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**NUCLEAR CRITICALITY SAFETY BONDING ANALYSIS FOR
THE IN-TANK-PRECIIPITATION (ITP) PROCESS, IMPACTED
BY FISSILE ISOTOPIC WEIGHT FRACTIONS (U)**

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BOUNDING ANALYSIS FOR THE IN-TANK-PRECIPITATION (ITP)
PROCESS, IMPACTED BY FISSILE ISOTOPIC WEIGHT FRACTIONS (U)**

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INTRODUCTION

The In-Tank Precipitation process (ITP) receives High Level Waste (HLW) supernatant liquid containing radionuclides in waste processing tank 48H. Sodium tetraphenylborate, NaTPB, and monosodium titanate (MST), $\text{NaTi}_2\text{O}_5\text{H}$, are added for removal of radioactive cesium and strontium, respectively. In addition to removal of radio-strontium, MST will also remove plutonium and uranium. The precipitate generated remains in tank 48H during processing, whereas, the decontaminated supernate is filtered and passes on to tank 50H, then to Saltstone. After three process batches the precipitate is washed, filtered, then transferred to the Defense Waste Processing Facility for incorporation into borosilicate glass.

The solutions fed to the ITP process are alkaline waste supernate, resulting from the neutralization of high level acidic waste generated in the Separations Canyon facilities. The majority of the feed solutions to ITP will come from the dissolution of supernate that had been concentrated by evaporation to a crystallized salt form, commonly referred to as saltcake. Cesium is highly soluble in the supernate, whereas, strontium, uranium and plutonium are only slightly soluble. The concern for criticality safety arises from the adsorption of uranium and plutonium onto MST. Both uranium and plutonium have fissionable isotopes. If sufficient mass and optimum conditions are achieved then criticality is credible.

The concentration of uranium and plutonium from solution into the smaller volume of precipitate represents a concern for criticality. This report supplements WSRC-TR-93-171, "Nuclear Criticality Safety Bounding Analysis For The In-Tank-Precipitation (ITP) Process (U)"¹, utilizing data representative of Separation's canyon waste streams (the previous analysis assumed very conservative bounding isotopic conditions). The historical waste stream information provides actual uranium and plutonium fissile isotope weight fraction data.

SUMMARY

Criticality safety in ITP can be analyzed by two bounding conditions; 1) the minimum safe ratio of MST to fissionable material and 2) the maximum fissionable material adsorption capacity of the MST. Calculations have provided the first bounding condition and experimental analysis has established the second. This report combines these conditions with canyon facility data to evaluate the potential for criticality in the ITP process due to the adsorption of the fissionable material from solution. In addition, this

report analyzes the potential impact of increased uranium loading onto MST. Results of this analysis demonstrate a greater safety margin for ITP operations than the previous analysis. This report further demonstrates that the potential for criticality in the ITP process due to adsorption of fissionable material by MST is not credible.

BACKGROUND

High Level Waste Process Description

Waste is transferred from the Separations' facilities to waste receiver tanks in the tank farms. Insoluble metal oxide sludge is allowed to settle out of the high alkaline solution, resulting in a solution of radioactive waste above a layer of sludge. The liquid solution is later decanted from the insoluble sludge fraction and concentrated by evaporation to solid salt. The solid salt will be dissolved and decontaminated in the ITP process for transfer to the Defense Waste Processing Facility (DWPF).

ITP Process Description

The ITP process contacts HLW solutions with sodium tetraphenylborate and monosodium titanate to remove radioactive cesium and strontium. The concern for criticality safety arises from the adsorption of uranium and plutonium onto monosodium titanate (MST), the adsorbent agent for strontium. The settling of the material effectively concentrates any adsorbed uranium and plutonium into the volume of the settled mass. Since uranium and plutonium have fissionable isotopes, the concentration and accumulation of the fissionable material is a concern for criticality safety.

MST is added during the first batch of a three batch ITP process cycle, and NaTPB is added every batch. Current plans are to maintain the MST concentration at approximately 0.3 grams per liter of solution. A 1000 Kg MST addition will yield an MST concentration of 0.3 grams per liter, in a batch size of ~ 800,000 gallons. The MST will remain in the tank during filtration, and for the second and third additions of liquid (also ~ 800,000 gallons). The MST concentration (0.3 grams per liter) is therefore determined against the MST required to process a single batch.^{2,3}

Fissile Material in HLW

Fissile material in HLW is dominated by the fissile isotopes of uranium and plutonium which entered the waste tanks as a result of process losses from Separation operations. These process losses are documented as monthly

transfers of actinide isotopic and elemental mass losses for all Separation's waste streams.⁵ Distinct uranium and plutonium isotopic differences exist between H-area and F-area waste as a result of operations.

In F-area, the process is primarily the production of weapons grade plutonium. The process extracts plutonium which is mostly ^{239}Pu from depleted uranium which is mostly ^{238}U . Plutonium 239 is the dominate fissile material in F-area. The minor quantity ($< .5$ wt%) of fissile uranium, ^{235}U , in depleted uranium can be ignored.

In H-area, the enriched uranium fuel is recycled for reuse in reactors. The enriched uranium began with the fissile isotope, ^{235}U , enriched to approximately 91 wt%. Over time, the weight percent of ^{235}U has decreased as the weight percent of ^{236}U has increased for the production of ^{237}Np . Plutonium is also a by-product of fuel reprocessing. The H-area plutonium has no value as weapons grade plutonium nor as heat source plutonium and was discarded to waste.

Uranium and plutonium are both adsorbed by MST in the ITP process. The criticality safety analysis requires evaluating the sum effect of fissile isotopes of both elements. Previous analysis¹ and experimentation⁵ indicates plutonium, assuming 100% ^{239}Pu , alone absorbed onto MST is insufficient for criticality. Fissile uranium isotopes must also be absorbed in combination with plutonium to impact criticality safety in ITP. As indicated above, F-area uranium is depleted in the fissile isotope ^{235}U and therefore F-area waste stream material will have less of an impact than enriched uranium in H-area.

Uranium has two major fissile isotopes, ^{235}U and ^{233}U . As mentioned previously, in H-area, waste receipts from HHW and LHW streams contain enriched uranium. Elemental uranium wt% of H-area HM HHW and LHW streams are captured in appendices D and F spreadsheets and figures to show variance of years of waste receipts. A very small quantity of ^{233}U is also present from a few Thorex processing campaigns distributed between eight sludge tanks. In a salt tank, ^{233}U bearing supernate was blended with supernate from tanks of varying uranium enrichment when deposited as saltcake. As a result, the ^{233}U content of solution going to ITP is many times less than the ^{235}U content and is assumed to be represented by an equivalent ^{235}U in the analysis.⁶ No credit has been given in this analysis for the impact of mixing enriched uranium from H-area HM waste with the much greater mass of depleted uranium from F-area Purex waste.

Plutonium also has two fissile isotopes, ^{239}Pu and ^{241}Pu . Both isotopes are present due to plutonium process losses and as waste from recycled enriched

uranium processing. In HLW, ^{241}Pu can be directly evaluated as ^{239}Pu . This is allowed when the ^{240}Pu content is greater than the ^{241}Pu due to the neutron adsorbing properties of ^{240}Pu competing with the fissioning of ^{241}Pu .^{6,7} Plutonium fissile weight fractions in this study were calculated as $(^{239}+^{241})\text{Pu}/\text{Total Pu}$. Plutonium fissile weight fraction data are captured in Appendix E spreadsheets.

The remainder of this analysis evaluates only the impact of the H-area HM High Heat Waste (HHW) process* fissile material losses. The HM Low Heat Waste Stream (LHW) did not contain ^{239}Pu , see Appendix F. The previously mentioned data of historical actinide isotope and elemental mass losses⁴ are used to evaluate the most limiting condition for ITP operation. Monthly fissile isotope weight fractions of plutonium and uranium for HM process waste streams used in this analysis are plotted in Figures 1 and 2 below.

* HM process - Modified Purex process in H-canyon for enriched uranium fuel reprocessing.

FIGURE 2.
H-Area HM Fissile Uranium Isotopic Weight Fractions
(JUN '59-DEC '92)

The average yearly weight fraction data for uranium and plutonium are plotted together in Figure 3 below. The most bounding ** fissile isotopic conditions for ITP occur where both the fissile uranium and plutonium isotopic weight fractions in combination are at their highest values observed. This occurs for material processed in the earliest years of the H-area HM process operation. Additional discussion of this analysis is provided in the Criticality Safety Analysis section and Appendices B, D, E, and F.

** Fissile-(e.g., ^{233}U , ^{235}U , ^{239}Pu , ^{241}Pu , ^{242}Am , ^{243}Cm , ^{245}Cm) a subset of fissionable nuclides, or mixtures of them, which are capable of sustaining a fission chain reaction with slow (thermalized) neutrons as well as with high energy (fast) neutrons.

FIGURE 3
Plutonium Vs Uranium Weight Fraction for H-area HM Waste
Jun'59-DEC'92

Other Fissile Materials in HLW

Uranium and plutonium are the most abundant fissionable elements*** in HLW. Other fissionable actinide elements, such as neptunium, americium, and curium, are also present but are many times less abundant in HLW.⁸ Neptunium has only a fissionable isotope and in the highly moderated conditions in ITP will only act as a neutron absorber. The mass of americium and curium in HLW is many times less than uranium and plutonium and the non-fissile isotopes of these elements greatly exceed the fissile isotopes.⁹ The small mass of these elements entering the waste tanks is distributed throughout a few tanks. The soluble fraction of these elements was further distributed and diluted during evaporation operations involving concentrate

*** Fissionable-(e.g., ^{233}U , ^{235}U , ^{237}Np , ^{238}Pu , ^{239}Pu , ^{240}Pu , ^{241}Pu) nuclides, or mixtures of them, capable of sustaining a fission chain reaction with neutrons at some (but not necessarily all) energies. Fissionable isotopes that are not fissile will not sustain a fission chain reaction with low-energy (thermalized) neutrons.

recycle and saltcake deposition. The very small contribution of americium and curium fissile isotopes to the much larger quantity of uranium and plutonium fissile isotopes led to these being ignored in this analysis. Sample analysis of ITP salt solutions and solids will allow continued confirmation of this assessment of americium and curium impact.

CRITICALITY SAFETY ANALYSIS DISCUSSION

Scenario Discussion

The criticality scenarios for ITP analyzed in this report involve first the accumulation of the fissionable material solids in eddies or mounds formed by agitation of the solids during mixing or liquid additions in the ITP processing tank 48H. The settling of the solids does not necessarily represent a criticality scenario. A homogeneous distribution of the fissionable material solids across the tank bottom would be within safe areal density limits.¹⁰ However, the thin slab layer of solids on the tank bottom is uncontrolled and agitation will alter the geometry of the solids possibly producing a geometry of concern. The second scenario is the accumulation of multiple batches of precipitate in ITP tank 49H, the precipitate storage and feed tank to the Defense Waste Processing Facility.

To analyze these scenarios for criticality potential, an experimental program was prepared to determine the capacity of the MST to adsorb both uranium and plutonium.^{5,11} The experiments covered a bounding range of MST concentrations and utilized the maximum solubilities for uranium and plutonium in the alkaline ITP solutions. These studies have provided loading equations for a range of MST concentrations. In addition, temperature effects were analyzed since during agitation the solution temperature will increase. The operating temperature is bounded by allowable corrosion control conditions.¹¹

For each MST mass addition, the fissionable material loading is defined by the MST mass concentration during processing. The distribution, or concentration, of the MST mass in the ITP salt solution provides the maximum chemical potential between the soluble fissionable material and the distributed MST particles. The actual ITP process involves allowing the MST particles to settle between process batches then repeating for two more batches, or contacts, with new salt solution. The loading of fissionable material, no matter how many contacts or batches of salt solution, remains bounded by the chemical potential or relative concentration difference between the fissionable material in solution and MST distributed concentration. If good distribution of the MST

in the liquid volume is not achieved then the relative MST concentration is greater and the fissionable material loading less. After the three batches of salt solution, the precipitate is washed with inhibited water and filtered, removing the remaining salt solution to Saltstone. The fissionable material loaded MST mass is then slurried and transferred to the precipitate storage tank 49H.

No individual addition of MST mass in the ITP process (see Figure 4, page 15, and previous analysis¹) represents a concern for criticality. The criticality scenario defaults to evaluating the potential for multiple additions of MST involved in multiple ITP process cycles accumulating. Accumulation does occur in ITP tank 49H where the ITP precipitate is stored before transfer to the Defense Waste Processing Facility. Accumulation could also occur in the ITP processing tank 48H if material is not completely removed between process cycles.

Tank 49H will receive and accumulate multiple batches of MST along with precipitate resulting from the added NaTPB. The anticipated process condition is to accumulate solids from six ITP process cycles, six MST mass additions, in tank 49H.

Fissile Material Considerations

In this analysis, actual waste stream fissile isotope weight fraction data are used. The previous analysis¹ assumed very conservative bounding isotopic conditions. This analysis conservatively uses the most bounding isotopic distributions which are represented by the 1959 H-area High Heat Waste Stream. The non-fissile isotopes are conservatively evaluated as diluents only and not for their neutron absorption characteristics.

In addition to the experiments, nuclear criticality safety analysis calculations have been performed to determine the safe bounding conditions for mixtures of MST and fissionable material.^{12,13,14,15} A major component of MST is titanium which is an effective neutron absorber and strongly influences the calculations. Initial k-infinite calculations evaluated an infinite mass of MST with varying fissionable material content. K-effective calculations evaluated the actual process condition of limited MST mass and variable fissionable material content. These calculations have also been used to define a conversion factor for plutonium to uranium¹⁵ in the MST matrix to allow comparison of the fissionable isotopes to safe values.

An undetermined safety margin is provided by the precipitating agent for cesium, tetraphenylborate. The boron in the precipitating agent is an excellent neutron adsorber (isotope ¹⁰B) and is present in varying concentrations dur-

ing each process operation. Boron was ignored in the analysis because its presence, or ratio to MST solids, cannot be guaranteed for certain steps of the process. Tetraphenylborate solids will be the greater fraction of solids in the ITP process versus MST.^{16, 17}

Another undetermined margin of safety in this analysis is the ability of the material to accumulate, particularly in the spherical geometry used in the calculational model. It is extremely unlikely that the required mass, volume, and solids concentration would achieve the optimum spherical conditions for criticality.

Criticality Analysis Bounding Conditions

The analysis utilizes data from the loading experiments and criticality safety calculations to define bounding conditions for the process (The analysis was previously derived¹ and is revisited in this report). The first step in the analysis uses the safe MST loading values from the calculations to determine an expression for the safe maximum MST mass. The second step combines the maximum equivalent fissionable material loading based on experimental data, uranium and plutonium fissile isotopic weight fractions and the plutonium to uranium conversion factor defined by the calculations. The maximum equivalent loading is then compared to the safe MST mass to evaluate the potential for criticality. In the previous safety bounding analysis, very conservative assumptions were made for uranium and plutonium weight fractions.

The criticality safety analysis begins with the determination of the safe weight percent loading (or ratio) of uranium to MST for a given mass of monosodium titanate. K-infinite and k-effective calculations^{13,14} defining these values were based on assuming 100% ²³⁵U. Each non-infinite MST mass value was conservatively evaluated as a sphere at optimum moderation conditions (H/U ratio). The data below is the basis for defining the relationship between the maximum safe fissionable material loading on MST and the maximum safe mass of MST.

<u>Safe MST Mass</u>	<u>Safe U-235 Loading</u>
Infinite	1.96 wt%
15,000 kg	2.2 wt%
2,400 kg	2.5 wt%
710 kg	2.9 wt%
570 kg	3.0 wt%

The safe mass and loading data can be fitted to logarithmic curve equations bounded by two ranges of MST mass.¹⁵

$$1) \text{ MST mass} \leq 2400 \text{ kg} \quad \text{Safe eq } ^{235}\text{U wt\%} = 6.618 Y^{-0.125}, Y = \text{MST, kg}$$

$$2) \text{ MST mass} \geq 2400 \text{ kg} \quad \text{Safe eq } ^{235}\text{U wt\%} = 4.303 Y^{-0.07}, Y = \text{MST, kg}$$

Throughout the remainder of the report the equation for the curve representing MST masses greater than 2400 kg is used. This curve is conservative for the range of values represented by equation 1 and does not impact the analysis. The curve fit for MST mass less than 2400 Kg covered a range of mass associated with only one or two MST mass additions whereas the criticality safety concern relates to an accumulation of multiple additions of material. The curve fit of equation 2 provides the best data fit at optimum conditions for evaluating criticality safety in ITP (incorporating an accumulation of multiple additions of material).

Solving for the safe mass of MST gives,

$$3) Y = 10^{\text{Log}(4.303 / Z) / 0.07} = \text{safe mass of monosodium titanate, kg}$$

If a fissionable material wt% loading (Z) is provided, expressed in terms of equivalent**** ²³⁵U, the maximum safe mass of MST can be determined using equation 3) above. The value (Y) represents any MST mass added to the tank or an accumulation of MST mass depending on the scenario being evaluated.

Experiments on uranium and plutonium solubility and monosodium titanate adsorption were conducted to determine maximum bounding conditions for fissile material loading. Based on the resulting data and a plutonium to uranium conversion factor for the material matrix, the maximum equivalent ²³⁵U wt% MST loading values were determined for any given monosodium titanate concentration, or individual mass addition.

The conclusion of the experiments and criticality safety calculations determining a Pu-U conversion factor were as follows:

- The maximum uranium wt% loading on MST is defined by the equation $1.8 - 0.29(x)$, where (x) is the MST concentration in grams per liter.

**** The MST fissionable material loading is expressed as an equivalent ²³⁵U wt% loading since in this analysis it represents the combined loading of fissionable isotopes converted to an equivalent ²³⁵U wt% loading.

The equation represents a 3 σ confidence level and was determined for MST concentrations from 0.05 to 0.51 grams per liter.⁵

- The maximum plutonium wt% loading on MST is defined by the equation $0.29 - 0.20(x)$, where (x) is the MST concentration in grams per liter. The equation represents a 3 σ confidence level and was determined for MST concentrations from 0.05 to 0.51 grams per liter.⁵
- Uranium competes with plutonium for the limited adsorption sites on monosodium titanate. Uranium solubility is about an order of magnitude greater than plutonium in waste solutions.⁵ Consequently at saturated uranium and plutonium concentrations, uranium loading will be greater than that of plutonium.
- The ^{239}Pu to ^{235}U conversion factor (V) is defined in terms of the total system or mass matrix being evaluated. The conversion factor is expressed by the equation $V = (2.3 - (9.0/\sqrt{(Y)}))$, where (Y) is the MST mass, kg, being evaluated.¹⁵ The equation was derived to incorporate a margin of safety which provided a conservative curve fit of the conversion factor data.¹⁵

The maximum equivalent ^{235}U wt% loading is defined by,

$$4) \text{ Max. eq } ^{235}\text{U wt\%} = (\text{wt \% U on MST}) + (V)(\text{wt\% Pu on MST})$$

Substituting for the maximum wt% loading of uranium and plutonium and the conversion factor for ^{239}Pu to ^{235}U gives,

$$\text{Max. eq } ^{235}\text{U wt\%} = (1.8 - 0.29(x)) + (2.3 - 9.0/\sqrt{(Y)})(0.29 - 0.20(x))$$

The lower the concentration (x) used in the loading equations above gives the maximum wt% loading for plutonium and uranium. Therefore, assuming the MST addition mass (X) is distributed in the entire tank volume defines the maximum bounding eq ^{235}U wt% for equation 4. This is a conservative assumption since the actual process operating liquid volume is less than the maximum tank operating volume capacity of approximately 1.3 million gallons.

$$(x), \text{ g/l} = (X, \text{ kg}) (1000 \text{ g/kg}) / ((1.3\text{E}6 \text{ gallons})(3.785 \text{ liters/gallon}))$$

$$(x), \text{ g/l} = 2.0\text{E-}4 (X)$$

Incorporating this bounding condition results in the following,

$$5) \text{ Max. eq } ^{235}\text{U wt\%} = (1.8 - 5.8\text{E-}5 (X)) + (2.3 - 9.0/\sqrt{Y})(0.29 - 4.0\text{E-}5 (X))$$

Correcting equation 5) for uranium and plutonium weight fractions and solving similarly to the analysis above for various uranium and plutonium weight fractions results in the spreadsheet data and curves represented in Appendix B, and yields equation 6 below.

$$6) \text{ Max eq } ^{235}\text{U wt\%} = (1.8 - 5.8\text{E-}5(X))(wt\% (^{233}+^{235})\text{U}) + (2.3 - 9.0/\sqrt{Y})(0.29 - 4.0\text{E-}5(X))(wt\% (^{239}+^{241})\text{Pu})$$

As indicated in Appendix B spreadsheet data and curves, the percentage of fissile to non-fissile uranium isotopes (weight fraction) has a significant impact on the potential for criticality. This was expected since any decrease in the uranium contribution of fissile isotopes adsorbed by the MST requires an equal increase in the plutonium fissile mass/isotope contribution.

The impact of increased uranium loading onto MST was evaluated by modifying equation 6 to incorporate increased uranium loading fractions in 10% increments from 10% to 90%. The modified equation results in the following,

$$7) \text{ Max eq } ^{235}\text{U wt\%} = (1.8*W - 5.8\text{E-}5(X))(wt\% (^{233}+^{235})\text{U}) + (2.3 - 9.0/\sqrt{Y})(0.29 - 4.0\text{E-}5(X))(wt\% (^{239}+^{241})\text{Pu})$$

W = increased loading fraction

CRITICALITY SAFETY ANALYSIS

Anticipated ITP Process Conditions

The maximum eq ^{235}U wt% loading determined by equation 6 can be used to determine the maximum safe mass of MST (Y) using equation 3. To perform the determination, an MST mass addition (X) is assumed defining the fissionable material loading using equation 3. Then the two equations can be solved for the remaining common variable, the maximum safe MST mass (Y). This is required due to the Pu-U conversion factor being dependent on the maximum or total MST mass being evaluated.

An initial Pu-U conversion factor (V) is required to begin the calculation. The initial conversion factor allowed the determination of an initial equivalent ^{235}U wt% value using equation 5 for each MST addition (X). Next the maximum safe MST mass (Y) was defined using equation 3. This then

allows a new Pu-U conversion factor (V) to be determined since the conversion factor is dependent on the total MST mass. This continues until convergence is reached, i.e. the maximum safe MST mass and conversion factor no longer change. Calculations using this methodology for anticipated ITP process conditions are documented in Appendices B and C. Equations used to generate Appendix B and C spreadsheets are captured in Appendix A (data set formulas).

Fissile Isotopic Weight Fraction Impact

The most limiting conditions for ITP operations are bounded by fissile isotopic weight fractions of uranium and plutonium which were extracted from H-area HM HHW streams. These data, representing fissile material losses, were evaluated for the history of Separation's waste transfers (from 1959 to 1992, see Appendices D and E).

The impact of weight fractions on the margin of safety in the ITP process is demonstrated in Appendix B spreadsheets. The required accumulated MST mass for criticality conditions as well as the number of safe batches (which define the margin of process safety) increase in Appendix B spreadsheets as fissile isotopic weight fractions diminish in magnitude. Higher uranium fissile weight fractions from Separation's waste transfers were observed for the earlier years (i.e., before 1971).

Since higher weight fraction magnitudes (very conservative assumptions) decreased the margin of safety in the previous analysis¹, attention was placed upon identifying the highest fissile isotopic weight fractions from waste receipt data. The average of monthly weight fractions from very early waste transfers (i.e., 1959 through 1971) had a greater impact on the margin of safety. The least number of safe batches, representative of the worst case margin of safety, occurred when weight fractions from 1959 waste transfers were input into Appendix B spreadsheet equations.

Weight fractions from H-area Low Heat Waste receipts (captured in appendix F data summary) are much less of an impact versus High Heat Waste during the same time period.

Optimum Condition Determination

Weight fractions which yielded the worst case margin of safety (HM HHW 1959) were used in Appendix C spreadsheets to define an optimum individual MST addition in the ITP process. The optimum individual MST addition was evaluated by varying MST mass additions from 500 Kg to 3500 Kg in Appendix C spreadsheets. One thousand kilograms (per the curve

minimum of Figure 4) was determined to be an optimum single MST addition in the analysis. The maximum equivalent ^{235}U MST loading for this optimum condition is 1.97 wt%. The safe MST mass for this equivalent ^{235}U MST loading is 71, 598 Kg (see Figure 5 below for safe accumulated MST mass).

No individual addition of MST mass in the ITP process represents a concern for criticality. The criticality scenario now defaults to evaluating the potential for 71 additions of MST, involved in multiple ITP process cycles, accumulating. Accumulation does occur in ITP tank 49H where the ITP precipitate is accumulated and stored before transfer to the Defense Waste Processing Facility. As indicated previously, the anticipated process condition is to accumulate MST from six ITP process cycles (equivalent to 6 MST additions) in tank 49H.

The 71 additions of MST represents many more ITP process cycles and salt tank dissolutions than required to empty waste tanks. Since the optimum bounding fissile material weight fraction condition exists for only a short history of waste receipts the actual safe number of additions increases significantly. After only a few ITP process cycles the potential for an unsafe condition is clearly not credible. In addition, processing 71 additions of MST will require 23 years, assuming three ITP process cycles per year.

Figure 4
Number of Safe Process Batches Impacted by 1959 Fissile
Isotopic Weight Fractions

Figure 5
Safe Accumulated MST Mass Impacted by 1959 Fissile
Isotopic Weight Fractions & Increased Uranium Loading

Potential Impact of Increased Uranium Loading

This analysis also evaluates the impact of increased uranium loading onto MST. During review of the original analysis¹ questions were raised concerning the potential of slightly higher uranium loadings if strontium was not present in solution. From competition experiments, it was concluded that the presence of plutonium and strontium appeared to decrease the adsorption of uranium as was evidenced by higher decontamination factors (DF's) with only uranium present compared to when uranium, plutonium and strontium were all present.¹⁸

The experimental wt% loading of ²³⁵U (i.e. 1.8 wt%) was increased to 90% above projection in 10% increments to evaluate the impact of increased uranium loading onto MST (i.e., simulating the absence of strontium). The increased loading fraction was computed in Appendix C spreadsheets to bound the impact of potential increased loading (see equation 7). The margin

of safety decreased with increased loading of uranium onto MST versus the scenario of no increased loading. Loadings up to 20% above experimental loading are safe for H-area HM waste streams with a minimum margin of safety of 9 safe batches (see figure 6)

Again, weight fractions which were used in the first scenario were input into Appendix C spreadsheets to define an optimum individual MST addition impacted by increased uranium loading. The optimum individual MST addition was evaluated by varying MST additions from 500 Kg to 3500 Kg in Appendix C spreadsheets. Fifteen hundred kilograms was determined to be an optimum single MST mass addition in the analysis for increased uranium loading. The optimum increased loading condition was evaluated when uranium loading was increased to 20% above experimental loading.

If assuming only 1500 kg of MST is added to the tank during a cycle under increased loading conditions, at least 9.67 more additions of 1500 kg each resulting in the same maximum equivalent ^{235}U wt % loading value of 2.20 wt% are required before exceeding a safe allowable accumulated MST mass of 14,511 Kg (see Appendix B spreadsheets at 1500 Kg addition). These bounding conditions occur at an increased loading of 20% above experimental loading.

The safe accumulated MST mass impacted by increased loading is much less than the mass calculated with no loading increase demonstrating a decrease in the margin of safety with increased uranium loading. The margin of safety diminishes significantly for loading increases of 30% or greater above experimental loading (see Appendix B spreadsheet data). However, for loadings up to 20% above experimental loading, the minimum margin of safety is 9.67 batches. This occurs during early years of waste transfers when the fissile weight fractions were near their maximum. After 1964 waste transfers, the number of safe batches increases to where they would exceed the capacity of tank 49H before criticality would be credible. This demonstrates that all waste transfers after 1964 when the loading is increased 20% above experimental loading are safe. Also, a minimum of 9.67 batches can accumulate safely from waste streams prior to 1964 with the same increased loading conditions.

Figure 6
Number of Safe Batches at 1500 Kg MST Addition,
Loading Increased 20% Above Experimental Loading

CONCLUSION

The analysis above demonstrates the application of the calculated k-effective data and MST uranium and plutonium loading experiments. The analysis provides bounding conditions for the criticality scenarios. For the worst case safety scenario, it is assumed that all tank farm waste will have fissile isotopic weight fractions no less than weight fractions calculated from 1959 waste stream data. At least seventy-one (71) MST mass additions are required at an accumulated MST mass of 71,598 Kg before sufficient mass for criticality can accumulate. If ITP processes three cycles per year, then at least 23 years operation are required before sufficient mass for criticality can accumulate. The maximum uranium loading would be 1.97 wt%.

Since most of the uranium contained in waste has an enrichment much less than 86% (or weight fraction of .860 wt%), the required number of MST mass additions will greatly exceed seventy one (71) as captured in Appendix B spreadsheets. Based on these conditions, criticality is deemed not credible since the number of MST additions required to accumulate sufficient fissionable material for criticality will exceed the number of ITP cycle operations required to empty the salt tanks.

It is also deemed not credible to assume the MST mass representing seventy-one (71) mass additions could accumulate as a sphere at the optimum mixture density, greater than 1,750 grams per liter¹⁴, for criticality.

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APPENDIX A

Data Set Formulas

The spreadsheet below is an example of data set formulas used in Appendices B and C.

MST Mass, Kg=	300	500
MST Conc, g/l=	=B1*1000/(1300000*3.785)	=C1*1000/(1300000*3.785)
U enrich=	U235 Wt Fraction Appendix D	=B\$3
U Loading Increase	1.1	1.2
U235 wt fraction=	=(1.8*B3-0.29*B2)*B3	=(1.8*C3-0.29*C2)*C3
Pu239 wt fraction=	Pu239 wt Fraction Appendix E	=B\$6
Pu wt fraction=	=(0.29-0.2*B2)*B6	=(0.29-0.2*C2)*C6
Pu239-U235=	2.25	2.25
eq U=	=B5+(B7*B8)	=C5+C7*C8
Safe Kg=	=10^((LOG(4.303/B9))/0.07)	=10^((LOG(4.303/C9))/0.07)
New Pu-U	=2.3-(9/SQRT(B10))	=2.3-(9/SQRT(C10))
New eqU=	=B\$5+B\$7*B11	=C\$5+C\$7*C11
New Safe Kg=	=10^((LOG(4.303/B12))/0.07)	=10^((LOG(4.303/C12))/0.07)
New' Pu-U	=2.3-(9/SQRT(B13))	=2.3-(9/SQRT(C13))
New' eqU=	=B\$5+B\$7*B14	=C\$5+C\$7*C14
New' Safe Kg=	=10^((LOG(4.303/B15))/0.07)	=10^((LOG(4.303/C15))/0.07)
New'' Pu-U	=2.3-(9/SQRT(B16))	=2.3-(9/SQRT(C16))
New'' eqU=	=B\$5+B\$7*B17	=C\$5+C\$7*C17
New'' Safe Kg=	=10^((LOG(4.303/B18))/0.07)	=10^((LOG(4.303/C18))/0.07)
New''' Pu-U	=2.3-(9/SQRT(B19))	=2.3-(9/SQRT(C19))
New''' eqU=	=B\$5+B\$7*B20	=C\$5+C\$7*C20
New''' Safe Kg=	=10^((LOG(4.303/B21))/0.07)	=10^((LOG(4.303/C21))/0.07)
Batches=	=B22/B1	=C22/C1
Pu Mass, kg =	=B22*B7/100	=C22*C7/100
U Mass, kg =	=B22*(B\$5/B\$3)/100	=C22*(C\$5/C\$3)/100

APPENDIX B

Data Summary

Appendix B contains the data analysis spreadsheets evaluating the maximum equivalent ^{235}U wt%, the maximum safe accumulated MST mass, the number of safe additions, and the impact of increased uranium loading onto MST.

Uranium and plutonium fissile weight fractions from Appendices D and E were input into Appendix A formulas to generate Appendix B spreadsheets. The yearly average uranium and plutonium fissile isotope weight fractions in H-area HM HHW transfers were used as input data in the formulas. Individual MST mass additions were held constant at 1000 Kg and 1500 Kg. These additions were optimum conditions demonstrated in the analysis.

The number of safe batches decreases as uranium loading was increased onto MST, as expected. Data from these spreadsheets is demonstrated below for a 1000 Kg MST addition, an anticipated process operating parameter. The scale range of the y-axis is truncated to help show a margin of safety comparison.

