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Westinghouse Hanford Company FY 1996 Materials Management Plan (MMP)

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Hanford Plant Priorities

The safe and sound operation of facilities and the storage of nuclear material are top priorities within Hanford's environmental management, site restoration mission. The assumptions, plans and Special Nuclear Material (SNM) inventory summaries contained in this document were prepared for Department of Energy (DOE) use for interim and long-range planning. In accordance with Richland DOE field office (DOE-RL) direction, year-end inventory values were not projected over an 11 year period, as historically done in previous MMP documents. This decision was made since significant SNM movements to or from Hanford are not projected in the foreseeable future. Instead, the inventory summaries within this document reflect an "as of date" of June 30, 1995.

Most DOE Richland Operations (RL) Office facilities used for SNM storage are funded by the Office of Transition and Facilities Management, Environmental Restoration and Waste Management (EM). These facilities include PUREX, the UO_3 plant, N-Reactor, T-Plant, K-Basins, FFTF, PFP and the 300 Area Fuel Fabrication facilities. Currently, Defense Programs (DP) provides partial funding for the latter two facilities. It is assumed that early in FY-1996 *(in accordance with DOE MMP assumptions)*, a Memorandum of Agreement (MOA) is signed between EM and DP for turnover of all DP project nuclear, special nuclear, and source materials to EM with the exception of attractiveness level "B" material. The MOA is assumed to take effect beginning in the 2nd quarter of FY- 1996. DP will continue to fund attractiveness level "B" plutonium at PFP; EM will fund expenses related to the storage, monitoring, and safeguarding of all other SNM stored in WHC facilities. Ownership and costs related to movement and/or stabilization of this non-"B" attractiveness level material will belong to EM programs (excluding NE material). Material under IAEA cognizance will be funded by EM beyond CY 1995.

The stabilization and/or disposition of these nuclear materials is dependent upon receipt of the necessary direction and funding from DP, NE, and EM.

Nuclear material long term storage, processing and/or disposition plans discussed or referenced in this document are dependent on the outcomes of two on-going National Environmental Policy Act (NEPA) reviews and implementation of the recently issued Record of Decision (ROD) from the DOE Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory Environmental Restoration and Waste Management Programs Environmental Impact Statement (SNF & INEL EIS). The on-going NEPA reviews concern PFP and K Basins: the PFP Environmental Assessment (EA) for interim stabilization and PFP Environmental Impact Statement (EIS) for plutonium stabilization; and the K Basins Environmental Impact Statement for Management of Spent Nuclear Fuel from the K Basins, Hanford Site, Richland, Washington (K Basins SNF EIS). Each of these reviews is discussed on page 3 of this document.

With the exception of the potential receipt of 2.6 kg Pu in plutonium oxide and residues from the Mound Plant and from PNL, no other significant plutonium movements to or from Hanford are projected until these NEPA reviews are completed. Other internal movements of plutonium at Hanford include the planned stabilization of 500 kg Pu of SS&C (sand, slag, and crucible) and ash within the PFP and the movement of some unirradiated FFTF fuel assemblies from the FFTF Facility to the PFP for storage.

PFP NEPA Documentation and Review

An EA describing the stabilization of reactive SS&C and ash currently stored in the PFP vaults is nearing completion. A Finding of No Significant Impact (FONSI) is the expected result of the EA and is expected to be released in November 1995. The EIS for stabilization of all PFP plutonium including residues that are left in the Pu Reclamation Facility (PRF) is in preparation. The ROD for this EIS is expected in June 1996. With these two NEPA documents in hand, PFP could proceed with the stabilization of the vault items and the final remediation of the residues in piping and other structures in the facility in accordance with the Hanford Site Integrated Stabilization Management Plan.

K Basins SNF EIS

An EIS is being prepared to ensure that environmental factors are considered in decisions regarding the management and storage (up to approximately 40 years) of Spent Nuclear Fuel (SNF) currently located in the K Basins. The K Basins SNF EIS will satisfy site-specific NEPA review requirements for implementing the SNF & INEL EIS.

The inventory of irradiated fuels to be covered by the K Basins SNF EIS includes approximately 2096 metric tons of N Reactor fuel and 3 metric tons of single-pass reactor fuel. The other Hanford Site inventories of irradiated fuel are planned to be transferred to Idaho National Engineering Laboratory based upon considerations identified in the SNF & INEL EIS Record of Decision, and will not be addressed in the K Basins SNF EIS. These other irradiated inventories include, approximately: 16 metric tons of Shippingport Reactor (PWR Core II) fuel, 11 metric tons of FFTF fuel and 2 metric tons of miscellaneous fuels.

<u>Current Status and Schedule:</u>

A Notice of Intent (NOI) to prepare the K Basins SNF EIS was published in the Federal Register in March, 1995. Public scoping meetings were held in May, 1995. Currently, internal DOE reviews of the draft EIS are being completed. Subsequently, the draft EIS will be issued for public comment. The scheduled date for issuance of the K Basins SNF EIS Record of Decision is December 31, 1995. With recent delays, issuance of the Record of Decision is now anticipated at March 22, 1996.

MMP Assumptions, Plans, and Issues

The FY 1996 Materials Management Plan (MMP) was prepared in accordance with the DOE-RL request for the MMP (reference letter, RL FY 1996 Materials Management Plan, J. E. Mecca, Director Transition Programs to the President, WHC, dated Sept. 15, 1995) and the DOE-RL assumptions also received in September 95.

As stated earlier, and unless otherwise noted, the inventory values presented in this document are based on a cut-off "as of" date of June 30, 1995 and are in complete agreement with June 30, 1995 NMMSS reporting data.

N Reactor

In accordance with a cease-preservation directive received from DOE on September 23, 1991, N Reactor formally began the transition from cold standby to shutdown in FY 1992. An N Reactor Shutdown program plan (Rev. 2) was submitted to DOE in September 1991 with revision 4, implementing DOE Comments, being released in December 1993. The work described in this plan is scheduled for completion in September 1997 when N Reactor turnover to the Hanford Surplus Facilities Program for Decommissioning is achieved.

Since no official nuclear material inventory (book value) remains at this facility, no further reporting of N Reactor transition activities will occur in this document.

Defense Production Reactor Spent Nuclear Fuel Disposition

Storage of Defense Production Reactor Spent Nuclear Fuel (SNF) (i.e., N Reactor SNF and Single-Pass Production Reactor SNF) in water filled storage basins at Hanford will continue pending the Record of Decision from the K Basins SNF EIS. SNF stored in the 105-K East (KE) Basin remains unencapsulated; SNF in the 105-K West (KW) Basin is encapsulated. SNF from the PUREX Plant was transferred to the KW Basin in the fourth quarter of FY 1995 and will be managed in a consistent manner as the KW Basin SNF inventory. SNF is suspected to be present in the sludge accumulation on the floor of the N Reactor fuel storage basin. If funded, it will be retrieved and transported to the KW Basin in 1996 and be managed in a consistent manner as the KW Basin SNF inventory.

Significant near-term activities are being completed at the K Basins to improve the safety posture until fuel removal is completed. In FY 1995, seismic isolation barriers were installed between the storage area within the KE and KW Basins and their respective discharge chute areas. This installation resolves an unreviewed safety question relating to seismically induced damage and resultant loss of basin water through construction joints in the discharge chute areas.

Removal of SNF from the K Basins is scheduled to begin in December 1997 and complete by December 1999. This schedule will satisfy DOE commitments to the Defense Nuclear Facilities Safety Board (DNFSB) as documented in DNFSB Recommendation 94-1 Implementation Plan, which was issued in February 1995. To support the schedule commitments, fuel will be removed from the K Basins consistent with the Integrated Process Strategy for K Basins SNF, which was developed by WHC and approved by RL in July 1995. The Integrated Process Strategy involves the following major steps:

- Retrieval of fuel, desludging, and cold vacuum drying at the K Basins to remove free water and enable dry on-site shipment and staging of the fuel
- Packaging the fuel into Multi-Canister Overpacks (MCOs), and on-site shipment of the fuel to the Canister Storage Building in the 200 Area for storage in the MCOs
- Conditioning of the fuel to remove bound water and to satisfy requirements for safe, economic, compliant storage for a 40 year period

  The timing and location of the conditioning step is currently being defined.

A path forward for sludge disposition at the K Basins was also developed and approved by RL and is currently being reviewed by the State of Washington Department of Ecology. The recommended sludge path forward would involve ultimate incorporation into the 200 Area tank waste system, after demonstrating the tank waste acceptance criteria are satisfied.

