+05	5.7928E+05	8.6206E+02	5.7928E+05	6.7254E+02
Y-90	7.31E-03	5.543E-03	1.2000E+06	6.6516E+03	9.422E+05	5.2226E+03	7.4252E+05	4.1158E+03	5.7928E+05	7.4252E+05	5.7928E+05	4.1158E+03	5.7928E+05	3.2109E+03
Zr-93	1.50E+06	1.162E-04	3.3713E+02	3.9175E-02	3.3713E+02	3.9175E-02	3.3713E+02	3.9174E-02	3.3713E+02	3.9174E-02	3.3713E+02	3.9174E-02	3.3713E+02	3.9175E-02
Nb-93M	1.61E+01	1.772E-04	3.2852E-06	5.8214E-10	3.2852E-06	5.8214E-10	3.2852E-06	5.8214E-10	3.2852E-06	5.8214E-10	3.2852E-06	5.8214E-10	3.2852E-06	5.8214E-10
Tc-99	2.13E+05	5.015E-04	2.1053E+02	1.0558E-01	2.1052E+02	1.0558E-01	2.1051E+02	1.0557E-01	2.1051E+02	1.0557E-01	2.1051E+02	1.0557E-01	2.1051E+02	1.0557E-01
Pd-107	6.50E+06	5.928E-05	2.4423E-01	1.4478E-05	2.4423E-01	1.4478E-05	2.4423E-01	1.4478E-05	2.4423E-01	1.4478E-05	2.4423E-01	1.4478E-05	2.4423E-01	1.4478E-05
Sn-126	1.00E+05	1.247E-03	3.3908E-00	4.2284E-03	3.3906E+00	4.2281E-03	3.3904E-00	4.2278E-03	3.3904E-00	4.2278E-03	3.3904E-00	4.2278E-03	3.3904E-00	4.2275E-03
I-129	1.57E+07	4.626E-04	6.0366E-01	2.7925E-04	6.0366E-01	2.7925E-04	6.0366E-01	2.7925E-04	6.0366E-01	2.7925E-04	6.0366E-01	2.7925E-04	6.0366E-01	2.7925E-04
Cs-135	2.30E+06	3.338E-04	3.9595E-00	1.3217E-03	3.9595E+00	1.3217E-03	3.9595E-00	1.3217E-03	3.9595E-00	1.3217E-03	3.9595E-00	1.3217E-03	3.9595E-00	1.3217E-03
Cs-137	3.02E+01	1.106E-03	1.2508E+06	1.3833E+03	9.9405E+05	1.0994E+03	7.9002E+05	8.7377E+02	6.2641E+05	8.7377E+02	6.2641E+05	8.7377E+02	6.2641E+05	6.9281E+02
Ba-137m	4.85E-06	3.927E-03	1.2500E+06	4.9088E+03	9.9405E+05	3.9036E+03	7.9022E+05	3.1032E+03	6.2641E+05	3.1032E+03	6.2641E+05	3.1032E+03	6.2641E+05	2.4599E+03
Sm-151	9.00E+01	1.173E-04	1.6906E+04	1.9831E-00	1.5653E+04	1.8361E-00	1.4493E+04	1.7000E-00	1.4493E+04	1.7000E-00	1.4493E+04	1.7000E-00	1.4493E+04	1.5756E-00
Pb-210*	2.23E+01	2.317E-04	4.9949E-04	1.1573E-07	8.1456E-04	1.8873E-07	1.1296E-03	2.6174E-07	1.4447E-03	2.6174E-07	1.4447E-03	2.6174E-07	1.4447E-03	3.3474E-07
Ra-226*	1.60E+03	2.888E-02	5.2362E-04	1.5122E-05	8.5551E-04	2.4707E-05	1.1874E-03	3.4292E-05	1.5193E-03	3.4292E-05	1.5193E-03	3.4292E-05	1.5193E-03	4.3877E-05
Ra-228*	5.76E-00	7.707E-05	6.4408E-00	4.9639E-04	1.9336E+00	1.4902E-04	1.9778E-00	1.5243E-04	2.0219E+00	1.5243E-04	2.0219E+00	1.5243E-04	2.0219E+00	1.5583E-04
Th-229*	7.30E+03	3.059E-02	2.7239E-00	8.3323E-02	4.6581E+00	1.4249E-01	6.5924E-00	2.0166E-01	8.5266E+00	2.0166E-01	8.5266E+00	2.0166E-01	8.5266E+00	2.6083E-01
Th-230*	7.54E+04	2.830E-02	2.3392E-01	6.6199E-03	3.5645E-01	1.0088E-02	4.7898E-01	1.3555E-02	6.0151E-01	1.3555E-02	6.0151E-01	1.3555E-02	6.0151E-01	1.7023E-02
Th-232	1.40E+10	2.421E-02	1.5451E-00	3.7407E-02	1.5451E+00	3.7407E-02	1.5451E-00	3.7407E-02	1.5451E-00	3.7407E-02	1.5451E-00	3.7407E-02	1.5451E+00	3.7407E-02
Pa-231*	3.28E+04	3.013E-02	5.6472E-00	1.7015E-01	5.6473E+00	1.7015E-01	5.6475E-00	1.7016E-01	5.6475E-00	1.7016E-01	5.6475E-00	1.7016E-01	5.6476E+00	1.7016E-01