Appendix B Loading Impact 1959 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.48	1.63	1.78	1.94	2.09	2.24	2.40	2.55	2.70	2.85
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.96	2.12	2.27	2.42	2.58	2.73	2.88	3.03	3.19	3.34
Safe Kg=	73460	25186	9305	3668	1531	672	308	147	73	37
New Pu-U	2.27	2.24	2.21	2.15	2.07	1.95	1.79	1.56	1.25	0.83
New eqU=	1.97	2.12	2.26	2.40	2.54	2.66	2.78	2.88	2.97	3.03
New Safe Kg=	71550	25434	9870	4161	1902	944	510	303	200	148
New' Pu-U	2.27	2.24	2.21	2.16	2.09	2.01	1.90	1.78	1.66	1.56
New' eqU=	1.97	2.12	2.26	2.40	2.54	2.68	2.81	2.93	3.06	3.19
New' Safe Kg=	71599	25424	9833	4113	1848	887	450	239	130	72
New" Pu-U	2.27	2.24	2.21	2.16	2.09	2.00	1.88	1.72	1.51	1.24
New" eqU=	1.97	2.12	2.26	2.40	2.54	2.67	2.80	2.92	3.03	3.12
New" Safe Kg=	71598	25424	9836	4117	1855	896	463	256	152	98
New" Pu-U	2.27	2.24	2.21	2.16	2.09	2.00	1.88	1.74	1.57	1.39
New" eqU=	1.97	2.12	2.26	2.40	2.54	2.67	2.80	2.92	3.04	3.15
New" Safe Kg=	71598	25424	9836	4117	1854	894	460	251	143	84
Batches=	71.60	25.42	9.84	4.12	1.85	0.89	0.46	0.25	0.14	0.08
Pu Mass, kg =	154.61	54.90	21.24	8.89	4.00	1.93	0.99	0.54	0.31	0.18
U Mass, kg =	1246.56	488.41	206.65	93.90	45.63	23.62	12.98	7.52	4.56	2.84

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

71.60
25.42
9.84
4.12
1.85
0.89
0.46
0.25
0.14
0.07

Appendix B Loading Impact 1959 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.45	1.61	1.76	1.91	2.06	2.22	2.37	2.52	2.68	2.83
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.90	2.05	2.21	2.36	2.51	2.66	2.82	2.97	3.12	3.27
Safe Kg=	118470	39220	14057	5397	2201	946	426	200	98	49
New Pu-U	2.27	2.25	2.22	2.18	2.11	2.01	1.86	1.66	1.39	1.02
New eqU=	1.90	2.05	2.20	2.34	2.48	2.62	2.74	2.85	2.95	3.03
New Safe Kg=	114334	38974	14534	5890	2585	1228	632	354	218	149
New' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.94	1.82	1.69	1.56
New' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.75	2.88	3.01	3.14
New' Safe Kg=	114414	38982	14510	5853	2542	1181	583	303	164	91
New'' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.93	1.78	1.60	1.35
New'' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.75	2.88	2.99	3.10
New'' Safe Kg=	114412	38981	14511	5856	2546	1187	592	315	179	110
New''' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.93	1.79	1.63	1.44
New''' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.75	2.88	3.00	3.11
New''' Safe Kg=	114413	38981	14511	5855	2546	1187	590	312	174	101
Batches=	76.28	25.99	9.67	3.90	1.70	0.79	0.39	0.21	0.12	0.07
Pu Mass, kg =	226.93	77.32	28.78	11.61	5.05	2.35	1.17	0.62	0.35	0.20
U Mass, kg =	1958.28	737.37	300.61	131.84	61.90	30.99	16.48	9.28	5.49	3.38

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

76.28
25.99
9.67
3.90
1.70
0.79
0.39
0.21
0.12
0.07

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.48	1.63	1.79	1.94	2.09	2.25	2.40	2.55	2.71	2.86
Pu239 wt fraction=	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779
Pu wt fraction=	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.92	2.07	2.23	2.38	2.53	2.68	2.84	2.99	3.14	3.30
Safe Kg=	102546	34228	12355	4773	1957	845	383	181	88	45
New Pu-U	2.27	2.25	2.22	2.17	2.10	1.99	1.84	1.63	1.34	0.96
New eqU=	1.92	2.07	2.22	2.36	2.50	2.63	2.76	2.87	2.97	3.05
New Safe Kg=	99354	34166	12843	5243	2318	1108	575	325	202	139
New' Pu-U	2.27	2.25	2.22	2.18	2.11	2.03	1.92	1.80	1.67	1.54
New' eqU=	1.92	2.07	2.22	2.36	2.50	2.64	2.77	2.90	3.03	3.16
New' Safe Kg=	99418	34168	12818	5207	2276	1064	528	276	150	83
New'' Pu-U	2.27	2.25	2.22	2.18	2.11	2.02	1.91	1.76	1.56	1.31
New'' eqU=	1.92	2.07	2.22	2.36	2.50	2.64	2.77	2.90	3.01	3.11
New'' Safe Kg=	99416	34168	12819	5209	2280	1070	537	287	164	101
New''' Pu-U	2.27	2.25	2.22	2.18	2.11	2.02	1.91	1.77	1.60	1.40
New''' eqU=	1.92	2.07	2.22	2.36	2.50	2.64	2.77	2.90	3.02	3.13
New''' Safe Kg=	99416	34168	12819	5209	2279	1069	535	284	159	93
Batches=	99.42	34.17	12.82	5.21	2.28	1.07	0.53	0.28	0.16	0.09
Pu Mass, kg =	193.11	66.37	24.90	10.12	4.43	2.08	1.04	0.55	0.31	0.18
U Mass, kg =	1730.90	656.39	269.33	118.82	56.10	28.23	15.09	8.53	5.06	3.13

U Loading
Increase

Batches

0	99.42
0.1	34.17
0.2	12.82
0.3	5.21
0.4	2.28
0.5	1.07
0.6	0.53
0.7	0.28
0.8	0.16
0.9	0.09

Appendix B Loading Impact 1960 Tank Receipts

WSRC-TR-94-004

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.46	1.61	1.76	1.92	2.07	2.22	2.39	2.53	2.68	2.84
Pu239 wt fraction=	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779	0.779
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.86	2.01	2.16	2.32	2.47	2.62	2.78	2.93	3.08	3.24
Safe Kg=	162318	52343	18342	6906	2768	1172	521	242	117	58
New Pu-U	2.28	2.26	2.23	2.19	2.13	2.04	1.91	1.72	1.47	1.12
New eqU=	1.86	2.01	2.16	2.31	2.45	2.59	2.72	2.84	2.94	3.04
New Safe Kg=	156282	51641	18701	7364	3138	1443	717	386	227	146
New' Pu-U	2.28	2.26	2.23	2.20	2.14	2.06	1.96	1.84	1.70	1.56
New' eqU=	1.86	2.01	2.16	2.31	2.45	2.59	2.73	2.86	2.99	3.11
New' Safe Kg=	156373	51659	18687	7336	3104	1407	679	347	185	102
New'' Pu-U	2.28	2.26	2.23	2.19	2.14	2.06	1.95	1.82	1.64	1.41
New'' eqU=	1.86	2.01	2.16	2.31	2.45	2.59	2.72	2.85	2.97	3.09
New'' Safe Kg=	156372	51658	18688	7338	3107	1411	685	355	195	115
New''' Pu-U	2.28	2.26	2.23	2.19	2.14	2.06	1.96	1.82	1.66	1.46
New''' eqU=	1.86	2.01	2.16	2.31	2.45	2.59	2.72	2.85	2.98	3.10
New''' Safe Kg=	156372	51658	18688	7338	3106	1411	684	353	193	110
Batches=	104.25	34.44	12.46	4.89	2.07	0.94	0.46	0.24	0.13	0.07
Pu Mass, kg =	278.99	92.17	33.34	13.09	5.54	2.52	1.22	0.63	0.34	0.20
U Mass, kg =	2676.45	977.17	387.14	165.21	75.53	36.84	19.10	10.49	6.07	3.68

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

104.25
34.44
12.46
4.89
2.07
0.94
0.46
0.24
0.13
0.07

APPENDIX B Loading Impact 1961 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.50	1.66	1.81	1.97	2.12	2.28	2.43	2.59	2.74	2.90
Pu239 wt fraction=	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.96	2.11	2.27	2.42	2.58	2.73	2.89	3.04	3.20	3.35
Safe Kg=	76731	25813	9381	3646	1502	652	296	140	69	35
New Pu-U	2.27	2.24	2.21	2.15	2.07	1.95	1.78	1.54	1.22	0.78
New eqU=	1.96	2.11	2.26	2.40	2.54	2.67	2.79	2.90	2.99	3.06
New Safe Kg=	74766	26028	9912	4107	1847	902	480	281	182	133
New' Pu-U	2.27	2.24	2.21	2.16	2.09	2.00	1.89	1.76	1.63	1.52
New' eqU=	1.96	2.11	2.26	2.41	2.55	2.68	2.82	2.95	3.07	3.21
New' Safe Kg=	74813	26019	9880	4064	1800	852	428	225	122	67
New'' Pu-U	2.27	2.24	2.21	2.16	2.09	1.99	1.86	1.70	1.49	1.20
New'' eqU=	1.96	2.11	2.26	2.41	2.55	2.68	2.81	2.93	3.04	3.14
New'' Safe Kg=	74812	26020	9882	4068	1805	860	439	239	140	90
New''' Pu-U	2.27	2.24	2.21	2.16	2.09	1.99	1.87	1.72	1.54	1.35
New''' eqU=	1.96	2.11	2.26	2.41	2.55	2.68	2.81	2.94	3.06	3.17
New''' Safe Kg=	74812	26020	9882	4068	1805	859	436	235	133	78
Batches=	74.81	26.02	9.88	4.07	1.80	0.86	0.44	0.24	0.13	0.08
Pu Mass, kg =	152.04	52.88	20.08	8.27	3.67	1.75	0.89	0.48	0.27	0.16
U Mass, kg =	1302.52	499.85	207.62	92.79	44.41	22.68	12.31	7.06	4.24	2.63

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

74.81
26.02
9.88
4.07
1.80
0.86
0.44
0.24
0.13
0.08

APPENDIX B Loading Impact 1961 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.48	1.63	1.79	1.94	2.10	2.25	2.41	2.56	2.72	2.87
Pu239 wt fraction=	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815	0.815
Pu wt fraction=	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.90	2.05	2.21	2.36	2.52	2.67	2.83	2.98	3.14	3.29
Safe Kg=	122121	39684	13998	5300	2135	908	405	189	92	46
New Pu-U	2.27	2.25	2.22	2.18	2.11	2.00	1.85	1.65	1.36	0.97
New eqU=	1.90	2.05	2.20	2.35	2.49	2.62	2.75	2.87	2.97	3.05
New Safe Kg=	118030	39436	14447	5761	2491	1166	592	328	199	135
New' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.93	1.80	1.66	1.52
New' eqU=	1.90	2.05	2.20	2.35	2.49	2.63	2.77	2.90	3.03	3.16
New" Safe Kg=	118103	39444	14426	5728	2453	1128	550	283	152	84
New" Pu-U	2.27	2.25	2.23	2.18	2.12	2.03	1.92	1.77	1.57	1.32
New" eqU=	1.90	2.05	2.20	2.35	2.49	2.63	2.76	2.89	3.01	3.12
New" Safe Kg=	118102	39443	14427	5731	2457	1131	557	293	165	100
New" Pu-U	2.27	2.25	2.23	2.18	2.12	2.03	1.92	1.77	1.60	1.40
New" eqU=	1.90	2.05	2.20	2.35	2.49	2.63	2.76	2.89	3.02	3.13
New" Safe Kg=	118102	39443	14427	5730	2456	1130	556	291	161	93
Batches=	78.73	26.30	9.62	3.82	1.64	0.75	0.37	0.19	0.11	0.06
Pu Mass, kg =	220.45	73.62	26.93	10.70	4.58	2.11	1.04	0.54	0.30	0.17
U Mass, kg =	2021.43	746.11	298.87	129.03	59.72	29.52	15.52	8.64	5.07	3.10

U Loading
Increase

0	78.73
0.1	26.30
0.2	9.62
0.3	3.82
0.4	1.64
0.5	0.75
0.6	0.37
0.7	0.19
0.8	0.11
0.9	0.06

Batches

APPENDIX B Loading Impact 1962 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.41	1.55	1.70	1.84	1.99	2.14	2.28	2.43	2.57	2.72
Pu239 wt fraction=	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.85	1.99	2.14	2.29	2.43	2.58	2.72	2.87	3.01	3.16
Safe Kg=	173635	58829	21511	8404	3480	1516	692	329	162	83
New Pu-U	2.28	2.26	2.24	2.20	2.15	2.07	1.96	1.80	1.59	1.31
New eqU=	1.85	2.00	2.14	2.28	2.41	2.54	2.67	2.78	2.88	2.97
New Safe Kg=	166331	57774	21834	8917	3918	1849	938	512	303	195
New' Pu-U	2.28	2.26	2.24	2.20	2.16	2.09	2.01	1.90	1.78	1.66
New' eqU=	1.85	2.00	2.14	2.28	2.41	2.55	2.67	2.80	2.92	3.04
New' Safe Kg=	166449	57801	21821	8885	3878	1805	891	464	252	141
New'' Pu-U	2.28	2.26	2.24	2.20	2.16	2.09	2.00	1.88	1.73	1.54
New'' eqU=	1.85	2.00	2.14	2.28	2.41	2.55	2.67	2.80	2.91	3.02
New'' Safe Kg=	166447	57800	21821	8887	3882	1810	898	473	264	157
New''' Pu-U	2.28	2.26	2.24	2.20	2.16	2.09	2.00	1.89	1.75	1.58
New''' eqU=	1.85	2.00	2.14	2.28	2.41	2.55	2.67	2.80	2.91	3.03
New''' Safe Kg=	166447	57800	21821	8887	3881	1810	897	471	261	151
Batches=	166.45	57.80	21.82	8.89	3.88	1.81	0.90	0.47	0.26	0.15
Pu Mass, kg =	326.55	113.40	42.81	17.44	7.62	3.55	1.76	0.92	0.51	0.30
U Mass, kg =	2897.94	1110.38	458.48	202.72	95.52	47.79	25.31	14.14	8.30	5.09

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

166.45
57.80
21.82
8.89
3.88
1.81
0.90
0.47
0.26
0.15

APPENDIX B Loading Impact 1962 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.38	1.53	1.68	1.82	1.97	2.11	2.26	2.40	2.55	2.69
Pu239 wt fraction=	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868	0.7868
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.79	1.93	2.08	2.23	2.37	2.52	2.66	2.81	2.95	3.10
Safe Kg=	277718	90875	32247	12274	4966	2121	950	444	216	109
New Pu-U	2.28	2.27	2.25	2.22	2.17	2.10	2.01	1.87	1.69	1.44
New eqU=	1.80	1.94	2.08	2.22	2.36	2.49	2.62	2.74	2.85	2.95
New Safe Kg=	264892	88475	32252	12726	5405	2463	1203	630	355	217
New' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.04	1.94	1.82	1.69
New' eqU=	1.80	1.94	2.08	2.22	2.36	2.49	2.62	2.75	2.88	3.00
New' Safe Kg=	265047	88522	32252	12704	5374	2427	1165	591	315	174
New'' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.04	1.93	1.79	1.62
New'' eqU=	1.80	1.94	2.08	2.22	2.36	2.49	2.62	2.75	2.87	2.99
New'' Safe Kg=	265045	88521	32252	12705	5376	2431	1170	598	323	185
New''' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.04	1.93	1.80	1.64
New''' eqU=	1.80	1.94	2.08	2.22	2.36	2.49	2.62	2.75	2.87	2.99
New''' Safe Kg=	265045	88521	32252	12705	5376	2430	1169	596	321	182
Batches=	176.70	59.01	21.50	8.47	3.58	1.62	0.78	0.40	0.21	0.12
Pu Mass, kg =	477.61	159.52	58.12	22.89	9.69	4.38	2.11	1.07	0.58	0.33
U Mass, kg =	4536.50	1674.46	668.13	286.07	130.71	63.47	32.64	17.72	10.13	6.06

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

176.70
59.01
21.50
8.47
3.58
1.62
0.78
0.40
0.21
0.12

APPENDIX B Loading Impact 1963 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.44	1.59	1.74	1.89	2.04	2.18	2.33	2.48	2.63	2.78
Pu239 wt fraction=	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.84	1.99	2.14	2.28	2.43	2.58	2.73	2.88	3.03	3.18
Safe Kg=	190543	62585	22280	8504	3450	1476	663	310	151	76
New Pu-U	2.28	2.26	2.24	2.20	2.15	2.07	1.95	1.79	1.57	1.27
New eqU=	1.84	1.99	2.13	2.28	2.41	2.55	2.68	2.80	2.91	3.00
New Safe Kg=	183027	61482	22553	8963	3840	1769	876	467	270	169
New' Pu-U	2.28	2.26	2.24	2.20	2.15	2.09	2.00	1.88	1.75	1.61
New' eqU=	1.84	1.99	2.13	2.28	2.42	2.55	2.69	2.82	2.94	3.06
New' Safe Kg=	183132	61507	22543	8938	3808	1734	839	429	230	128
New'' Pu-U	2.28	2.26	2.24	2.20	2.15	2.08	1.99	1.87	1.71	1.50
New'' eqU=	1.84	1.99	2.13	2.28	2.42	2.55	2.68	2.81	2.93	3.05
New'' Safe Kg=	183131	61506	22543	8940	3811	1738	846	436	239	139
New''' Pu-U	2.28	2.26	2.24	2.20	2.15	2.08	1.99	1.87	1.72	1.54
New''' eqU=	1.84	1.99	2.13	2.28	2.42	2.55	2.68	2.81	2.93	3.05
New''' Safe Kg=	183131	61506	22543	8940	3811	1737	844	435	237	135
Batches=	183.13	61.51	22.54	8.94	3.81	1.74	0.84	0.43	0.24	0.14
Pu Mass, kg =	323.03	108.49	39.76	15.77	6.72	3.06	1.49	0.77	0.42	0.24
U Mass, kg =	3188.42	1181.58	473.65	203.92	93.78	45.89	23.80	13.05	7.53	4.55

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

183.13
61.51
22.54
8.94
3.81
1.74
0.84
0.43
0.24
0.14

APPENDIX B Loading Impact 1963 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.42	1.56	1.71	1.86	2.01	2.16	2.31	2.46	2.61	2.76
Pu239 wt fraction=	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074	0.7074
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.78	1.93	2.08	2.23	2.38	2.53	2.67	2.82	2.97	3.12
Safe Kg=	298243	94677	32733	12180	4832	2028	894	412	198	98
New Pu-U	2.28	2.27	2.25	2.22	2.17	2.10	2.00	1.86	1.66	1.39
New eqU=	1.79	1.93	2.08	2.22	2.36	2.50	2.63	2.76	2.88	2.98
New Safe Kg=	285546	92352	32724	12587	5222	2328	1113	571	316	189
New' Pu-U	2.28	2.27	2.25	2.22	2.18	2.11	2.03	1.92	1.79	1.64
New' eqU=	1.79	1.93	2.08	2.22	2.36	2.50	2.64	2.77	2.90	3.02
New' Safe Kg=	285680	92392	32724	12569	5197	2299	1083	540	284	158
New'' Pu-U	2.28	2.27	2.25	2.22	2.18	2.11	2.03	1.91	1.77	1.58
New'' eqU=	1.79	1.93	2.08	2.22	2.36	2.50	2.64	2.77	2.89	3.01
New'' Safe Kg=	285679	92392	32724	12570	5198	2302	1087	545	290	163
New''' Pu-U	2.28	2.27	2.25	2.22	2.18	2.11	2.03	1.91	1.77	1.60
New''' eqU=	1.79	1.93	2.08	2.22	2.36	2.50	2.64	2.77	2.89	3.01
New''' Safe Kg=	285679	92392	32724	12570	5198	2302	1086	544	289	161
Batches=	190.45	61.59	21.82	8.38	3.47	1.53	0.72	0.36	0.19	0.11
Pu Mass, kg =	462.85	149.69	53.02	20.37	8.42	3.73	1.76	0.88	0.47	0.26
U Mass, kg =	4889.66	1747.67	677.91	283.03	126.40	60.11	30.32	16.18	9.10	5.37

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

190.45
61.59
21.82
8.38
3.47
1.53
0.72
0.36
0.19
0.11

APPENDIX B Loading Impact 1964 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.43	1.58	1.73	1.88	2.02	2.17	2.32	2.47	2.62	2.76
Pu239 wt fraction=	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826
Pu wt fraction=	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.90	2.04	2.19	2.34	2.49	2.64	2.78	2.93	3.08	3.23
Safe Kg=	122217	41739	15367	6040	2514	1101	504	241	119	61
New Pu-U	2.27	2.26	2.23	2.18	2.12	2.03	1.90	1.72	1.47	1.15
New eqU=	1.90	2.04	2.19	2.33	2.46	2.59	2.71	2.82	2.92	3.00
New Safe Kg=	117707	41383	15841	6563	2933	1412	734	414	255	173
New' Pu-U	2.27	2.26	2.23	2.19	2.13	2.06	1.97	1.86	1.74	1.62
New' eqU=	1.90	2.04	2.19	2.33	2.46	2.60	2.73	2.85	2.97	3.10
New' Safe Kg=	117796	41394	15818	6524	2886	1362	682	359	196	110
New'' Pu-U	2.27	2.26	2.23	2.19	2.13	2.06	1.96	1.82	1.66	1.44
New'' eqU=	1.90	2.04	2.19	2.33	2.46	2.60	2.72	2.84	2.96	3.06
New'' Safe Kg=	117794	41394	15819	6526	2891	1369	691	371	212	130
New''' Pu-U	2.27	2.26	2.23	2.19	2.13	2.06	1.96	1.83	1.68	1.51
New''' eqU=	1.90	2.04	2.19	2.33	2.46	2.60	2.72	2.85	2.96	3.08
New''' Safe Kg=	117794	41394	15819	6526	2890	1368	689	368	207	121
Batches=	117.79	41.39	15.82	6.53	2.89	1.37	0.69	0.37	0.21	0.12
Pu Mass, kg =	242.62	85.26	32.58	13.44	5.95	2.82	1.42	0.76	0.43	0.25
U Mass, kg =	2050.87	795.21	332.37	148.87	71.14	36.13	19.44	11.04	6.58	4.08

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

117.79
41.39
15.82
6.53
2.89
1.37
0.69
0.37
0.21
0.12

APPENDIX B Loading Impact 1964 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.41	1.56	1.70	1.85	2.00	2.15	2.30	2.44	2.59	2.74
Pu239 wt fraction=	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826	0.826
Pu wt fraction=	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.83	1.98	2.13	2.28	2.43	2.57	2.72	2.87	3.02	3.17
Safe Kg=	196564	64823	23157	8865	3606	1547	696	326	159	80
New Pu-U	2.28	2.26	2.24	2.20	2.15	2.07	1.96	1.80	1.59	1.30
New eqU=	1.84	1.98	2.13	2.27	2.41	2.54	2.67	2.78	2.89	2.98
New Safe Kg=	188156	63541	23427	9359	4032	1869	932	501	292	186
New' Pu-U	2.28	2.26	2.24	2.21	2.16	2.09	2.01	1.90	1.77	1.64
New' eqU=	1.84	1.98	2.13	2.27	2.41	2.54	2.68	2.80	2.93	3.05
New' Safe Kg=	188280	63572	23417	9331	3995	1828	888	457	245	136
New'' Pu-U	2.28	2.26	2.24	2.21	2.16	2.09	2.00	1.88	1.73	1.53
New'' eqU=	1.84	1.98	2.13	2.27	2.41	2.54	2.67	2.80	2.92	3.03
New'' Safe Kg=	188278	63571	23418	9332	3998	1833	895	465	257	151
New''' Pu-U	2.28	2.26	2.24	2.21	2.16	2.09	2.00	1.88	1.74	1.57
New''' eqU=	1.84	1.98	2.13	2.27	2.41	2.54	2.67	2.80	2.92	3.04
New''' Safe Kg=	188278	63571	23418	9332	3998	1832	894	463	254	146
Batches=	125.52	42.38	15.61	6.22	2.67	1.22	0.60	0.31	0.17	0.10
Pu Mass, kg =	356.18	120.26	44.30	17.65	7.56	3.47	1.69	0.88	0.48	0.28
U Mass, kg =	3222.56	1202.51	485.12	210.12	97.21	47.85	24.97	13.77	7.99	4.85

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

125.52
42.38
15.61
6.22
2.67
1.22
0.60
0.31
0.17
0.10

APPENDIX B Loading Impact 1965 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.36	1.51	1.65	1.79	1.93	2.07	2.21	2.35	2.49	2.64
Pu239 wt fraction=	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.86	2.00	2.14	2.29	2.43	2.57	2.71	2.85	2.99	3.13
Safe Kg=	156635	55181	20871	8399	3569	1592	741	359	180	93
New Pu-U	2.28	2.26	2.24	2.20	2.16	2.07	1.97	1.82	1.63	1.37
New eqU=	1.87	2.01	2.14	2.28	2.40	2.53	2.66	2.76	2.85	2.94
New Safe Kg=	149568	54174	21253	8979	4071	1979	1032	580	362	234
New' Pu-U	2.28	2.26	2.24	2.21	2.16	2.10	2.02	1.93	1.82	1.71
New' eqU=	1.67	2.01	2.14	2.28	2.41	2.53	2.66	2.76	2.90	3.01
New' Safe Kg=	149702	54205	21235	8939	4020	1922	972	516	286	162
New'' Pu-U	2.28	2.26	2.24	2.20	2.16	2.09	2.01	1.90	1.77	1.59
New'' eqU=	1.87	2.01	2.14	2.28	2.41	2.53	2.66	2.77	2.88	2.99
New'' Safe Kg=	149700	54204	21236	8941	4025	1930	982	530	302	184
New''' Pu-U	2.28	2.26	2.24	2.20	2.16	2.10	2.01	1.91	1.78	1.64
New''' eqU=	1.87	2.01	2.14	2.28	2.41	2.53	2.66	2.78	2.89	3.00
New''' Safe Kg=	149700	54204	21236	8941	4025	1929	980	527	297	176
Batches=	149.70	54.20	21.24	8.94	4.02	1.93	0.98	0.53	0.30	0.18
Pu Mass, kg =	331.10	119.89	46.97	19.78	8.90	4.27	2.17	1.16	0.66	0.39
U Mass, kg =	2606.37	1041.29	446.18	203.95	99.05	50.94	27.66	15.80	9.46	5.90

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

149.70
54.20
21.24
8.94
4.02
1.93
0.98
0.53
0.30
0.18

APPENDIX B Loading Impact 1965 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.34	1.48	1.62	1.77	1.91	2.05	2.19	2.33	2.47	2.61
Pu239 wt fraction=	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887	0.887
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.80	1.94	2.08	2.22	2.36	2.50	2.65	2.79	2.93	3.07
Safe Kg=	257425	87521	32098	12573	5218	2279	1041	496	245	125
New Pu-U	2.28	2.27	2.25	2.22	2.18	2.11	2.02	1.90	1.72	1.49
New eqU=	1.81	1.94	2.08	2.22	2.35	2.48	2.60	2.71	2.82	2.92
New Safe Kg=	244393	84997	32109	13081	5720	2678	1342	720	416	260
New' Pu-U	2.28	2.27	2.25	2.22	2.18	2.13	2.05	1.96	1.86	1.74
New' eqU=	1.81	1.94	2.08	2.22	2.35	2.48	2.61	2.73	2.85	2.97
New' Safe Kg=	244577	85054	32109	13054	5680	2632	1293	669	363	204
New'' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.05	1.95	1.83	1.67
New'' eqU=	1.81	1.94	2.08	2.22	2.35	2.48	2.61	2.73	2.84	2.95
New'' Safe Kg=	244574	85053	32109	13055	5683	2637	1299	678	374	219
New''' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.05	1.95	1.83	1.69
New''' eqU=	1.81	1.94	2.08	2.22	2.35	2.48	2.61	2.73	2.84	2.96
New''' Safe Kg=	244574	85053	32109	13055	5683	2636	1299	677	372	214
Batches=	163.05	56.70	21.41	8.70	3.79	1.76	0.87	0.45	0.25	0.14
Pu Mass, kg =	496.85	172.78	65.23	26.52	11.55	5.36	2.64	1.37	0.75	0.43
U Mass, kg =	4186.11	1608.85	665.16	293.95	138.19	68.85	36.25	20.11	11.71	7.13

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

163.05
56.70
21.41
8.70
3.79
1.76
0.87
0.45
0.25
0.14

APPENDIX B Loading Impact 1966 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.23	1.35	1.48	1.61	1.74	1.86	1.99	2.12	2.24	2.37
Pu239 wt fraction=	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.52	1.65	1.78	1.90	2.03	2.16	2.28	2.41	2.54	2.67
Safe Kg=	2775791	884883	307037	114609	45590	19178	8477	3916	1882	938
New Pu-U	2.29	2.29	2.28	2.27	2.26	2.24	2.20	2.16	2.09	2.01
New eqU=	1.53	1.66	1.78	1.91	2.03	2.16	2.28	2.40	2.52	2.63
New Safe Kg=	2627606	845162	296293	111995	45261	19430	8817	4213	2116	1114
New' Pu-U	2.29	2.29	2.28	2.27	2.26	2.24	2.20	2.16	2.10	2.03
New' eqU=	1.53	1.66	1.78	1.91	2.03	2.16	2.28	2.40	2.52	2.64
New" Safe Kg=	2628091	845375	296384	112029	45267	19423	8803	4196	2097	1095
New" Pu-U	2.29	2.29	2.28	2.27	2.26	2.24	2.20	2.16	2.10	2.03
New" eqU=	1.53	1.66	1.78	1.91	2.03	2.16	2.28	2.40	2.52	2.64
New" Safe Kg=	2628089	845373	296383	112029	45267	19423	8803	4197	2098	1097
New" Pu-U	2.29	2.29	2.28	2.27	2.26	2.24	2.20	2.16	2.10	2.03
New" eqU=	1.53	1.66	1.78	1.91	2.03	2.16	2.28	2.40	2.52	2.64
New" Safe Kg=	2628089	845373	296383	112029	45267	19423	8803	4197	2098	1097
Batches=	2628.09	845.37	296.38	112.03	45.27	19.42	8.80	4.20	2.10	1.10
Pu Mass, kg =	3453.56	1110.90	389.48	147.22	59.49	25.52	11.57	5.52	2.76	1.44
U Mass, kg =	45756.69	16240.16	6227.20	2555.45	1114.05	512.97	248.35	125.96	66.75	36.87

U Loading
Increase

0	2628.09
0.1	845.37
0.2	296.38
0.3	112.03
0.4	45.27
0.5	19.42
0.6	8.80
0.7	4.20
0.8	2.10
0.9	1.10

Batches

APPENDIX B Loading Impact 1966 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.21	1.33	1.46	1.59	1.71	1.84	1.97	2.09	2.22	2.35
Pu239 wt fraction=	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527	0.527
Pu wt fraction=	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.48	1.61	1.73	1.86	1.99	2.11	2.24	2.37	2.49	2.62
Safe Kg=	4255190	1312050	442467	161141	62735	25894	11254	5121	2428	1195
New Pu-U	2.30	2.29	2.29	2.28	2.26	2.24	2.22	2.17	2.12	2.04
New eqU=	1.48	1.61	1.74	1.86	1.99	2.11	2.24	2.36	2.48	2.59
New Safe Kg=	4034999	1254067	426711	157074	61973	26020	11560	5412	2662	1373
New' Pu-U	2.30	2.29	2.29	2.28	2.26	2.24	2.22	2.18	2.13	2.06
New' eqU=	1.48	1.61	1.74	1.86	1.99	2.11	2.24	2.36	2.48	2.60
New" Safe Kg=	4035550	1254308	426815	157116	61985	26017	11550	5399	2647	1357
New" Pu-U	2.30	2.29	2.29	2.28	2.26	2.24	2.22	2.18	2.13	2.06
New" eqU=	1.48	1.61	1.74	1.86	1.99	2.11	2.24	2.36	2.48	2.60
New" Safe Kg=	4035548	1254307	426815	157116	61985	26017	11551	5400	2648	1359
New" Pu-U	2.30	2.29	2.29	2.28	2.26	2.24	2.22	2.18	2.13	2.06
New" eqU=	1.48	1.61	1.74	1.86	1.99	2.11	2.24	2.36	2.48	2.60
New" Safe Kg=	4035548	1254307	426815	157116	61985	26017	11551	5399	2648	1359
Batches=	2690.37	836.20	284.54	104.74	41.32	17.34	7.70	3.60	1.77	0.91
Pu Mass, kg =	4870.87	1513.94	515.16	189.64	74.82	31.40	13.94	6.52	3.20	1.64
U Mass, kg =	69072.21	23726.40	8841.87	3537.61	1507.23	679.45	322.44	160.45	83.46	45.26

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2690.37
836.20
284.54
104.74
41.32
17.34
7.70
3.60
1.77
0.91

APPENDIX B Loading Impact 1967 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.14	1.26	1.38	1.49	1.61	1.73	1.85	1.97	2.08	2.20
Pu239 wt fraction=	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906
Pu wt fraction=	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.65	1.77	1.88	2.00	2.12	2.24	2.36	2.47	2.59	2.71
Safe Kg=	895032	333670	132584	55718	24606	11358	5455	2716	1396	740
New Pu-U	2.29	2.28	2.28	2.26	2.24	2.22	2.18	2.13	2.06	1.97
New eqU=	1.66	1.77	1.89	2.01	2.12	2.23	2.34	2.45	2.55	2.65
New Safe Kg=	827017	313378	126974	54663	24884	11938	6022	3190	1775	1038
New' Pu-U	2.29	2.28	2.27	2.26	2.24	2.22	2.18	2.14	2.09	2.02
New' eqU=	1.66	1.77	1.89	2.01	2.12	2.23	2.34	2.45	2.55	2.66
New' Safe Kg=	827635	313661	127091	54695	24872	11902	5973	3134	1715	975
New'' Pu-U	2.29	2.28	2.27	2.26	2.24	2.22	2.18	2.14	2.08	2.01
New'' eqU=	1.66	1.77	1.89	2.01	2.12	2.23	2.34	2.45	2.55	2.66
New'' Safe Kg=	827629	313657	127089	54694	24873	11904	5977	3140	1723	985
New''' Pu-U	2.29	2.28	2.27	2.26	2.24	2.22	2.18	2.14	2.08	2.01
New''' eqU=	1.66	1.77	1.89	2.01	2.12	2.23	2.34	2.45	2.55	2.66
New''' Safe Kg=	827629	313657	127089	54694	24873	11904	5977	3139	1722	983
Batches=	827.63	313.66	127.09	54.69	24.87	11.90	5.98	3.14	1.72	0.98
Pu Mass, kg =	1869.73	708.60	287.11	123.56	56.19	26.89	13.50	7.09	3.89	2.22
U Mass, kg =	14409.54	6025.55	2670.21	1247.60	612.13	314.39	168.60	94.22	54.76	33.05