Technology acquisition and fuel characterization activities for the Defense Production Reactor SNF will be completed to support implementation of the path forward for SNF removal from the K Basins. An Environmental Assessment, Characterization of Stored Defense Production Special Nuclear Fuel and Associated Materials, was completed and a Finding of No Significant Impact issued for the characterization activities. In-situ characterization activities were completed in 1995, including video survey of KE Basin canisters and fuel contents. Fuel elements were transferred to the 300 Area and tests were initiated to characterize the SNF and support definition of the conditioning process. Sludge samples were also acquired and shipped on-site for characterization to support sludge disposition activities.

300 Area Fuel Fabrication Facilities

Shutdown and deactivation of the 300 Area Fuel Fabrication Facilities is assumed to occur by FY 1999 provided funding becomes available to relocate and store the unirradiated uranium inventory remaining from N-Reactor fuel fabrication activities. Various options for consolidation and storage of this material were included in a WHC study completed in FY 1994; reference WHC-SD-CP-ES-163, Rev 0, Options Analysis for Uranium Consolidation, dated April 8, 1994. DOE plans are currently being proposed to consolidate the disposition and sales effort of all departmental surplus uranium within Materials Disposition (MD). Oak Ridge would functionally manage the field activities. Continued short term storage in the 300 Area (until a national policy is developed) is the preferred option provided costs are the primary drivers for EM programs. If interim storage is required beyond FY 1999, the recommended alternative is to transfer, consolidate, and store this material in the 4732-C warehouse in the Hanford 400 Area. An FY 1995 study, Transportation and Packaging Evaluation Transfer of Unirradiated Uranium from the 300 Area to the 400 Area, estimates the transfer cost to be $870,000 for rail shipment to $31,075,000 for highway shipment. Yearly operating expense requirements would decline by $190,000 (from $950K to $760K).

In FY 1993, Hanford shipped 326 MTU of 0.95% U-235 enriched billets to the United Kingdom Ministry of Defense (UK MOD). Negotiations are now taking place to supply an additional 706 MTU of 0.71% and 0,95% enriched billets to the UK MOD. This shipment is assumed to occur between January and September of FY 1996. Other negotiations are taking place to ship 63.5 MTU of normal (0.71%) uranium fuel elements to Allied Signal, Inc.(also to begin in the 2nd quarter of FY 1996).

In addition, it is assumed that 36 unirradiated fuel assemblies (842.6 kg NU) will ship to ANL-East in the 1st quarter of FY 1996 for prototype electrorefiner tests.

The DOE-RL assumptions also assume that 3 TRIGA reactor unirradiated fuel assemblies (102 grams of U235 iso. wt.) containing 20% U235 enriched uranium will ship to the Department of Interior, Denver, Colorado in the 1st quarter of FY 1996. It is also assumed that the TRIGA Fission Chamber will transfer to Reed College in FY 1996.

PUREX Plant

In accordance with DOE-HQ direction, the Plutonium Uranium Extraction Plant (PUREX) is currently being deactivated. The objective of deactivation is to place the PUREX facility in a passively safe, environmentally secure configuration, and ensure that this configuration is retained until decontamination and decommissioning (D&D) take place. The PUREX/UO_3 Deactivation Project Management Plan outlines the deactivation approach and the supporting technical, cost, and schedule baselines. Deactivation activities concentrate on removal, reduction, and stabilization of the radioactive and chemical materials remaining in the plant as well as the shutdown of utilities and effluents.

Currently, the majority of the PUREX chemical and SNM inventory has been disposed, stabilized or redeployed (including approximately 20,000 liters of solution containing 9 kgs of plutonium and 5.3 metric tons of uranium). Remaining actions are to complete flushing of vessels which formerly contained radioactive or hazardous materials by June, 1996 and to remove/stabilize the residual material in the plutonium and neptunium handling glove-boxes by July, 1996. In addition, PUREX is currently projected to complete the transfer of approximately 690,000 liters of low specific activity nitric acid containing 7.3 MTU to British Nuclear Fuels Limited by December, 1995. When the deactivation project is completed in September 1997 (based on change request), the PUREX facility will be unoccupied and locked pending eventual D&D.

UO_3 Plant

All deactivation activities have been completed at the Uranium Trioxide (UO_3) Plant and the facility turned over to BHI for stewardship through D&D. The deactivation activities included deactivating and/or decontaminating instruments and equipment, permanently shutting down and sealing off the utilities, and documenting existing conditions. Materials and equipment, as made available, are being redeployed to other facilities on the Hanford site. Currently 667 metric tones of low enriched uranium oxide powder are stored at the UO_3 Plant in T-hopper and other containers. This material was scheduled for shipment to COGEMA, however, due to cancellation of the sales transaction will remain at Hanford indefinitely. There is also 103 MTU of depleted uranium oxide powder stored in 55 gallon drums at the UO3 Plant.

Plutonium Finishing Plant (PFP)

The PFP mission is to provide safe storage of Category I and II special nuclear material (SNM) and laboratory support to the Hanford Site. The mission includes the stabilizing and packaging of SNM for temporary storage sufficient to support the deactivation and cleanup function of the facility. The storage of Category I and II SNM at this facility indirectly supports national security interests, and safe storage is accomplished in a manner that ensures the health and safety of the public and employees are not compromised.

The US Department of Energy has developed an Integrated Program Plan to address concerns identified in Defense Nuclear Facilities Safety Board Recommendation 94-1. The program plan, transmitted to the DNFSB in February 1995, identifies the actions that the DOE plans to implement at various sites including Hanford. Hanford has issued an implementation plan, WHC-EP-0853 to accomplish the requirements of the HQ Program Plan. This plan addresses the PFP inventory and provides direction for evaluation of it's inventory for long term stability and directs that actions be taken to stabilize materials found at risk. Additionally, direction is provided for Pu materials removed from facility ducts, piping, glove-box and canyon areas to be stabilized to DOE specifications.

PFP began the stabilization process for residues in 1995 using two small muffle furnaces. This process stabilized 236 items (containing 21 kg Pu) of high risk wet and organic bearing residues created during the past 6 years. This stabilization activity was completed in June 1995. In addition, high risk chloride + Pu solutions were consumed during the testing of a prototype vertical calciner and other stabilization processes which were completed Sept 1995. The stabilization of the un-stabilized ash inventory was also initiated in FY 1995 and 20 items of ash were stabilized by Sept 30 1995.

As stated previously in this document (reference PFP NEPA Documentation and Reviews), with the completion and approval of two NEPA documents (the EA for stabilization of reactive SS&C and ash and the EIS for disposition of the remaining PFP plutonium), both of which are scheduled for completion in FY 1996, PFP management will proceed with the stabilization of the vault items and the final remediation of the residues in piping and other structures in the facility in accordance with the Hanford Site Integrated Stabilization Management Plan (SISMP).

In 1996 six more muffle furnaces are scheduled to be installed and activated to stabilize the remaining at risk ash and SS&C residual material to the specifications. Additionally, duct removal is planned to remediate several areas of duct work containing gram quantities of Pu. Design and installation of a vertical calcinier is scheduled to permit solidification of the Pu solutions currently in inventory.

In CY 1996 PFP management expects to stabilize in excess of 500 kg of SS&C and ash bulk material. Current planning at PFP also involves characterization of the vault inventory in order to satisfy identification of at risk materials. This characterization program includes material removals from the vault and the opening of the item containers for examination of both the contents and the container integrity. A large portion of these items will be repackaged and returned to vault storage. Processing of the Pu liquid inventory is expected to be initiated during FY 1997 using a vertical calciner.

PFP management does not plan on running the Plutonium Reclamation Facility (PRF) (236-Z) nor the RMC (Remote Mechanical C) line in the foreseeable future. The stabilization time frame for these areas is defined in the Hanford SISMP.

The planned stabilization of the PFP inventory by the year 2002 meets DOE requirements. The required EIS and other NEPA documentation referenced previously are being prepared to support these stabilization activities as well as any other disposition of the PFP inventory. Plant stabilization and deactivation activities are assumed to occur in accordance with the FY 1996 MYPP/FYWP.

Plutonium Vault Storage Movements

In addition to the movements of plutonium bearing materials for stabilization purposes referenced above, other movements of SNM have occurred and are also planned in FY 1996.

This past year the EBR/LAMPRE material contained in casks and stored in the PFP complex was placed in an above ground newly purchased vault-like enclosure to ensure a safe configuration for continued storage.

The PFP facility is also preparing to receive FFTF fuel assemblies for storage. Special storage casks have been ordered and site preparation completed for the storage of the material. The movement and storage of the FFTF fuel was addressed in the Shutdown of the Fast Flux Test Facility Environmental Assessment, dated May 1995. The first shipment of material is expected to occur in January 1996.

Fuel grade plutonium metal and oxide from the existing product inventory is available for non-weapons uses should any requirements surface in the future. The pure oxide and metal inventories do, however, contain americium above product specification levels.