**Spent Fuel Database - Fission Products Isotope Report
2010 & 2030 Data**

Fuel Record ID: 86 85
 Fuel Record Name: @ Ft. St. Vrain @ INEEL
 MTHM: 14.72945 8.6243

Isotope	half-life (years) ^c	Thermal (watts/Ci) ^d	year 2000 (total curies) (by calculation) ^a	year 2000 (total watts)	year 2010 (total curies) (from template) ^b	year 2010 (total watts)	year 2020 (total curies) (by calculation) ^a	year 2020 (total watts)	year 2030 (total curies) (from template) ^b	year 2030 (total watts)
U-233	1.59E+05	2.907E-03	2.0508E+03	5.9616E-00	2.0507E+03	5.9614E-00	2.0506E+03	5.9611E-00	2.0506E+03	5.9611E-00
U-234	2.46E+05	2.880E-02	1.6099E+02	4.6366E-00	1.6099E+02	4.6365E-00	1.6099E+02	4.6364E-00	1.6098E+02	4.6362E-00
U-235	7.04E+08	2.619E-02	5.8667E-01	1.5365E-02	5.8667E-01	1.5365E-02	5.8667E-01	1.5365E-02	5.8667E-01	1.5365E-02
U-236	2.34E+07	2.709E-02	5.8632E-00	1.5883E-01	5.8632E+00	1.5883E-01	5.8632E-00	1.5883E-01	5.8632E+00	1.5883E-01
U-238	4.47E+09	2.537E-02	1.5267E-02	3.8732E-04	1.5267E-02	3.8732E-04	1.5267E-02	3.8732E-04	1.5267E-02	3.9646E-04
Np-237	2.14E+06	3.057E-02	4.3181E-00	1.3200E-01	4.3181E+00	1.3200E-01	4.3181E-00	1.3200E-01	4.3181E+00	1.3200E-01
Pu-238	8.77E+01	3.314E-02	2.4799E+04	8.2185E+02	2.2915E+04	7.5940E+02	2.1174E+04	7.0170E+02	1.9571E+04	6.4858E+02
Pu-239	2.41E+04	3.082E-02	5.9872E+01	1.8453E-00	5.9855E+01	1.8447E-00	5.9838E+01	1.8442E-00	5.9820E+01	1.8437E-00
Pu-240	6.56E+03	3.114E-02	1.0647E+02	3.3115E-00	1.0636E+02	3.3121E-00	1.0625E+02	3.3086E-00	1.0614E+02	3.3052E-00
Am-241	4.33E+02	3.322E-02	1.0308E+03	3.4242E+01	1.0144E+03	3.3698E+01	9.9828E+02	3.3163E+01	9.8245E+02	3.2637E+01
Am-242M	1.41E+02	3.950E-04	1.4322E-01	5.6572E-05	1.3635E-01	5.3858E-05	1.2981E-01	5.1275E-05	1.2360E-01	4.8822E-05
Am-243	7.37E+03	3.215E-02	7.4055E-00	2.3809E-01	7.3985E+00	2.3786E-01	7.3915E-00	2.3764E-01	7.3847E+00	2.3742E-01
Cm-244	1.81E+01	3.498E-02	4.9595E+02	1.7348E+01	3.3817E+02	1.1829E+01	2.3059E+02	8.0660E-00	1.5729E+02	5.5020E-00
Cm-245	8.50E+03	3.319E-02	6.7002E-02	2.2238E-03	6.6947E-02	2.2220E-03	6.6892E-02	2.2202E-03	6.6838E-02	2.2184E-03
Cm-246	4.76E+03	3.274E-02	1.9231E-02	6.2962E-04	1.9203E-02	6.2871E-04	1.9175E-02	6.2779E-04	1.9147E-02	6.2687E-04
Total watts				3.5554E+05		2.8359E+05		2.2691E+05		1.8079E+05
Watts/canister				8.0438E+02		6.4160E+02		5.1338E+02		4.0903E+02

* Isotopes subject to 'ingrowth' because of 'parent' decay; 'calculated' concentrations (2000 & 2020) from year 2010 values
 *** Average MTHM per standard canister: (14.72945 [off-site] + 8.6423 [INEEL] MTHM) / 442 canisters = 0.0529 MTHM / canister

- a. Based on half-life value and year 2010 template values
- b. Template values from integrated spent fuel database
- c. Half-lives from Chart of the Nuclides, GE Nuclear Energy, 15th Edition, 1996
- d. DOE/RW-184-R-1, Characteristics of Potential Repository Wastes, July 1992