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

827.63
313.66
127.09
54.69
24.87
11.90
5.98
3.14
1.72
0.98

APPENDIX B Loading Impact 1967 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.66
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.12	1.24	1.36	1.47	1.59	1.71	1.83	1.95	2.06	2.18
Pu239 wt fraction=	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906
Pu wt fraction=	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.59	1.71	1.82	1.94	2.06	2.18	2.30	2.41	2.53	2.65
Safe Kg=	152989	54986	211700	86512	37269	16826	7922	3873	1959	1023
New Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.10	2.02
New eqU=	1.60	1.71	1.83	1.95	2.06	2.17	2.28	2.39	2.50	2.60
New Safe Kg=	1413019	515041	201499	83989	37088	17276	8464	4353	2348	1328
New' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05
New' eqU=	1.60	1.71	1.83	1.95	2.06	2.17	2.29	2.40	2.50	2.61
New' Safe Kg=	1413794	515402	201658	84048	37094	17255	8428	4309	2299	1277
New'' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05
New'' eqU=	1.60	1.71	1.83	1.95	2.06	2.17	2.29	2.40	2.50	2.61
New'' Safe Kg=	1413788	515398	201656	84046	37094	17256	8430	4312	2304	1284
New''' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05
New''' eqU=	1.60	1.71	1.83	1.95	2.06	2.17	2.29	2.40	2.50	2.61
New''' Safe Kg=	1413789	515398	201656	84046	37094	17256	8430	4312	2304	1283
Batches=	942.53	343.60	134.44	56.03	24.73	11.50	5.62	2.87	1.54	0.86
Pu Mass, kg =	2933.64	1069.46	418.44	174.40	76.97	35.81	17.49	8.95	4.78	2.66
U Mass, kg =	24198.32	9749.24	4177.49	1892.38	901.97	450.65	235.33	128.14	72.61	42.74

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

942.53
343.60
134.44
56.03
24.73
11.50
5.62
2.87
1.54
0.86

APPENDIX B Loading Impact 1968 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.13	1.25	1.37	1.48	1.60	1.72	1.84	1.95	2.07	2.19
Pu239 wt fraction=	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.48	1.60	1.72	1.83	1.95	2.07	2.19	2.30	2.42	2.54
Safe Kg=	4087926	1378783	502196	195534	80715	35084	15966	7571	3726	1896
New Pu-U	2.30	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.15	2.09
New eqU=	1.49	1.61	1.72	1.84	1.95	2.07	2.18	2.29	2.40	2.51
New Safe Kg=	3819501	1300410	478632	188663	79054	35010	16314	7971	4075	2175
New' Pu-U	2.30	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11
New' eqU=	1.49	1.61	1.72	1.84	1.95	2.07	2.18	2.29	2.41	2.51
New' Safe Kg=	3820375	1300818	478822	188747	79084	35012	16301	7951	4050	2149
New'' Pu-U	2.30	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11
New'' eqU=	1.49	1.61	1.72	1.84	1.95	2.07	2.18	2.29	2.41	2.51
New'' Safe Kg=	3820372	1300816	478820	188746	79083	35012	16302	7952	4052	2151
New''' Pu-U	2.30	2.29	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11
New''' eqU=	1.49	1.61	1.72	1.84	1.95	2.07	2.18	2.29	2.41	2.51
New''' Safe Kg=	3820372	1300816	478820	188746	79083	35012	16302	7952	4052	2151
Batches=	3.82E+03	1.30E+03	4.79E+02	1.89E+02	7.91E+01	3.50E+01	1.63E+01	7.95E+00	4.05E+00	2.15E+00
Pu Mass, kg =	5925.32	2017.54	742.64	292.74	122.66	54.30	25.28	12.33	6.28	3.34
U Mass, kg =	6.65E+04	2.50E+04	1.01E+04	4.31E+03	1.95E+03	9.25E+02	4.60E+02	2.39E+02	1.29E+02	7.23E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

3.82E+03
1.30E+03
4.79E+02
1.89E+02
7.91E+01
3.50E+01
1.63E+01
7.95E+00
4.05E+00
2.15E+00

APPENDIX B Loading Impact 1968 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.11	1.23	1.35	1.47	1.58	1.70	1.82	1.93	2.05	2.17
Pu239 wt fraction=	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622	0.622
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.43	1.55	1.67	1.79	1.90	2.02	2.14	2.26	2.37	2.49
Safe Kg=	6517822	2123376	750624	284755	114888	48937	21872	10205	4949	2485
New Pu-U	2.30	2.29	2.29	2.28	2.27	2.26	2.24	2.21	2.17	2.12
New eqU=	1.44	1.56	1.67	1.79	1.91	2.02	2.14	2.25	2.36	2.47
New Safe Kg=	6102946	2005024	715291	274220	112047	48480	22100	10572	5292	2766
New' Pu-U	2.30	2.29	2.29	2.28	2.27	2.26	2.24	2.21	2.18	2.13
New' eqU=	1.44	1.56	1.67	1.79	1.91	2.02	2.14	2.25	2.36	2.47
New' Safe Kg=	6103962	2005494	715511	274320	112087	48489	22093	10557	5273	2745
New'' Pu-U	2.30	2.29	2.29	2.28	2.27	2.26	2.24	2.21	2.18	2.13
New'' eqU=	1.44	1.56	1.67	1.79	1.91	2.02	2.14	2.25	2.36	2.47
New'' Safe Kg=	6103959	2005492	715510	274319	112086	48489	22093	10558	5274	2746
New''' Pu-U	2.30	2.29	2.29	2.28	2.27	2.26	2.24	2.21	2.18	2.13
New''' eqU=	1.44	1.56	1.67	1.79	1.91	2.02	2.14	2.25	2.36	2.47
New''' Safe Kg=	6103959	2005492	715510	274319	112086	48489	22093	10558	5274	2746
Batches=	4.07E+03	1.34E+03	4.77E+02	1.83E+02	7.47E+01	3.23E+01	1.47E+01	7.04E+00	3.52E+00	1.83E+00
Pu Mass, kg =	8695.52	2856.96	1019.29	390.79	159.67	69.08	31.47	15.04	7.51	3.91
U Mass, kg =	1.04E+05	3.79E+04	1.48E+04	6.18E+03	2.73E+03	1.27E+03	6.17E+02	3.14E+02	1.66E+02	9.15E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

4.07E+03
1.34E+03
4.77E+02
1.83E+02
7.47E+01
3.23E+01
1.47E+01
7.04E+00
3.52E+00
1.83E+00

APPENDIX B Loading Impact 1969 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.35	1.49	1.63	1.77	1.91	2.05	2.19	2.33	2.47	2.61
Pu239 wt fraction=	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.81	1.95	2.09	2.23	2.37	2.51	2.65	2.79	2.93	3.07
Safe Kg=	239107	82422	30592	12109	5071	2233	1028	492	245	126
New Pu-U	2.28	2.27	2.25	2.22	2.17	2.11	2.02	1.89	1.72	1.50
New eqU=	1.81	1.95	2.09	2.22	2.35	2.48	2.60	2.72	2.82	2.92
New Safe Kg=	227372	80179	30653	12618	5568	2627	1325	715	415	260
New' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.05	1.96	1.86	1.74
New' eqU=	1.81	1.95	2.09	2.22	2.35	2.48	2.61	2.73	2.85	2.97
New' Safe Kg=	227541	80231	30651	12591	5528	2582	1276	665	362	204
New'' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.05	1.95	1.83	1.67
New'' eqU=	1.81	1.95	2.09	2.22	2.35	2.48	2.61	2.73	2.84	2.95
New'' Safe Kg=	227539	80229	30651	12592	5531	2586	1283	673	373	219
New''' Pu-U	2.28	2.27	2.25	2.22	2.18	2.12	2.05	1.95	1.83	1.69
New''' eqU=	1.81	1.95	2.09	2.22	2.35	2.48	2.61	2.73	2.84	2.96
New''' Safe Kg=	227539	80229	30651	12592	5531	2586	1282	672	371	214
Batches=	2.28E+02	8.02E+01	3.07E+01	1.26E+01	5.53E+00	2.59E+00	1.28E+00	6.72E-01	3.71E-01	2.14E-01
Pu Mass, kg =	459.57	162.04	61.91	25.43	11.17	5.22	2.59	1.36	0.75	0.43
U Mass, kg =	3.96E+03	1.54E+03	6.44E+02	2.87E+02	1.36E+02	6.83E+01	3.62E+01	2.02E+01	1.18E+01	7.20E+00

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.28E+02
8.02E+01
3.07E+01
1.26E+01
5.53E+00
2.59E+00
1.28E+00
6.72E-01
3.71E-01
2.14E-01

APPENDIX B Loading Impact 1969 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
U Loading Increase	.1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.33	1.47	1.61	1.75	1.89	2.03	2.17	2.31	2.45	2.59
Pu239 wt fraction=	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Pu wt fraction=	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.75	1.89	2.03	2.17	2.31	2.45	2.59	2.73	2.87	3.01
Safe Kg=	387060	128815	46380	17878	7315	3155	1426	672	329	166
New Pu-U	2.29	2.27	2.26	2.23	2.19	2.14	2.08	1.95	1.80	1.60
New eqU=	1.75	1.89	2.03	2.17	2.30	2.43	2.56	2.67	2.79	2.89
New Safe Kg=	366800	124392	45886	18261	7795	3556	1731	899	500	298
New' Pu-U	2.29	2.27	2.26	2.23	2.20	2.15	2.08	2.00	1.90	1.78
New' eqU=	1.75	1.89	2.03	2.17	2.30	2.43	2.56	2.68	2.80	2.92
New' Safe Kg=	367018	124469	45899	18245	7765	3520	1692	858	457	254
New'' Pu-U	2.29	2.27	2.26	2.23	2.20	2.15	2.08	1.99	1.88	1.73
New'' eqU=	1.75	1.89	2.03	2.17	2.30	2.43	2.56	2.68	2.80	2.91
New'' Safe Kg=	367016	124468	45899	18245	7767	3523	1696	864	465	264
New''' Pu-U	2.29	2.27	2.26	2.23	2.20	2.15	2.08	1.99	1.88	1.75
New''' eqU=	1.75	1.89	2.03	2.17	2.30	2.43	2.56	2.68	2.80	2.91
New''' Safe Kg=	367016	124468	45899	18245	7767	3523	1696	863	463	261
Batches=	2.45E+02	8.30E+01	3.06E+01	1.22E+01	5.18E+00	2.35E+00	1.13E+00	5.76E-01	3.09E-01	1.74E-01
Pu Mass, kg =	680.87	230.91	85.15	33.85	14.41	6.54	3.15	1.60	0.86	0.48
U Mass, kg =	6.28E+03	2.35E+03	9.51E+02	4.11E+02	1.89E+02	9.20E+01	4.73E+01	2.57E+01	1.46E+01	8.71E+00

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.45E+02
8.30E+01
3.06E+01
1.22E+01
5.18E+00
2.35E+00
1.13E+00
5.76E-01
3.09E-01
1.74E-01

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.07	1.18	1.29	1.40	1.51	1.62	1.73	1.84	1.95	2.06
Pu239 wt fraction=	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Pu wt fraction=	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.61	1.72	1.83	1.94	2.05	2.16	2.27	2.38	2.49	2.60
Safe Kg=	1247469	484647	199672	86641	39369	18643	9163	4657	2441	1316
New Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.21	2.17	2.12	2.05
New eqU=	1.62	1.73	1.84	1.95	2.05	2.16	2.26	2.36	2.46	2.55
New Safe Kg=	1140353	449937	188744	83697	39062	19124	9799	5248	2936	1716
New' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.21	2.18	2.13	2.08
New' eqU=	1.62	1.73	1.84	1.95	2.05	2.16	2.26	2.36	2.46	2.56
New' Safe Kg=	1141254	450378	188948	83777	39074	19099	9753	5190	2870	1646
New'' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.21	2.18	2.13	2.08
New'' eqU=	1.62	1.73	1.84	1.95	2.05	2.16	2.26	2.36	2.46	2.56
New'' Safe Kg=	1141246	450372	188944	83775	39074	19100	9756	5195	2878	1656
New''' Pu-U	2.29	2.29	2.28	2.27	2.25	2.23	2.21	2.18	2.13	2.08
New''' eqU=	1.62	1.73	1.84	1.95	2.05	2.16	2.26	2.36	2.46	2.56
New''' Safe Kg=	1.14E+06	4.50E+05	1.89E+05	8.38E+04	3.91E+04	1.91E+04	9.76E+03	5.19E+03	2.88E+03	1.65E+03
Batches=	1.14E+03	4.50E+02	1.89E+02	8.38E+01	3.91E+01	1.91E+01	9.76E+00	5.19E+00	2.88E+00	1.65E+00
Pu Mass, kg =	2.76E+03	1.09E+03	4.57E+02	2.03E+02	9.46E+01	4.62E+01	2.36E+01	1.26E+01	6.97E+00	4.01E+00
U Mass, kg =	1.99E+04	8.65E+03	3.97E+03	1.91E+03	9.62E+02	5.04E+02	2.75E+02	1.56E+02	9.15E+01	5.56E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.14E+03
4.50E+02
1.89E+02
8.38E+01
3.91E+01
1.91E+01
9.76E+00
5.19E+00
2.88E+00
1.65E+00

APPENDIX B Loading Impact 1970 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.05	1.16	1.27	1.38	1.49	1.60	1.71	1.82	1.93	2.04
Pu239 wt fraction=	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971	0.971
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.55	1.66	1.77	1.88	1.99	2.10	2.21	2.32	2.43	2.54
Safe Kg=	2194445	821709	327769	138214	61223	28337	13643	6807	3507	1861
New Pu-U	2.29	2.29	2.28	2.28	2.26	2.25	2.22	2.19	2.16	2.09
New eqU=	1.56	1.67	1.78	1.88	1.99	2.10	2.20	2.31	2.41	2.51
New Safe Kg=	2008890	761154	308237	132325	59906	28486	14185	7382	4010	2273
New' Pu-U	2.29	2.29	2.28	2.28	2.26	2.25	2.22	2.20	2.16	2.11
New' eqU=	1.56	1.67	1.78	1.88	1.99	2.10	2.20	2.31	2.41	2.51
New' Safe Kg=	2007032	761716	308508	132444	59944	28480	14158	7338	3958	2216
New'' Pu-U	2.29	2.29	2.28	2.28	2.26	2.25	2.22	2.19	2.16	2.11
New'' eqU=	1.56	1.67	1.78	1.88	1.99	2.10	2.20	2.31	2.41	2.51
New'' Safe Kg=	2007024	761711	308504	132441	59943	28480	14156	7341	3963	2223
New''' Pu-U	2.29	2.29	2.28	2.28	2.26	2.25	2.22	2.19	2.16	2.11
New''' eqU=	1.56	1.67	1.78	1.88	1.99	2.10	2.20	2.31	2.41	2.51
New''' Safe Kg=	2.01E+06	7.62E+05	3.09E+05	1.32E+05	5.99E+04	2.85E+04	1.42E+04	7.34E+03	3.96E+03	2.22E+03
Batches=	1.34E+03	5.08E+02	2.06E+02	8.83E+01	4.00E+01	1.90E+01	9.44E+00	4.89E+00	2.64E+00	1.48E+00
Pu Mass, kg =	4.46E+03	1.69E+03	6.86E+02	2.95E+02	1.33E+02	6.33E+01	3.15E+01	1.63E+01	8.81E+00	4.94E+00
U Mass, kg =	3.44E+04	1.44E+04	6.39E+03	2.98E+03	1.46E+03	7.44E+02	3.95E+02	2.18E+02	1.25E+02	7.40E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.34E+03
5.08E+02
2.06E+02
8.83E+01
4.00E+01
1.90E+01
9.44E+00
4.89E+00
2.64E+00
1.48E+00

APPENDIX B Loading Impact 1971 Tank Receipts

WSRC-TR-94-004

Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.16	1.29	1.41	1.53	1.65	1.77	1.89	2.01	2.13	2.25
Pu239 wt fraction=	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Pu wt fraction=	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.69	1.82	1.94	2.06	2.18	2.30	2.42	2.54	2.66	2.78
Safe Kg=	602798	226122	90338	38147	16918	7839	3778	1887	973	517
New Pu-U	2.29	2.28	2.27	2.25	2.23	2.20	2.15	2.09	2.01	1.90
New eqU=	1.70	1.82	1.94	2.06	2.17	2.28	2.39	2.50	2.60	2.70
New Safe Kg=	558640	213485	87245	37903	17428	8457	4324	2328	1320	791
New' Pu-U	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05	1.98
New' eqU=	1.70	1.82	1.94	2.06	2.17	2.29	2.40	2.51	2.61	2.72
New' Safe Kg=	559136	213703	87325	37912	17401	8410	4266	2264	1252	719
New'' Pu-U	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05	1.96
New'' eqU=	1.70	1.82	1.94	2.06	2.17	2.29	2.40	2.51	2.61	2.71
New'' Safe Kg=	559130	213699	87323	37911	17402	8414	4272	2272	1263	733
New''' Pu-U	2.29	2.28	2.27	2.25	2.23	2.20	2.16	2.11	2.05	1.97
New''' eqU=	1.70	1.82	1.94	2.06	2.17	2.29	2.40	2.51	2.61	2.71
New''' Safe Kg=	5.59E+05	2.14E+05	8.73E+04	3.79E+04	1.74E+04	8.41E+03	4.27E+03	2.27E+03	1.26E+03	730
Batches=	5.59E+02	2.14E+02	8.73E+01	3.79E+01	1.74E+01	8.41E+00	4.27E+00	2.27E+00	1.26E+00	7.30E-01
Pu Mass, kg =	1317.53	503.56	205.77	89.33	41.01	19.83	10.06	5.38	2.97	1.72
U Mass, kg =	9.73E+03	4.11E+03	1.83E+03	8.65E+02	4.28E+02	2.22E+02	1.20E+02	6.81E+01	4.01E+01	2.45E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

5.59E+02
2.14E+02
8.73E+01
3.79E+01
1.74E+01
8.41E+00
4.27E+00
2.27E+00
1.26E+00
7.30E-01

APPENDIX B Loading Impact 1971 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.15	1.27	1.39	1.51	1.63	1.75	1.87	1.99	2.11	2.23
Pu239 wt fraction=	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945	0.945
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.63	1.75	1.87	1.99	2.11	2.23	2.35	2.47	2.60	2.72
Safe Kg=	1034885	374295	144844	59469	25725	11657	5507	2700	1379	717
New Pu-U	2.29	2.29	2.28	2.26	2.24	2.22	2.18	2.13	2.08	2.03
New eqU=	1.64	1.76	1.88	2.00	2.11	2.23	2.34	2.45	2.56	2.66
New Safe Kg=	957468	351749	138687	58274	25957	12209	6049	3152	1728	996
New Pu-U	2.29	2.28	2.28	2.26	2.24	2.22	2.18	2.14	2.08	2.01
New eqU=	1.64	1.76	1.88	2.00	2.11	2.23	2.34	2.45	2.56	2.66
New Safe Kg=	958101	352036	138808	58308	25947	12177	6005	3102	1673	939
New Pu-U	2.29	2.28	2.28	2.26	2.24	2.22	2.18	2.14	2.08	2.01
New eqU=	1.64	1.76	1.88	2.00	2.11	2.23	2.34	2.45	2.56	2.66
New Safe Kg=	958095	352032	138803	58307	25947	12179	6008	3107	1680	948
New Pu-U	2.29	2.28	2.28	2.26	2.24	2.22	2.18	2.14	2.08	2.01
New eqU=	1.64	1.76	1.88	2.00	2.11	2.23	2.34	2.45	2.56	2.66
New Safe Kg=	9.58E+05	3.52E+05	1.39E+05	5.83E+04	2.59E+04	1.22E+04	6.01E+03	3.11E+03	1.68E+03	947
Batches=	6.39E+02	2.35E+02	9.25E+01	3.89E+01	1.73E+01	8.12E+00	4.01E+00	2.07E+00	1.12E+00	6.31E-01
Pu Mass, kg =	2073.64	761.92	300.42	126.20	56.16	26.36	13.00	6.72	3.53	2.05
U Mass, kg =	1.64E+04	6.66E+03	2.88E+03	1.31E+03	6.31E+02	3.16E+02	1.68E+02	9.23E+01	5.29E+01	3.15E+01

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

6.39E+02
2.35E+02
9.25E+01
3.89E+01
1.73E+01
8.12E+00
4.01E+00
2.07E+00
1.12E+00
6.31E-01

Loading Impact of .669 wt% U and .945 wt% F

APPENDIX B Loading Impact 1972 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.95	1.05	1.15	1.25	1.35	1.45	1.55	1.64	1.74	1.84
Pu239 wt fraction=	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.32	1.42	1.51	1.61	1.71	1.81	1.91	2.01	2.11	2.20
Safe Kg=	22268166	7932902	3029668	1229577	526475	236402	110760	53916	27168	14126
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.22
New eqU=	1.32	1.42	1.52	1.62	1.72	1.81	1.91	2.01	2.10	2.20
New Safe Kg=	20477834	7353036	2830545	1158379	500562	227136	107739	53226	27305	14511
New' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New' eqU=	1.32	1.42	1.52	1.62	1.72	1.81	1.91	2.01	2.10	2.20
New' Safe Kg=	20480739	7354507	2831310	1158784	500775	227244	107788	53241	27300	14495
New'' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New'' eqU=	1.32	1.42	1.52	1.62	1.72	1.81	1.91	2.01	2.10	2.20
New'' Safe Kg=	20480734	7354503	2831307	1158782	500773	227243	107787	53241	27301	14496
New''' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New''' eqU=	1.32	1.42	1.52	1.62	1.72	1.81	1.91	2.01	2.10	2.20
New''' Safe Kg=	2.05E+07	7.35E+03	2.83E+03	1.16E+03	5.01E+02	2.27E+02	1.08E+02	5.32E+01	2.73E+01	1.45E+01
Batches=	2.05E+04	7.35E+03	2.83E+03	1.16E+03	5.01E+02	2.27E+02	1.08E+02	5.32E+01	2.73E+01	1.45E+01
Pu Mass, kg =	3.30E+04	1.18E+04	4.56E+03	1.87E+03	8.07E+02	3.66E+02	1.74E+02	8.58E+01	4.40E+01	2.34E+01
U Mass, kg =	3.57E+05	1.41E+05	5.95E+04	2.64E+04	1.23E+04	6.00E+03	3.04E+03	1.60E+03	8.68E+02	4.67E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.05E+04
7.35E+03
2.83E+03
1.16E+03
5.01E+02
2.27E+02
1.08E+02
5.32E+01
2.73E+01
1.45E+01

APPENDIX B Loading Impact 1972 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.94	1.04	1.14	1.23	1.33	1.43	1.53	1.63	1.73	1.83
Pu239 wt fraction=	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646	0.646
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.27	1.37	1.47	1.57	1.67	1.76	1.86	1.96	2.06	2.16
Safe Kg=	36882189	12677598	4693833	1853909	774878	340638	156576	74917	37166	19053
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.23
New eqU=	1.28	1.38	1.47	1.57	1.67	1.77	1.87	1.96	2.06	2.16
New Safe Kg=	34030684	11784163	4394696	1748715	736893	326833	151813	73549	37040	19339
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.24
New eqU=	1.28	1.38	1.47	1.57	1.67	1.77	1.87	1.96	2.06	2.16
New Safe Kg=	34034108	11785866	4395572	1749176	737136	326959	151874	73573	37043	19330
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.24
New eqU=	1.28	1.38	1.47	1.57	1.67	1.77	1.87	1.96	2.06	2.16
New Safe Kg=	34034104	11785862	4395570	1749174	737134	326958	151873	73572	37043	19330
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.24
New eqU=	1.28	1.38	1.47	1.57	1.67	1.77	1.87	1.96	2.06	2.16
New Safe Kg=	3.40E+07	1.18E+07	4.40E+06	1.75E+06	7.37E+05	3.27E+05	1.52E+05	7.36E+04	3.70E+04	1.93E+04
Batches=	2.27E+04	7.86E+03	2.93E+03	1.17E+03	4.91E+02	2.18E+02	1.01E+02	4.90E+01	2.47E+01	1.29E+01
Pu Mass, kg =	5.04E+04	1.74E+04	6.50E+03	2.59E+03	1.09E+03	4.84E+02	2.25E+02	1.09E+02	5.48E+01	2.86E+01
U Mass, kg =	5.83E+05	2.23E+05	9.11E+04	3.94E+04	1.79E+04	8.54E+03	4.24E+03	2.19E+03	1.17E+03	6.44E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.27E+04
7.86E+03
2.93E+03
1.17E+03
4.91E+02
2.18E+02
1.01E+02
4.90E+01
2.47E+01
1.29E+01

APPENDIX B Loading Impact 1973 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.87	0.96	1.05	1.14	1.23	1.32	1.40	1.49	1.58	1.67
Pu239 wt fraction=	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.18	1.27	1.36	1.45	1.54	1.63	1.72	1.81	1.90	1.99
Safe Kg=	1.06E+08	3.73E+07	1.41E+07	5.66E+06	2.40E+06	1.07E+06	4.97E+05	2.40E+05	1.20E+05	6.23E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New eqU=	1.19	1.28	1.37	1.46	1.54	1.63	1.72	1.81	1.90	1.99
New Safe Kg=	97850780	34615381	13145961	5312343	2267849	1016705	476310	232229	117431	61412
New' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New' eqU=	1.19	1.28	1.37	1.46	1.54	1.63	1.72	1.81	1.90	1.99
New' Safe Kg=	97856806	34618446	13147582	5313225	2268338	1016980	476463	232311	117472	61427
New'' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New'' eqU=	1.19	1.28	1.37	1.46	1.54	1.63	1.72	1.81	1.90	1.99
New'' Safe Kg=	97856801	34618443	13147579	5313223	2268337	1016978	476461	232310	117471	61427
New''' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New''' eqU=	1.19	1.28	1.37	1.46	1.54	1.63	1.72	1.81	1.90	1.99
New''' Safe Kg=	9.79E+07	3.46E+07	1.31E+07	5.31E+06	2.27E+06	1.02E+06	4.76E+05	2.32E+05	1.17E+05	6.14E+04
Batches=	9.79E+04	3.46E+04	1.31E+04	5.31E+03	2.27E+03	1.02E+03	4.76E+02	2.32E+02	1.17E+02	6.14E+01
Pu Mass, kg =	1.36E+05	4.82E+04	1.83E+04	7.39E+03	3.16E+03	1.42E+03	6.63E+02	3.23E+02	1.63E+02	8.55E+01
U Mass, kg =	1.70E+06	6.65E+05	2.76E+05	1.21E+05	5.58E+04	2.69E+04	1.34E+04	6.97E+03	3.74E+03	2.06E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

9.79E+04
3.46E+04
1.31E+04
5.31E+03
2.27E+03
1.02E+03
4.76E+02
2.32E+02
1.17E+02
6.14E+01

APPENDIX B Loading Impact 1973 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.85	0.94	1.03	1.12	1.21	1.30	1.39	1.48	1.57	1.66
Pu239 wt fraction=	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558	0.558
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.14	1.23	1.32	1.41	1.50	1.59	1.68	1.77	1.86	1.95
Safe Kg=	1.74E+08	5.91E+07	2.16E+07	8.46E+06	3.50E+06	1.53E+06	6.97E+05	3.32E+05	1.64E+05	8.34E+04
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27
New eqU=	1.15	1.24	1.33	1.41	1.50	1.59	1.68	1.77	1.86	1.95
New Safe Kg=	1.61E+08	54994530	20245202	7960320	3316674	1454842	668243	319974	159123	81927
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27
New' eqU=	1.15	1.24	1.33	1.41	1.50	1.59	1.68	1.77	1.86	1.95
New' Safe Kg=	1.61E+08	54998032	20247023	7961299	3317213	1455143	668412	320067	159170	81948
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27
New'' eqU=	1.15	1.24	1.33	1.41	1.50	1.59	1.68	1.77	1.86	1.95
New'' Safe Kg=	1.61E+08	54998029	20247020	7961297	3317211	1455142	668411	320066	159170	81947
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27
New''' eqU=	1.15	1.24	1.33	1.41	1.50	1.59	1.68	1.77	1.86	1.95
New''' Safe Kg=	1.61E+08	5.50E+07	2.02E+07	7.96E+06	3.32E+06	1.46E+06	6.68E+05	3.20E+05	1.59E+05	8.19E+04
Batches=	1.07E+05	3.67E+04	1.35E+04	5.31E+03	2.21E+03	9.70E+02	4.46E+02	2.13E+02	1.06E+02	5.46E+01
Pu Mass, kg =	2.06E+05	7.03E+04	2.59E+04	1.02E+04	4.24E+03	1.86E+03	8.54E+02	4.09E+02	2.03E+02	1.05E+02
U Mass, kg =	2.76E+06	1.04E+06	4.19E+05	1.79E+05	8.07E+04	3.80E+04	1.87E+04	9.51E+03	5.02E+03	2.73E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.07E+05
3.67E+04
1.35E+04
5.31E+03
2.21E+03
9.70E+02
4.46E+02
2.13E+02
1.06E+02
5.46E+01

APPENDIX B Loading Impact 1974 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.65	0.71	0.78	0.85	0.92	0.98	1.05	1.12	1.18	1.25
Pu239 wt fraction=	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.03	1.10	1.16	1.23	1.30	1.37	1.43	1.50	1.57	1.63
Safe Kg=	7.39E+08	3.01E+08	1.29E+08	5.80E+07	2.72E+07	1.33E+07	6.70E+06	3.49E+06	1.87E+06	1.03E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New eqU=	1.04	1.11	1.17	1.24	1.31	1.37	1.44	1.51	1.57	1.64
New Safe Kg=	6.58E+08	2.70E+08	1.16E+08	5.27E+07	2.49E+07	1.22E+07	6.19E+06	3.24E+06	1.75E+06	9.66E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New' eqU=	1.04	1.11	1.17	1.24	1.31	1.37	1.44	1.51	1.57	1.64
New' Safe Kg=	6.58E+08	2.70E+08	1.16E+08	5.27E+07	2.49E+07	1.22E+07	6.19E+06	3.24E+06	1.75E+06	9.66E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New'' eqU=	1.04	1.11	1.17	1.24	1.31	1.37	1.44	1.51	1.57	1.64
New'' Safe Kg=	6.58E+08	2.70E+08	1.16E+08	5.27E+07	2.49E+07	1.22E+07	6.19E+06	3.24E+06	1.75E+06	9.66E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New''' eqU=	1.04	1.11	1.17	1.24	1.31	1.37	1.44	1.51	1.57	1.64
New''' Safe Kg=	6.58E+08	2.70E+08	1.16E+08	5.27E+07	2.49E+07	1.22E+07	6.19E+06	3.24E+06	1.75E+06	9.66E+05
Batches=	6.58E+05	2.70E+05	1.16E+05	5.27E+04	2.49E+04	1.22E+04	6.19E+03	3.24E+03	1.75E+03	9.66E+02
Pu Mass, kg =	1.12E+06	4.58E+05	1.98E+05	8.96E+04	4.23E+04	2.07E+04	1.05E+04	5.51E+03	2.97E+03	1.64E+03
U Mass, kg =	1.15E+07	5.18E+06	2.45E+06	1.20E+06	6.12E+05	3.22E+05	1.75E+05	9.73E+04	5.56E+04	3.25E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

6.58E+05
2.70E+05
1.16E+05
5.27E+04
2.49E+04
1.22E+04
6.19E+03
3.24E+03
1.75E+03
9.66E+02

APPENDIX B Loading Impact 1974 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.64	0.70	0.77	0.84	0.90	0.97	1.04	1.11	1.17	1.24
Pu239 wt fraction=	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682	0.682
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.99	1.06	1.12	1.19	1.26	1.32	1.39	1.46	1.52	1.59
Safe Kg=	1.34E+09	5.26E+08	2.18E+08	9.54E+07	4.36E+07	2.08E+07	1.03E+07	5.24E+06	2.76E+06	1.49E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New eqU=	1.00	1.06	1.13	1.20	1.26	1.33	1.40	1.46	1.53	1.60
New Safe Kg=	1.20E+09	4.74E+08	1.98E+08	8.70E+07	4.00E+07	1.92E+07	9.51E+06	4.88E+06	2.58E+06	1.41E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New' eqU=	1.00	1.06	1.13	1.20	1.26	1.33	1.40	1.46	1.53	1.60
New' Safe Kg=	1.20E+09	4.74E+08	1.98E+08	8.71E+07	4.00E+07	1.92E+07	9.52E+06	4.88E+06	2.58E+06	1.41E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New'' eqU=	1.00	1.06	1.13	1.20	1.26	1.33	1.40	1.46	1.53	1.60
New'' Safe Kg=	1.20E+09	4.74E+08	1.98E+08	8.71E+07	4.00E+07	1.92E+07	9.52E+06	4.88E+06	2.58E+06	1.41E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New''' eqU=	1.00	1.06	1.13	1.20	1.26	1.33	1.40	1.46	1.53	1.60
New''' Safe Kg=	1.20E+09	4.74E+08	1.98E+08	8.71E+07	4.00E+07	1.92E+07	9.52E+06	4.88E+06	2.58E+06	1.41E+06
Batches=	8.00E+05	3.16E+05	1.32E+05	5.80E+04	2.67E+04	1.28E+04	6.34E+03	3.26E+03	1.72E+03	9.37E+02
Pu Mass, kg =	1.87E+06	7.40E+05	3.09E+05	1.36E+05	6.25E+04	2.99E+04	1.49E+04	7.63E+03	4.04E+03	2.20E+03
U Mass, kg =	2.05E+07	8.96E+06	4.10E+06	1.96E+06	9.73E+05	5.00E+05	2.66E+05	1.45E+05	8.14E+04	4.68E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