It is expected that small quantities of Pu will be received at PFP in the future as the other Hanford locations perform their scheduled clean out activities. Some off site receipts are also expected in keeping with the need for safe secure storage of the nation's plutonium. It is expected that PFP will make shipments of small quantities of Pu for laboratory standards and other programmatic needs.

Although the Withdrawals and Returns Summary received from DOE-HQ (ref: document HQDP010049672, dated August 23, 1995) forecasts the return of 15 kg Pu from LLNL to the Hanford Site in FY 1996, it is assumed by direction of DOE-RL that no further receipts of Hanford material from LLNL are forthcoming. Hanford had previously received all LLNL material that meets the Hanford acceptance criteria. No other returns or withdrawals are projected.

In accordance with DOE-RL guidance, Pu receipts from Mound and from PNL at Hanford are projected: 1.2 kg Pu in plutonium oxide from Mound and 1.4 kg Pu in residues from PNL.

IAEA Safeguards at PFP

In September of 1993 President Clinton offered to place excess U.S. nuclear materials under IAEA safeguards. In January of 1994, the Hanford Site was identified as the second site (Oak Ridge was the first) in the U.S. to be prepared for placement on the eligibility list for IAEA safeguards selection. Planning and preparation started at Hanford in February of 1994.

Approximately 1 metric ton of plutonium oxide in various levels of concentrations (ranging from about 40% to 92%), enrichments (ranging from about 5% to 16% Pu240), and purity are under IAEA safeguards. Approximately 1,100 items reside in 42 cubicles in a single PFP vault. The placement of an approximate metric ton was done in two separate phases. The reasons for this two-phased approach were to (1) reduce the operational impacts to both the contractor and the IAEA; (2) perform any additional facility modifications requested by the IAEA; (3) provide an opportunity to adjust the second material offering, if required; and (4) give both parties the experience of working with each other and adjusting to revised plant procedures.

The first phase, termed the "Initial Offer," consisted of placing approximately 500 items under IAEA safeguards, and it was completed in December 1994. The second phase, called the "Inventory Change," consisted of approximately 600 items, and it was completed in August 1995.

The PFP storage vault for IAEA material is under both IAEA and domestic safeguards containment and surveillance (CAS) systems.

During the Initial Offer phase, 108 items were measured. A total of 78 samples were taken for destructive analyses (DA). A Physical Inventory Listing (PIL) of the material being placed under IAEA safeguards was sent to DOE-HQ on January 14, 1995. A new PIL, combining material from both phases, was prepared and sent to DOE-HQ in September 1995.

Each facility being placed under IAEA safeguards must complete a document called a Design Information Questionnaire (DIQ). This document covers information in specific detail. The initial draft was completed in August 1994 and the final version in November 1994. This document is instrumental in developing a Facility Attachment.

The Facility Attachment, which defines how the IAEA will conduct business in a facility, is currently under negotiation between the U.S. and the IAEA. It is anticipated the Facility Attachment will be approved in late 1996 or early 1997.

The IAEA inspections are monthly and are being performed on an ad hoc basis until a Facility Attachment for the Hanford Site has been negotiated between the U.S. and the IAEA.

As a base case assumption, no additional material will be placed under IAEA safeguards during FY 1996. In the future, additional materials may be added, however, it is anticipated this will not occur until sometime in 1999.

As an alternate case assumption, PFP management is directed to anticipate and plan for an additional 500 Kg Pu be added to the existing plutonium IAEA material already set aside.

Fast Flux Test Facility (FFTF)

The Fast Flux Test Facility (FFTF) is a 400 MWt sodium-cooled research reactor owned by the Department of Energy (DOE) and operated by the Westinghouse Hanford Company (WHC) on the Hanford Site. Originally constructed to support the U.S. Liquid Metal Fast Breeder Reactor Program, the FFTF supported various missions from 1980 to 1992, including both national and international breeder reactor programs, production of medical and industrial isotopes, material testing for the fusion and space programs, and providing customized neutron environments to meet a variety of customer's needs.

In a December 15, 1993 memorandum, DOE-HQ directed its Richland Operations Office to place the FFTF in a radiologically safe shutdown condition. The permanent shutdown directive was ordered when the DOE concluded that no combination of missions for the FFTF had a reasonable probability possibility of financial viability over the next 10 years.

Accordingly, an FFTF Transition Project Plan (WHC-SD-FF-SSP-004) was developed which delineates the activities required to place the reactor facility into a long-term, low maintenance, industrially safe shutdown configuration for a long term surveillance and maintenance phase prior to completion of decommissioning. The Plan was updated and reissued on November 21, 1995 to reflect program progress and changes. An aggressive FFTF Master Baseline Schedule was prepared, and WHC is actively working to complete transition activities and turnover the facility to the Environmental Restoration Contractor in fiscal year 2001.

The following primary activities are necessary to complete the FFTF Transition Project:

- Defuel the reactor (now complete)
- Wash residual sodium from 51 FFTF fueled components, load them into eight FFTF Interim Storage Casks (ISCs), and transfer the ISCs to the Plutonium Finishing Plant for interim storage.
- Wash residual sodium from 327 highly radioactive fuel components, load them in approximately 48 FFTF ISCs, and transfer the ISCs to the 400 Area Interim Storage Area (ISA).
- Wash seven sodium-bonded metal fuel assemblies plus sodium bonded metal and carbide pins, load into shipping casks, and ship to the Idaho National Engineering Laboratory.
- Drain secondary molten metallic sodium to in-plant storage tanks.
- Transfer molten metallic sodium to the new Sodium Storage Facility (SSF) following acceptance testing.
- Maintain an inert gas atmosphere within the sodium and NaK systems to protect the residuals from chemical reactions.
- Shut down the auxiliary plant systems.

Reactor defueling, the first major transition project milestone to be achieved, was completed on April 19, 1995. All fueled core components were removed from the reactor vessel and placed in sodium pool storage in the Interim Decay Storage Vessel and the Fuel Storage Facility. A significant portion of the FFTF Transition Project consists of retrieving the fuel from these sodium storage locations, washing the residual sodium from the assemblies, placing the prepared fuel into dry storage casks, and transferring the casks to the ISA which is located adjacent to the reactor complex. Construction of the ISA, which will contain FFTF, TRIGA, and 324 Building spent nuclear fuel, was completed in August, 1995.

The first Interim Storage Cask was received in June 1995. An Acceptance Testing Program is currently in progress to assure that the fuel handling equipment and systems are acceptable for proceeding with unrestricted fuel off load. The milestone for completion of the Acceptance Testing Program is March 5, 1996. Completion of the fuel off load effort will occur over the span of approximately three years. Drain of the two sodium-filled fuel storage vessels and shut down of the associated auxiliary systems and the fuel off load processes and equipment will result in a significant reduction in cost. Since removal of the fuel is required prior to draining the total inventory of sodium, the fuel off load to dry storage is a critical path element of the overall Transition Project.

Another challenging Transition Project activity is the transfer of the 260,000 gallons of molten sodium from the various locations and plant systems within the FFTF. A Sodium Storage Facility (SSF) is being constructed adjacent to the southwest corner of the FFTF to support the sodium drain operations and house the sodium. The SSF will consist of three 80,000 gallon tanks and one 52,000 gallon tank, within a concrete building providing shielding and weather protection for the tanks. Tank modifications and site demolition and preparation construction activities were completed in August and September 1995, respectively.

Many plant systems that are no longer required for surveillance and maintenance (S&M) activities are being deactivated. However, during the next four years of the transition project, approximately 80 percent of the plant systems are still needed to support hot sodium circulation. After that, these remaining plant systems will be deactivated, and S&M costs significantly reduced. By January 2001, essentially all of the plant systems will be deactivated. The projected Transition Project completion date is March 2001.

Recent and ongoing discussions were initiated within the DOE to consider utilizing the FFTF for medical isotope & tritium production; no decision for continued FFTF operation has yet been reached.

Plutonium Requirements

Defense Programs

<u><7% Pu-240 Product Shipments</u>

All <7% Pu-240 plutonium product in stable form (not including nitrate) has been shipped off-site. There are no plans to produce any weapon grade plutonium metal. No requirements for weapon grade plutonium oxide or metal from the Hanford Site were identified in the DOE assumptions for the RL MMP.

<u>Fuel Grade Product Shipments</u>

No Defense Programs requirements for fuel grade (FG) plutonium from the Hanford Site were identified in the DOE assumptions for the RL MMP.

Research & Development Programs

In accordance with the returns and withdrawals schedule received from DOE-HQ in September 1995, no withdrawals are projected throughout the MMP reporting period for Nuclear Energy programs (NE) or any other programs.