8.00E+05
3.16E+05
1.32E+05
5.80E+04
2.67E+04
1.28E+04
6.34E+03
3.26E+03
1.72E+03
9.37E+02

APPENDIX B Loading Impact 1975 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.62	0.68	0.75	0.81	0.87	0.94	1.00	1.07	1.13	1.19
Pu239 wt fraction=	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.95	1.01	1.07	1.14	1.20	1.27	1.33	1.39	1.46	1.52
Safe Kg=	2.47E+09	9.72E+08	4.05E+08	1.77E+08	8.13E+07	3.88E+07	1.92E+07	9.82E+06	5.18E+06	2.81E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New eqU=	0.95	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.53
New Safe Kg=	2.21E+09	8.77E+08	3.68E+08	1.62E+08	7.47E+07	3.58E+07	1.78E+07	9.16E+06	4.85E+06	2.64E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New' eqU=	0.95	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.53
New' Safe Kg=	2.21E+09	8.77E+08	3.68E+08	1.62E+08	7.47E+07	3.58E+07	1.78E+07	9.16E+06	4.85E+06	2.64E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New'' eqU=	0.95	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.53
New'' Safe Kg=	2.21E+09	8.77E+08	3.68E+08	1.62E+08	7.47E+07	3.58E+07	1.78E+07	9.16E+06	4.85E+06	2.64E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New''' eqU=	0.95	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.53
New''' Safe Kg=	2.21E+09	8.77E+08	3.68E+08	1.62E+08	7.47E+07	3.58E+07	1.78E+07	9.16E+06	4.85E+06	2.64E+06
Batches=	2.21E+06	8.77E+05	3.68E+05	1.62E+05	7.47E+04	3.58E+04	1.78E+04	9.16E+03	4.85E+03	2.64E+03
Pu Mass, kg =	3.24E+06	1.28E+06	5.37E+05	2.37E+05	1.09E+05	5.23E+04	2.60E+04	1.34E+04	7.09E+03	3.86E+03
U Mass, kg =	3.85E+07	1.69E+07	7.73E+06	3.70E+06	1.84E+06	9.46E+05	5.03E+05	2.75E+05	1.54E+05	8.88E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.21E+06
8.77E+05
3.68E+05
1.62E+05
7.47E+04
3.58E+04
1.78E+04
9.16E+03
4.85E+03
2.64E+03

APPENDIX B Loading Impact 1975 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.61	0.67	0.74	0.80	0.86	0.93	0.99	1.05	1.12	1.18
Pu239 wt fraction=	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586	0.586
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.91	0.97	1.04	1.10	1.17	1.23	1.29	1.36	1.42	1.48
Safe Kg=	4.38E+09	1.66E+09	6.70E+08	2.85E+08	1.27E+08	5.94E+07	2.88E+07	1.45E+07	7.50E+06	4.00E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New eqU=	0.92	0.98	1.04	1.11	1.17	1.24	1.30	1.36	1.43	1.49
New Safe Kg=	3.95E+09	1.51E+09	6.11E+08	2.62E+08	1.18E+08	5.51E+07	2.68E+07	1.35E+07	7.04E+06	3.77E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New' eqU=	0.92	0.98	1.04	1.11	1.17	1.24	1.30	1.36	1.43	1.49
New' Safe Kg=	3.95E+09	1.51E+09	6.12E+08	2.62E+08	1.18E+08	5.51E+07	2.68E+07	1.35E+07	7.04E+06	3.77E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New'' eqU=	0.92	0.98	1.04	1.11	1.17	1.24	1.30	1.36	1.43	1.49
New'' Safe Kg=	3.95E+09	1.51E+09	6.12E+08	2.62E+08	1.18E+08	5.51E+07	2.68E+07	1.35E+07	7.04E+06	3.77E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New''' eqU=	0.92	0.98	1.04	1.11	1.17	1.24	1.30	1.36	1.43	1.49
New''' Safe Kg=	3.95E+09	1.51E+09	6.12E+08	2.62E+08	1.18E+08	5.51E+07	2.68E+07	1.35E+07	7.04E+06	3.77E+06
Batches=	2.63E+06	1.00E+06	4.08E+05	1.75E+05	7.84E+04	3.67E+04	1.79E+04	9.02E+03	4.69E+03	2.51E+03
Pu Mass, kg =	5.30E+06	2.02E+06	8.21E+05	3.51E+05	1.58E+05	7.39E+04	3.60E+04	1.82E+04	9.45E+03	5.06E+03
U Mass, kg =	6.76E+07	2.85E+07	1.27E+07	5.89E+06	2.86E+06	1.44E+06	7.49E+05	4.02E+05	2.22E+05	1.26E+05

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.63E+06
1.00E+06
4.08E+05
1.75E+05
7.84E+04
3.67E+04
1.79E+04
9.02E+03
4.69E+03
2.51E+03

APPENDIX B Loading Impact 1976 Tank Receipts

WSRC-TR-94-004

Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.77	0.85	0.92	1.00	1.08	1.16	1.24	1.32	1.40	1.48
Pu239 wt fraction=	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.09	1.17	1.25	1.33	1.41	1.49	1.57	1.65	1.73	1.81
Safe Kg=	3.19E+08	1.18E+08	4.62E+07	1.92E+07	8.41E+06	3.85E+06	1.84E+06	9.08E+05	4.64E+05	2.45E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.10	1.18	1.26	1.34	1.42	1.50	1.57	1.65	1.73	1.81
New Safe Kg=	2.91E+08	1.08E+08	4.26E+07	1.78E+07	7.85E+06	3.62E+06	1.73E+06	8.63E+05	4.44E+05	2.36E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New' eqU=	1.10	1.18	1.26	1.34	1.42	1.50	1.57	1.65	1.73	1.81
New' Safe Kg=	2.91E+08	1.08E+08	4.26E+07	1.78E+07	7.85E+06	3.62E+06	1.73E+06	8.64E+05	4.44E+05	2.36E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New'' eqU=	1.10	1.18	1.26	1.34	1.42	1.50	1.57	1.65	1.73	1.81
New'' Safe Kg=	2.91E+08	1.08E+08	4.26E+07	1.78E+07	7.85E+06	3.62E+06	1.73E+06	8.64E+05	4.44E+05	2.36E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New''' eqU=	1.10	1.18	1.26	1.34	1.42	1.50	1.57	1.65	1.73	1.81
New''' Safe Kg=	2.91E+08	1.08E+08	4.26E+07	1.78E+07	7.85E+06	3.62E+06	1.73E+06	8.64E+05	4.44E+05	2.36E+05
Batches=	2.91E+05	1.08E+05	4.26E+04	1.78E+04	7.85E+03	3.62E+03	1.73E+03	8.64E+02	4.44E+02	2.36E+02
Pu Mass, kg =	4.22E+05	1.56E+05	6.19E+04	2.59E+04	1.14E+04	5.25E+03	2.52E+03	1.25E+03	6.45E+02	3.42E+02
U Mass, kg =	5.07E+06	2.07E+06	8.95E+05	4.07E+05	1.93E+05	9.55E+04	4.89E+04	2.59E+04	1.41E+04	7.93E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.91E+05
1.08E+05
4.26E+04
1.78E+04
7.85E+03
3.62E+03
1.73E+03
8.64E+02
4.44E+02
2.36E+02

APPENDIX B Loading Impact 1976 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.75	0.83	0.91	0.99	1.07	1.15	1.23	1.31	1.39	1.47
Pu239 wt fraction=	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582	0.582
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.05	1.13	1.21	1.29	1.37	1.45	1.53	1.61	1.69	1.77
Safe Kg=	5.41E+08	1.92E+08	7.31E+07	2.96E+07	1.26E+07	5.66E+06	2.65E+06	1.29E+06	6.47E+05	3.36E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.06	1.14	1.22	1.30	1.38	1.46	1.53	1.61	1.69	1.77
New Safe Kg=	4.95E+08	1.77E+08	6.77E+07	2.76E+07	1.18E+07	5.33E+06	2.50E+06	1.22E+06	6.19E+05	3.24E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New' eqU=	1.06	1.14	1.22	1.30	1.38	1.46	1.53	1.61	1.69	1.77
New' Safe Kg=	4.95E+08	1.77E+08	6.77E+07	2.76E+07	1.18E+07	5.33E+06	2.50E+06	1.22E+06	6.19E+05	3.24E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New'' eqU=	1.06	1.14	1.22	1.30	1.38	1.46	1.53	1.61	1.69	1.77
New'' Safe Kg=	4.95E+08	1.77E+08	6.77E+07	2.76E+07	1.18E+07	5.33E+06	2.50E+06	1.22E+06	6.19E+05	3.24E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New''' eqU=	1.06	1.14	1.22	1.30	1.38	1.46	1.53	1.61	1.69	1.77
New''' Safe Kg=	4.95E+08	1.77E+08	6.77E+07	2.76E+07	1.18E+07	5.33E+06	2.50E+06	1.22E+06	6.19E+05	3.24E+05
Batches=	3.30E+05	1.18E+05	4.51E+04	1.84E+04	7.89E+03	3.55E+03	1.67E+03	8.16E+02	4.13E+02	2.16E+02
Pu Mass, kg =	6.60E+05	2.36E+05	9.03E+04	3.67E+04	1.58E+04	7.10E+03	3.34E+03	1.63E+03	8.26E+02	4.31E+02
U Mass, kg =	8.47E+06	3.34E+06	1.40E+06	6.20E+05	2.88E+05	1.39E+05	6.99E+04	3.64E+04	1.95E+04	1.08E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

3.30E+05
1.18E+05
4.51E+04
1.84E+04
7.89E+03
3.55E+03
1.67E+03
8.16E+02
4.13E+02
2.16E+02

APPENDIX B Loading Impact 1977 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.55	0.61	0.66	0.72	0.78	0.83	0.89	0.95	1.01	1.06
Pu239 wt fraction=	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.94	1.00	1.05	1.11	1.17	1.22	1.28	1.34	1.39	1.45
Safe Kg=	2.78E+09	1.20E+09	5.43E+08	2.56E+08	1.25E+08	6.35E+07	3.32E+07	1.78E+07	9.84E+06	5.56E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New eqU=	0.95	1.00	1.06	1.12	1.18	1.23	1.29	1.35	1.40	1.46
New Safe Kg=	2.44E+09	1.06E+09	4.84E+08	2.30E+08	1.13E+08	5.76E+07	3.02E+07	1.63E+07	9.05E+06	5.14E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New' eqU=	0.95	1.00	1.06	1.12	1.17	1.23	1.29	1.35	1.40	1.46
New' Safe Kg=	2.44E+09	1.06E+09	4.84E+08	2.30E+08	1.13E+08	5.76E+07	3.02E+07	1.63E+07	9.05E+06	5.14E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New'' eqU=	0.95	1.00	1.06	1.12	1.17	1.23	1.29	1.35	1.40	1.46
New'' Safe Kg=	2.44E+09	1.06E+09	4.84E+08	2.30E+08	1.13E+08	5.76E+07	3.02E+07	1.63E+07	9.05E+06	5.14E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New''' eqU=	0.95	1.00	1.06	1.12	1.17	1.23	1.29	1.35	1.40	1.46
New''' Safe Kg=	2.44E+09	1.06E+09	4.84E+08	2.30E+08	1.13E+08	5.76E+07	3.02E+07	1.63E+07	9.05E+06	5.14E+06
Batches=	2.44E+06	1.06E+06	4.84E+05	2.30E+05	1.13E+05	5.76E+04	3.02E+04	1.63E+04	9.05E+03	5.14E+03
Pu Mass, kg =	4.22E+06	1.84E+06	8.36E+05	3.97E+05	1.95E+05	9.95E+04	5.23E+04	2.82E+04	1.56E+04	8.88E+03
U Mass, kg =	4.25E+07	2.04E+07	1.02E+07	5.24E+06	2.78E+06	1.52E+06	8.53E+05	4.90E+05	2.88E+05	1.73E+05

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.44E+06
1.06E+06
4.84E+05
2.30E+05
1.13E+05
5.76E+04
3.02E+04
1.63E+04
9.05E+03
5.14E+03

APPENDIX B Loading Impact 1977 Tank Receipts

WSRC-TR-94-004

Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.54	0.60	0.65	0.71	0.77	0.83	0.88	0.94	1.00	1.05
Pu239 wt fraction=	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693	0.693
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.90	0.95	1.01	1.07	1.13	1.18	1.24	1.30	1.35	1.41
Safe Kg=	5.27E+09	2.19E+09	9.58E+08	4.39E+08	2.09E+08	1.03E+08	5.28E+07	2.78E+07	1.51E+07	8.37E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New eqU=	0.91	0.96	1.02	1.08	1.13	1.19	1.25	1.30	1.36	1.42
New Safe Kg=	4.65E+09	1.95E+09	8.58E+08	3.95E+08	1.89E+08	9.41E+07	4.83E+07	2.56E+07	1.39E+07	7.76E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New' eqU=	0.91	0.96	1.02	1.08	1.13	1.19	1.25	1.30	1.36	1.42
New' Safe Kg=	4.65E+09	1.95E+09	8.58E+08	3.95E+08	1.89E+08	9.41E+07	4.84E+07	2.56E+07	1.39E+07	7.76E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New'' eqU=	0.91	0.96	1.02	1.08	1.13	1.19	1.25	1.30	1.36	1.42
New'' Safe Kg=	4.65E+09	1.95E+09	8.58E+08	3.95E+08	1.89E+08	9.41E+07	4.84E+07	2.56E+07	1.39E+07	7.76E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New''' eqU=	0.91	0.96	1.02	1.08	1.13	1.19	1.25	1.30	1.36	1.42
New''' Safe Kg=	4.65E+09	1.95E+09	8.58E+08	3.95E+08	1.89E+08	9.41E+07	4.84E+07	2.56E+07	1.39E+07	7.76E+06
Batches=	3.10E+06	1.30E+06	5.72E+05	2.63E+05	1.26E+05	6.28E+04	3.22E+04	1.71E+04	9.28E+03	5.18E+03
Pu Mass, kg =	7.37E+06	3.09E+06	1.36E+06	6.27E+05	3.01E+05	1.49E+05	7.67E+04	4.06E+04	2.21E+04	1.23E+04
U Mass, kg =	7.95E+07	3.68E+07	1.78E+07	8.89E+06	4.61E+06	2.46E+06	1.35E+06	7.60E+05	4.39E+05	2.59E+05

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

3.10E+06
1.30E+06
5.72E+05
2.63E+05
1.26E+05
6.28E+04
3.22E+04
1.71E+04
9.28E+03
5.18E+03

APPENDIX B Loading Impact 1978 Tank Receipts

WSRC-TR-94-004

Rev. 0

	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.43	0.47	0.52	0.56	0.61	0.65	0.69	0.74	0.78	0.83
Pu239 wt fraction=	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.81	0.85	0.90	0.94	0.98	1.03	1.07	1.12	1.16	1.21
Safe Kg=	2.42E+10	1.13E+10	5.47E+09	2.75E+09	1.42E+09	7.59E+08	4.15E+08	2.33E+08	1.34E+08	7.84E+07
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New eqU=	0.82	0.86	0.90	0.95	0.99	1.04	1.08	1.13	1.17	1.21
New Safe Kg=	2.09E+10	9.81E+09	4.79E+09	2.42E+09	1.26E+09	6.76E+08	3.72E+08	2.10E+08	1.21E+08	7.11E+07
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New' eqU=	0.82	0.86	0.90	0.95	0.99	1.04	1.08	1.13	1.17	1.21
New' Safe Kg=	2.09E+10	9.81E+09	4.79E+09	2.42E+09	1.26E+09	6.76E+08	3.72E+08	2.10E+08	1.21E+08	7.11E+07
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New'' eqU=	0.82	0.86	0.90	0.95	0.99	1.04	1.08	1.13	1.17	1.21
New'' Safe Kg=	2.09E+10	9.81E+09	4.79E+09	2.42E+09	1.26E+09	6.76E+08	3.72E+08	2.10E+08	1.21E+08	7.11E+07
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New''' eqU=	0.82	0.86	0.90	0.95	0.99	1.04	1.08	1.13	1.17	1.21
New''' Safe Kg=	2.09E+10	9.81E+09	4.79E+09	2.42E+09	1.26E+09	6.76E+08	3.72E+08	2.10E+08	1.21E+08	7.11E+07
Batches=	2.09E+07	9.81E+06	4.79E+06	2.42E+06	1.26E+06	6.76E+05	3.72E+05	2.10E+05	1.21E+05	7.11E+04
Pu Mass, kg =	3.52E+07	1.65E+07	8.06E+06	4.07E+06	2.12E+06	1.14E+06	6.26E+05	3.53E+05	2.03E+05	1.20E+05
U Mass, kg =	3.64E+08	1.89E+08	1.01E+08	5.52E+07	3.10E+07	1.79E+07	1.05E+07	6.29E+06	3.84E+06	2.39E+06

U Loading Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.09E+07
9.81E+06
4.79E+06
2.42E+06
1.26E+06
6.76E+05
3.72E+05
2.10E+05
1.21E+05
7.11E+04

APPENDIX B Loading Impact 1978 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.42	0.47	0.51	0.55	0.60	0.64	0.69	0.73	0.78	0.82
Pu239 wt fraction=	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675	0.675
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.77	0.81	0.86	0.90	0.95	0.99	1.03	1.08	1.12	1.17
Safe Kg=	4.83E+10	2.17E+10	1.02E+10	4.96E+09	2.50E+09	1.30E+09	6.97E+08	3.63E+08	2.15E+08	1.24E+08
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New eqU=	0.78	0.82	0.87	0.91	0.95	1.00	1.04	1.09	1.13	1.18
New Safe Kg=	4.19E+10	1.90E+10	8.96E+09	4.39E+09	2.23E+09	1.17E+09	6.27E+08	3.46E+08	1.96E+08	1.13E+08
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New' eqU=	0.78	0.82	0.87	0.91	0.95	1.00	1.04	1.09	1.13	1.18
New' Safe Kg=	4.19E+10	1.90E+10	8.96E+09	4.39E+09	2.23E+09	1.17E+09	6.27E+08	3.46E+08	1.96E+08	1.13E+08
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New'' eqU=	0.78	0.82	0.87	0.91	0.95	1.00	1.04	1.09	1.13	1.18
New'' Safe Kg=	4.19E+10	1.90E+10	8.96E+09	4.39E+09	2.23E+09	1.17E+09	6.27E+08	3.46E+08	1.96E+08	1.13E+08
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30
New''' eqU=	0.78	0.82	0.87	0.91	0.95	1.00	1.04	1.09	1.13	1.18
New''' Safe Kg=	4.19E+10	1.90E+10	8.96E+09	4.39E+09	2.23E+09	1.17E+09	6.27E+08	3.46E+08	1.96E+08	1.13E+08
Batches=	2.79E+07	1.27E+07	5.98E+06	2.93E+06	1.49E+06	7.77E+05	4.18E+05	2.31E+05	1.30E+05	7.54E+04
Pu Mass, kg =	6.48E+07	2.93E+07	1.39E+07	6.79E+06	3.44E+06	1.80E+06	9.69E+05	5.35E+05	3.02E+05	1.75E+05
U Mass, kg =	7.17E+08	3.59E+08	1.86E+08	9.89E+07	5.42E+07	3.04E+07	1.75E+07	1.03E+07	6.17E+06	3.77E+06

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.79E+07
1.27E+07
5.98E+06
2.93E+06
1.49E+06
7.77E+05
4.18E+05
2.31E+05
1.30E+05
7.54E+04

APPENDIX B Loading Impact 1979 Tank Receipts

WSRC-TR-94-004
Rev. 0

	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.62	0.69	0.75	0.81	0.88	0.94	1.01	1.07	1.14	1.20
Pu239 wt fraction=	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.98	1.05	1.11	1.17	1.24	1.30	1.37	1.43	1.50	1.56
Safe Kg=	1.48E+09	6.00E+08	2.56E+08	1.14E+08	5.35E+07	2.60E+07	1.30E+07	6.77E+06	3.61E+06	1.98E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New eqU=	0.99	1.05	1.12	1.18	1.25	1.31	1.37	1.44	1.50	1.57
New Safe Kg=	1.32E+09	5.39E+08	2.31E+08	1.04E+08	4.89E+07	2.39E+07	1.21E+07	6.29E+06	3.37E+06	1.86E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New' eqU=	0.99	1.05	1.12	1.18	1.25	1.31	1.37	1.44	1.50	1.57
New' Safe Kg=	1.32E+09	5.39E+08	2.31E+08	1.04E+08	4.89E+07	2.39E+07	1.21E+07	6.29E+06	3.37E+06	1.86E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New'' eqU=	0.99	1.05	1.12	1.18	1.25	1.31	1.37	1.44	1.50	1.57
New'' Safe Kg=	1.32E+09	5.39E+08	2.31E+08	1.04E+08	4.89E+07	2.39E+07	1.21E+07	6.29E+06	3.37E+06	1.86E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New''' eqU=	0.99	1.05	1.12	1.18	1.25	1.31	1.37	1.44	1.50	1.57
New''' Safe Kg=	1.32E+09	5.39E+08	2.31E+08	1.04E+08	4.89E+07	2.39E+07	1.21E+07	6.29E+06	3.37E+06	1.86E+06
Batches=	1.32E+06	5.39E+05	2.31E+05	1.04E+05	4.89E+04	2.39E+04	1.21E+04	6.29E+03	3.37E+03	1.86E+03
Pu Mass, kg =	2.11E+06	8.61E+05	3.70E+05	1.66E+05	7.81E+04	3.81E+04	1.93E+04	1.00E+04	5.39E+03	2.97E+03
U Mass, kg =	2.30E+07	1.03E+07	4.86E+06	2.37E+06	1.20E+06	6.30E+05	3.40E+05	1.89E+05	1.07E+05	6.25E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.32E+06
5.39E+05
2.31E+05
1.04E+05
4.89E+04
2.39E+04
1.21E+04
6.29E+03
3.37E+03
1.86E+03

APPENDIX B Loading Impact 1979 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.61	0.68	0.74	0.80	0.87	0.93	1.00	1.06	1.13	1.19
Pu239 wt fraction=	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641	0.641
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.94	1.01	1.07	1.13	1.20	1.26	1.33	1.39	1.46	1.52
Safe Kg=	2.68E+09	1.04E+09	4.31E+08	1.87E+08	8.53E+07	4.05E+07	1.99E+07	1.01E+07	5.31E+06	2.87E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New eqU=	0.95	1.01	1.08	1.14	1.21	1.27	1.33	1.40	1.46	1.53
New Safe Kg=	2.40E+09	9.42E+08	3.92E+08	1.71E+08	7.83E+07	3.73E+07	1.85E+07	9.43E+06	4.97E+06	2.70E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New' eqU=	0.95	1.01	1.08	1.14	1.21	1.27	1.33	1.40	1.46	1.53
New' Safe Kg=	2.40E+09	9.42E+08	3.92E+08	1.71E+08	7.83E+07	3.73E+07	1.85E+07	9.44E+06	4.97E+06	2.70E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New'' eqU=	0.95	1.01	1.08	1.14	1.21	1.27	1.33	1.40	1.46	1.53
New'' Safe Kg=	2.40E+09	9.42E+08	3.92E+08	1.71E+08	7.83E+07	3.73E+07	1.85E+07	9.44E+06	4.97E+06	2.70E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New''' eqU=	0.95	1.01	1.08	1.14	1.21	1.27	1.33	1.40	1.46	1.53
New''' Safe Kg=	2.40E+09	9.42E+08	3.92E+08	1.71E+08	7.83E+07	3.73E+07	1.85E+07	9.44E+06	4.97E+06	2.70E+06
Batches=	1.60E+06	6.28E+05	2.61E+05	1.14E+05	5.22E+04	2.49E+04	1.23E+04	6.29E+03	3.32E+03	1.80E+03
Pu Mass, kg =	3.53E+06	1.38E+06	5.75E+05	2.51E+05	1.15E+05	5.48E+04	2.71E+04	1.39E+04	7.30E+03	3.96E+03
U Mass, kg =	4.11E+07	1.78E+07	8.11E+06	3.85E+06	1.90E+06	9.75E+05	5.15E+05	2.80E+05	1.57E+05	8.98E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.60E+06
6.28E+05
2.61E+05
1.14E+05
5.22E+04
2.49E+04
1.23E+04
6.29E+03
3.32E+03
1.80E+03

APPENDIX B Loading Impact 1980 Tank Receipts

WSRC-TR-94-004
Rev. 0

	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.61	0.67	0.74	0.80	0.86	0.93	0.99	1.05	1.12	1.18
Pu239 wt fraction=	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.01	1.07	1.14	1.20	1.26	1.33	1.39	1.45	1.52	1.58
Safe Kg=	9.66E+08	4.07E+08	1.80E+08	8.30E+07	3.99E+07	1.99E+07	1.02E+07	5.42E+06	2.95E+06	1.65E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New eqU=	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.52	1.59
New Safe Kg=	8.53E+08	3.62E+08	1.61E+08	7.49E+07	3.62E+07	1.81E+07	9.39E+06	5.00E+06	2.74E+06	1.54E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New' eqU=	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.52	1.59
New' Safe Kg=	8.53E+08	3.62E+08	1.61E+08	7.49E+07	3.62E+07	1.81E+07	9.39E+06	5.00E+06	2.74E+06	1.54E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New'' eqU=	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.52	1.59
New'' Safe Kg=	8.53E+08	3.62E+08	1.61E+08	7.49E+07	3.62E+07	1.81E+07	9.39E+06	5.00E+06	2.74E+06	1.54E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New''' eqU=	1.02	1.08	1.15	1.21	1.27	1.34	1.40	1.46	1.52	1.59
New''' Safe Kg=	8.53E+08	3.62E+08	1.61E+08	7.49E+07	3.62E+07	1.81E+07	9.39E+06	5.00E+06	2.74E+06	1.54E+06
Batches=	8.53E+05	3.62E+05	1.61E+05	7.49E+04	3.62E+04	1.81E+04	9.39E+03	5.00E+03	2.74E+03	1.54E+03
Pu Mass, kg =	1.52E+06	6.43E+05	2.86E+05	1.33E+05	6.44E+04	3.23E+04	1.67E+04	8.90E+03	4.87E+03	2.74E+03
U Mass, kg =	1.49E+07	6.95E+06	3.38E+06	1.71E+06	8.91E+05	4.79E+05	2.65E+05	1.50E+05	8.72E+04	5.17E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

8.53E+05
3.62E+05
1.61E+05
7.49E+04
3.62E+04
1.81E+04
9.39E+03
5.00E+03
2.74E+03
1.54E+03

APPENDIX B Loading Impact 1980 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
U Loading-Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.60	0.66	0.73	0.79	0.85	0.92	0.98	1.04	1.11	1.17
Pu239 wt fraction=	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713	0.713
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.97	1.03	1.09	1.16	1.22	1.28	1.35	1.41	1.47	1.54
Safe Kg=	1.80E+09	7.28E+08	3.11E+08	1.40E+08	6.54E+07	3.18E+07	1.60E+07	8.32E+06	4.45E+06	2.44E+06
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New eqU=	0.98	1.04	1.10	1.17	1.23	1.29	1.36	1.42	1.48	1.54
New Safe Kg=	1.59E+09	6.51E+08	2.80E+08	1.27E+08	5.96E+07	2.91E+07	1.47E+07	7.70E+06	4.14E+06	2.29E+06
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New' eqU=	0.98	1.04	1.10	1.17	1.23	1.29	1.36	1.42	1.48	1.54
New' Safe Kg=	1.59E+09	6.51E+08	2.80E+08	1.27E+08	5.96E+07	2.91E+07	1.47E+07	7.70E+06	4.14E+06	2.29E+06
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New'' eqU=	0.98	1.04	1.10	1.17	1.23	1.29	1.36	1.42	1.48	1.54
New'' Safe Kg=	1.59E+09	6.51E+08	2.80E+08	1.27E+08	5.96E+07	2.91E+07	1.47E+07	7.70E+06	4.14E+06	2.29E+06
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29
New''' eqU=	0.98	1.04	1.10	1.17	1.23	1.29	1.36	1.42	1.48	1.54
New''' Safe Kg=	1.59E+09	6.51E+08	2.80E+08	1.27E+08	5.96E+07	2.91E+07	1.47E+07	7.70E+06	4.14E+06	2.29E+06
Batches=	1.06E+06	4.34E+05	1.87E+05	8.44E+04	3.97E+04	1.94E+04	9.83E+03	5.14E+03	2.76E+03	1.52E+03
Pu Mass, kg =	2.60E+06	1.06E+06	4.58E+05	2.07E+05	9.73E+04	4.76E+04	2.41E+04	1.26E+04	6.76E+03	3.73E+03
U Mass, kg =	2.73E+07	1.23E+07	5.81E+06	2.85E+06	1.45E+06	7.61E+05	4.12E+05	2.29E+05	1.30E+05	7.61E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.06E+06
4.34E+05
1.87E+05
8.44E+04
3.97E+04
1.94E+04
9.83E+03
5.14E+03
2.76E+03
1.52E+03

APPENDIX B Loading Impact 1981 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.71	0.78	0.85	0.93	1.00	1.07	1.15	1.22	1.29	1.36
Pu239 wt fraction=	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.03	1.10	1.17	1.25	1.32	1.39	1.47	1.54	1.61	1.68
Safe Kg=	7.77E+08	2.91E+08	1.16E+08	4.90E+07	2.17E+07	1.00E+07	4.83E+06	2.41E+06	1.24E+06	6.59E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New eqU=	1.03	1.11	1.18	1.25	1.33	1.40	1.47	1.54	1.62	1.69
New Safe Kg=	7.05E+08	2.66E+08	1.07E+08	4.52E+07	2.01E+07	9.37E+06	4.53E+06	2.27E+06	1.18E+06	6.29E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New' eqU=	1.03	1.11	1.18	1.25	1.33	1.40	1.47	1.54	1.62	1.69
New' Safe Kg=	7.05E+08	2.66E+08	1.07E+08	4.52E+07	2.01E+07	9.37E+06	4.54E+06	2.27E+06	1.18E+06	6.29E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New'' eqU=	1.03	1.11	1.18	1.25	1.33	1.40	1.47	1.54	1.62	1.69
New'' Safe Kg=	7.05E+08	2.66E+08	1.07E+08	4.52E+07	2.01E+07	9.37E+06	4.54E+06	2.27E+06	1.18E+06	6.29E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New''' eqU=	1.03	1.11	1.18	1.25	1.33	1.40	1.47	1.54	1.62	1.69
New''' Safe Kg=	7.05E+08	2.66E+08	1.07E+08	4.52E+07	2.01E+07	9.37E+06	4.54E+06	2.27E+06	1.18E+06	6.29E+05
Batches=	7.05E+05	2.66E+05	1.07E+05	4.52E+04	2.01E+04	9.37E+03	4.54E+03	2.27E+03	1.18E+03	6.29E+02
Pu Mass, kg =	1.00E+06	3.78E+05	1.52E+05	6.43E+04	2.86E+04	1.33E+04	6.45E+03	3.23E+03	1.68E+03	8.94E+02
U Mass, kg =	1.23E+07	5.10E+06	2.24E+06	1.03E+06	4.96E+05	2.48E+05	1.28E+05	6.83E+04	3.75E+04	2.11E+04

U Loading
Increase

0	7.05E+05
0.1	2.66E+05
0.2	1.07E+05
0.3	4.52E+04
0.4	2.01E+04
0.5	9.37E+03
0.6	4.54E+03
0.7	2.27E+03
0.8	1.18E+03
0.9	6.29E+02

Batches

APPENDIX B Loading Impact 1981 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
U Loading increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.69	0.77	0.84	0.91	0.99	1.06	1.13	1.21	1.28	1.35
Pu239 wt fraction=	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	0.99	1.06	1.13	1.21	1.28	1.35	1.43	1.50	1.57	1.65
Safe Kg=	1.33E+09	4.81E+08	1.86E+08	7.62E+07	3.29E+07	1.49E+07	7.04E+06	3.45E+06	1.75E+06	9.13E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New eqU=	1.00	1.07	1.14	1.21	1.29	1.36	1.43	1.51	1.58	1.65
New Safe Kg=	1.21E+09	4.41E+08	1.71E+08	7.07E+07	3.07E+07	1.40E+07	6.62E+06	3.26E+06	1.66E+06	8.72E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New' eqU=	1.00	1.07	1.14	1.21	1.29	1.36	1.43	1.51	1.58	1.65
New' Safe Kg=	1.21E+09	4.41E+08	1.71E+08	7.07E+07	3.07E+07	1.40E+07	6.62E+06	3.26E+06	1.66E+06	8.73E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New'' eqU=	1.00	1.07	1.14	1.21	1.29	1.36	1.43	1.51	1.58	1.65
New'' Safe Kg=	1.21E+09	4.41E+08	1.71E+08	7.07E+07	3.07E+07	1.40E+07	6.62E+06	3.26E+06	1.66E+06	8.73E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29
New''' eqU=	1.00	1.07	1.14	1.21	1.29	1.36	1.43	1.51	1.58	1.65
New''' Safe Kg=	1.21E+09	4.41E+08	1.71E+08	7.07E+07	3.07E+07	1.40E+07	6.62E+06	3.26E+06	1.66E+06	8.73E+05
Batches=	8.09E+05	2.94E+05	1.14E+05	4.71E+04	2.05E+04	9.31E+03	4.41E+03	2.17E+03	1.11E+03	5.82E+02
Pu Mass, kg =	1.58E+06	5.76E+05	2.24E+05	9.23E+04	4.01E+04	1.82E+04	8.64E+03	4.26E+03	2.17E+03	1.14E+03
U Mass, kg =	2.08E+07	8.35E+06	3.55E+06	1.59E+06	7.47E+05	3.65E+05	1.85E+05	9.69E+04	5.23E+04	2.91E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

8.09E+05
2.94E+05
1.14E+05
4.71E+04
2.05E+04
9.31E+03
4.41E+03
2.17E+03
1.11E+03
5.82E+02

APPENDIX B Loading Impact 1982 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.72	0.79	0.87	0.94	1.01	1.09	1.16	1.24	1.31	1.38
Pu239 wt fraction=	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.08	1.16	1.23	1.30	1.38	1.45	1.53	1.60	1.68	1.75
Safe Kg=	3.67E+08	1.42E+08	5.86E+07	2.54E+07	1.15E+07	5.45E+06	2.68E+06	1.36E+06	7.12E+05	3.84E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.29
New eqU=	1.09	1.16	1.24	1.31	1.39	1.46	1.53	1.61	1.68	1.76
New Safe Kg=	3.30E+08	1.29E+08	5.35E+07	2.33E+07	1.06E+07	5.07E+06	2.50E+06	1.28E+06	6.75E+05	3.66E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.29
New' eqU=	1.09	1.16	1.24	1.31	1.39	1.46	1.53	1.61	1.68	1.76
New' Safe Kg=	3.30E+08	1.29E+08	5.35E+07	2.33E+07	1.07E+07	5.07E+06	2.50E+06	1.28E+06	6.75E+05	3.66E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.29
New'' eqU=	1.09	1.16	1.24	1.31	1.39	1.46	1.53	1.61	1.68	1.76
New'' Safe Kg=	3.30E+08	1.29E+08	5.35E+07	2.33E+07	1.07E+07	5.07E+06	2.50E+06	1.28E+06	6.75E+05	3.66E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.29
New''' eqU=	1.09	1.16	1.24	1.31	1.39	1.46	1.53	1.61	1.68	1.76
New''' Safe Kg=	3.30E+08	1.29E+08	5.35E+07	2.33E+07	1.07E+07	5.07E+06	2.50E+06	1.28E+06	6.75E+05	3.66E+05
Batches=	3.30E+05	1.29E+05	5.35E+04	2.33E+04	1.07E+04	5.07E+03	2.50E+03	1.28E+03	6.75E+02	3.66E+02
Pu Mass, kg =	5.36E+05	2.09E+05	8.67E+04	3.78E+04	1.73E+04	8.22E+03	4.06E+03	2.07E+03	1.09E+03	5.94E+02
U Mass, kg =	5.75E+06	2.48E+06	1.12E+06	5.32E+05	2.62E+05	1.34E+05	7.06E+04	3.84E+04	2.15E+04	1.23E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

3.30E+05
1.29E+05
5.35E+04
2.33E+04
1.07E+04
5.07E+03
2.50E+03
1.28E+03
6.75E+02
3.66E+02

APPENDIX B Loading Impact 1982 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.71	0.78	0.85	0.93	1.00	1.08	1.15	1.22	1.30	1.37
Pu239 wt fraction=	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.04	1.11	1.19	1.26	1.34	1.41	1.49	1.56	1.63	1.71
Safe Kg=	6.45E+08	2.41E+08	9.61E+07	4.05E+07	1.79E+07	8.28E+06	3.98E+06	1.99E+06	1.02E+06	5.42E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New eqU=	1.05	1.12	1.20	1.27	1.34	1.42	1.49	1.57	1.64	1.71
New Safe Kg=	5.83E+08	2.20E+08	8.80E+07	3.73E+07	1.66E+07	7.72E+06	3.73E+06	1.87E+06	9.69E+05	5.17E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New' eqU=	1.05	1.12	1.20	1.27	1.34	1.42	1.49	1.57	1.64	1.71
New' Safe Kg=	5.83E+08	2.20E+08	8.80E+07	3.73E+07	1.66E+07	7.72E+06	3.73E+06	1.87E+06	9.70E+05	5.18E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New'' eqU=	1.05	1.12	1.20	1.27	1.34	1.42	1.49	1.57	1.64	1.71
New'' Safe Kg=	5.83E+08	2.20E+08	8.80E+07	3.73E+07	1.66E+07	7.72E+06	3.73E+06	1.87E+06	9.70E+05	5.18E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29
New''' eqU=	1.05	1.12	1.20	1.27	1.34	1.42	1.49	1.57	1.64	1.71
New''' Safe Kg=	5.83E+08	2.20E+08	8.80E+07	3.73E+07	1.66E+07	7.72E+06	3.73E+06	1.87E+06	9.70E+05	5.18E+05
Batches=	3.89E+05	1.46E+05	5.87E+04	2.49E+04	1.11E+04	5.15E+03	2.49E+03	1.25E+03	6.46E+02	3.45E+02
Pu Mass, kg =	8.68E+05	3.27E+05	1.31E+05	5.55E+04	2.47E+04	1.15E+04	5.56E+03	2.79E+03	1.44E+03	7.70E+02
U Mass, kg =	9.98E+06	4.15E+06	1.82E+06	8.40E+05	4.04E+05	2.02E+05	1.04E+05	5.56E+04	3.06E+04	1.72E+04

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

3.89E+05
1.46E+05
5.87E+04
2.49E+04
1.11E+04
5.15E+03
2.49E+03
1.25E+03
6.46E+02
3.45E+02

APPENDIX B Loading Impact 1983 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.86	0.95	1.03	1.12	1.21	1.30	1.39	1.48	1.57	1.65
Pu239 wt fraction=	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.21	1.30	1.38	1.47	1.56	1.65	1.74	1.83	1.92	2.00
Safe Kg=	7.68E+07	2.79E+07	1.09E+07	4.48E+06	1.95E+06	8.85E+05	4.19E+05	2.06E+05	1.05E+05	5.50E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New eqU=	1.21	1.30	1.39	1.48	1.57	1.66	1.74	1.83	1.92	2.01
New Safe Kg=	7.02E+07	2.57E+07	1.01E+07	4.18E+06	1.83E+06	8.38E+05	4.00E+05	1.99E+05	1.02E+05	5.43E+04
New' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New' eqU=	1.21	1.30	1.39	1.48	1.57	1.66	1.74	1.83	1.92	2.01
New' Safe Kg=	7.02E+07	2.57E+07	1.01E+07	4.18E+06	1.83E+06	8.38E+05	4.00E+05	1.99E+05	1.02E+05	5.43E+04
New'' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New'' eqU=	1.21	1.30	1.39	1.48	1.57	1.66	1.74	1.83	1.92	2.01
New'' Safe Kg=	7.02E+07	2.57E+07	1.01E+07	4.18E+06	1.83E+06	8.38E+05	4.00E+05	1.99E+05	1.02E+05	5.43E+04
New''' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New''' eqU=	1.21	1.30	1.39	1.48	1.57	1.66	1.74	1.83	1.92	2.01
New''' Safe Kg=	7.02E+07	2.57E+07	1.01E+07	4.18E+06	1.83E+06	8.38E+05	4.00E+05	1.99E+05	1.02E+05	5.43E+04
Batches=	7.02E+04	2.57E+04	1.01E+04	4.18E+03	1.83E+03	8.38E+02	4.00E+02	1.99E+02	1.02E+02	5.43E+01
Pu Mass, kg =	1.09E+05	4.01E+04	1.57E+04	6.52E+03	2.85E+03	1.31E+03	6.24E+02	3.10E+02	1.59E+02	8.46E+01
U Mass, kg =	1.22E+06	4.94E+05	2.12E+05	9.54E+04	4.50E+04	2.21E+04	1.13E+04	5.97E+03	3.25E+03	1.82E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

7.02E+04
2.57E+04
1.01E+04
4.18E+03
1.83E+03
8.38E+02
4.00E+02
1.99E+02
1.02E+02
5.43E+01

APPENDIX B Loading Impact 1983 Tank Receipts

WSRC-TR-94-004

Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.84	0.93	1.02	1.11	1.20	1.28	1.37	1.46	1.55	1.64
Pu239 wt fraction=	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625	0.625
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.16	1.25	1.34	1.43	1.52	1.61	1.70	1.78	1.87	1.96
Safe Kg=	1.29E+08	4.53E+07	1.71E+07	6.85E+06	2.90E+06	1.29E+06	6.00E+05	2.90E+05	1.45E+05	7.50E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28	2.27
New eqU=	1.17	1.26	1.35	1.44	1.52	1.61	1.70	1.79	1.88	1.96
New Safe Kg=	1.18E+08	4.18E+07	1.59E+07	6.41E+06	2.73E+06	1.22E+06	5.73E+05	2.79E+05	1.41E+05	7.37E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28	2.27
New eqU=	1.17	1.26	1.35	1.44	1.52	1.61	1.70	1.79	1.88	1.96
New Safe Kg=	1.18E+08	4.18E+07	1.59E+07	6.41E+06	2.73E+06	1.22E+06	5.73E+05	2.79E+05	1.41E+05	7.37E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28	2.27
New eqU=	1.17	1.26	1.35	1.44	1.52	1.61	1.70	1.79	1.88	1.96
New Safe Kg=	1.18E+08	4.18E+07	1.59E+07	6.41E+06	2.73E+06	1.22E+06	5.73E+05	2.79E+05	1.41E+05	7.37E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28	2.27
New eqU=	1.17	1.26	1.35	1.44	1.52	1.61	1.70	1.79	1.88	1.96
New Safe Kg=	1.18E+08	4.18E+07	1.59E+07	6.41E+06	2.73E+06	1.22E+06	5.73E+05	2.79E+05	1.41E+05	7.37E+04
Batches=	7.89E+04	2.79E+04	1.06E+04	4.27E+03	1.82E+03	8.16E+02	3.82E+02	1.86E+02	9.40E+01	4.91E+01
Pu Mass, kg =	1.69E+05	5.99E+04	2.27E+04	9.17E+03	3.91E+03	1.75E+03	8.20E+02	4.00E+02	2.02E+02	1.05E+02
U Mass, kg =	2.03E+06	7.91E+05	3.29E+05	1.44E+05	6.64E+04	3.20E+04	1.60E+04	8.29E+03	4.44E+03	2.45E+03

U Loading
Increase

0	7.89E+04
0.1	2.79E+04
0.2	1.06E+04
0.3	4.27E+03
0.4	1.82E+03
0.5	8.16E+02
0.6	3.82E+02
0.7	1.86E+02
0.8	9.40E+01
0.9	4.91E+01

Batches

APPENDIX B Loading Impact 1984 Tank Receipts

WSRC-TR-84-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.98	1.08	1.18	1.28	1.39	1.49	1.59	1.69	1.79	1.89
Pu239 wt fraction=	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.33	1.43	1.53	1.63	1.73	1.83	1.94	2.04	2.14	2.24
Safe Kg=	1.97E+07	6.88E+06	2.58E+06	1.03E+06	4.37E+05	1.94E+05	9.01E+04	4.35E+04	2.17E+04	1.12E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New eqU=	1.34	1.44	1.54	1.64	1.74	1.84	1.94	2.04	2.14	2.23
New Safe Kg=	1.82E+07	6.40E+06	2.42E+06	9.78E+05	4.18E+05	1.87E+05	8.81E+04	4.32E+04	2.20E+04	1.16E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New eqU=	1.34	1.44	1.54	1.64	1.74	1.84	1.94	2.04	2.14	2.23
New Safe Kg=	1.82E+07	6.40E+06	2.43E+06	9.79E+05	4.18E+05	1.88E+05	8.81E+04	4.32E+04	2.20E+04	1.16E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New eqU=	1.34	1.44	1.54	1.64	1.74	1.84	1.94	2.04	2.14	2.23
New Safe Kg=	1.82E+07	6.40E+06	2.43E+06	9.79E+05	4.18E+05	1.88E+05	8.81E+04	4.32E+04	2.20E+04	1.16E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New eqU=	1.34	1.44	1.54	1.64	1.74	1.84	1.94	2.04	2.14	2.23
New Safe Kg=	1.82E+07	6.40E+06	2.43E+06	9.79E+05	4.18E+05	1.88E+05	8.81E+04	4.32E+04	2.20E+04	1.16E+04
Batches=	1.82E+04	6.40E+03	2.43E+03	9.79E+02	4.18E+02	1.88E+02	8.81E+01	4.32E+01	2.20E+01	1.16E+01
Pu Mass, kg =	2.81E+04	9.90E+03	3.75E+03	1.51E+03	6.46E+02	2.90E+02	1.36E+02	6.67E+01	3.40E+01	1.79E+01
U Mass, kg =	3.16E+05	1.23E+05	5.10E+04	2.23E+04	1.03E+04	4.95E+03	2.49E+03	1.30E+03	6.99E+02	3.90E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.82E+04
6.40E+03
2.43E+03
9.79E+02
4.18E+02
1.88E+02
8.81E+01
4.32E+01
2.20E+01
1.16E+01

APPENDIX B Loading Impact 1984 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.96	1.06	1.17	1.27	1.37	1.47	1.57	1.67	1.77	1.88
Pu239 wt fraction=	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.28	1.38	1.49	1.59	1.69	1.79	1.89	1.99	2.09	2.20
Safe Kg=	3.21E+07	1.09E+07	3.96E+06	1.54E+06	6.37E+05	2.77E+05	1.26E+05	5.98E+04	2.94E+04	1.50E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.29	1.39	1.49	1.59	1.69	1.79	1.89	1.99	2.09	2.19
New Safe Kg=	2.98E+07	1.01E+07	3.72E+06	1.46E+06	6.08E+05	2.67E+05	1.23E+05	5.90E+04	2.95E+04	1.53E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.29	1.39	1.49	1.59	1.69	1.79	1.89	1.99	2.09	2.19
New Safe Kg=	2.98E+07	1.01E+07	3.72E+06	1.46E+06	6.08E+05	2.67E+05	1.23E+05	5.90E+04	2.95E+04	1.53E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.29	1.39	1.49	1.59	1.69	1.79	1.89	1.99	2.09	2.19
New Safe Kg=	2.98E+07	1.01E+07	3.72E+06	1.46E+06	6.08E+05	2.67E+05	1.23E+05	5.90E+04	2.95E+04	1.53E+04
Batches=	1.99E+04	6.75E+03	2.48E+03	9.73E+02	4.05E+02	1.78E+02	8.19E+01	3.93E+01	1.97E+01	1.02E+01
Pu Mass, kg =	4.23E+04	1.44E+04	5.28E+03	2.07E+03	8.63E+02	3.79E+02	1.74E+02	8.38E+01	4.19E+01	2.17E+01
U Mass, kg =	5.10E+05	1.92E+05	7.70E+04	3.29E+04	1.48E+04	6.97E+03	3.43E+03	1.75E+03	9.30E+02	5.10E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.99E+04
6.75E+03
2.48E+03
9.73E+02
4.05E+02
1.78E+02
8.19E+01
3.93E+01
1.97E+01
1.02E+01

APPENDIX B Loading Impact 1985 Tank Receipts

WSRC-TR-94-004
Rev. 0

	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.88	0.97	1.07	1.16	1.25	1.34	1.43	1.52	1.61	1.70
Pu239 wt fraction=	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.25	1.35	1.44	1.53	1.62	1.71	1.80	1.89	1.98	2.08
Safe Kg=	4.43E+07	1.62E+07	6.36E+06	2.64E+06	1.15E+06	5.27E+05	2.51E+05	1.24E+05	6.32E+04	3.33E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25
New eqU=	1.26	1.35	1.44	1.54	1.63	1.72	1.81	1.90	1.99	2.08
New Safe Kg=	4.04E+07	1.49E+07	5.90E+06	2.47E+06	1.09E+06	5.00E+05	2.41E+05	1.20E+05	6.22E+04	3.32E+04
New' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25
New' eqU=	1.26	1.35	1.44	1.54	1.63	1.72	1.81	1.90	1.99	2.08
New' Safe Kg=	4.04E+07	1.49E+07	5.90E+06	2.47E+06	1.09E+06	5.01E+05	2.41E+05	1.20E+05	6.22E+04	3.32E+04
New'' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25
New'' eqU=	1.26	1.35	1.44	1.54	1.63	1.72	1.81	1.90	1.99	2.08
New'' Safe Kg=	4.04E+07	1.49E+07	5.90E+06	2.47E+06	1.09E+06	5.01E+05	2.41E+05	1.20E+05	6.22E+04	3.32E+04
New''' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25
New''' eqU=	1.26	1.35	1.44	1.54	1.63	1.72	1.81	1.90	1.99	2.08
New''' Safe Kg=	4.04E+07	1.49E+07	5.90E+06	2.47E+06	1.09E+06	5.01E+05	2.41E+05	1.20E+05	6.22E+04	3.32E+04
Batches=	4.04E+04	1.49E+04	5.90E+03	2.47E+03	1.09E+03	5.01E+02	2.41E+02	1.20E+02	6.22E+01	3.32E+01
Pu Mass, kg =	6.68E+04	2.47E+04	9.75E+03	4.08E+03	1.79E+03	8.28E+02	3.98E+02	1.99E+02	1.03E+02	5.50E+01
U Mass, kg =	7.04E+05	2.87E+05	1.24E+05	5.63E+04	2.67E+04	1.32E+04	6.79E+03	3.61E+03	1.98E+03	1.12E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

4.04E+04
1.49E+04
5.90E+03
2.47E+03
1.09E+03
5.01E+02
2.41E+02
1.20E+02
6.22E+01
3.32E+01

APPENDIX B Loading Impact 1985 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.87	0.96	1.05	1.14	1.23	1.32	1.42	1.51	1.60	1.69
Pu239 wt fraction=	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663	0.663
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.21	1.30	1.39	1.48	1.57	1.67	1.76	1.85	1.94	2.03
Safe Kg=	7.48E+07	2.65E+07	1.00E+07	4.06E+06	1.73E+06	7.73E+05	3.61E+05	1.75E+05	8.79E+04	4.56E+04
New Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26
New eqU=	1.22	1.31	1.40	1.49	1.58	1.67	1.76	1.85	1.94	2.03
New Safe Kg=	6.86E+07	2.44E+07	9.34E+06	3.80E+06	1.63E+06	7.34E+05	3.46E+05	1.69E+05	8.60E+04	4.52E+04
New' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.26
New' eqU=	1.22	1.31	1.40	1.49	1.58	1.67	1.76	1.85	1.94	2.03
New' Safe Kg=	6.86E+07	2.44E+07	9.34E+06	3.80E+06	1.63E+06	7.34E+05	3.46E+05	1.69E+05	8.60E+04	4.52E+04
New'' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.26
New'' eqU=	1.22	1.31	1.40	1.49	1.58	1.67	1.76	1.85	1.94	2.03
New'' Safe Kg=	6.86E+07	2.44E+07	9.34E+06	3.80E+06	1.63E+06	7.34E+05	3.46E+05	1.69E+05	8.60E+04	4.52E+04
New''' Pu-U	2.30	2.30	2.30	2.30	2.29	2.29	2.28	2.28	2.27	2.26
New''' eqU=	1.22	1.31	1.40	1.49	1.58	1.67	1.76	1.85	1.94	2.03
New''' Safe Kg=	6.86E+07	2.44E+07	9.34E+06	3.80E+06	1.63E+06	7.34E+05	3.46E+05	1.69E+05	8.60E+04	4.52E+04
Batches=	4.57E+04	1.63E+04	6.23E+03	2.53E+03	1.09E+03	4.89E+02	2.30E+02	1.13E+02	5.73E+01	3.01E+01
Pu Mass, kg =	1.04E+05	3.71E+04	1.42E+04	5.76E+03	2.47E+03	1.11E+03	5.25E+02	2.57E+02	1.31E+02	6.86E+01
U Mass, kg =	1.17E+06	4.62E+05	1.93E+05	8.55E+04	3.96E+04	1.92E+04	9.65E+03	5.03E+03	2.71E+03	1.51E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

4.57E+04
1.63E+04
6.23E+03
2.53E+03
1.09E+03
4.89E+02
2.30E+02
1.13E+02
5.73E+01
3.01E+01

APPENDIX B Loading Impact 1986 Tank Receipts

WSRC-TR-94-004
Rev. 0

	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.96	1.06	1.16	1.25	1.35	1.45	1.55	1.65	1.75	1.85
Pu239 wt fraction=	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.30	1.40	1.50	1.60	1.69	1.79	1.89	1.99	2.09	2.19
Safe Kg=	2.71E+07	9.47E+06	3.56E+06	1.43E+06	6.04E+05	2.68E+05	1.25E+05	6.02E+04	3.01E+04	1.55E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.31	1.40	1.50	1.60	1.70	1.80	1.90	1.99	2.09	2.19
New Safe Kg=	2.50E+07	8.81E+06	3.34E+06	1.35E+06	5.75E+05	2.58E+05	1.21E+05	5.93E+04	3.01E+04	1.59E+04
New' Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New' eqU=	1.31	1.40	1.50	1.60	1.70	1.80	1.90	1.99	2.09	2.19
New' Safe Kg=	2.50E+07	8.81E+06	3.34E+06	1.35E+06	5.75E+05	2.58E+05	1.21E+05	5.93E+04	3.01E+04	1.59E+04
New'' Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New'' eqU=	1.31	1.40	1.50	1.60	1.70	1.80	1.90	1.99	2.09	2.19
New'' Safe Kg=	2.50E+07	8.81E+06	3.34E+06	1.35E+06	5.75E+05	2.58E+05	1.21E+05	5.93E+04	3.01E+04	1.59E+04
New''' Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New''' eqU=	1.31	1.40	1.50	1.60	1.70	1.80	1.90	1.99	2.09	2.19
New''' Safe Kg=	2.50E+07	8.81E+06	3.34E+06	1.35E+06	5.75E+05	2.58E+05	1.21E+05	5.93E+04	3.01E+04	1.59E+04
Batches=	2.50E+04	8.81E+03	3.34E+03	1.35E+03	5.75E+02	2.58E+02	1.21E+02	5.93E+01	4.57E+01	2.41E+01
Pu Mass, kg =	3.79E+04	1.34E+04	5.06E+03	2.04E+03	8.72E+02	3.91E+02	1.84E+02	8.99E+01	4.57E+01	2.41E+01
U Mass, kg =	4.35E+05	1.69E+05	7.02E+04	3.08E+04	1.42E+04	6.82E+03	3.42E+03	1.78E+03	9.59E+02	5.33E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.50E+04
8.81E+03
3.34E+03
1.35E+03
5.75E+02
2.58E+02
1.21E+02
5.93E+01
3.01E+01
1.59E+01

APPENDIX B Loading Impact 1986 Tank Receipts

WSRC-TR-94-004
Rev. 0

	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.94	1.04	1.14	1.24	1.34	1.44	1.54	1.63	1.73	1.83
Pu239 wt fraction=	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608	0.608
Pu wt fraction=	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.25	1.35	1.45	1.55	1.65	1.75	1.85	1.95	2.05	2.15
Safe Kg=	4.43E+07	1.50E+07	5.46E+06	2.13E+06	8.80E+05	3.83E+05	1.74E+05	8.28E+04	4.08E+04	2.08E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24
New eqU=	1.26	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.05	2.14
New Safe Kg=	4.10E+07	1.40E+07	5.13E+06	2.01E+06	8.38E+05	3.68E+05	1.69E+05	8.12E+04	4.05E+04	2.10E+04
New' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24
New' eqU=	1.26	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.05	2.14
New' Safe Kg=	4.10E+07	1.40E+07	5.13E+06	2.01E+06	8.38E+05	3.68E+05	1.69E+05	8.12E+04	4.06E+04	2.10E+04
New'' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24
New'' eqU=	1.26	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.05	2.14
New'' Safe Kg=	4.10E+07	1.40E+07	5.13E+06	2.01E+06	8.38E+05	3.68E+05	1.69E+05	8.12E+04	4.06E+04	2.10E+04
New''' Pu-U	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24
New''' eqU=	1.26	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.05	2.14
New''' Safe Kg=	4.10E+07	1.40E+07	5.13E+06	2.01E+06	8.38E+05	3.68E+05	1.69E+05	8.12E+04	4.06E+04	2.10E+04
Batches=	2.73E+04	9.30E+03	3.42E+03	1.34E+03	5.59E+02	2.45E+02	1.13E+02	5.42E+01	2.70E+01	1.40E+01
Pu Mass, kg =	5.71E+04	1.94E+04	7.14E+03	2.80E+03	1.17E+03	5.12E+02	2.36E+02	1.13E+02	5.65E+01	2.92E+01
U Mass, kg =	7.02E+05	2.64E+05	1.06E+05	4.53E+04	2.04E+04	9.61E+03	4.72E+03	2.41E+03	1.28E+03	6.99E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.73E+04
9.30E+03
3.42E+03
1.34E+03
5.59E+02
2.45E+02
1.13E+02
5.42E+01
2.70E+01
1.40E+01

APPENDIX B Loading Impact 1987 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.77	0.85	0.93	1.01	1.09	1.16	1.24	1.32	1.40	1.48
Pu239 wt fraction=	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.14	1.22	1.30	1.38	1.46	1.54	1.62	1.70	1.78	1.86
Safe Kg=	1.66E+08	6.37E+07	2.60E+07	1.12E+07	5.02E+06	2.36E+06	1.15E+06	5.81E+05	3.03E+05	1.62E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28
New eqU=	1.15	1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.78	1.86
New Safe Kg=	1.50E+08	5.80E+07	2.38E+07	1.03E+07	4.66E+06	2.20E+06	1.08E+06	5.51E+05	2.89E+05	1.57E+05
New' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28
New' eqU=	1.15	1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.78	1.86
New' Safe Kg=	1.50E+08	5.80E+07	2.38E+07	1.03E+07	4.66E+06	2.20E+06	1.08E+06	5.51E+05	2.89E+05	1.57E+05
New'' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28
New'' eqU=	1.15	1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.78	1.86
New'' Safe Kg=	1.50E+08	5.80E+07	2.38E+07	1.03E+07	4.66E+06	2.20E+06	1.08E+06	5.51E+05	2.89E+05	1.57E+05
New''' Pu-U	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28	2.28
New''' eqU=	1.15	1.23	1.31	1.39	1.47	1.55	1.63	1.71	1.78	1.86
New''' Safe Kg=	1.50E+08	5.80E+07	2.38E+07	1.03E+07	4.66E+06	2.20E+06	1.08E+06	5.51E+05	2.89E+05	1.57E+05
Batches=	1.50E+05	5.80E+04	2.38E+04	1.03E+04	4.66E+03	2.20E+03	1.08E+03	5.51E+02	2.89E+02	1.57E+02
Pu Mass, kg =	2.51E+05	9.69E+04	3.97E+04	1.72E+04	7.78E+03	3.66E+03	1.81E+03	9.20E+02	4.83E+02	2.62E+02
U Mass, kg =	2.61E+06	1.11E+06	5.00E+05	2.34E+05	1.15E+05	5.82E+04	3.05E+04	1.65E+04	9.20E+03	5.26E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.50E+05
5.80E+04
2.38E+04
1.03E+04
4.66E+03
2.20E+03
1.08E+03
5.51E+02
2.89E+02
1.57E+02

APPENDIX B Loading Impact 1987 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.75	0.83	0.91	0.99	1.07	1.15	1.23	1.31	1.39	1.47
Pu239 wt fraction=	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.10	1.18	1.26	1.34	1.42	1.50	1.58	1.66	1.74	1.81
Safe Kg=	2.90E+08	1.07E+08	4.22E+07	1.76E+07	7.74E+06	3.55E+06	1.70E+06	8.42E+05	4.31E+05	2.28E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.11	1.19	1.27	1.35	1.42	1.50	1.58	1.66	1.74	1.82
New Safe Kg=	2.63E+08	9.78E+07	3.88E+07	1.63E+07	7.20E+06	3.33E+06	1.60E+06	7.99E+05	4.12E+05	2.19E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.11	1.19	1.27	1.35	1.42	1.50	1.58	1.66	1.74	1.82
New Safe Kg=	2.63E+08	9.78E+07	3.88E+07	1.63E+07	7.20E+06	3.33E+06	1.60E+06	7.99E+05	4.12E+05	2.19E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.11	1.19	1.27	1.35	1.42	1.50	1.58	1.66	1.74	1.82
New Safe Kg=	2.63E+08	9.78E+07	3.88E+07	1.63E+07	7.20E+06	3.33E+06	1.60E+06	7.99E+05	4.12E+05	2.19E+05
New Pu-U	2.30	2.30	2.30	2.30	2.30	2.30	2.29	2.29	2.29	2.28
New eqU=	1.11	1.19	1.27	1.35	1.42	1.50	1.58	1.66	1.74	1.82
New Safe Kg=	2.63E+08	9.78E+07	3.88E+07	1.63E+07	7.20E+06	3.33E+06	1.60E+06	7.99E+05	4.12E+05	2.19E+05
Batches=	1.75E+05	6.52E+04	2.59E+04	1.09E+04	4.80E+03	2.22E+03	1.07E+03	5.33E+02	2.75E+02	1.46E+02
Pu Mass, kg =	4.03E+05	1.50E+05	5.96E+04	2.50E+04	1.11E+04	5.11E+03	2.46E+03	1.23E+03	6.33E+02	3.37E+02
U Mass, kg =	4.50E+06	1.85E+06	8.04E+05	3.67E+05	1.75E+05	8.69E+04	4.47E+04	2.37E+04	1.30E+04	7.31E+03

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.75E+05
6.52E+04
2.59E+04
1.09E+04
4.80E+03
2.22E+03
1.07E+03
5.33E+02
2.75E+02
1.46E+02

APPENDIX B Loading Impact 1988 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.95	1.04	1.14	1.24	1.34	1.43	1.53	1.63	1.73	1.83
Pu239 wt fraction=	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.36	1.45	1.55	1.65	1.75	1.84	1.94	2.04	2.14	2.24
Safe Kg=	1.46E+07	5.40E+06	2.13E+06	8.90E+05	3.91E+05	1.80E+05	8.60E+04	4.26E+04	2.19E+04	1.15E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New eqU=	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.04	2.14	2.23
New Safe Kg=	1.33E+07	4.97E+06	1.98E+06	8.35E+05	3.71E+05	1.73E+05	8.38E+04	4.23E+04	2.21E+04	1.20E+04
New' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New' eqU=	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.04	2.14	2.23
New' Safe Kg=	1.33E+07	4.97E+06	1.98E+06	8.36E+05	3.71E+05	1.73E+05	8.38E+04	4.23E+04	2.21E+04	1.20E+04
New'' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New'' eqU=	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.04	2.14	2.23
New'' Safe Kg=	1.33E+07	4.97E+06	1.98E+06	8.36E+05	3.71E+05	1.73E+05	8.38E+04	4.23E+04	2.21E+04	1.20E+04
New''' Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22
New''' eqU=	1.36	1.46	1.56	1.66	1.75	1.85	1.95	2.04	2.14	2.23
New''' Safe Kg=	1.33E+07	4.97E+06	1.98E+06	8.36E+05	3.71E+05	1.73E+05	8.38E+04	4.23E+04	2.21E+04	1.20E+04
Batches=	1.33E+04	4.97E+03	1.98E+03	8.36E+02	3.71E+02	1.73E+02	8.38E+01	4.23E+01	2.21E+01	1.20E+01
Pu Mass, kg =	2.43E+04	9.08E+03	3.62E+03	1.53E+03	6.78E+02	3.15E+02	1.53E+02	7.72E+01	4.04E+01	2.19E+01
U Mass, kg =	2.32E+05	9.55E+04	4.16E+04	1.91E+04	9.14E+03	4.56E+03	2.36E+03	1.27E+03	7.04E+02	4.03E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.33E+04
4.97E+03
1.98E+03
8.36E+02
3.71E+02
1.73E+02
8.38E+01
4.23E+01
2.21E+01
1.20E+01