FFTF Driver Fuel and LMFBR Test Fuel

Due to the FFTF shutdown directive, dated December 15, 1993, no SNM requirements are projected for NE Hanford programs.

Certified Ceramic Grade Plutonium Oxide Inventory

A total of 354 kg Pu of 16-16.75% Pu-240 ceramic grade oxide, prepared by Los Alamos National Laboratory (LANL) during FY 1982-1983 for the Breeder Program, is in storage at WHC. No requirements for this material are currently forecasted. The oxide is held in an excess but usable "M" account (project M-GE-0221-OCX, Ceramic Grade Pu Oxide-RL).

Restricted Use Plutonium Allocations

In September 1995, with the concurrence of DOE-HQ, restricted use material at Hanford was reallocated into four new projects. This reallocation was necessary in order to ensure comprehensive and highly visible control for more efficient management of the restricted use material. Program ownership remains with the same program (DP and NE) as before the allocations were made.

Table Notes

1. Most tables display SNM inventories by DOE form code categories. The weapon component category and the gas category are not displayed since neither of these forms are contained in SNM inventories in WHC facilities.

2. #Items refers to the number of item records in the data base; this is not necessarily the number of containers of material.

3. Tables show PUREX as containing irradiated fuel. Since the inventory cutoff date of 6/30/95, the single pass reactor fuel (containing 8.7 Kg Pu) has been transferred to K basins. Tables do not reflect this movement.

4. Tables 5.0 and 5.1 display DP material (by DP Project) that will be retained by DP and that will be turned over to EM in accordance with the Memorandum of Agreement (MOA) referenced in the beginning of this document. Two tables are included since material transfers to the new restricted use projects (referenced on page 12) were not initiated prior to June 30, 1995; table 5.0 displays project MOA results before the transfers and table 5.1 displays the project results after the transfers are completed.

5. Material quantities reflected in the following tables are reported in element weights unless specified otherwise.

Table 1.0 Irradiated Fuel in K-Basins at WHC
(Element Wt.)

Fuel Source	Pgrm	Ave Grade	#Items	Pu Kg	EU Kg	DU Kg	Np237 Kg	Pu240 Ave Wt%	Pu239 AveWt %	Pu241 AveWt %	EU U235 AveWt%	DU U235 AveWt%
N-Reactor Fuel	EM	<7%	2062	222.5	325690.0	5658.6	2.5	5.12	94.50	0.38	0.90	0.67
N-Reactor Fuel	EM	FG	10058	3803.3	1094781.2	669495.2	57.2	13.43	84.96	1.61	0.79	0.67
Sub Total N-Rx	EM	FG	12120	4025.9	1420471.1	675153.8	59.7	12.97	85.49	1.54	0.82	0.67
Single Pass Reactor Fuel	EM	<7%	18	0.4	129.5	378.1	0	5.97	93.26	0.78	1.06	0.61
Total K-Basins	EM	FG	12138	4026.3	1420.6 MTU	675.5 MTU	59.7	12.97	85.49	1.54	0.82	0.67

Note: In addition to the Irradiated material shown above, K Basins also contain 2.2 MTU of unirradiated EU and 0.1 MTU of unirradiated NU material.

Table 1.1 All Irradiated SNM at WHC

(Element Wt.)

Facility	Pgrm	Ave Grade	#Items	Kg Pu	Kg EU	Kg DU	Kg NU	Kg Th	Kg Np237	Pu240 Ave Wt%	Pu239 AveWt %	Pu241 AveWt %	EU U235 AveWt%	DU U235 AveWt%
K-Basins	EM	FG	12138	4026.3	1420600.6	675531.8	0	0	59.7	12.97	85.49	1.54	.82	0.67
PFP	EM	WG	3	7.8	0	0	0	0	0	6.00			0	0
PUREX	DP	FG	2	0.5	240.7	17.3	0	0	0	11.20			0.77	0.60
PUREX	EM	PRG	1	8.7	0	2874.0	10.0	0	0	26.00			0	0.20
T-Plant	EM	PRG	268	120.3	0	15657.0	0	0	0	27.44	64.42	5.62	0	0.21
308/303K	NE		103	0	19.4	0	0	0	0	0	0	0	19.95	0
FFTF Site	MM	FG	1	2.8	0.4	15.2	0	0	0	17.44			1.10	0.17
FFTF Site	NE	FG	446	2433.6	251.8	7645.3	849.3	21.2	2.0	16.07			30.07	0.32
Total			12962	6600.1	1421112.8	701740.6	859.3	21.2	61.8					

Table 2.0 Pu at WHC & Offsite by DP Form and WHC Facility Kg Pu (Element Wt.)

DOE Form	WHC Pu at WHC							PNL Pu at WHC	Offsite Pu at WHC	WHC Pu at PNL	WHC PU at Offsite
	K-Basins	PUREX	PFP	T-Plant	D&D Tank Farms	308/ 303K	FFTF Site				
Metal	0	0	770.2	0	0	0	0	0	0	0	4.2
Oxide	0	0	2048.4	0	0	0	0	0	0	0	0
Compound	0	0	107.9	0	0	0	0	0.8	0	0	3.6
Sources & Samp	0	0.2	54.1	0	0	0	0	1.5	0	0.5	6.7
Combustibles	0	0.1	31.2	0	0	0	0	0	0	0	0
Noncombustible	0	0	0.4	0	0	0	0	0	0	0	0
Process Residue	0	0	168.0	0	0	0	0	0	0	0	0
Solution	0	7.9	309.3	0	0	0	0	25.8	0	0	0
Reactor Fuel	0	0	522.3	0	0.4	0.4	290.8	15.7	2.5	0.3	11.0
Irradiated Fuel/Target	4026.3	9.3	7.8	120.3	0	0	2417.0	0	19.4	2.8	33.9
Licensee Inv	0	0	0	0	0	0	0	0	0	0	1.1
Total	**4026.3**	**17.5**	**4019.6**	**120.3**	**0.4**	**0.4**	**2707.8**	**43.7**	**21.9**	**3.6**	**60.6**

Grand Total	10957.9	3.6	60.6
NMMSS Total	10957.9	3.6	60.6

Table 2.1 Pu240% Graded Plutonium Stored in WHC Facilities

Kg Pu (Element Wt.)

DOE Form	# Items	<7% Pu240	7-19% Pu240 FG	>19% Pu240 PRG	Total
Metal	484	13.3	741.4	15.5	770.2
Oxide	3753	985.2	881.6	181.5	2048.4
Compound	804	22.6	84.6	1.5	108.7
Sources & Samples	729	11.4	43.2	1.2	55.9
Combustibles	434	1.2	30.1	0	31.3
Noncombustible	42	0.4	0	0	0.4
Process Residue	977	158.4	8.3	1.3	168.0
Solution	450	287.4	35.3	20.3	343.0
Reactor Fuel	767	0.2	817.4	14.5	832.1
Irradiated Fuel/Target	12601	244.3	5971.7	384.2	6600.1
Total	21041	1734.3	8613.6	620.1	10957.9

Table 2.2 Restricted Use Plutonium Stored in WHC Facilities

Kg Pu (Element Wt.)

DOE Form	# Items	Facility	Program	H-AF-8010-R0L	H-AF-8010-RFF	E-GE-0221-R6S	M-GE-0221-R3M	Total
Metal	6	PFP	DP	0	0	10.7	0	10.7
Metal	277	PFP	DP	0	0	0	586.0	586.0
Oxide	84	PFP	DP	0	0	37.9	0	37.9
Process Residue	426	PFP	DP	0	0	40.1	0	40.1
Reactor Fuel	11	FFTF Site	NE	90.7	0	0	0	90.7
Irradiated Fuel	49	FFTF Site	NE	0	393.1	0	0	393.1
Total	853			90.7	393.1	88.7	586.0	1158.50

Table 3.0 All SNM Types in WHC Facilities

(Element Wt.)

DOE Form	#Items	Pu kg	EU kg	DU kg	Nu kg	Th kg	Np237 kg	Pu238 g	U-233 g	Cf mg	Am241 g	Trit g	Li g
Metal	7016	770.2	1745658.4	325.3	154957.9	0	0	0	0	0	0	0	0
Oxide	4252	2048.4	667245.2	103992.0	1915.3	433.1	0	0	0	0	0	0	0
Compound	910	108.7	146.0	321.9	51.9	1.1	0	0	0	0	0	0	0
Sources & Samples	871	55.9	2734.4	21570.6	510.0	13.4	0.1	114.9	114.0	23484	12.0	0.5	50.0
Combustibles	436	31.3	0.3	6.3	0.3	0	0	0	0	0	0	0	0
Noncombustible	42	0.4	0.1	0	0	0	0	0	0	0	0	0	0
Process Residue	979	168.0	0.7	5.4	0	0	0	0	0	0	0	0	0
Solution	457	343.0	5121.7	59.5	.4	0	0	0	40.0	0	0	0	0
Reactor Fuel	1230	832.1	179.6	3001.0	1604.7	27.3	0	0	0	0	0	0	0
Irradiated Fuel	12962	6600.1	1421112.8	701740.6	859.3	21.2	61.8	0	0	0	0	0	0
Total	**29155**	**10957.9**	**3842199.1**	**831022.7**	**159899.9**	**496.1**	**61.9**	**114.9**	**154.0**	**23484**	**12.0**	**0.5**	**50.0**

Note: The isotope weight of Californium (Cf) totals 7,988 mg.