APPENDIX B Loading Impact 1988 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
U Loading Increase	1.1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	0.93	1.03	1.12	1.22	1.32	1.42	1.52	1.61	1.71	1.81
Pu239 wt fraction=	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732	0.732
Pu wt fraction=	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.31	1.40	1.50	1.60	1.70	1.80	1.89	1.99	2.09	2.19
Safe Kg=	2.48E+07	8.85E+06	3.39E+06	1.38E+06	5.90E+05	2.65E+05	1.24E+05	6.05E+04	3.05E+04	1.59E+04
New Pu-U	2.30	2.30	2.30	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.31	1.41	1.51	1.61	1.70	1.80	1.90	1.99	2.09	2.18
New Safe Kg=	2.27E+07	8.17E+06	3.15E+06	1.29E+06	5.59E+05	2.54E+05	1.21E+05	5.96E+04	3.06E+04	1.63E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.31	1.41	1.51	1.61	1.70	1.80	1.90	1.99	2.09	2.18
New Safe Kg=	2.27E+07	8.17E+06	3.15E+06	1.29E+06	5.59E+05	2.54E+05	1.21E+05	5.96E+04	3.06E+04	1.62E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.31	1.41	1.51	1.61	1.70	1.80	1.90	1.99	2.09	2.18
New Safe Kg=	2.27E+07	8.17E+06	3.15E+06	1.29E+06	5.59E+05	2.54E+05	1.21E+05	5.96E+04	3.06E+04	1.62E+04
New Pu-U	2.30	2.30	2.29	2.29	2.29	2.28	2.27	2.26	2.25	2.23
New eqU=	1.31	1.41	1.51	1.61	1.70	1.80	1.90	1.99	2.09	2.18
New Safe Kg=	2.27E+07	8.17E+06	3.15E+06	1.29E+06	5.59E+05	2.54E+05	1.21E+05	5.96E+04	3.06E+04	1.62E+04
Batches=	1.51E+04	5.45E+03	2.10E+03	8.61E+02	3.73E+02	1.69E+02	8.04E+01	3.97E+01	2.04E+01	1.08E+01
Pu Mass, kg =	3.81E+04	1.37E+04	5.28E+03	2.17E+03	9.37E+02	4.26E+02	2.02E+02	9.99E+01	5.13E+01	2.72E+01
U Mass, kg =	3.89E+05	1.55E+05	6.53E+04	2.91E+04	1.36E+04	6.63E+03	3.37E+03	1.77E+03	9.64E+02	5.41E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

1.51E+04
5.45E+03
2.10E+03
8.61E+02
3.73E+02
1.69E+02
8.04E+01
3.97E+01
2.04E+01
1.08E+01

APPENDIX B Loading Impact 1989 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.02	1.12	1.22	1.33	1.43	1.54	1.64	1.75	1.85	1.96
Pu239 wt fraction=	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.51	1.61	1.72	1.82	1.93	2.03	2.14	2.24	2.35	2.45
Safe Kg=	3.25E+06	1.24E+06	5.04E+05	2.16E+05	9.69E+04	4.54E+04	2.21E+04	1.12E+04	5.80E+03	3.10E+03
New Pu-U	2.30	2.29	2.29	2.28	2.27	2.26	2.24	2.21	2.18	2.14
New eqU=	1.52	1.62	1.72	1.83	1.93	2.03	2.13	2.23	2.33	2.43
New Safe Kg=	2.96E+06	1.14E+06	4.71E+05	2.05E+05	9.37E+04	4.49E+04	2.25E+04	1.17E+04	6.35E+03	3.58E+03
New' Pu-U	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22	2.19	2.15
New' eqU=	1.52	1.62	1.72	1.83	1.93	2.03	2.13	2.23	2.33	2.43
New' Safe Kg=	2.96E+06	1.14E+06	4.71E+05	2.05E+05	9.38E+04	4.49E+04	2.24E+04	1.17E+04	6.31E+03	3.53E+03
New'' Pu-U	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22	2.19	2.15
New'' eqU=	1.52	1.62	1.72	1.83	1.93	2.03	2.13	2.23	2.33	2.43
New'' Safe Kg=	2.96E+06	1.14E+06	4.71E+05	2.05E+05	9.38E+04	4.49E+04	2.25E+04	1.17E+04	6.31E+03	3.53E+03
New''' Pu-U	2.29	2.29	2.29	2.28	2.27	2.26	2.24	2.22	2.19	2.15
New''' eqU=	1.52	1.62	1.72	1.83	1.93	2.03	2.13	2.23	2.33	2.43
New''' Safe Kg=	2.96E+06	1.14E+06	4.71E+05	2.05E+05	9.38E+04	4.49E+04	2.25E+04	1.17E+04	6.31E+03	3.53E+03
Batches=	2.96E+03	1.14E+03	4.71E+02	2.05E+02	9.38E+01	4.49E+01	2.25E+01	1.17E+01	6.31E+00	3.53E+00
Pu Mass, kg =	6.47E+03	2.50E+03	1.03E+03	4.48E+02	2.05E+02	9.81E+01	4.90E+01	2.55E+01	1.38E+01	7.72E+00
U Mass, kg =	5.15E+04	2.20E+04	9.90E+03	4.68E+03	2.31E+03	1.19E+03	6.33E+02	3.51E+02	2.01E+02	1.19E+02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

2.96E+03
1.14E+03
4.71E+02
2.05E+02
9.38E+01
4.49E+01
2.25E+01
1.17E+01
6.31E+00
3.53E+00

APPENDIX B Loading Impact 1989 Tank Receipts

WSRC-TR-94-004
Rev. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.00	1.10	1.21	1.31	1.42	1.52	1.63	1.73	1.84	1.94
Pu239 wt fraction=	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876	0.876
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.45	1.55	1.66	1.76	1.87	1.97	2.08	2.18	2.29	2.39
Safe Kg=	5.65E+06	2.08E+06	8.18E+05	3.41E+05	1.49E+05	6.83E+04	3.26E+04	1.61E+04	8.25E+03	4.35E+03
New Pu-U	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.23	2.20	2.16
New eqU=	1.46	1.56	1.67	1.77	1.87	1.98	2.08	2.18	2.28	2.38
New Safe Kg=	5.16E+06	1.92E+06	7.63E+05	3.22E+05	1.43E+05	6.68E+04	3.26E+04	1.66E+04	8.78E+03	4.83E+03
New Pu-U	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.23	2.20	2.17
New eqU=	1.46	1.56	1.67	1.77	1.87	1.98	2.08	2.18	2.28	2.38
New Safe Kg=	5.16E+06	1.92E+06	7.64E+05	3.22E+05	1.43E+05	6.69E+04	3.26E+04	1.66E+04	8.74E+03	4.79E+03
New Pu-U	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.23	2.20	2.17
New eqU=	1.46	1.56	1.67	1.77	1.87	1.98	2.08	2.18	2.28	2.38
New Safe Kg=	5.16E+06	1.92E+06	7.64E+05	3.22E+05	1.43E+05	6.69E+04	3.26E+04	1.66E+04	8.75E+03	4.79E+03
New Pu-U	2.30	2.29	2.29	2.28	2.28	2.27	2.25	2.23	2.20	2.17
New eqU=	1.46	1.56	1.67	1.77	1.87	1.98	2.08	2.18	2.28	2.38
New Safe Kg=	5.16E+06	1.92E+06	7.64E+05	3.22E+05	1.43E+05	6.69E+04	3.26E+04	1.66E+04	8.75E+03	4.79E+03
Batches=	3.44E+03	1.28E+03	5.09E+02	2.15E+02	9.55E+01	4.46E+01	2.17E+01	1.10E+01	5.83E+00	3.19E+00
Pu Mass, kg =	1.03E+04	3.85E+03	1.53E+03	6.46E+02	2.87E+02	1.34E+02	6.54E+01	3.32E+01	1.75E+01	9.61E+00
U Mass, kg =	8.82E+04	3.63E+04	1.58E+04	7.25E+03	3.48E+03	1.75E+03	9.10E+02	4.92E+02	2.76E+02	1.60E+02

U Loading
Increase

0	3.44E+03
0.1	1.28E+03
0.2	5.09E+02
0.3	2.15E+02
0.4	9.55E+01
0.5	4.46E+01
0.6	2.17E+01
0.7	1.10E+01
0.8	5.83E+00
0.9	3.19E+00

Batches

APPENDIX C

Data Summary

Appendix C contains the data analysis spreadsheets used to evaluate the following conditions.

- Various MST mass additions from 500 to 3500 Kg
- Uranium and plutonium fissile isotopics at optimum conditions
1959 data, .849 wt% ^{235}U and .866 wt% equivalent ^{239}Pu (see Appendix B)
- Increased Uranium MST loading impact.

The spreadsheets determine the safe number of MST additions that can be introduced into ITP. The result for uranium loading increases up to 50% are plotted below. The addition of 1000 Kg is the optimum MST mass addition until the 20% increased loading case.

Increased Loading Impact Above Experimental Loading

APPENDIX C Loading Impact of 500 Kg MST Addition. 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	500	500	500	500	500	500	500	500	500	500
MST Conc, g/l=	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102	0.102
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.50	1.66	1.81	1.96	2.11	2.27	2.42	2.57	2.73	2.88
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	2.03	2.18	2.33	2.49	2.64	2.79	2.95	3.10	3.25	3.40
Safe Kg=	46261	16391	6231	2518	1074	481	225	109	55	28
New Pu-U	2.26	2.23	2.19	2.12	2.03	1.89	1.70	1.44	1.08	0.61
New eqU=	2.03	2.18	2.32	2.46	2.59	2.71	2.82	2.91	2.98	3.02
New Safe Kg=	45645	16909	6830	2999	1431	745	425	269	191	156
New' Pu-U	2.26	2.23	2.19	2.14	2.06	1.97	1.86	1.75	1.65	1.58
New' eqU=	2.03	2.18	2.32	2.46	2.60	2.73	2.86	2.98	3.11	3.25
New' Safe Kg=	45666	16881	6780	2938	1365	674	350	189	103	56
New'' Pu-U	2.26	2.23	2.19	2.13	2.06	1.95	1.82	1.64	1.41	1.09
New'' eqU=	2.03	2.18	2.32	2.46	2.59	2.72	2.84	2.96	3.06	3.13
New'' Safe Kg=	45665	16882	6783	2945	1375	688	369	213	133	93
New''' Pu-U	2.26	2.23	2.19	2.13	2.06	1.96	1.83	1.68	1.52	1.36
New''' eqU=	2.03	2.18	2.32	2.46	2.59	2.72	2.85	2.97	3.08	3.20
New''' Safe Kg=	45665	16882	6783	2944	1373	685	364	204	118	70
Batches=	91.33	33.76	13.57	5.89	2.75	1.37	0.73	0.41	0.24	0.14
Pu Mass, kg =	106.65	39.43	15.84	6.88	3.21	1.60	0.85	0.48	0.28	0.16
U Mass, kg =	808.52	329.29	144.52	68.03	34.21	18.30	10.37	6.17	3.80	2.36

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

91.33
33.76
13.57
5.89
2.75
1.37
0.73
0.41
0.24
0.14

APPENDIX C Loading Impact of 1000 Kg MST Addition, 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
MST Conc, g/l=	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203	0.203
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.48	1.63	1.78	1.94	2.09	2.24	2.40	2.55	2.70	2.85
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.96	2.12	2.27	2.42	2.58	2.73	2.88	3.03	3.19	3.34
Safe Kg=	73460	25186	9305	3668	1531	672	308	147	73	37
New Pu-U	2.27	2.24	2.21	2.15	2.07	1.95	1.79	1.56	1.25	0.83
New eqU=	1.97	2.12	2.26	2.40	2.54	2.68	2.78	2.88	2.97	3.03
New Safe Kg=	71550	25434	9870	4161	1902	944	510	303	200	148
New' Pu-U	2.27	2.24	2.21	2.16	2.09	2.01	1.90	1.78	1.66	1.56
New' eqU=	1.97	2.12	2.26	2.40	2.54	2.68	2.81	2.93	3.06	3.19
New' Safe Kg=	71599	25424	9833	4113	1848	887	450	239	130	72
New'' Pu-U	2.27	2.24	2.21	2.16	2.09	2.00	1.88	1.72	1.51	1.24
New'' eqU=	1.97	2.12	2.26	2.40	2.54	2.67	2.80	2.92	3.03	3.12
New'' Safe Kg=	71598	25424	9836	4117	1855	896	463	256	152	98
New''' Pu-U	2.27	2.24	2.21	2.16	2.09	2.00	1.88	1.74	1.57	1.39
New''' eqU=	1.97	2.12	2.26	2.40	2.54	2.67	2.80	2.92	3.04	3.15
New''' Safe Kg=	71598	25424	9836	4117	1854	894	460	251	143	84
Batches=	71.60	25.42	9.84	4.12	1.85	0.89	0.46	0.25	0.14	0.08
Pu Mass, kg =	154.61	54.90	21.24	8.89	4.00	1.93	0.99	0.54	0.31	0.18
U Mass, kg =	1246.56	488.41	206.65	93.90	45.63	23.62	12.98	7.52	4.56	2.84

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

71.60
25.42
9.84
4.12
1.85
0.89
0.46
0.25
0.14
0.08

APPENDIX C Loading Impact of 1500 Kg MST Addition, 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
MST Conc, g/l=	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305	0.305
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.45	1.61	1.76	1.91	2.06	2.22	2.37	2.52	2.68	2.83
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.90	2.05	2.21	2.36	2.51	2.66	2.82	2.97	3.12	3.27
Safe Kg=	118470	39220	14057	5397	2201	946	426	200	98	49
New Pu-U	2.27	2.25	2.22	2.18	2.11	2.01	1.86	1.66	1.39	1.02
New eqU=	1.90	2.05	2.20	2.34	2.48	2.62	2.74	2.85	2.95	3.03
New Safe Kg=	114334	38974	14534	5890	2585	1228	632	354	218	149
New' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.94	1.82	1.69	1.58
New' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.76	2.88	3.01	3.14
New' Safe Kg=	114414	38982	14510	5853	2542	1181	583	303	164	91
New'' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.93	1.78	1.60	1.35
New'' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.75	2.88	2.99	3.10
New'' Safe Kg=	114412	38981	14511	5856	2546	1187	592	315	179	110
New''' Pu-U	2.27	2.25	2.23	2.18	2.12	2.04	1.93	1.79	1.63	1.44
New''' eqU=	1.90	2.05	2.20	2.34	2.49	2.62	2.75	2.88	3.00	3.11
New''' Safe Kg=	114413	38981	14511	5855	2546	1187	590	312	174	101
Batches=	76.28	25.99	9.67	3.90	1.70	0.79	0.39	0.21	0.12	0.07
Pu Mass, kg =	226.93	77.32	28.78	11.61	5.05	2.35	1.17	0.62	0.35	0.20
U Mass, kg =	1958.28	737.37	300.61	131.84	61.90	30.99	16.48	9.28	5.49	3.38

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

76.28
25.99
9.67
3.90
1.70
0.79
0.39
0.21
0.12
0.07

APPENDIX C Loading Impact of 2000 Kg MST Addition, 1359 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
MST Conc, g/l=	0.406	0.406	0.406	0.406	0.406	0.406	0.406	0.406	0.406	0.406
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.43	1.58	1.73	1.89	2.04	2.19	2.35	2.50	2.65	2.80
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.83	1.99	2.14	2.29	2.45	2.60	2.75	2.90	3.06	3.21
Safe Kg=	194246	61944	21500	8027	3194	1344	594	274	132	66
New Pu-U	2.28	2.26	2.24	2.20	2.14	2.05	1.93	1.76	1.52	1.19
New eqU=	1.84	1.99	2.14	2.28	2.43	2.56	2.69	2.82	2.92	3.02
New Safe Kg=	186338	60841	21797	8497	3586	1634	804	428	249	158
New' Pu-U	2.28	2.26	2.24	2.20	2.15	2.08	1.98	1.87	1.73	1.58
New' eqU=	1.84	1.99	2.14	2.28	2.43	2.57	2.70	2.83	2.96	3.09
New' Safe Kg=	186450	60867	21786	8470	3552	1597	765	388	206	113
New'' Pu-U	2.28	2.26	2.24	2.20	2.15	2.07	1.97	1.84	1.67	1.45
New'' eqU=	1.84	1.99	2.14	2.28	2.43	2.57	2.70	2.83	2.95	3.07
New'' Safe Kg=	186448	60866	21786	8472	3555	1601	771	396	217	126
New''' Pu-U	2.28	2.26	2.24	2.20	2.15	2.08	1.98	1.85	1.69	1.50
New''' eqU=	1.84	1.99	2.14	2.28	2.43	2.57	2.70	2.83	2.96	3.07
New''' Safe Kg=	186448	60866	21786	8472	3554	1601	770	394	214	122
Batches=	93.22	30.43	10.89	4.24	1.78	0.80	0.39	0.20	0.11	0.06
Pu Mass, kg =	336.99	110.01	39.38	15.31	6.42	2.89	1.39	0.71	0.39	0.22
U Mass, kg =	3136.30	1133.40	444.90	188.25	85.38	41.33	21.27	11.60	6.67	4.02

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

93.22
30.43
10.89
4.24
1.78
0.80
0.39
0.20
0.11
0.06

APPENDIX C Loading Impact of 2500 Kg MST Addition, 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
MST Conc, g/l=	0.508	0.508	0.508	0.508	0.508	0.508	0.508	0.508	0.508	0.508
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.40	1.56	1.71	1.86	2.01	2.17	2.32	2.47	2.63	2.78
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.77	1.92	2.08	2.23	2.38	2.53	2.69	2.84	2.99	3.15
Safe Kg=	324187	99324	33313	12075	4682	1925	834	379	179	88
New Pu-U	2.28	2.27	2.25	2.22	2.17	2.09	1.99	1.84	1.63	1.34
New eqU=	1.78	1.93	2.08	2.22	2.37	2.51	2.64	2.77	2.89	3.00
New Safe Kg=	309938	96778	33287	12485	5072	2222	1049	533	293	175
New' Pu-U	2.28	2.27	2.25	2.22	2.17	2.11	2.02	1.91	1.77	1.62
New' eqU=	1.78	1.93	2.08	2.22	2.37	2.51	2.65	2.78	2.92	3.04
New' Safe Kg=	310084	96822	33288	12468	5048	2193	1018	502	261	141
New'' Pu-U	2.28	2.27	2.25	2.22	2.17	2.11	2.02	1.90	1.74	1.54
New'' eqU=	1.78	1.93	2.08	2.22	2.37	2.51	2.65	2.78	2.91	3.03
New'' Safe Kg=	310083	96821	33288	12468	5048	2198	1022	507	267	150
New''' Pu-U	2.28	2.27	2.25	2.22	2.17	2.11	2.02	1.90	1.75	1.56
New''' eqU=	1.78	1.93	2.08	2.22	2.37	2.51	2.65	2.78	2.91	3.03
New''' Safe Kg=	310083	96821	33288	12468	5048	2196	1021	506	266	147
Batches=	124.03	38.73	13.32	4.99	2.02	0.88	0.41	0.20	0.11	0.06
Pu Mass, kg =	505.87	157.95	54.31	20.34	8.23	3.58	1.67	0.83	0.43	0.24
U Mass, kg =	5124.60	1774.40	669.98	273.39	119.76	56.04	27.91	14.73	8.22	4.82

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

124.03
38.73
13.32
4.99
2.02
0.88
0.41
0.20
0.11
0.06

APPENDIX C Loading Impact of 3000 Kg MST Addition. 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
MST Conc, g/l=	0.610	0.610	0.610	0.610	0.610	0.610	0.610	0.610	0.610	0.610
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.38	1.53	1.68	1.84	1.99	2.14	2.30	2.45	2.60	2.75
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.71	1.86	2.01	2.16	2.32	2.47	2.62	2.78	2.93	3.08
Safe Kg=	551456	161851	52338	18384	6936	2785	1181	526	245	118
New Pu-U	2.29	2.28	2.26	2.23	2.19	2.13	2.04	1.91	1.72	1.47
New eqU=	1.71	1.86	2.01	2.16	2.31	2.45	2.59	2.73	2.85	2.97
New Safe Kg=	526609	156930	51765	18676	7307	3083	1399	681	357	202
New' Pu-U	2.29	2.28	2.26	2.23	2.19	2.14	2.06	1.96	1.82	1.67
New' eqU=	1.71	1.86	2.01	2.16	2.31	2.45	2.59	2.73	2.87	3.00
New' Safe Kg=	526790	156991	51776	18667	7289	3061	1375	657	332	176
New'' Pu-U	2.29	2.28	2.26	2.23	2.19	2.14	2.06	1.95	1.81	1.62
New'' eqU=	1.71	1.86	2.01	2.16	2.31	2.45	2.59	2.73	2.86	2.99
New'' Safe Kg=	526789	156990	51776	18667	7290	3063	1377	660	336	182
New''' Pu-U	2.29	2.28	2.26	2.23	2.19	2.14	2.06	1.95	1.81	1.63
New''' eqU=	1.71	1.86	2.01	2.16	2.31	2.45	2.59	2.73	2.86	2.99
New''' Safe Kg=	526789	156990	51776	18667	7290	3063	1377	660	336	180
Batches=	175.60	52.33	17.26	6.22	2.43	1.02	0.46	0.22	0.11	0.06
Pu Mass, kg =	766.69	228.49	75.36	27.17	10.61	4.46	2.00	0.96	0.49	0.26
U Mass, kg =	8550.77	2830.83	1026.82	403.80	170.82	77.28	37.22	19.02	10.28	5.85

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

175.60
52.33
17.26
6.22
2.43
1.02
0.46
0.22
0.11
0.06

APPENDIX C Loading Impact of 3500 Kg MST Addition, 1959 Tank Receipts

WSRC-TR-94-004
REV. 0

MST Mass, Kg=	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
MST Conc, g/l=	0.711	0.711	0.711	0.711	0.711	0.711	0.711	0.711	0.711	0.711
U enrich=	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
U Loading Increase	1	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9
U235 wt fraction=	1.35	1.51	1.66	1.81	1.96	2.12	2.27	2.42	2.58	2.73
Pu239 wt fraction=	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866	0.866
Pu wt fraction=	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Pu239-U235=	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25
eq U=	1.64	1.79	1.95	2.10	2.25	2.41	2.56	2.71	2.86	3.02
Safe Kg=	957500	268340	83450	28348	10389	4067	1687	736	336	160
New Pu-U	2.29	2.28	2.27	2.25	2.21	2.16	2.08	1.97	1.81	1.59
New eqU=	1.65	1.80	1.95	2.10	2.25	2.39	2.54	2.67	2.81	2.93
New Safe Kg=	915024	259576	81988	28434	10718	4359	1905	891	447	240
New' Pu-U	2.29	2.28	2.27	2.25	2.21	2.16	2.09	2.00	1.87	1.72
New' eqU=	1.65	1.80	1.95	2.10	2.25	2.39	2.54	2.68	2.82	2.95
New' Safe Kg=	915239	259653	82009	28432	10706	4343	1887	873	428	222
New'' Pu-U	2.29	2.28	2.27	2.25	2.21	2.16	2.09	2.00	1.87	1.70
New'' eqU=	1.65	1.80	1.95	2.10	2.25	2.39	2.54	2.68	2.81	2.95
New'' Safe Kg=	915238	259652	82009	28432	10706	4344	1888	875	431	225
New''' Pu-U	2.29	2.28	2.27	2.25	2.21	2.16	2.09	2.00	1.87	1.70
New''' eqU=	1.65	1.80	1.95	2.10	2.25	2.39	2.54	2.68	2.81	2.95
New''' Safe Kg=	915238	259652	82009	28432	10706	4344	1888	875	431	224
Batches=	261.50	74.19	23.43	8.12	3.06	1.24	0.54	0.25	0.12	0.06
Pu Mass, kg =	1170.97	332.20	104.92	36.38	13.70	5.56	2.42	1.12	0.55	0.29
U Mass, kg =	14586.33	4605.50	1602.22	606.66	247.71	108.33	50.48	24.97	13.06	7.21

U Loading
Increase

0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

Batches

261.50
74.19
23.43
8.12
3.06
1.24
0.54
0.25
0.12
0.06

APPENDIX D

Data Summary

Appendix D provides the monthly and yearly average uranium fissile isotopic weight fraction data over the history of H-area HHW transfers. Weight fractions of uranium were calculated as $(^{233}+^{235})\text{U}/\text{Total U}$.

The yearly and total waste stream uranium fissile isotopic weight fraction data are plotted below.

Highest Yearly Average = 0.86

HM HHW Average = 0.55

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Appendix D H-area HM HHW Uranium Wt Fractions JUN'59-DEC'92

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-59	0.8273	0.8490	0	21	1096	86	120	1323
Jul-59	0.8476		0	19	1357	97	126	1599
Aug-59	0.8428		0	19	1313	109	115	1556
Sep-59	0.8491		0	20	1401	97	130	1648
Oct-59	0.8544		0	15	1088	80	89	1272
Nov-59	0.8604		0	8	540	38	41	627
Dec-59	0.8613		0	6	463	32	36	537
Jan-60	0.8453	0.8515	0	14	991	78	88	1171
Feb-60	0.8551		0	12	868	64	70	1014
Mar-60	0.8664		0	18	1307	84	98	1507
Apr-60	0.8557		0	6	454	35	35	530
May-60	0.8477		0	10	667	56	53	786
Jun-60			0	0	0	0	0	0
Jul-60			0	0	0	0	0	0
Aug-60			0	0	0	0	0	0
Sep-60			0	0	0	0	0	0
Oct-60	0.8528		0	5	350	29	26	410
Nov-60	0.8523		0	19	1255	103	94	1471
Dec-60	0.8371		0	36	2329	228	186	2779
Jan-61	0.8434	0.8624	0	22	1459	135	112	1728
Feb-61	0.8460		0	1	83	8	6	98
Mar-61	1.0000		0	0	3	0	0	3
Apr-61	0.8521		0	1	58	5	4	68
May-61			0	0	0	0	0	0
Jun-61			0	0	0	0	0	0
Jul-61	0.8452		0	2	154	14	12	182
Aug-61	0.8447		0	30	1934	179	144	2287
Sep-61	0.8430		0	54	3254	305	243	3856
Oct-61	0.8432		0	34	2231	214	164	2643
Nov-61	0.8442		0	17	1075	104	76	1272

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-61			0	0	0	0	0	0
Jan-62		0.8086	0	0	0	0	0	0
Feb-62	0.8953		0	3	163	16	0	182
Mar-62	0.8512		0	3	190	18	12	223
Apr-62	0.4971		0	0	16	2	14	32
May-62	0.0000		0	0	0	0	1	1
Jun-62			0	0	0	0	0	0
Jul-62	0.8991		0	15	992	96	0	1103
Aug-62	0.8616		0	22	1509	148	71	1750
Sep-62	0.7981		0	13	881	82	126	1102
Oct-62	0.8607		0	20	1380	130	72	1602
Nov-62	0.8220		0	17	1177	121	115	1430
Dec-62	0.7923		0	16	976	134	104	1230
Jan-63	0.8171	0.8273	0	37	2052	325	95	2509
Feb-63	0.0000		0	0	0	0	210	210
Mar-63	0.7914		0	3	191	28	19	241
Apr-63			0	0	0	0	0	0
May-63			0	0	0	0	0	0
Jun-63			0	0	0	0	0	0
Jul-63			0	0	0	0	0	0
Aug-63			0	0	0	0	0	0
Sep-63			0	0	0	0	0	0
Oct-63	0.8972		0	12	595	56	0	663
Nov-63	0.8795		0	16	1607	150	53	1826
Dec-63	0.7514		0	8	650	63	142	863
Jan-64	0.0000	0.8224	0	0	0	0	61	61
Feb-64			0	0	0	0	0	0
Mar-64	0.9187		454	40	0	0	0	494
Apr-64	0.9173		167	15	0	0	0	182
May-64	0.9197		725	63	0	0	0	788

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt_Fraction</u>	<u>Wt_Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-64			0	0	0	0	0	0
Jul-64	0.8090		0	27	1703	198	174	2102
Aug-64	0.8090		0	22	1374	159	141	1696
Sep-64	0.7565		0	14	748	129	96	987
Oct-64	0.7570		0	20	1067	184	136	1407
Nov-64	0.7592		0	3	181	31	23	238
Dec-64	0.7548		0	1	62	11	8	82
Jan-65	0.7853	0.7839	260	30	511	111	68	980
Feb-65	0.8309		549	51	403	87	54	1144
Mar-65	0.8484		0	10	677	51	59	797
Apr-65	0.8498		0	8	576	43	50	677
May-65	0.8266		0	16	1042	102	99	1259
Jun-65	0.7839		0	17	1023	151	112	1303
Jul-65	0.7423		0	7	374	77	45	503
Aug-65	0.7318		0	23	1225	266	157	1671
Sep-65	0.7316		0	19	996	216	128	1359
Oct-65	0.7961		161	6	218	44	46	475
Nov-65	0.7280		192	17	751	162	170	1292
Dec-65	0.7522		205	10	372	87	91	765
Jan-66	0.9862	0.7053	144	2	0	0	0	146
Feb-66	0.6985		177	15	649	165	173	1179
Mar-66	0.7195		0	36	1854	445	237	2572
Apr-66	0.7195		0	20	1038	249	133	1440
May-66	0.7007		0	31	1440	379	201	2051
Jun-66	0.6975		0	18	852	228	121	1219
Jul-66	0.7045		0	19	888	228	123	1258
Aug-66	0.7112		0	15	699	169	98	981
Sep-66	0.6713		0	10	442	138	67	657
Oct-66	0.6591		0	15	650	217	102	984
Nov-66	0.6762		0	11	515	160	74	760

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-66	0.5197		0	9	257	153	74	493
Jan-67	0.4057	0.6552	0	13	274	285	101	673
Feb-67	0.6753		0	23	1057	330	152	1562
Mar-67	0.7014		0	23	1097	286	155	1561
Apr-67	0.7003		0	9	421	109	61	600
May-67	0.6903		0	14	588	160	88	850
Jun-67	0.6852		0	11	482	135	74	702
Jul-67	0.6849		0	22	954	267	147	1390
Aug-67	0.6722		0	1	62	16	13	92
Sep-67			0	0	0	0	0	0
Oct-67	0.6693		0	3	155	40	33	231
Nov-67	0.6611		0	7	348	83	87	525
Dec-67	0.6616		0	3	136	32	34	205
Jan-68	0.6677	0.6509	0	8	340	94	66	508
Feb-68	0.6685		0	3	132	38	24	197
Mar-68	0.4498		0	4	116	98	39	257
Apr-68	0.4593		0	18	477	385	155	1035
May-68	0.7477		136	4	53	43	16	252
Jun-68	0.7477		136	4	53	43	16	252
Jul-68	1.0000		19	0	0	0	0	19
Aug-68	0.9885		86	1	0	0	0	87
Sep-68	0.4721		0	2	63	49	19	133
Oct-68	0.4680		0	5	139	110	42	296
Nov-68	0.4869		0	4	127	93	36	260
Dec-68	0.6550		0	10	430	143	72	655
Jan-69	0.3010	0.7776	0	45	911	752	1299	3007
Feb-69	0.6291		0	2	70	26	13	111
Mar-69	0.7375		0	26	1352	280	172	1830
Apr-69	0.7832		0	2	131	20	14	167
May-69	0.7784		0	11	644	100	71	826

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-69	0.7794		0	9	555	86	61	711
Jul-69	0.8784		104	14	792	47	62	1019
Aug-69	0.9834		179	3	0	0	0	182
Sep-69	0.9808		257	4	0	0	1	262
Oct-69	0.9807		102	2	0	0	0	104
Nov-69	0.9824		897	14	1	0	2	914
Dec-69	0.5171		18	17	492	299	157	983
Jan-70	0.5052	0.6123	0	15	441	279	135	870
Feb-70	0.5056		0	2	70	44	22	138
Mar-70	0.4818		0	4	117	82	39	242
Apr-70	0.4789		0	18	506	358	171	1053
May-70	0.4795		0	11	320	226	108	665
Jun-70			0	0	0	0	0	0
Jul-70			0	0	0	0	0	0
Aug-70	0.7393		1966	88	648	132	687	3521
Sep-70	0.8288		0	4	327	29	34	394
Oct-70	0.4804		0	6	175	124	58	363
Nov-70	0.8064		0	3	193	22	21	239
Dec-70	0.8174		0	18	1231	129	126	1504
Jan-71	0.8990	0.6690	0	5	431	13	30	479
Feb-71	0.9097		0	10	925	20	61	1016
Mar-71	0.8339		0	5	339	31	31	406
Apr-71	0.8287		0	17	1160	111	110	1398
May-71	0.3032		0	8	134	219	79	440
Jun-71	0.3098		0	2	28	44	16	90
Jul-71	0.8058		0	4	280	34	29	347
Aug-71	0.8239		0	4	264	27	25	320
Sep-71	0.8469		0	1	67	3	8	79
Oct-71	0.6116		0	3	103	42	20	168
Nov-71	0.4589		0	68	1789	1392	636	3885

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-71	0.3971		0	8	181	187	78	454
Jan-72	0.5980	0.5478	0	0	3	1	1	5
Feb-72	0.5555		0	3	117	61	29	210
Mar-72	0.5340		0	0	15	9	4	28
Apr-72	0.5299		0	2	59	34	16	111
May-72	0.5594		0	3	92	47	22	164
Jun-72	0.5629		0	3	105	52	26	186
Jul-72	0.5548		0	4	148	77	37	266
Aug-72	0.8600		0	0	31	2	3	36
Sep-72	0.5572		0	2	76	39	19	136
Oct-72	0.6621		0	6	296	91	53	446
Nov-72	0.5537		0	3	80	33	28	144
Dec-72	0.0457		0	0	67	1	1382	1450
Jan-73	0.0513	0.4983	0	1	239	5	4355	4600
Feb-73	0.5186		0	4	174	54	102	334
Mar-73	0.6421		0	26	1198	382	255	1861
Apr-73	0.5786		0	3	123	58	28	212
May-73	0.5477		0	1	39	21	10	71
Jun-73	0.7042		0	4	199	49	30	282
Jul-73	0.7171		0	4	217	50	31	302
Aug-73	0.7347		0	2	145	31	19	197
Sep-73	0.6167		0	18	779	305	158	1260
Oct-73	0.4270		0	3	87	80	33	203
Nov-73	0.3945		0	13	348	290	227	878
Dec-73	0.0468		0	0	40	1	804	845
Jan-74	0.0460	0.3716	0	0	68	1	1390	1459
Feb-74	0.0405		0	1	143	4	3342	3490
Mar-74	0.0344		0	3	169	21	4662	4855
Apr-74	0.0419		0	4	53	26	1167	1250
May-74	0.5425		0	1	37	20	10	68

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-74	0.5482		0	6	215	113	57	391
Jul-74	0.5603		0	15	589	290	154	1048
Aug-74	0.5521		0	5	206	110	51	372
Sep-74	0.5441		0	8	328	181	84	601
Oct-74	0.5339		0	12	451	246	133	842
Nov-74	0.5097		0	9	317	205	89	620
Dec-74	0.5055		0	8	286	186	84	564
Jan-75	0.6048	0.3555	0	5	245	101	53	404
Feb-75	0.4359		0	4	134	84	84	306
Mar-75	0.4162		0	8	267	125	238	638
Apr-75	0.5164		0	5	186	113	55	359
May-75	0.5483		0	5	198	105	52	360
Jun-75	0.5167		0	3	113	68	34	218
Jul-75	0.4829		0	9	298	216	92	615
Aug-75	0.2991		0	23	526	291	906	1746
Sep-75	0.0296		0	1	154	7	4983	5145
Oct-75	0.0273		0	0	12	0	422	434
Nov-75	0.0265		0	0	6	0	218	224
Dec-75	0.3627		0	4	132	110	116	362
Jan-76	0.4580	0.4400	0	6	188	147	68	409
Feb-76	0.3827		0	3	83	92	38	216
Mar-76	0.1685		0	7	295	131	1301	1734
Apr-76	0.5852		0	4	199	80	56	339
May-76	0.5509		0	3	162	63	65	293
Jun-76	0.5548		0	3	157	64	58	282
Jul-76	0.5122		0	7	260	164	75	506
Aug-76	0.5000		0	5	152	102	44	303
Sep-76	0.4620		0	4	121	95	41	261
Oct-76	0.4558		0	3	102	81	37	223
Nov-76	0.2128		0	15	316	180	961	1472

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-76	0.4377		0	3	76	66	28	173
Jan-77	0.3505	0.3159	0	7	239	184	248	678
Feb-77	0.2471		0	8	281	183	656	1128
Mar-77	0.4865		0	7	227	158	73	465
Apr-77	0.4508		0	4	119	96	44	263
May-77	0.4310		0	6	167	147	66	386
Jun-77	0.4012		0	10	265	265	118	658
Jul-77	0.3968		0	6	153	152	73	384
Aug-77	0.3897		0	6	164	154	95	419
Sep-77	0.5311		0	9	420	208	151	788
Oct-77	0.0350		0	0	27	2	732	761
Nov-77	0.0353		0	0	26	2	699	727
Dec-77	0.0351		0	0	32	2	867	901
Jan-78	0.0347	0.2460	0	0	7	0	192	199
Feb-78	0.0352		0	0	27	2	728	757
Mar-78	0.0722		0	20	2927	1267	35880	40094
Apr-78	0.0918		0	6	497	266	4585	5354
May-78	0.3311		0	14	433	368	485	1300
Jun-78	0.3916		0	17	556	440	400	1413
Jul-78	0.2024		0	11	501	337	1605	2454
Aug-78	0.4054		0	15	544	358	418	1335
Sep-78	0.1117		0	36	3429	1808	25090	30363
Oct-78	0.5263		0	11	453	263	131	858
Nov-78	0.2659		0	13	737	449	1551	2750
Dec-78	0.4838		0	11	369	255	125	760
Jan-79	0.4767	0.3571	0	7	243	174	84	508
Feb-79	0.3192		0	7	242	160	344	753
Mar-79	0.5397		0	6	268	145	76	495
Apr-79	0.4810		0	6	210	141	78	435
May-79	0.3665		0	15	554	406	528	1503

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-79	0.4445		0	9	311	240	137	697
Jul-79	0.3607		0	19	813	461	947	2240
Aug-79	0.2943		0	9	503	321	864	1697
Sep-79	0.3776		0	16	720	481	679	1896
Oct-79	0.5561		0	3	135	64	40	242
Nov-79	0.0348		0	0	46	2	1259	1307
Dec-79	0.0345		0	0	46	2	1268	1316
Jan-80	0.0334	0.3506	0	0	5	0	143	148
Feb-80	0.0359		0	0	4	0	106	110
Mar-80	0.0363		0	0	5	0	131	136
Apr-80	0.0353		0	0	10	0	270	280
May-80	0.0476		0	0	20	2	393	415
Jun-80	0.5452		0	5	221	109	69	404
Jul-80	0.5445		0	7	295	146	92	540
Aug-80	0.5770		0	8	375	170	95	648
Sep-80	0.5897		0	12	534	231	126	903
Oct-80	0.5951		0	8	361	155	81	605
Nov-80	0.5901		0	8	345	152	78	583
Dec-80	0.5766		0	6	288	134	70	498
Jan-81	0.5505	0.4059	0	7	286	150	75	518
Feb-81	0.5766		0	7	299	134	77	517
Mar-81	0.5798		0	6	257	114	65	442
Apr-81	0.3357		0	11	490	277	672	1450
May-81	0.4842		0	9	346	223	134	712
Jun-81	0.3361		0	12	522	296	713	1543
Jul-81	0.3841		0	20	861	497	851	2229
Aug-81	0.4716		0	11	421	252	205	889
Sep-81	0.3364		0	17	688	412	915	2032
Oct-81	0.1683		0	12	673	407	2868	3960
Nov-81	0.2855		0	10	371	258	651	1290

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-81	0.3623		0	14	526	412	492	1444
Jan-82	0.4372	0.4120	0	3	115	94	50	262
Feb-82	0.4382		0	0	11	9	5	25
Mar-82	0.2449		0	10	428	317	979	1734
Apr-82	0.2585		0	9	360	268	745	1382
May-82	0.4463		0	9	306	237	131	683
Jun-82	0.4797		0	7	286	190	111	594
Jul-82	0.2453		0	9	479	189	1259	1936
Aug-82	0.4039		0	8	320	184	276	788
Sep-82	0.4498		0	9	468	203	355	1035
Oct-82	0.4219		0	11	588	273	514	1386
Nov-82	0.6139		0	7	317	125	66	515
Dec-82	0.5044		0	14	573	345	200	1132
Jan-83	0.4507	0.4918	0	14	531	336	292	1173
Feb-83	0.4000		0	5	228	144	190	567
Mar-83	0.4403		0	10	421	293	228	952
Apr-83	0.4348		0	13	517	391	263	1184
May-83	0.3871		0	10	453	296	405	1164
Jun-83	0.4836		0	11	380	255	137	783
Jul-83	0.5752		0	12	518	240	128	898
Aug-83	0.4755		0	14	609	297	355	1275
Sep-83	0.6341		0	7	335	120	65	527
Oct-83	0.6121		0	11	515	189	124	839
Nov-83	0.5457		0	10	393	207	108	718
Dec-83	0.4626		0	12	417	306	163	898
Jan-84	0.4814	0.5626	0	6	200	138	70	414
Feb-84	0.5156		0	10	389	230	123	752
Mar-84	0.5079		0	9	346	213	111	679
Apr-84	0.5271		0	6	238	131	75	450
May-84	0.5961		0	12	559	221	143	935

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-84	0.6224		0	11	521	198	105	835
Jul-84	0.6234		0	3	135	51	27	216
Aug-84	0.6201		0	7	332	126	69	534
Sep-84	0.6365		0	7	349	124	67	547
Oct-84	0.6234		0	10	480	181	97	768
Nov-84	0.5315		0	14	586	323	176	1099
Dec-84	0.4655		0	14	500	357	199	1070
Jan-85	0.4644	0.5073	0	16	578	414	232	1240
Feb-85	0.4635		0	7	248	178	100	533
Mar-85	0.5854		0	10	438	179	119	746
Apr-85	0.6007		0	20	982	369	259	1630
May-85	0.4448		0	15	554	352	319	1240
Jun-85	0.4862		0	16	610	393	231	1250
Jul-85	0.5173		0	17	681	383	231	1312
Aug-85	0.5067		0	13	509	303	176	1001
Sep-85	0.5142		0	12	484	282	160	938
Oct-85	0.5071		0	4	173	104	59	340
Nov-85	0.5061		0	2	65	39	22	128
Dec-85	0.4914		0	6	217	139	78	440
Jan-86	0.4775	0.5500	0	20	751	506	290	1567
Feb-86	0.4801		0	5	186	126	69	386
Mar-86	0.5532		0	13	551	272	157	993
Apr-86	0.5643		0	11	480	225	132	848
May-86	0.6526		0	8	456	141	92	697
Jun-86	0.5748		0	13	584	258	158	1013
Jul-86	0.5355		0	10	433	227	136	806
Aug-86	0.5534		0	8	337	162	100	607
Sep-86	0.6216		0	11	556	193	132	892
Oct-86	0.5277		0	4	180	100	56	340
Nov-86	0.5483		0	0	11	6	3	20

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-86	0.5117		0	8	305	175	106	594
Jan-87	0.5251	0.4412	0	8	314	176	98	596
Feb-87	0.5290		0	5	207	115	63	390
Mar-87	0.0777		0	14	1184	378	13488	15064
Apr-87	0.0974		0	17	1528	526	13442	15513
May-87	0.5651		0	10	432	191	129	762
Jun-87	0.5482		0	10	427	154	185	776
Jul-87	0.5523		0	9	400	203	110	722
Aug-87	0.5407		0	9	371	199	105	684
Sep-87			0	0	0	0	0	0
Oct-87	0.4527		0	1	25	16	13	55
Nov-87	0.4804		0	4	135	89	52	280
Dec-87	0.4849		0	5	182	121	66	374
Jan-88	0.5348	0.5435	0	5	198	100	66	369
Feb-88	0.5302		0	6	250	137	77	470
Mar-88	0.5335		0	5	205	110	63	383
Apr-88	0.5444		0	8	355	184	103	650
May-88	0.5480		0	8	348	171	106	633
Jun-88	0.5610		0	10	421	187	130	748
Jul-88	0.5524		0	3	133	64	40	240
Aug-88	0.5436		0	0	6	3	2	11
Sep-88			0	0	0	0	0	0
Oct-88			0	0	0	0	0	0
Nov-88			0	0	0	0	0	0
Dec-88			0	0	0	0	0	0
Jan-89	0.5418	0.5827	0	1	25	13	7	46
Feb-89			0	0	0	0	0	0
Mar-89	0.5383		0	1	27	14	8	50
Apr-89	0.5476		0	3	117	60	33	213
May-89	0.4989		0	0	1	1	0	2

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<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-89	0.5484		0	1	22	11	6	40
Jul-89	1.0000		0	0	1	0	0	1
Aug-89	0.5436		0	0	6	3	2	11
Sep-89	0.5453		0	3	128	66	37	234
Oct-89	0.5464		0	4	188	97	54	343
Nov-89	0.5454		0	3	122	63	35	223
Dec-89	0.5540		0	0	5	3	1	9
Jan-90		0.5183	0	0	0	0	0	0
Feb-90	0.5582		0	0	14	7	4	25
Mar-90	0.4979		0	0	2	1	1	4
Apr-90			0	0	0	0	0	0
May-90			0	0	0	0	0	0
Jun-90			0	0	0	0	0	0
Jul-90			0	0	0	0	0	0
Aug-90			0	0	0	0	0	0
Sep-90	0.4989		0	0	1	1	0	2
Oct-90			0	0	0	0	0	0
Nov-90			0	0	0	0	0	0
Dec-90			0	0	0	0	0	0
Jan-91		0.4979	0	0	0	0	0	0
Feb-91			0	0	0	0	0	0
Mar-91			0	0	0	0	0	0
Apr-91	0.4979		0	0	2	1	1	4
May-91			0	0	0	0	0	0
Jun-91			0	0	0	0	0	0
Jul-91			0	0	0	0	0	0
Aug-91			0	0	0	0	0	0
Sep-91			0	0	0	0	0	0
Oct-91			0	0	0	0	0	0
Nov-91			0	0	0	0	0	0

Appendix D H-area HM HHW Uranium Wt Fractions JUN'59-DEC'92

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	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Dec-91			0	0	0	0	0	0
Jan-92	0.4979	0.4979	0	0	2	1	1	4
Feb-92			0	0	0	0	0	0
Mar-92			0	0	0	0	0	0
Apr-92			0	0	0	0	0	0
May-92			0	0	0	0	0	0
Jun-92			0	0	0	0	0	0
Jul-92			0	0	0	0	0	0
Aug-92			0	0	0	0	0	0
Sep-92			0	0	0	0	0	0
Oct-92			0	0	0	0	0	0
Nov-92			0	0	0	0	0	0
Dec-92			0	0	0	0	0	0
	<u>U-235</u>							
	<u>AVERAGE</u>							
	<u>Wt Fraction</u>							
	0.5515							

APPENDIX E

Data Summary

Appendix E provides the monthly and yearly average plutonium fissile isotopic weight fraction data over the history of H-area HHW transfers. Weight fractions of plutonium were calculated as $(^{239}+^{241})\text{Pu}/\text{Total Pu}$.

The yearly and total waste stream plutonium fissile isotopic weight fraction data are plotted below.

Highest Yearly Average = 1.0

HM HHW Average = 0.64

Appendix E H-Area HM HHW PU Weight Fractions JUN'59-DEC'92

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	<u>PU-239+241</u>	<u>Average/Yr.</u>	<u>PU-238</u>	<u>PU-239</u>	<u>PU-240</u>	<u>PU-241</u>	<u>PU-242</u>	<u>TOTAL PU</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>	<u>HHW(g)</u>
Jun-59	0.8712	0.8666	29	700	75	5	0	809
Jul-59	0.8664		47	1078	120	7	0	1252
Aug-59	0.8657		56	1283	144	8	0	1491
Sep-59	0.8570		63	1121	125	7	0	1316
Oct-59	0.8638		79	1792	205	12	0	2088
Nov-59	0.8680		40	956	106	6	0	1108
Dec-59	0.8739		24	607	64	4	0	699
Jan-60	0.7764	0.7793	59	761	160	8	2	990
Feb-60	0.7753		62	780	164	8	2	1016
Mar-60	0.7747		65	829	176	8	2	1080
Apr-60	0.7960		24	341	63	3	1	432
May-60	0.7899		30	414	80	4	1	529
Jun-60			0	0	0	0	0	0
Jul-60			0	0	0	0	0	0
Aug-60			0	0	0	0	0	0
Sep-60			0	0	0	0	0	0
Oct-60			0	0	0	0	0	0
Nov-60	0.7712		85	1047	226	10	2	1370
Dec-60	0.7720		79	985	212	9	2	1287
Jan-61	0.7983	0.8148	132	1356	210	15	4	1717
Feb-61	0.8583		12	186	19	2	0	219
Mar-61	0.0000		1	0	0	0	0	1
Apr-61	0.0000		12	0	0	0	0	12
May-61	0.0000		54	0	0	0	0	54
Jun-61	0.0000		10	0	0	0	0	10
Jul-61	0.8278		2	696	141	4	2	845
Aug-61	0.0000		8	0	0	0	0	8
Sep-61	0.7966		189	1929	303	23	6	2450
Oct-61	0.7988		131	1356	210	15	4	1716
Nov-61	0.8021		92	967	146	11	3	1219
Dec-61	0.8215		10	239	42	1	0	292
Jan-62	0.0000	0.7868	15	0	0	0	0	15
Feb-62	0.0000		6	0	0	0	0	6
	<u>PU-239+241</u>	<u>Average/Yr.</u>	<u>PU-238</u>	<u>PU-239</u>	<u>PU-240</u>	<u>PU-241</u>	<u>PU-242</u>	<u>TOTAL PU</u>

Appendix E H-Area HM HHW PU Weight Fractions JUN'59-DEC'92

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	A	B	C	D	E	F	G	H	I
37		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
38	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
39									
40	Mar-62	0.0000		8	0	0	0	0	8
41	Apr-62	0.0000		21	0	0	0	0	21
42	May-62	0.0000		21	0	0	0	0	21
43	Jun-62	0.0000		15	0	0	0	0	15
44	Jul-62	0.0000		10	0	0	0	0	10
45	Aug-62	0.7835		167	1462	236	19	6	1890
46	Sep-62	0.7834		190	1668	271	22	6	2157
47	Oct-62	0.7902		177	1720	279	22	6	2204
48	Nov-62	0.7868		159	1462	236	19	6	1882
49	Dec-62	0.7900		195	1803	293	23	7	2311
50	Jan-63	0.7039	0.7074	483	2257	459	44	26	3269
51	Feb-63	0.0000		8	0	0	0	0	8
52	Mar-63	0.0000		1	0	0	0	0	1
53	Apr-63			0	0	0	0	0	0
54	May-63	0.0000		4	0	0	0	0	4
55	Jun-63			0	0	0	0	0	0
56	Jul-63			0	0	0	0	0	0
57	Aug-63			0	0	0	0	0	0
58	Sep-63			0	0	0	0	0	0
59	Oct-63	0.7134		195	963	188	18	11	1375
60	Nov-63	0.7061		393	1867	377	36	22	2695
61	Dec-63	0.7061		393	1867	377	36	22	2695
62	Jan-64	0.0000	0.8263	3	0	0	0	0	3
63	Feb-64			0	0	0	0	0	0
64	Mar-64	0.0000		1	0	0	0	0	1
65	Apr-64			0	0	0	0	0	0
66	May-64	0.0000		2	0	0	0	0	2
67	Jun-64	0.8906		0	178	20	2	2	202
68	Jul-64	0.8150		23	334	49	6	5	417
69	Aug-64	0.7734		68	557	90	10	8	733
70	Sep-64	0.0000		122	0	0	0	0	122
71	Oct-64	0.0000		1	0	0	0	0	1
72	Nov-64	0.0000		0	0	0	0	5	5

	A	B	C	D	E	F	G	H	I
73		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
74	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
75									
76	Dec-64			0	0	0	0	0	0
77	Jan-65	1.0000	0.8870	0	0	0	1	0	1
78	Feb-65	0.9385		0	183	11	1	1	196
79	Mar-65	0.8960		14	368	28	3	1	414
80	Apr-65	0.8654		34	459	37	4	1	535
81	May-65	0.8113		46	290	21	2	1	360
82	Jun-65	0.8608		27	307	22	2	1	359
83	Jul-65	0.8369		28	209	13	1	0	251
84	Aug-65	0.0000		22	0	0	0	0	22
85	Sep-65	0.0000		5	0	0	0	0	5
86	Oct-65			0	0	0	0	0	0
87	Nov-65			0	0	0	0	0	0
88	Dec-65			0	0	0	0	0	0
89	Jan-66		0.5271	0	0	0	0	0	0
90	Feb-66			0	0	0	0	0	0
91	Mar-66	0.4996		384	454	71	11	12	932
92	Apr-66	0.4765		988	1063	183	28	31	2293
93	May-66	0.4738		1177	1253	218	33	37	2718
94	Jun-66	0.5506		369	533	66	12	11	991
95	Jul-66	0.5104		669	823	122	20	20	1654
96	Aug-66	0.4957		419	489	78	11	13	1010
97	Sep-66	0.5024		354	424	66	10	11	865
98	Oct-66	0.5594		151	229	28	4	5	417
99	Nov-66	0.6802		119	251	0	1	0	371
100	Dec-66	0.5229		230	299	43	7	7	586
101	Jan-67	0.9020	0.9057	12	183	8	1	0	204
102	Feb-67	0.9350		5	115	3	0	0	123
103	Mar-67	0.8842		22	288	16	2	0	328
104	Apr-67	0.8929		14	199	10	1	0	224
105	May-67	0.9186		10	202	8	1	0	221
106	Jun-67	0.8269		27	161	7	1	0	196
107	Jul-67	0.9523		4	18	12	2	0	336
108	Aug-67	0.9726		0	107	3	0	0	110

	A	B	C	D	E	F	G	H	I
109		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
110	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
111									
112	Sep-67			0	0	0	0	0	0
113	Oct-67	0.0000		25	0	0	0	2	27
114	Nov-67	0.9132		17	303	12	2	0	334
115	Dec-67	0.8594		27	237	12	1	0	277
116	Jan-68	0.5877	0.6216	37	72	13	2	2	126
117	Feb-68	0.5159		75	99	18	2	2	196
118	Mar-68	0.7237		38	202	36	5	5	286
119	Apr-68	0.8367		0	101	18	2	2	123
120	May-68			0	0	0	0	0	0
121	Jun-68			0	0	0	0	0	0
122	Jul-68			0	0	0	0	0	0
123	Aug-68	0.0000		14	0	0	0	0	14
124	Sep-68	0.3153		77	38	7	1	1	124
125	Oct-68	0.6337		82	211	38	5	5	341
126	Nov-68	0.5610		132	222	40	5	6	405
127	Dec-68	0.7991		19	358	64	9	9	459
128	Jan-69	0.8813	0.8096	7	102	6	2	1	118
129	Feb-69	0.6209		6	17	5	1	0	29
130	Mar-69	0.9301		4	52	0	1	0	57
131	Apr-69	0.4080		13	11	3	0	0	27
132	May-69	0.8671		15	103	1	1	0	120
133	Jun-69	0.9599		1	95	3	1	0	100
134	Jul-69	1.0000		0	10	0	0	0	10
135	Aug-69			0	0	0	0	0	0
136	Sep-69			0	0	0	0	0	0
137	Oct-69			0	0	0	0	0	0
138	Nov-69			0	0	0	0	0	0
139	Dec-69			0	0	0	0	0	0
140	Jan-70	0.9761	0.9707	12	691	5	1	0	709
141	Feb-70	0.9416		22	1308	58	1	1	1390
142	Mar-70	0.9762		17	1024	7	1	1	1050
143	Apr-70	0.9706		28	1219	8	2	1	1258
144	May-70	0.9708		24	1060	7	2	1	1094

	A	B	C	D	E	F	G	H	I
145		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
146	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
147									
148	Jun-70			0	0	0	0	0	0
149	Jul-70			0	0	0	0	0	0
150	Aug-70	0.9770		8	508	4	0	0	520
151	Sep-70	0.9769		11	633	4	1	0	649
152	Oct-70	0.9766		10	583	4	1	0	598
153	Nov-70	0.9707		35	1519	10	2	1	1567
154	Dec-70			0	0	0	0	0	0
155	Jan-71	0.9407	0.9449	4	95	2	0	0	101
156	Feb-71	0.9368		50	987	15	4	2	1058
157	Mar-71	0.9375		32	642	10	2	1	687
158	Apr-71	0.9359		25	479	7	2	1	514
159	May-71	0.9423		27	634	11	2	1	675
160	Jun-71	0.9384		29	606	10	2	1	648
161	Jul-71	0.9377		43	853	13	3	1	913
162	Aug-71	0.9398		5	109	2	0	0	116
163	Sep-71	1.0000		0	1	0	0	0	1
164	Oct-71	0.9437		13	317	5	1	1	337
165	Nov-71	0.9433		31	729	12	2	1	775
166	Dec-71	0.9423		14	292	4	1	0	311
167	Jan-72		0.6463	0	0	0	0	0	0
168	Feb-72	0.6024		253	592	137	21	15	1018
169	Mar-72			0	0	0	0	0	0
170	Apr-72	0.6100		231	556	124	19	13	943
171	May-72	0.6027		439	1028	237	36	26	1766
172	Jun-72	0.6031		295	691	159	24	17	1186
173	Jul-72	0.6494		216	600	107	18	11	952
174	Aug-72	0.9170		1	11	0	0	0	12
175	Sep-72	0.6103		296	713	158	24	17	1208
176	Oct-72	0.6109		450	1086	240	37	26	1839
177	Nov-72	0.6111		462	1114	246	38	26	1886
178	Dec-72			0	0	0	0	0	0
179	Jan-73		0.5583	0	0	0	0	0	0
180	Feb-73	0.6031		587	1331	290	58	38	2304

Appendix E H-Area HM HHW PU Weight Fractions JUN'59-DEC'92

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	A	B	C	D	E	F	G	H	I
181		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
182	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
183									
184	Mar-73	0.6029		854	1936	422	84	56	3352
185	Apr-73	0.6028		1221	2768	604	120	80	4793
186	May-73	0.6323		4396	12352	2663	161	224	19796
187	Jun-73	0.6029		480	1089	238	47	31	1885
188	Jul-73	0.6029		788	1785	389	77	51	3090
189	Aug-73	0.1270		805	37	0	79	0	921
190	Sep-73	0.6030		1074	2436	531	105	70	4216
191	Oct-73	0.6028		760	1724	376	74	50	2984
192	Nov-73	0.6029		727	1649	360	71	47	2854
193	Dec-73			0	0	0	0	0	0
194	Jan-74	1.0000	0.6825	0	2	0	0	0	2
195	Feb-74	0.6657		0	2	1	0	0	3
196	Mar-74	1.0000		0	4	0	0	0	4
197	Apr-74	0.0000		0	0	1	0	0	1
198	May-74	0.6087		328	737	148	32	19	1264
199	Jun-74	0.6064		778	1734	352	75	46	2985
200	Jul-74	0.6086		827	1856	372	80	48	3183
201	Aug-74	0.6056		454	1008	205	44	27	1738
202	Sep-74	0.6030		433	950	196	42	25	1646
203	Oct-74	0.6025		368	807	167	36	22	1400
204	Nov-74	0.6030		375	824	170	36	22	1427
205	Dec-74	0.6040		287	628	127	27	16	1085
206	Jan-75	0.6135	0.5863	98	223	43	10	6	380
207	Feb-75	0.6018		428	932	193	43	25	1621
208	Mar-75	0.6018		643	1399	289	65	38	2434
209	Apr-75	0.6047		723	1589	323	73	42	2750
210	May-75	0.6046		771	1695	345	78	45	2934
211	Jun-75	0.6059		542	1196	242	55	31	2066
212	Jul-75	0.6019		915	1989	411	93	53	3461
213	Aug-75	0.6019		210	456	94	21	12	793
214	Sep-75	0.4990		0	1	1	0	0	2
215	Oct-75	0.4990		0	1	1	0	0	2
216	Nov-75	0.5990		0	3	2	0	0	5

	A	B	C	D	E	F	G	H	I
217		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
218	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
219									
220	Dec-75	0.6023		353	767	158	36	20	1334
221	Jan-76	0.5788	0.5820	668	1299	287	69	42	2365
222	Feb-76	0.5791		443	862	190	46	28	1569
223	Mar-76	0.5864		740	1480	314	77	46	2657
224	Apr-76	0.5840		523	1038	223	54	33	1871
225	May-76	0.5828		497	980	212	52	31	1772
226	Jun-76	0.5839		550	1089	234	57	34	1964
227	Jul-76	0.5862		552	1103	234	57	34	1980
228	Aug-76	0.5839		569	1128	243	59	35	2034
229	Sep-76	0.5828		671	1325	287	70	42	2395
230	Oct-76	0.5789		520	1011	223	54	33	1841
231	Nov-76	0.5784		270	524	116	28	17	955
232	Dec-76	0.5791		443	862	190	46	28	1569
233	Jan-77	0.5825	0.6930	454	899	198	47	27	1625
234	Feb-77	0.5859		522	1045	226	54	30	1877
235	Mar-77	0.5857		547	1095	237	57	32	1968
236	Apr-77	0.5771		403	781	177	42	24	1427
237	May-77	0.5769		425	822	186	44	25	1502
238	Jun-77	0.5769		414	801	182	43	24	1464
239	Jul-77	0.5770		378	732	166	39	22	1337
240	Aug-77	0.5862		481	964	208	50	28	1731
241	Sep-77	0.9228		0	48	4	0	0	52
242	Oct-77	0.9120		0	51	5	1	0	57
243	Nov-77	0.9044		0	38	4	0	0	42
244	Dec-77	0.9283		0	13	1	0	0	14
245	Jan-78	1.0000	0.6751	0	4	0	0	0	4
246	Feb-78	1.0000		0	5	0	0	0	5
247	Mar-78	0.8745		0	7	1	0	0	8
248	Apr-78	0.5844		277	547	119	30	15	988
249	May-78	0.5847		443	876	190	49	25	1583
250	Jun-78	0.5813		431	840	185	47	24	1527
251	Jul-78	0.5700		420	796	182	46	34	1478
252	Aug-78	0.5818		324	632	139	36	18	1149

	A	B	C	D	E	F	G	H	I
253		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
254	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
255									
256	Sep-78	0.5810		445	866	191	49	25	1576
257	Oct-78	0.5740		266	505	116	29	15	931
258	Nov-78	0.5847		443	876	190	49	25	1583
259	Dec-78	0.5852		398	787	170	44	22	1421
260	Jan-79	0.5721	0.6407	707	1296	285	83	41	2412
261	Feb-79	0.5737		858	1579	344	100	50	2929
262	Mar-79	0.5710		622	1135	251	73	36	2117
263	Apr-79	0.5709		583	1065	236	68	34	1986
264	May-79	0.5710		673	1230	272	79	40	2294
265	Jun-79	0.5721		847	1555	342	99	50	2893
266	Jul-79	0.5721		719	1319	290	84	42	2454
267	Aug-79	0.5720		726	1332	293	85	43	2479
268	Sep-79	0.5694		801	1454	324	93	47	2719
269	Oct-79	1.0000		0	17	0	0	0	17
270	Nov-79			0	0	0	0	0	0
271	Dec-79	0.9029		0	28	3	0	0	31
272	Jan-80	0.9090	0.7133	0	317	32	4	0	353
273	Feb-80	0.9088		0	69	7	1	0	77
274	Mar-80	0.9101		0	60	6	1	0	67
275	Apr-80	0.8819		0	15	2	0	0	17
276	May-80	0.8566		0	6	1	0	0	7
277	Jun-80	0.5809		841	1615	354	105	48	2963
278	Jul-80	0.5824		728	1407	306	91	42	2574
279	Aug-80	0.5858		1359	2661	569	170	77	4836
280	Sep-80	0.5860		743	1456	311	93	42	2645
281	Oct-80	0.5858		1170	2291	490	147	67	4165
282	Nov-80	0.5859		987	1933	413	124	56	3513
283	Dec-80	0.5860		1096	2148	459	137	62	3902
284	Jan-81	0.5726	0.5699	927	1691	371	120	56	3165
285	Feb-81	0.5725		980	1787	392	126	59	3344
286	Mar-81	0.5549		1050	1715	380	135	57	3337
287	Apr-81	0.5708		788	1426	316	102	47	2579
288	May-81	0.5706		840	1521	337	108	51	2857

	A	B	C	D	E	F	G	H	I
289		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
290	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
291									
292	Jun-81	0.5725		748	1364	299	96	45	2552
293	Jul-81	0.5706		798	1444	320	103	48	2713
294	Aug-81	0.5696		965	1740	388	124	58	3275
295	Sep-81	0.5706		966	1749	388	124	58	3285
296	Oct-81	0.5706		1019	1844	409	131	61	3464
297	Nov-81	0.5706		683	1236	274	88	41	2322
298	Dec-81	0.5725		748	1364	299	96	45	2552
299	Jan-82	0.6509	0.6503	332	901	163	54	18	1468
300	Feb-82			0	0	0	0	0	0
301	Mar-82	0.6514		305	830	150	49	16	1350
302	Apr-82	0.6515		624	1696	308	102	33	2761
303	May-82	0.6506		501	1356	246	81	26	2210
304	Jun-82	0.6506		457	1238	225	75	24	2019
305	Jul-82	0.6533		87	240	43	14	5	389
306	Aug-82	0.6505		522	1415	257	85	28	2307
307	Sep-82	0.6509		365	991	180	59	19	1614
308	Oct-82	0.6480		411	1102	203	67	22	1805
309	Nov-82	0.6479		151	406	75	24	8	664
310	Dec-82	0.6480		579	1555	287	94	31	2546
311	Jan-83	0.6043	0.6251	669	1399	283	107	36	2494
312	Feb-83	0.6050		129	271	55	21	7	483
313	Mar-83	0.6044		831	1741	353	133	45	3103
314	Apr-83	0.6057		493	1042	211	79	27	1852
315	May-83	0.6052		597	1256	254	95	32	2234
316	Jun-83	0.6049		461	971	197	73	25	1727
317	Jul-83	0.8128		0	685	139	0	18	842
318	Aug-83	0.6365		521	1101	139	83	18	1862
319	Sep-83	0.6037		500	1042	211	80	27	1860
320	Oct-83	0.6050		443	926	185	71	24	1649
321	Nov-83	0.6066		1206	2548	509	192	65	4520
322	Dec-83	0.6068		634	1338	266	101	34	2373
323	Jan-84	0.6184	0.6200	350	794	159	65	22	1390
324	Feb-84	0.6208		838	1920	380	156	52	3346