Table 3.1 Pu240/U235 Isotopes & Average Weight Percent Contained in Plutonium & Uranium (EU & DU) Stored in WHC Facilities

DOE Form	Kg Pu240 in Pu	Kg U235 in EU	Kg U235 in DU	Ave Wt% Pu240 in Pu	Ave Wt% U235 in EU	Ave Wt% U235 in DU
Metal	130.7	17604.5	0.7	17.0	1.0	0.2
Oxide	231.1	5989.7	285.4	11.3	0.9	0.3
Compound	11.1	47.3	0.7	10.2	32.4	0.2
Sources & Samples	5.6	30.8	43.2	10.1	1.1	0.2
Combustibles	5.5	0.1	0	17.4	36.7	0.2
Noncombustible	0	0	0	5.8	63.6	0
Process Residue	10.7	0	0	6.4	4.5	0.2
Solution	25.6	43.4	0.4	7.4	.8	0.6
Reactor Fuel	98.1	46.8	6.3	11.8	26.1	0.2
Irradiated Fuel/Target	989.6	11679.4	4595.6	14.4	0.8	0.7
Total	1468.0	35442.0	4932.3			

Table 4.0 Enriched Uranium (EU) in WHC Facilities

Kg EU (Element Wt.)

DOE Form	#Items	K-Basins	PUREX	U03-Plant	PFP	222-S Lab	T Plant	D&D Tank Farms	308/ 303K	U-Fuel Fab Storage	FFTF Site	Total (rounded)
Metal	5942	2264.6	0	0	2.4	0	0	0	0	1743391.4	0	1745658
Oxide	565	0	0	667041.0	204.2	0	0	0	0	0	0	667245
Compound	301	0	0	0	146.0	0	0	0	0	0	0	146
Sources & Samples	94	0	19.1	1206.2	10.8	0.9	0	0	0	1497.3	0	2734
Combustibles	3	0	0	0	0.3	0	0	0	0	0	0	0
Noncombustible	4	0	0	0	0.1	0	0	0	0	0	0	0
Process Residue	4	0	0	0	0.2	0	0	0	0	0.4	0	1
Solution	53	0	4871.7	234.6	3.9	0	0	0	0	11.4	0	5122
Reactor Fuel	252	0	0	0	136.7	0	0	0	0.2	0	42.7	180
Irradiated Fuel	8026	1420600.6	240.7	0	0	0	0	0	19.4	0	252.3	1421113
Total (rounded)	15244	1422865	5131	668482	505	1	0	0	19	1744901	295	3842199

Table 4.1 Fuel Fabrication Unirradiated Uranium Inventory

(Element Wt.)

Metal Form	COEI	% U-235	MTU	kg U-235
Enriched Uranium				
Billets	254	0.95	626.0	5946.9
	254	1.25	233.6	2920.1
Finished Fuel	257	0.95	611.9	5813.1
	257	0.98	3.6	35.2
	257	1.05	3.6	37.3
	257	1.08	2.6	28.5
	257	1.15	133.7	1537.5
Unfinished Fuel	256	0.95	113.4	1077.0
	256	1.25	14.6	182.9
Total			1743.0	17578.5

Normal Uranium				
Billets	254	0.71	80.0	
Finished Fuel	257	0.71	66.0	
Unfinished Fuel	256	0.71	8.7	
Total			154.7	

Total Inventory	1897.7

Note: Table does not include: 2.2 metric tons of EU contained in unirradiated fuel stored in KE-Basin; nor 1.9 metric tons of EU contained in unirradiated scrap, sources and samples; nor 310 kg of DU contained in misc. scrap stored in the 300 Area.

Table 4.2 Depleted Uranium (DU) in WHC Facilities

Kg DU (Element Wt.)

DOE Form	#Items	K-Basins	PUREX	U03-Plant	PFP	222-S Lab	T Plant	D&D Tank Farms	308/ 303K	U-Fuel Fab Storage	FFTF Site	Total (rounded)
Metal	14	0	0	0	21.8	0	0	0	0	303.6	0	325
Oxide	149	0	0	103047.4	206.7	0	0	0	738.0	0	0	945
Compound	431	0	0	0	321.9	0	0	0	0	0	0	322
Sources & Samples	336	0	0	0	48.2	0	0	0	24.4	0	21498.0	124617
Combustibles	21	0	0	0	6.3	0	0	0	0	0	0	6
Noncombustibles	0	0	0	0	0	0	0	0	0	0	0	0
Process Residue	3	0	0	0	0.3	0	0	0	0	5.1	0	5
Solution	52	0	0	0	58.6	0	0	0	0	1.0	0	60
Reactor Fuel	700	0	0	0	949.7	0	0	0	1433.0	0	618.3	3001
Irradiated Fuel	4847	675531.8	2891.3	0	0	0	15657.0	0	0	0	7660.5	701741
Total (rounded)	6553	675532	2891	103047	1613	0	15657	0	2195	310	29777	831022

Table 4.3 Normal Uranium (NU) in WHC Facilities

Kg NU (Element Wt.)

DOE Form	#Items	K-Basins	PUREX	U03-Plant	PFP	222-S Lab	T Plant	D&D Tank Farms	308/ 303K	U-Fuel Fab Storage	FFTF Site	Total (rounded)
Metal	598	65.4	0	0	1.4	0	203.0	0	0	154688.1	0	154958
Oxide	477	0	0	1.1	780.9	0	0	0	1133.3	0	0	1915
Compound	52	0	0	0	51.9	0	0	0	0	0	0	52
Sources & Samples	32	41.5	4.0	0.7	10.8	12.4	0	0	0	440.5	0	510
Combustibles	5	0	0	0	0.3	0	0	0	0	0	0	0
Noncombustibles	0	0	0	0	0	0	0	0	0	0	0	0
Process Residue	0	0	0	0	0	0	0	0	0	0	0	0
Solution	7	0	0	0	0.4	0	0	0	0	0	0	0
Reactor Fuel	199	0	0	0	1264.6	0	0	0	133.1	0	206.9	1605
Irradiated Fuel	176	0	10.0	0	0	0	0	0	0	0	849.3	859
Total (rounded)	1546	107	14	2	2110	12	203	0	1266	155129	1056	159899

Table 5.0 DP Project SNM at WHC for Retention and Turnover to EM (DP-EM MOA) (Before Restricted Use Project Changes)

(Element Wt.)

DP-EM MOA Summary	Project #	Facility	#Items	Pu kg	EU kg	DU kg	NU kg	Th kg	Np kg	Pu238 g	U233 g	Cf mg	Li g
DP Retention	HGEO22106S	PFP	15	16.3	0	0	0	0	0	0	0	0	0
DP Retention	MEGO22103M	PFP	347	729.9	0	0	0	0	0	0	0	0	0
Total Retention			**362**	**746.2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Turnover to EM	EGE034102H	FuelFab	8	0	1497.3	0	440.5	0	0	0	0	0	0
Turnover to EM	HGE011200F	K-Basin	20	0	2264.6	0	46.8	0	0	0	0	0	0
Turnover to EM	HGE011200F	FuelFab	6506	0	1743403.3	309.7	154688.1	0	0	0	0	0	0
Turnover to EM	HGE0221000	222-S	9	0	.9	0	12.4	0	0	0	0	23397	50
Turnover to EM	HGE0221000	D&D TF	1	0	0	0	0	0	0	3	0	0	0
Turnover to EM	HGE0221000	PFP	216	26.7	1.3	38.5	.8	1.4	.1	85	39	20	0
Turnover to EM	HGE0221000	PUREX	4	.2	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0221000	FuelFab	1	0	0	0	0	0	0	0	0	67	0
Turnover to EM	HGE022101Z	PFP	46	12.7	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE022103C	PFP	49	8.1	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE022104R	PFP	139	43.9	.2	.3	0	0	0	0	0	0	0
Turnover to EM	HGE022106N	PFP	99	234.8	0	0	0	0	0	0	0	0	0
Turnover to EM	HGEO22106S	PFP	4577	1424.6	153.8	545.1	813.5	0	0	0	40	0	0
Turnover to EM	HGE022106U	U03	197	0	668247.2	0	1.9	0	0	0	0	0	0

DP Project SNM at WHC for Retention and Turnover to EM (DP-EM MOA) - Continued

DP-EM MOA Summary	Project #	Facility	#Items	Pu kg	EU kg	DU kg	NU kg	Th kg	Np kg	Pu238 g	U233 g	Cf mg	Li g
Turnover to EM	HGE022106X	PFP	396	334.5	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210CU	U03	1	0	234.6	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210SP	PUREX	6	.1	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210DP&U	PUREX	3	8.4	576.6	17.3	0	0	0	0	0	0	0
Turnover to EM	HGE02210SU	PUREX	2	0	19.1	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210ZM	PFP	140	.3	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0221RRR	PFP	32	13.4	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE030000	308/303K	13	0	0	1.0	.3	0	0	0	0	0	0
Turnover to EM	HGE030000	FFTF	5	0	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE030000	PFP	18	2.3	1.2	.5	3.5	0	0	0	0	0	0
Turnover to EM	HGE0347030	308/303K	1	0	0	.7	0	0	0	0	0	0	0
Turnover to EM	HGE0347030	K-Basin	2	0	0	0	60.1	0	0	0	0	0	0
Turnover to EM	HGE0347030	PFP	32	3.2	0	0	0	0	0	2	0	0	0
Turnover to EM	MGE011103B	U03	4	0	0	103047.4	0	0	0	0	0	0	0
Turnover to EM	MGE022100X	PFP	404	198.4	0	0	0	0	0	0	0	0	0
Turnover to EM	MGE02210CX	PFP	424	354.4	0	0	0	0	0	0	0	0	0
Total Turnovers			13717	3412.1	2416400.3	103960.5	156072	1.4	.1	90	79	23484	50

Table 5.1 DP Project SNM at WHC for Retention and Turnover to EM (DP-EM MOA) (After Restricted Use Project Changes)

(Element Wt.)

DP-EM MOA Summary	Project #	Facility	#Items	Pu kg	EU kg	DU kg	NU kg	Th kg	Np237 kg	Pu238 g	U233 g	Cf mg	Li g
DP Retention	EGE0221R6S	PFP	6	10.7	0	0	0	0	0	0	0	0	0
DP Retention	HGE022106S	PFP	9	5.6	0	0	0	0	0	0	0	0	0
DP Retention	MGE022103M	PFP	70	143.8	0	0	0	0	0	0	0	0	0
DP Retention	MGE0221R3M	PFP	277	586	0	0	0	0	0	0	0	0	0
Total Retention			**362**	**746.1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Turnover to EM	EGE0221R6S	PFP	510	78.0	0	0	0	0	0	0	0	0	0
Turnover to EM	EGE034102H	Fuel Fab.	8	0	1497.3	0	440.5	0	0	0	0	0	0
Turnover to EM	HGE011200F	K-Basin	20	0	2264.6	0	46.8	0	0	0	0	0	0
Turnover to EM	HGE011200F	Fuel Fab.	6506	0	1743403.3	309.7	154688.1	0	0	0	0	0	0
Turnover to EM	HGE0221000	222-S	9	0	.9	0	12.4	0	0	0	0	23397	50
Turnover to EM	HGE0221000	D&D TF	1	0	0	0	0	0	0	3	0	0	0
Turnover to EM	HGE0221000	PFP	216	26.7	1.3	38.5	.8	1.4	.1	85	39	20	0
Turnover to EM	HGE0221000	PUREX	4	.2	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0221000	Fuel Fab	1	0	0	0	0	0	0	0	0	67	0
Turnover to EM	HGE022101Z	PFP	46	12.7	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE022103C	PFP	49	8.1	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE022104R	PFP	139	43.9	.2	.3	0	0	0	0	0	0	0
Turnover to EM	HGE022106N	PFP	99	234.8	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE022106S	PFP	4098	1359.8	153.8	545.1	813.5	0	0	0	40	0	0

DP Project SNM at WHC for Retention and Turnover to EM (DP-EM MOA) - Continued

DP-EM MOA Summary	Project #	Facility	#Items	Pu kg	EU kg	DU kg	NU kg	Th kg	Np237 kg	Pu238 g	U233 g	Cf mg	Li g
Turnover to EM	HGE022106U	U03	197	0	668247.2	0	1.9	0	0	0	0	0	0
Turnover to EM	HGE022106X	PFP	396	334.5	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210CU	UO3	1	0	234.6	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210SP	PUREX	6	.1	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210SP&U	PUREX	3	8.4	576.6	17.3	0	0	0	0	0	0	0
Turnover to EM	HGE02210SU	PUREX	2	0	19.1	0	0	0	0	0	0	0	0
Turnover to EM	HGE02210ZM	PFP	140	.3	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0221RRR	PFP	1	.3	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0300000	308/303K	13	0	0	1.0	.3	0	0	0	0	0	0
Turnover to EM	HGE0300000	FFTF	5	0	0	0	0	0	0	0	0	0	0
Turnover to EM	HGE0300000	PFP	18	2.3	1.2	.5	3.5	0	0	0	0	0	0
Turnover to EM	HGE0347030	308/303K	1	0	0	.7	0	0	0	0	0	0	0
Turnover to EM	HGE0347030	K-Basins	2	0	0	0	60.1	0	0	0	0	0	0
Turnover to EM	HGE0347030	PFP	32	3.2	0	0	0	0	0	2	0	0	0
Turnover to EM	MGEO11103B	UO3	4	0	0	103047.4	0	0	0	0	0	0	0
Turnover to EM	MGE022100X	PFP	404	198.4	0	0	0	0	0	0	0	0	0
Turnover to EM	MGE02210CX	PFP	424	354.4	0	0	0	0	0	0	0	0	0
Total Turnover			**13,355**	**2,666.1**	**2,416,400.1**	**103,960.5**	**156,067.9**	**1.4**	**.1**	**90**	**79**	**23484**	**50**

Table 6.0 DOE Program Summary
All SNM by DOE Program in WHC Facilities
(Element Wt.)

DOE Program	#Items	Pu kg	EU kg	DU kg	Nu kg	Th kg	Np237 kg	Pu238 g	U-233 g	Cf mg	Am241 g	Trit g	Li g
DP	13717	3412.1	2416400	103960.5	156072.0	1.4	0.1	90.1	79.0	23484	0	0.1	50.0
EM	12464	4189.7	1425149.4	694122.0	213.0	0	59.7	0	0	0	2.0	0	0
MM	50	19.2	4.9	106.7	771.3	0	0	0	0	0	0	0	0
NE	2923	3336.9	644.6	32833.4	2843.5	494.7	2.0	24.8	75.0	0	10.0	0.5	0
NN	1	0	0	0.2	0	0	0	0	0	0	0	0	0
Total	29155	10957.9	3842199.1	831022.7	159899.9	496.1	61.9	114.9	154.0	23484	12.0	0.5	50.0

Appendix A - West Valley Plutonium Shipments to AEC's Hanford Site

In the 1950"s, commercial utilities began returning fuel to the Atomic Energy Commission (AEC) under a program called the Plutonium Credit Activity. This program, established by the US Congress in the Atomic Energy Act of 1954, provided "credit" for plutonium produced in commercial nuclear reactors operating on fuel purchased or leased from the AEC. Although the uranium in the civilian power reactor industry in the 1950's and early 1960's was owned by the AEC and leased to the utility companies, the plutonium produced during operation of these reactors was owned by the utility companies.

The Plutonium Credit Activity program was announced in 1957 and ended in 1970. The US Government paid the utilities approximately $10.4 million for approximately 900 kg of plutonium. All of the plutonium purchased under this program was processed at West Valley and shipped to the Hanford site with the exception of 2.5 kg plutonium from the Vallecitos Boiling Water Reactor, which was processed at the Savannah River Site.

The AEC-owned plutonium and the plutonium purchased by the AEC under the Plutonium Credit Activity was shipped to the Hanford site as plutonium nitrate solution. The liquid shipments were by commercial truck in accordance with applicable transportation regulations.

Of the 1530 kg of separated plutonium received by the Hanford Site from West Valley, 635 kg came from fuel or reactors that were AEC-owned, and the remaining 895 kg came from the commercial power-reactor fuel.

- o Of the 635 kg of the AEC-origin plutonium, the majority came from N-Reactor, a plutonium production reactor at the Hanford site near Richland, Washington. Specifically, 534 kg of plutonium came form N-Reactor, 95 kg from AEC-owned fuel for the Southwest Experimental Fast Oxide Reactor (SEFOR), and 6 kg from the Bonus Nuclear Electrical Station, an AEC-owned demonstration reactor.