	A	B	C	D	E	F	G	H	I
325		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
326	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
327									
328	Mar-84	0.6210		955	2189	433	178	59	3814
329	Apr-84	0.6210		1082	2479	490	202	67	4320
330	May-84	0.6202		703	1605	318	131	44	2801
331	Jun-84	0.6206		891	2038	404	167	55	3555
332	Jul-84	0.6187		99	224	45	19	6	393
333	Aug-84	0.6202		639	1461	290	119	40	2549
334	Sep-84	0.6204		765	1750	347	143	48	3053
335	Oct-84	0.6202		1189	2716	539	222	74	4740
336	Nov-84	0.6202		1261	2881	572	235	78	5027
337	Dec-84	0.6186		1311	2976	596	245	82	5210
338	Jan-85	0.6631	0.6634	468	1345	230	78	25	2144
339	Feb-85	0.6636		697	2006	342	114	37	3196
340	Mar-85	0.6635		858	2469	421	140	46	3934
341	Apr-85	0.6636		910	2620	446	148	49	4173
342	May-85	0.6636		968	2788	475	157	52	4440
343	Jun-85	0.6650		544	1574	266	89	29	2502
344	Jul-85	0.6651		603	1746	295	98	32	2774
345	Aug-85	0.6625		650	1864	320	106	35	2975
346	Sep-85	0.6625		328	942	162	54	18	1504
347	Oct-85			0	0	0	0	0	0
348	Nov-85	0.6625		328	942	162	54	18	1504
349	Dec-85	0.6623		979	2806	482	159	53	4479
350	Jan-86	0.6115	0.6080	514	1114	220	88	31	1967
351	Feb-86	0.6123		800	1741	342	137	49	3069
352	Mar-86	0.5619		906	1999	386	155	386	3832
353	Apr-86	0.6142		811	1778	346	139	49	3123
354	May-86	0.6127		1197	2609	512	205	73	4596
355	Jun-86	0.6129		574	1252	245	98	35	2204
356	Jul-86	0.6127		876	1909	375	150	53	3363
357	Aug-86	0.6126		775	1689	332	133	47	2976
358	Sep-86	0.6131		835	1823	357	143	51	3209
359	Oct-86			0	0	0	0	0	0
360	Nov-86	0.6127		329	718	141	56	20	1264

Appendix E H-Area HM HHW PU Weight Fractions JUN'59-DEC'92

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REV.0

	A	B	C	D	E	F	G	H	I
		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
361									
362									
363									3123
364	Dec-86	0.6114		815	1769	350	139	50	1272
365	Jan-87	0.6670	0.6696	279	797	134	51	11	1787
366	Feb-87	0.6719		388	1128	184	72	15	1751
367	Mar-87	0.6720		380	1106	181	70	14	2717
368	Apr-87	0.6691		593	1709	284	108	23	1862
369	May-87	0.6722		404	1177	192	74	15	1697
370	Jun-87	0.6698		370	1068	177	68	14	2975
371	Jul-87	0.6676		652	1866	313	119	25	209
372	Aug-87	0.6654		46	131	22	8	2	0
373	Sep-87			0	0	0	0	0	843
374	Oct-87	0.6682		185	529	88	34	7	1649
375	Nov-87	0.6705		359	1039	171	66	14	949
376	Dec-87	0.6716		206	599	98	38	8	2132
377	Jan-88	0.6590	0.7316	486	1292	223	112	19	1603
378	Feb-88	0.6611		364	976	166	83	14	2074
379	Mar-88	0.6586		473	1257	217	108	19	1871
380	Apr-88	0.6589		427	1134	195	98	17	97
381	May-88	0.8768		12	82	0	3	0	0
382	Jun-88			0	0	0	0	0	0
383	Jul-88			0	0	0	0	0	0
384	Aug-88			0	0	0	0	0	0
385	Sep-88			0	0	0	0	0	48
386	Oct-88	0.8755		6	40	0	2	0	0
387	Nov-88			0	0	0	0	0	0
388	Dec-88			0	0	0	0	0	0
389	Jan-89		0.8759	0	0	0	0	0	40
390	Feb-89	0.8755		5	34	0	1	0	26
391	Mar-89	0.8851		3	22	0	1	0	0
392	Apr-89			0	0	0	0	0	38
393	May-89	0.8689		5	32	0	1	0	5
394	Jun-89	0.8007		1	4	0	0	0	1
395	Jul-89	1.0000		0	0	0	1	0	15
396	Aug-89	0.8672		2	13	0	0	0	

	A	B	C	D	E	F	G	H	I
397		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
398	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
399									
400	Sep-89	0.8339		1	5	0	0	0	6
401	Oct-89			0	0	0	0	0	0
402	Nov-89			0	0	0	0	0	0
403	Dec-89			0	0	0	0	0	0
404	Jan-90		0.0000	0	0	0	0	0	0
405	Feb-90			0	0	0	0	0	0
406	Mar-90			0	0	0	0	0	0
407	Apr-90			0	0	0	0	0	0
408	May-90			0	0	0	0	0	0
409	Jun-90			0	0	0	0	0	0
410	Jul-90			0	0	0	0	0	0
411	Aug-90			0	0	0	0	0	0
412	Sep-90			0	0	0	0	0	0
413	Oct-90			0	0	0	0	0	0
414	Nov-90			0	0	0	0	0	0
415	Dec-90			0	0	0	0	0	0
416	Jan-91		1.0000	0	0	0	0	0	0
417	Feb-91			0	0	0	0	0	0
418	Mar-91			0	0	0	0	0	0
419	Apr-91	1.0000		0	3	0	0	0	3
420	May-91	1.0000		0	4	0	0	0	4
421	Jun-91			0	0	0	0	0	0
422	Jul-91			0	0	0	0	0	0
423	Aug-91			0	0	0	0	0	0
424	Sep-91			0	0	0	0	0	0
425	Oct-91			0	0	0	0	0	0
426	Nov-91	0.0000		1	0	0	0	0	1
427	Dec-91			0	0	0	0	0	0
428	Jan-92	0.8007	0.8007	1	4	0	0	0	5
429	Feb-92			0	0	0	0	0	0
430	Mar-92			0	0	0	0	0	0
431	Apr-92			0	0	0	0	0	0
432	May-92			0	0	0	0	0	0

	A	B	C	D	E	F	G	H	I
433		PU-239+241	Average/Yr.	PU-238	PU-239	PU-240	PU-241	PU-242	TOTAL PU
434	DATE	Wt Fraction	Wt Fraction	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)	HHW(g)
435									
436	Jun-92			0	0	0	0	0	0
437	Jul-92			0	0	0	0	0	0
438	Aug-92			0	0	0	0	0	0
439	Sep-92			0	0	0	0	0	0
440	Oct-92			0	0	0	0	0	0
441	Nov-92			0	0	0	0	0	0
442	Dec-92			0	0	0	0	0	0
443									
444		PU-239+241							
445		Average							
446		Wt Fraction							
447									
448		0.6446							
449									
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APPENDIX F

Data Summary

Appendix F provides the monthly and yearly average uranium fissile isotopic weight fraction data over the history of H-area LHW transfers. No fissile plutonium isotopes entered this waste stream, only ^{238}Pu . The monthly ^{238}Pu mass is listed in the tables.

The yearly and total waste stream uranium fissile isotopic weight fraction data is plotted below.

Highest Yearly Average = 0.85

HM LHW Average = 0.56

Appendix F H-Area LHW Uranium Wt Fraction Vs Pu-238 Mass(grams) JUN'59-DEC'92

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Rev. 0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Jun-59	0.8255	0.8488	0	1	62	5	7	75	0
Jul-59	0.8390		0	1	63	5	6	75	0
Aug-59	0.8484		0	1	62	5	5	73	0
Sep-59	0.8503		0	1	63	4	6	74	0
Oct-59	0.8504		0	1	63	5	5	74	0
Nov-59	0.8640		0	1	64	4	5	74	0
Dec-59	0.8640		0	1	64	4	5	74	0
Jan-60	0.8390	0.8490	0	1	63	5	6	75	0
Feb-60	0.8504		0	1	63	5	5	74	0
Mar-60	0.8640		0	1	64	4	5	74	0
Apr-60	0.8504		0	1	63	5	5	74	0
May-60	0.8504		0	1	63	5	5	74	0
Jun-60			0	0	0	0	0	0	0
Jul-60			0	0	0	0	0	0	0
Aug-60			0	0	0	0	0	0	0
Sep-60			0	0	0	0	0	0	0
Oct-60	0.8504		0	1	63	5	5	74	0
Nov-60	0.8504		0	1	63	5	5	74	0
Dec-60	0.8369		0	1	62	6	5	74	0
Jan-61	0.8369	0.8398	0	1	62	6	5	74	0
Feb-61			0	0	0	0	0	0	0
Mar-61			0	0	0	0	0	0	1
Apr-61			0	0	0	0	0	0	9
May-61			0	0	0	0	0	0	42
Jun-61			0	0	0	0	0	0	8
Jul-61			0	0	0	0	0	0	1
Aug-61	0.8369		0	1	62	6	5	74	2
Sep-61	0.8369		0	1	62	6	5	74	7
Oct-61	0.8439		0	4	234	22	17	277	4
Nov-61	0.8446		0	3	197	19	14	233	5
Dec-61			0	0	0	0	0	0	8
Jan-62		0.8254	0	0	0	0	0	0	12
Feb-62			0	0	0	0	0	0	5
Mar-62			0	0	0	0	0	0	7

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Apr-62			0	0	0	0	0	0	17
May-62			0	0	0	0	0	0	17
Jun-62			0	0	0	0	0	0	12
Jul-62			0	0	0	0	0	0	8
Aug-62	0.8311		0	2	109	11	9	131	14
Sep-62	0.8323		0	1	45	4	4	54	14
Oct-62	0.8367		0	3	191	18	16	228	9
Nov-62	0.8311		0	3	238	24	21	286	8
Dec-62	0.7957		0	3	200	28	20	251	7
Jan-63	0.7831	0.6704	0	5	298	47	30	380	6
Feb-63	0.7845		0	1	66	10	7	84	9
Mar-63			0	0	0	0	0	0	1
Apr-63	0.7986		0	0	8	1	1	10	0
May-63	0.7888		0	7	376	56	37	476	4
Jun-63	0.7856		0	2	107	16	11	136	0
Jul-63	0.3988		0	7	216	156	160	539	1
Aug-63	0.3388		0	5	139	121	143	408	0
Sep-63	0.3671		0	7	189	142	174	512	1
Oct-63	0.7534		0	12	676	44	163	895	1
Nov-63	0.8295		0	16	1010	84	106	1216	1
Dec-63	0.7460		0	8	477	60	93	638	3
Jan-64	0.7273	0.7795	0	7	366	49	80	502	3
Feb-64	0.7287		0	10	580	77	127	794	0
Mar-64	0.8431		227	22	120	26	16	411	1
Apr-64	0.7567		91	16	398	87	53	645	0
May-64	0.9185		362	32	0	0	0	394	2
Jun-64	0.7427		238	67	2403	522	319	3549	1
Jul-64	0.8089		0	4	226	26	23	279	1
Aug-64	0.8099		0	5	322	37	33	397	2
Sep-64	0.7575		0	10	557	96	71	734	4
Oct-64	0.7564		0	4	197	34	25	260	1
Nov-64	0.7556		0	6	302	52	39	399	0
Dec-64	0.7487		0	1	39	7	5	52	0
Jan-65	0.9331	0.8350	42	3	0	0	0	45	0

Appendix F H-Area LHW Uranium Wt Fraction Vs Pu-238 Mass(grams) JUN59-DEC'92

WSRC-TR-94-004

Rev. 0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Feb-65	0.9213		47	4	0	0	0	51	0
Mar-65	0.8509		0	1	69	5	6	81	1
Apr-65	0.8485		0	4	271	20	24	319	1
May-65	0.8248		0	5	313	31	30	379	1
Jun-65	0.7802		0	2	118	18	13	151	5
Jul-65	0.7420		0	7	362	75	43	487	2
Aug-65	0.7319		0	15	789	171	101	1076	4
Sep-65	0.7308		0	10	511	111	66	698	4
Oct-65	0.9391		192	3	27	5	6	233	0
Nov-65	0.8694		56	1	25	5	6	93	0
Dec-65	0.8483		45	1	23	5	6	80	0
Jan-66	0.8905	0.6963	76	1	23	5	6	111	0
Feb-66	0.6902		6	1	21	5	6	39	5
Mar-66	0.7198		0	8	424	102	54	588	3
Apr-66	0.7219		0	4	230	55	29	318	7
May-66	0.7012		0	9	411	108	57	585	6
Jun-66	0.6979		0	14	644	172	91	921	0
Jul-66	0.7029		0	3	162	42	23	230	0
Aug-66	0.7145		0	1	63	15	9	88	1
Sep-66	0.6704		0	3	131	41	20	195	3
Oct-66	0.6507		0	1	30	10	5	46	1
Nov-66	0.6754		0	12	557	174	80	823	4
Dec-66	0.5201		0	8	240	143	69	460	0
Jan-67	0.4056	0.6558	0	5	103	107	38	253	7
Feb-67	0.6728		0	2	89	28	13	132	8
Mar-67	0.6986		0	1	56	15	8	80	0
Apr-67	0.7028		0	1	50	13	7	71	4
May-67	0.6914		0	7	300	81	45	433	3
Jun-67	0.6814		0	1	56	16	9	82	0
Jul-67	0.6814		0	1	56	16	9	82	3
Aug-67	0.6669		0	16	716	186	153	1071	2
Sep-67	0.6716		11	11	496	129	106	753	0
Oct-67	0.6829		18	5	210	55	45	333	0
Nov-67	0.6610		0	2	116	28	29	175	0

Appendix F H-Area LHW Uranium Wt Fraction Vs Pu-238 Mass(grams) JUN'59-DEC'92

WSRC-TR-94-004
Rev. 0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Dec-67	0.6528		0	1	36	9	9	55	0
Jan-68	0.6693	0.6464	0	1	53	15	10	79	8
Feb-68	0.6651		0	2	92	27	17	138	6
Mar-68	0.4514		0	2	53	44	18	117	5
Apr-68	0.4581		0	2	57	46	19	124	3
May-68	0.7476		9	0	3	3	1	16	1
Jun-68	0.7476		9	0	3	3	1	16	3
Jul-68	1.0000		19	0	0	0	0	19	2
Aug-68	0.9188		346	6	33	12	15	412	1
Sep-68	0.4678		0	1	23	18	7	49	1
Oct-68	0.4678		0	1	23	18	7	49	0
Nov-68	0.4985		0	0	5	4	1	10	6
Dec-68	0.6652		0	0	14	5	2	21	0
Jan-69	0.6114	0.8239	0	2	76	31	15	124	5
Feb-69	0.6264		0	1	27	10	5	43	0
Mar-69	0.7409		0	3	167	34	21	225	8
Apr-69	0.7723		0	1	41	6	5	53	4
May-69	0.7748		0	2	97	15	11	125	1
Jun-69	0.7766		0	1	49	8	5	63	4
Jul-69	0.8698		15	4	187	11	15	232	1
Aug-69	1.0000		21	0	0	0	0	21	1
Sep-69	1.0000		24	0	0	0	0	24	1
Oct-69	1.0000		26	0	0	0	0	26	3
Nov-69	0.9814		106	2	0	0	0	108	0
Dec-69	0.7337		279	11	145	87	54	576	9
Jan-70	0.5065	0.6740	0	4	125	79	38	246	1
Feb-70	0.5045		0	4	123	78	38	243	1
Mar-70	0.4820		0	10	266	186	88	550	2
Apr-70	0.4784		0	8	217	154	73	452	2
May-70	0.4788		0	10	282	200	95	587	12
Jun-70	0.8436		120	5	71	18	12	226	0
Jul-70	0.9826		964	15	1	0	2	982	0
Aug-70	0.8880		217	7	280	25	30	559	0
Sep-70	0.8263		0	4	331	30	35	400	4

Appendix F H-Area LHW Uranium Wt Fraction Vs Pu-238 Mass(grams) JUN'59-DEC'92

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Rev. 0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Oct-70	0.4818		0	10	292	206	96	604	3
Nov-70	0.7924		0	1	50	6	6	63	10
Dec-70	0.8232		0	1	61	6	6	74	9
Jan-71	0.8978	0.6696	0	1	62	2	4	69	8
Feb-71	0.9114		0	1	83	2	5	91	2
Mar-71	0.8308		0	3	193	18	18	232	1
Apr-71	0.8267		0	2	125	12	12	151	11
May-71	0.3046		0	2	26	42	15	85	6
Jun-71	0.3139		0	2	29	45	16	92	5
Jul-71	0.8081		0	2	140	17	14	173	9
Aug-71	0.8250		0	4	323	33	31	391	6
Sep-71	0.8484		0	1	96	5	11	113	0
Oct-71	0.6063		0	1	31	13	6	51	0
Nov-71	0.4600		0	1	24	19	8	52	5
Dec-71	0.4019		0	1	23	23	10	57	0
Jan-72	0.5670	0.5462	0	1	29	14	7	51	0
Feb-72	0.5539		0	3	120	63	30	216	0
Mar-72	0.5342		0	4	142	81	38	265	0
Apr-72	0.5357		0	5	180	102	48	335	22
May-72	0.5594		0	3	92	47	22	164	31
Jun-72	0.5635		0	5	191	95	47	338	0
Jul-72	0.5584		0	2	84	43	21	150	28
Aug-72	0.8562		0	1	72	5	6	84	0
Sep-72	0.5577		0	2	66	34	16	118	6
Oct-72	0.6636		0	3	141	43	25	212	8
Nov-72	0.5566		0	3	86	35	30	154	10
Dec-72	0.0486		0	0	6	0	116	122	16
Jan-73	0.0512	0.4708	0	0	16	0	293	309	4
Feb-73	0.1083		5	7	225	51	1812	2100	9
Mar-73	0.6405		0	6	271	87	58	422	8
Apr-73	0.5781		0	4	160	76	36	276	2
May-73	0.5539		0	2	75	40	18	135	0
Jun-73	0.7075		0	3	151	37	22	213	2
Jul-73	0.7161		0	2	127	30	18	177	0

Appendix F H-Area LHW Uranium Wt Fraction Vs Pu-238 Mass(grams) JUN'59-DEC'92

WSRC-TR-94-004
Rev. 0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Aug-73	0.7355		0	3	196	41	26	266	5
Sep-73	0.6174		0	6	281	110	57	454	4
Oct-73	0.4254		0	3	76	70	29	178	8
Nov-73	0.4334		0	4	107	95	40	246	70
Dec-73	0.0829		0	2	16	16	157	191	74
Jan-74	0.0865	0.3802	0	2	16	16	149	183	0
Feb-74	0.0642		0	2	22	16	299	339	2
Mar-74	0.0524		0	2	20	15	340	377	28
Apr-74	0.0577		6	12	306	41	4975	5340	9
May-74	0.5483		0	1	44	23	12	80	4
Jun-74	0.5539		0	1	45	23	12	81	0
Jul-74	0.5557		0	1	34	17	9	61	0
Aug-74	0.5510		0	4	147	78	37	266	0
Sep-74	0.5463		0	2	80	44	20	146	0
Oct-74	0.5342		0	3	112	61	33	209	2
Nov-74	0.5090		0	1	24	15	7	47	2
Dec-74	0.5033		0	2	52	34	15	103	2
Jan-75	0.1619	0.2607	0	1	17	12	74	104	4
Feb-75	0.2995		0	2	35	18	61	116	3
Mar-75	0.3417		0	2	43	19	61	125	4
Apr-75	0.3311		0	2	44	23	63	132	35
May-75	0.3436		0	2	46	22	63	133	22
Jun-75	0.3113		0	2	37	18	61	118	100
Jul-75	0.4822		0	1	45	33	14	93	5
Aug-75	0.4537		0	13	408	320	155	896	20
Sep-75	0.1325		0	4	81	54	466	605	6
Oct-75	0.0245		0	0	20	5	781	806	1
Nov-75	0.0340		0	9	1575	207	44035	45826	0
Dec-75	0.2121		0	2	40	31	114	187	1
Jan-76	0.0957	0.4381	0	3	110	66	958	1137	2
Feb-76	0.0786		0	4	140	104	1514	1762	8
Mar-76	0.5925		0	7	303	135	65	510	9
Apr-76	0.5869		0	3	156	62	44	265	11
May-76	0.5504		0	3	137	53	55	248	8

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Jun-76	0.5548		0	7	319	130	117	573	4
Jul-76	0.5122		0	5	185	116	54	360	32
Aug-76	0.4984		0	8	190	128	56	380	10
Sep-76	0.4628		0	4	137	107	47	295	8
Oct-76	0.4543		0	4	119	95	43	261	2
Nov-76	0.4345		0	5	133	115	52	305	0
Dec-76	0.4363		0	4	127	111	48	290	0
Jan-77	0.4583	0.3561	0	3	86	71	27	187	23
Feb-77	0.4991		0	10	351	237	103	701	2
Mar-77	0.4881		0	14	501	348	160	1023	7
Apr-77	0.4519		0	16	493	396	182	1087	11
May-77	0.4308		0	8	239	211	95	553	16
Jun-77	0.4012		0	1	29	29	13	72	16
Jul-77	0.3955		0	2	54	54	26	136	2
Aug-77	0.4078		0	5	131	125	59	320	4
Sep-77	0.5314		0	1	64	32	23	120	8
Oct-77	0.1000		0	0	28	9	240	277	0
Nov-77	0.0347		0	0	6	0	165	171	1
Dec-77	0.0748		0	4	304	114	3594	4016	2
Jan-78	0.0380	0.3434	0	0	5	0	125	130	4
Feb-78	0.1195		459	138	5093	1468	38757	45915	5
Mar-78	0.0649		0	4	147	5	2084	2240	34
Apr-78	0.0993		0	2	48	11	417	478	1
May-78	0.4183		0	3	84	74	39	200	7
Jun-78	0.4450		0	2	67	54	27	150	4
Jul-78	0.4616		0	3	101	77	37	218	4
Aug-78	0.4904		0	2	62	42	20	126	2
Sep-78	0.4645		0	2	55	42	19	118	9
Oct-78	0.5257		0	5	212	123	62	402	0
Nov-78	0.5086		0	4	173	109	53	339	10
Dec-78	0.4854		0	3	94	64	32	193	3
Jan-79	0.4766	0.4278	0	2	66	47	23	138	14
Feb-79	0.4772		0	4	136	97	47	284	1
Mar-79	0.5387		0	3	127	69	36	235	13

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Apr-79	0.4749		0	3	112	77	43	235	1
May-79	0.4416		0	3	90	69	41	203	8
Jun-79	0.4361		0	2	74	59	34	169	21
Jul-79	0.4788		0	2	62	40	25	129	10
Aug-79	0.4719		0	1	45	31	18	95	6
Sep-79	0.4825		0	3	108	71	41	223	10
Oct-79	0.5804		0	2	85	35	24	146	30
Nov-79	0.1294		0	1	94	50	574	719	77
Dec-79	0.1451		0	1	45	23	238	307	19
Jan-80	0.2058	0.2474	0	2	108	65	345	520	9
Feb-80	0.1883		0	10	272	139	1010	1431	7
Mar-80	0.0416		0	0	41	3	929	973	7
Apr-80	0.0576		0	0	51	13	811	875	23
May-80	0.0350		0	0	4	0	109	113	19
Jun-80	0.5314		0	0	8	4	3	15	13
Jul-80	0.1003		0	11	832	305	7057	8205	1
Aug-80	0.4714		0	5	197	95	119	416	9
Sep-80	0.1236		0	3	362	142	2390	2897	12
Oct-80	0.5949		0	6	275	118	62	461	17
Nov-80	0.4109		0	17	677	292	652	1638	11
Dec-80	0.2083		0	5	251	105	833	1194	11
Jan-81	0.3148	0.4720	0	6	293	142	483	924	4
Feb-81	0.4382		0	3	111	50	88	252	2
Mar-81	0.5772		0	2	77	34	20	133	9
Apr-81	0.4849		0	2	73	47	28	150	3
May-81	0.4851		0	1	37	24	14	76	21
Jun-81	0.5046		0	4	158	95	55	312	2
Jul-81	0.5060		0	2	66	40	22	130	12
Aug-81	0.5132		0	2	69	41	22	134	13
Sep-81	0.4931		0	5	192	123	68	398	6
Oct-81	0.4631		0	1	33	24	13	71	9
Nov-81	0.4534		0	2	66	49	28	145	24
Dec-81	0.4301		0	1	38	32	17	88	8
Jan-82	0.4383	0.4909	0	1	33	27	14	75	5

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Feb-82	0.4269		0	1	21	18	9	49	0
Mar-82	0.4428		0	1	24	19	10	54	5
Apr-82	0.5150		0	1	31	18	10	60	7
May-82	0.4395		0	1	30	24	13	68	13
Jun-82	0.4981		0	0	10	6	4	20	6
Jul-82	0.2459		0	24	928	534	2257	3743	2
Aug-82	0.4831		0	1	48	32	18	99	2
Sep-82	0.6138		0	1	32	12	7	52	4
Oct-82	0.6413		0	1	72	26	13	112	6
Nov-82	0.6266		0	1	49	18	10	78	15
Dec-82	0.5191		0	1	25	14	8	48	3
Jan-83	0.4924	0.4979	0	9	341	216	124	690	7
Feb-83	0.4537		0	4	143	108	59	314	12
Mar-83	0.4783		0	3	96	65	36	200	25
Apr-83	0.4528		0	3	115	87	48	253	3
May-83	0.4496		0	1	51	40	21	113	21
Jun-83	0.4388		0	1	37	30	16	84	16
Jul-83	0.4372		0	2	61	50	26	139	26
Aug-83	0.4736		0	7	260	184	96	547	96
Sep-83	0.6399		0	1	68	24	13	106	13
Oct-83	0.6367		0	2	90	32	17	141	17
Nov-83	0.5548		0	2	69	35	18	124	18
Dec-83	0.4674		0	1	38	28	14	81	14
Jan-84	0.4786	0.5639	0	2	61	42	22	127	22
Feb-84	0.5176		0	4	148	87	46	285	46
Mar-84	0.5099		0	1	44	27	14	86	14
Apr-84	0.5273		0	2	82	46	25	155	25
May-84	0.6095		0	7	319	127	69	522	69
Jun-84	0.6318		0	1	57	21	11	90	11
Jul-84	0.6155		0	1	29	11	6	47	6
Aug-84	0.6203		0	2	74	28	15	119	15
Sep-84	0.6348		0	1	56	20	11	88	11
Oct-84	0.6267		0	1	71	27	14	113	14
Nov-84	0.5277		0	1	27	15	8	51	8

	U-235	Yearly Avg.	U-233	U-234	U-235	U-236	U-238	TOTAL U	Pu-238
DATE	Wt Fraction	Wt Fraction	LHW(g)	LHW(g)	LHW(g)	LHW(g)	LHW(g)	LHW(g)	LHW(g)
Dec-84	0.4673		0	1	53	38	21	113	21
Jan-85	0.4642	0.5104	0	4	130	93	52	279	52
Feb-85	0.4655		0	1	50	36	20	107	20
Mar-85	0.5877		0	1	56	23	15	95	15
Apr-85	0.5982		0	1	45	17	12	75	12
May-85	0.4810		0	1	28	18	11	58	11
Jun-85	0.4922		0	1	41	26	15	83	15
Jul-85	0.5101		0	1	43	25	15	84	15
Aug-85	0.5048		0	2	77	46	27	152	27
Sep-85	0.5178		0	2	93	54	30	179	30
Oct-85	0.5085		0	1	25	15	8	49	8
Nov-85	0.5037		0	1	46	28	16	91	16
Dec-85	0.4903		0	1	31	20	11	63	11
Jan-86	0.4804	0.5404	0	2	81	55	30	168	30
Feb-86	0.4710		0	1	26	18	10	55	10
Mar-86	0.4765		0	3	99	68	37	207	37
Apr-86	0.5155		0	1	30	17	10	58	10
May-86	0.6531		0	1	55	17	11	84	11
Jun-86	0.5983		0	0	21	9	5	35	5
Jul-86	0.5200		0	1	48	27	16	92	16
Aug-86	0.5538		0	1	40	19	12	72	12
Sep-86	0.6347		0	2	84	27	19	132	19
Oct-86	0.5229		0	1	32	18	10	61	10
Nov-86	0.5315		0	0	16	9	5	30	5
Dec-86	0.5271		0	3	110	61	34	208	34
Jan-87	0.5466	0.5441	0	0	17	9	5	31	5
Feb-87	0.5508		0	0	21	11	6	38	6
Mar-87	0.5281		0	2	80	45	24	151	24
Apr-87	0.5610		0	3	130	62	36	231	36
May-87	0.5983		0	0	9	4	2	15	2
Jun-87	0.5551		0	3	147	74	40	264	40
Jul-87	0.5553		0	1	44	22	12	79	12
Aug-87	0.5373		0	2	83	45	24	154	24
Sep-87			0	0	0	0	0	0	0

DATE	U-235 Wt Fraction	Yearly Avg. Wt Fraction	U-233 LHW(g)	U-234 LHW(g)	U-235 LHW(g)	U-236 LHW(g)	U-238 LHW(g)	TOTAL U LHW(g)	Pu-238 LHW(g)
Oct-87	0.5295		0	2	68	37	21	128	21
Nov-87	0.5246		0	0	10	6	3	19	3
Dec-87	0.4982		0	0	12	8	4	24	4
Jan-88	0.4984	0.5443	0	1	22	14	7	44	7
Feb-88	0.5286		0	1	35	19	11	66	11
Mar-88	0.5325		0	1	39	21	12	73	12
Apr-88	0.5454		0	9	383	198	110	700	110
May-88	0.5477		0	1	50	26	14	91	14
Jun-88	0.5697		0	0	4	2	1	7	1
Jul-88	0.5447		0	4	159	82	46	291	46
Aug-88	0.5815		0	0	7	3	2	12	2
Sep-88	0.5449		0	2	82	42	24	150	24
Oct-88	0.5496		0	1	43	22	12	78	12
Nov-88			0	0	0	0	0	0	0
Dec-88			0	0	0	0	0	0	0
Jan-89		0.5420	0	0	0	0	0	0	0
Feb-89	0.5697		0	0	4	2	1	7	1
Mar-89	0.5276		0	0	9	5	3	17	3
Apr-89	0.5450		0	12	497	257	143	909	143
May-89	0.5504		0	1	53	27	15	96	15
Jun-89	0.5697		0	0	4	2	1	7	1
Jul-89	0.4989		0	0	1	1	0	2	0
Aug-89	0.5298		0	53	2164	1187	667	4071	667
Sep-89	0.5398		0	0	13	7	4	24	4
Oct-89	0.5415		0	1	44	23	13	81	13
Nov-89	0.5456		0	2	104	54	30	190	30
Dec-89	0.5443		0	2	89	46	26	163	26
Jan-90	0.5436	0.5468	0	0	6	3	2	11	2
Feb-90	0.5466		0	1	51	26	15	93	15
Mar-90			0	0	0	0	0	0	0
Apr-90			0	0	0	0	0	0	0
May-90			0	0	0	0	0	0	0
Jun-90			0	0	0	0	0	0	0
Jul-90	0.5444		0	4	160	83	46	293	46

	<u>U-235</u>	<u>Yearly Avg.</u>	<u>U-233</u>	<u>U-234</u>	<u>U-235</u>	<u>U-236</u>	<u>U-238</u>	<u>TOTAL U</u>	<u>Pu-238</u>
<u>DATE</u>	<u>Wt Fraction</u>	<u>Wt Fraction</u>	<u>LHW(g)</u>	<u>LHW(g)</u>	<u>LHW(g)</u>	<u>LHW(g)</u>	<u>LHW(g)</u>	<u>LHW(g)</u>	<u>LHW(g)</u>
Aug-90	0.5449		0	5	205	106	59	375	59
Sep-90	0.5441		0	7	274	142	79	502	79
Oct-90	0.5582		0	0	14	7	4	25	4
Nov-90	0.5474		0	2	95	49	27	173	27
Dec-90	0.5448		0	5	229	119	68	419	68
Jan-91	0.5815	0.5485	0	0	7	3	2	12	2
Feb-91	0.5461		0	7	315	163	90	575	90
Mar-91	0.5449		0	6	246	127	71	450	71
Apr-91	0.5451		0	8	327	169	94	598	94
May-91	0.5446		0	7	295	153	85	540	85
Jun-91	0.5459		0	9	397	205	114	725	114
Jul-91	0.5457		0	9	364	188	104	665	104
Aug-91	0.5452		0	10	420	217	121	768	121
Sep-91	0.5459		0	1	46	24	13	84	13
Oct-91	0.5466		0	1	51	26	15	93	15
Nov-91	0.5426		0	2	92	48	27	169	27
Dec-91	0.5484		0	1	22	11	6	40	6
Jan-92	0.5443	0.5439	0	2	83	43	24	152	24
Feb-92	0.5430		0	2	67	35	19	123	19
Mar-92	0.5340		0	1	30	16	9	56	9
Apr-92			0	0	0	0	0	0	0
May-92	0.5418		0	1	25	13	7	46	7
Jun-92	0.5538		0	0	15	8	4	27	4
Jul-92	0.5424		0	1	37	19	11	68	11
Aug-92	0.5476		0	2	78	40	22	142	22
Sep-92	0.5483		0	1	33	17	9	60	9
Oct-92	0.5422		0	1	31	16	9	57	9
Nov-92			0	0	0	0	0	0	0
Dec-92	0.5418		0	1	25	13	7	46	7
	AVG. U-235								
	WT FRACTION								
	0.5619								

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