- o Of the 895 kg of separated plutonium purchased by the AEC from the utility companies, 436 kg was from Yankee Atomic Company (Yankee Rowe), 285 kg from Commonwealth Edison Company (Dresden-1), 63 kg from Consumers Power Company (Big Rock Point), 7 kg from Northern States Power Company (Pathfinder), and 104 kg from Consolidated Edison Company (Indian Point-1).

Most of the Plutonium the AEC received from West Valley was used in the breeder reactor and the zero power reactor programs. To meet the isotopic and physical requirements for these programs, the NFS plutonium was blended with other plutonium and then converted to either a metal or an oxide. Even by blending, the isotopic mixture of the power reactor plutonium generally precluded its use in weapons production, and there is no indication that blending for that purpose occurred.

Note: Narrative is taken from DP-22 document,"Plutonium Recovery from Spent Fuel Reprocessing at West Valley, New York."

Table A1 NFS, West Valley Separated Plutonium Shipments to the Hanford Site
(Element Wt.)

Source AEC/Utility	Reactor Name	Origin (Kg Pu)		
		AEC	Commercial	Total
Atomic Energy Commission	N-Reactor	533.5		533.5
Southwest Atomic Energy Associates	SEFOR	95.2		95.2
Puerto Rico Water Resources Authority	Bonus Superheater Bonus Boiler	6.5		6.5
Commonwealth Edison	Dresden-1		284.5	284.5
Consolidated Edison	Indian Point-1		104.0	104.0
Consumers Power	Big Rock Point		63.4	63.4
Northern States Power	Pathfinder		7.0	7.0
Yankee Atomic Electric	Yankee Rowe		435.7	435.7
Total		**635.2**	**894.6**	**1529.8**

Appendix B - Program Inventory

Table B1 EM Program Inventory
by Form & Item Mix (Counterpart)
Element Wt.

DOE Form	Item Mix	#Items	Pu	EU	DU	NU	Np237	Am241
Metal	NU	1	0.0	0.0	0.0	203.0	0.0	0.0
Sources & Samples	Am241	2	0.0	0.0	0.0	0.0	0.0	2.0
Solution	EU	4	0.0	4535.8	0.0	0.0	0.0	0.0
Solution	Pu	1	.0	0.0	0.0	0.0	0.0	0.0
Solution	Pu+DU	39	25.7	0.0	58.0	0.0	0.0	0.0
Sub Total		44	25.7	4535.8	58.0	0.0	0.0	0.0
Reactor Fuel	Pu	3	.3	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+DU	3	.2	0.0	1.2	0.0	0.0	0.0
Reactor Fuel	Pu+EU	1	.3	13.1	0.0	0.0	0.0	0.0
Sub Total		7	.8	13.1	1.2	0.0	0.0	0.0
Irrad Fuel/Target	DU	196	0.0	0.0	15657.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu	75	128.2	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU	15	.3	0.0	378.1	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+NU+Np	1	8.7	0.0	2874.0	10.0	.0	0.0
Irrad Fuel/Target	Pu+DU+Np	4216	1631.9	0.0	675153.8	0.0	24.9	0.0
Irrad Fuel/Target	Pu+EU	6	.1	518.9	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+EU+Np	7901	2394.0	1420081.6	0.0	0.0	34.8	0.0
Sub Total		12,410	4163.2	1420600.5	694062.9	10.0	59.7	0.0
Total		12464	4189.7	1425149.4	694122.0	213.0	59.7	2.0

Table B2 DP Program Inventory
by Form & Item Mix (Counterpart)
Element Wt.

DOE Form	Item Mix	#Items	Kg Pu	Kg EU	Kg DU	Kg NU	Kg Th	Kg Np237	g Pu238	g U233	mg Cf	g Trit	g Li
Metal	DU	2	0.0	0.0	303.6	0.0	0.0	0	0	0	0	0	0
Metal	EU	5935	0.0	1745625.4	0.0	0.0	0.0	0	0	0	0	0	0
Metal	EU+NU	2	0.0	31.1	0.0	13.1	0.0	0	0	0	0	0	0
Metal	NU	592	0.0	0.0	0.0	154740.4	0.0	0	0	0	0	0	0
Metal	Pu	464	758.8	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Metal	Pu+DU	12	10.3	0.0	21.8	0.0	0.0	0	0	0	0	0	0
Metal	Pu+EU	5	0.7	1.9	0.0	0.0	0.0	0	0	0	0	0	0
Metal	Pu+NU	3	0.2	0.0	0.0	1.4	0.0	0	0	0	0	0	0
Sub Total	**All**	**7015**	**770.2**	**1745658.4**	**325.3**	**154754.9**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Oxide	DU	4	0.0	0.0	103047.4	0.0	0.0	0	0	0	0	0	0
Oxide	EU	186	0.0	665135.7	0.0	0.0	0.0	0	0	0	0	0	0
Oxide	EU+NU	1	0.0	1905.3	0.0	1.1	0.0	0	0	0	0	0	0
Oxide	Pu	3002	1929.1	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Oxide	Pu+DU	86	9.7	0.0	182.9	0.0	0.0	0	0	0	0	0	0
Oxide	Pu+DU+NU	1	0.2	0.0	11.6	2.7	0.0	0	0	0	0	0	0
Oxide	Pu+EU	19	11.3	1.1	0.0	0.0	0.0	0	0	0	0	0	0
Oxide	Pu+NU	178	20.0	0.0	0.0	756.7	0.0	0	0	0	0	0	0
Sub Total	**All**	**3477**	**1970.4**	**667042.1**	**103242.0**	**760.6**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Compound	DU	16	0.0	0.0	15.3	0.0	0.0	0	0	0	0	0	0
Compound	EU	80	0.0	18.8	0.0	0.0	0.0	0	0	0	0	0	0
Compound	EU+DU+NU	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Compound	EU+NU	4	0.0	0.2	0.0	0.2	0.0	0	0	0	0	0	0
Compound	NU	5	0.0	0.0	0.0	0.2	0.0	0	0	0	0	0	0
Compound	Pu	135	21.3	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Compound	Pu+DU	412	51.4	0.0	306.1	0.0	0.0	0	0	0	0	0	0
Compound	Pu+EU	213	28.4	127.0	0.0	0.0	0.0	0	0	0	0	0	0
Compound	Pu+EU+DU+NU	2	2.0	0.1	0.4	2.0	0.0	0	0	0	0	0	0
Compound	Pu+EU+NU	1	0.0	0.0	0.0	0.2	0.0	0	0	0	0	0	0
Compound	Pu+NU	39	5.0	0.0	0.0	49.3	0.0	0	0	0	0	0	0
Sub Total	**All**	**908**	**108.1**	**146.0**	**321.9**	**51.9**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Sources & Samples	Cf	6	0.0	0.0	0.0	0.0	0.0	0	0	0	23484	0	0
Sources & Samples	DU	6	0.0	0.0	1.5	0.0	0.0	0	0	0	0	0	0
Sources & Samples	DU+NU	1	0.0	0.0	0.0	41.5	0.0	0	0	0	0	0	0
Sources & Samples	EU	28	0.0	2578.6	0.0	0.0	0.0	0	0	0	0	0	0
Sources & Samples	EU+DU+NU	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0

Table B2 DP Program Inventory - Continued

DOE Form	Item Mix	#Items	Kg Pu	Kg EU	Kg DU	Kg NU	Kg Th	Kg Np237	g Pu238	g U233	mg Cf	g Trit	g Li
Sources & Samples	EU+NU	1	0.0	147.0	0.0	10.9	0.0	0	0	0	0	0	0
Sources & Samples	NU	5	0.0	0.0	0.0	434.9	0.0	0	0	0	0	0	0
Sources & Samples	Np237	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Sources & Samples	Pu	350	40.8	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Sources & Samples	Pu+DU	12	1.3	0.0	38.9	0.0	0.0	0	0	0	0	0	0
Sources & Samples	Pu+EU	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Sources & Samples	Pu+EU+NU+Np+Li	1	0.0	0.5	0.0	6.8	0.0	0	0	0	0	0	50
Sources & Samples	Pu+NU	6	1.0	0.0	0.0	9.5	0.0	0	0	0	0	0	0
Sources & Samples	Pu+Np+Th	1	1.0	0.0	0.0	0.0	1.4	0	0	0	0	0	0
Sources & Samples	Pu+Np+U233	1	2.0	0.0	0.0	0.0	0.0	0	0	39	0	0	0
Sources & Samples	Pu238	10	0.0	0.0	0.0	0.0	0.0	0	90.1	0	0	0	0
Sources & Samples	Trit	5	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Sub Total	**All**	**436**	**46.0**	**2726.1**	**40.4**	**503.6**	**1.4**	**0**	**90.1**	**39**	**23484**	**0**	**50**
Combustibles	EU	2	0.0	0.1	0.0	0.0	0.0	0	0	0	0	0	0
Combustibles	Pu	407	30.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Combustibles	Pu+DU	21	1.0	0.0	6.3	0.0	0.0	0	0	0	0	0	0
Combustibles	Pu+EU	1	0.0	0.1	0.0	0.0	0.0	0	0	0	0	0	0
Combustibles	Pu+NU	5	0.2	0.0	0.0	0.3	0.0	0	0	0	0	0	0
Sub Total	**All**	**436**	**31.3**	**0.2**	**6.3**	**0.3**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Noncombustible	Pu	38	0.4	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Noncombustible	Pu+EU	4	0.1	.1	0.0	0.0	0.0	0	0	0	0	0	0
Sub Total	**All**	**42**	**0.4**	**0.1**	**0.0**	**0.0**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Process Residue	EU	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Process Residue	EU+DU	1	0.0	0.4	5.1	0.0	0.0	0	0	0	0	0	0
Process Residue	Pu	971	131.1	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Process Residue	Pu+DU	1	0.1	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Process Residue	Pu+EU	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Process Residue	Pu+EU+DU+Th	1	36.8	0.2	0.3	0.0	0.0	0	0	0	0	0	0
Sub Total	**All**	**976**	**168.0**	**0.6**	**5.4**	**0.0**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Solution	EU	1	0.0	234.6	0.0	0.0	0.0	0	0	0	0	0	0
Solution	EU+DU	1	0.0	11.4	1.0	0.0	0.0	0	0	0	0	0	0
Solution	Pu	340	286.7	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Solution	Pu+DU	12	20.1	0.0	0.6	0.0	0.0	0	0	0	0	0	0
Solution	Pu+EU	45	9.9	339.8	0.0	0.0	0.0	0	0	0	0	0	0
Solution	Pu+EU+Th	1	0.1	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Solution	Pu+EU+U233	1	0.0	0.0	0.0	0.0	0.0	0	0	3	0	0	0
Solution	Pu+NU	7	0.1	0.0	0.0	0.4	0.0	0	0	0	0	0	0
Solution	Pu+Th	4	0.2	0.0	0.0	0.0	0.0	0	0	0	0	0	0

Table B2 DP Program Inventory - Continued

DOE Form	Item Mix	#Items	Kg Pu	Kg EU	Kg DU	Kg NU	Kg Th	Kg Np237	g Pu238	g U233	mg Cf	g Trit	g Li
Solution	U233	1	0.0	0.0	0.0	0.0	0.0	0	0	37	0	0	0
Sub Total	**All**	**413**	**317.2**	**585.8**	**1.5**	**0.4**	**0.0**	**0**	**0**	**40**	**0**	**0**	**0**
Reactor Fuel	DU	5	0.0	0.0	0.4	0.0	0.0	0	0	0	0	0	0
Reactor Fuel	NU	4	0.0	0.0	0.0	0.3	0.0	0	0	0	0	0	0
Reactor Fuel	Pu	3	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
Sub Total	**All**	**12**	**0.0**	**0.0**	**0.4**	**0.3**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Irrad Fuel	Pu+EU+DU	1	0.0	13.7	17.3	0.0	0.0	0	0	0	0	0	0
Irrad Fuel	Pu+EU+Np	1	0.5	227.0	0.0	0.0	0.0	0	0	0	0	0	0
Sub Total	**All**	**2**	**0.5**	**240.7**	**17.3**	**0.0**	**0.0**	**0**	**0**	**0**	**0**	**0**	**0**
Total	**All**	**13717**	**3412.1**	**2416400**	**103960.5**	**156072**	**1.4**	**0**	**90.1**	**79**	**23484**	**0**	**50**

Note: Sub Total quantities are computer gererated (based on 3 or more decimal places) and may differ slightly from acutal column totals due to rounding.

Table B3 NE Program Inventory

by Form & Item Mix (Counterpart)

Element Wt.

DOE Form	Item Mix	#Items	Pu Kg	EU Kg	DU Kg	NU Kg	Th Kg	Np237 Kg	Pu238 g	U233 g	Cf g	Am241 g	Trit g
Oxide	DU	3	0.0	0.0	467.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	DU+NU	2	0.0	0.0	270.9	47.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	EU	7	0.0	.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	NU	257	0.0	0.0	0.0	1085.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Pu	21	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Pu+DU	57	4.9	0.0	12.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Pu+EU	346	59.9	197.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Pu+EU+Th	5	.4	2.6	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Pu+NU	38	6.4	0.0	0.0	21.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oxide	Th	42	0.0	0.0	0.0	0.0	433.1	0.0	0.0	0.0	0.0	0.0	0.0
Sub Total	**All**	**778**	**78.0**	**200.3**	**750.1**	**1154.7**	**433.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Compound	Pu	1	.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Compound	Pu+Th	1	.4	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0
Sub Total	**All**	**2**	**0.5**	**0.0**	**0.0**	**0.0**	**1.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Sources & Samples	Am241	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0
Sources & Samples	Cf	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	DU	15	0.0	0.0	21521.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	EU	24	0.0	.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu	7	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu+DU	297	3.1	0.0	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu+EU	32	1.7	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu+NU	17	2.1	0.0	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu+Th	4	.1	0.0	0.0	0.0	.4	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Pu238	5	0.0	0.0	0.0	0.0	0.0	0.0	24.8	0.0	0.0	0.0	0.0
Sources & Samples	Th	8	0.0	0.0	0.0	0.0	11.6	0.0	0.0	0.0	0.0	0.0	0.0
Sources & Samples	Trit	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	.5
Sources & Samples	U233	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	75.0	0.0	0.0	0.0
Sub Total	**All**	**423**	**9.9**	**6.9**	**21530.2**	**6.4**	**12.0**	**0.0**	**24.8**	**75.0**	**0.0**	**10.0**	**0.5**
Process Residue/ST	**Pu**	**3**	**.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Reactor Fuel	DU	313	0.0	0.0	1371.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	DU+Th	4	0.0	0.0	15.2	0.0	15.2	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	EU	78	0.0	73.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	NU	32	0.0	0.0	0.0	147.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu	117	31.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+DU	312	527.9	0.0	1446.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table B3 NE Program Inventory - Continued

DOE Form	Item Mix	#Items	Pu Kg	EU Kg	DU Kg	NU Kg	Th Kg	Np237 Kg	Pu238 g	U233 g	Cf g	Am241 g	Trit g
Reactor Fuel	Pu+DU+NU	22	50.8	0.0	40.4	142.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+DU+Np	1	2.1	0.0	7.2	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+EU	150	14.2	47.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+EU+DU	8	11.6	36.1	15.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+EU+DU+NU	8	10.3	4.4	10.3	28.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+EU+DU+NU+Th	2	1.6	5.2	.9	1.1	.3	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+EU+NU	2	.1	.2	0.0	.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+NU	109	164.8	0.0	0.0	512.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Pu+Th	4	.4	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
Reactor Fuel	Th	6	0.0	0.0	0.0	0.0	10.8	0.0	0.0	0.0	0.0	0.0	0.0
Sub Total	**All**	**1168**	**814.9**	**166.2**	**2907.7**	**833.1**	**27.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Irrad Fuel/Target	DU	59	0.0	0.0	293.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	EU	106	0.0	148.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU	42	377.4	0.0	994.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+NU	18	76.2	0.0	214.7	43.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+NU+Np	131	931.1	0.0	3007.2	197.4	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+Np	157	814.9	0.0	2934.5	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+Np+Th	1	1.8	0.0	63.1	0.0	10.6	.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+DU+Th	1	1.5	0.0	63.4	0.0	10.6	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+EU+DU	1	3.3	9.9	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+EU+DU+NU+Np	2	12.5	1.8	36.4	.9	0.0	.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+EU+DU+Np	5	11.7	40.2	29.2	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+EU+Np	2	2.3	71.2	0.0	0.0	0.0	.0	0.0	0.0	0.0	0.0	0.0
Irrad Fuel/Target	Pu+NU	24	200.8	0.0	0.0	607.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sub Total	**All**	**549**	**2433.6**	**271.2**	**7645.4**	**849.3**	**21.2**	**2.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Total	**All**	**2923**	**3336.9**	**644.6**	**32833.4**	**2843.5**	**494.7**	**2.0**	**24.8**	**75.0**	**0.0**	**10.0**	**0.5**

Note: Sub Total quantities are computer gererated (based on 3 or more decimal places) and may differ slightly from actual columm totals due to rounding.