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Per ECN #3902

West Valley Demonstration Project

OPERATIONAL SAFETY REQUIREMENTS

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RECORD OF REVISION

PROCEDURE

If there are changes to the procedure, the revision number increases by one. These changes are indicated in the left margin of the body by an arrow (>) at the beginning of the paragraph that contains a change.

Example:

> The arrow in the margin indicates a change.

Rev. No.	Description of Changes	Revision On Page(s)	Dated
0	Original Issue	All	
1	Dated 5/20/88	All	
1	Engineering Release 1430	N/A	8/88
2	Per ECN 3353	Page 4	1/90
3	Complete Revision Per ECN 3902	All	04/24/92

RECORD OF REVISION (CONTINUATION SHEET)

Rev. No.	Description of Changes	Revision On Page(s)	Dated

OPERATIONAL SAFETY REQUIREMENT OSR/GP-1

TITLE: WVDP Airborne Radioactive Release Limits

CRITERIA: 1. Release of airborne radioactive effluents shall not exceed limits established by DOE orders.

UNACCEPTABLE EVENTS: 1. Releases of airborne radioactivity exceeding DOE limits.

REPORTING REQUIREMENTS: For Operational Safety Requirement (OSR) violations, WV-987 "Initial Investigation, Oral Reporting, and Written Critique of Occurrences at WVNS" shall be followed.

Operational Safety Requirement OSR/GP-1 Page

IMPLEMENTING PROCEDURES:

EM-11
EM-101
SOP 15-11
SOP 15-48
SOP 50-35
SOP 70-30
SOP 80-5
SOP 80-6

> OPERATIONAL SAFETY REQUIREMENT

WVDP AIRBORNE RADIOACTIVITY RELEASE LIMITS

APPLICABILITY

This OSR applies to all airborne radioactive emissions from WVDP permitted process and ventilation stacks.

OBJECTIVE

This specification ensures that the off-site doses from airborne radioactive releases from WVDP operations are less than the guideline values stipulated by DOE Order 5400.5, and 40 CFR 61, for individuals in uncontrolled (off-site) areas.

SPECIFICATION

SAFETY LIMIT

OFF-SITE RADIATION DOSE TO THE MAXIMALLY EXPOSED INDIVIDUAL BY THE AIRBORNE PATHWAY SHALL BE LESS THAN 10 MREM/YEAR EFFECTIVE DOSE EQUIVALENT.

1. LIMITING CONDITIONS FOR OPERATION

   A. THE TOTAL PARTICULATE RADIOACTIVITY RELEASE RATE FROM THE WVDP MAIN PLANT STACK SHALL NOT EXCEED 18 NANOCURIES/SECOND FOR LONG-LIVED GROSS BETA ACTIVITY AND 0.18 NANOCURIES/SECOND FOR LONG-LIVED GROSS ALPHA ACTIVITY AVERAGED OVER A CALENDAR QUARTER.

   B. THE TOTAL PARTICULATE RADIOACTIVITY RELEASE FROM EACH OF THE OTHER STACKS AND ANY FUTURE VENTS OR STACKS FOR WHICH MONITORING IS OR WILL BE REQUIRED (UP TO A TOTAL OF NINE STACKS), SHALL NOT EXCEED 3 NANOCURIES/SECOND/STACK FOR LONG-LIVED GROSS BETA ACTIVITY AND 0.03 NANOCURIES/SECOND/STACK FOR LONG-LIVED GROSS ALPHA ACTIVITY AVERAGED OVER A CALENDAR QUARTER.

2. SURVEILLANCE REQUIREMENT

   A. THE TOTAL PARTICULATE RADIOACTIVITY RELEASED FROM THE WVDP MAIN PLANT STACK SHALL BE MEASURED TO ENSURE THAT THE AVERAGE AIRBORNE

RADIOACTIVITY RELEASED DOES NOT EXCEED 47 MILLICURIES GROSS BETA ACTIVITY OR 0.47 MILLICURIE GROSS ALPHA ACTIVITY IN ANY ONE MONTH.

c. THE TOTAL PARTICULATE RADIOACTIVITY RELEASED FROM ALL OTHER STACKS FOR WHICH MONITORING IS REQUIRED SHALL BE MEASURED TO ENSURE THAT THE AVERAGE AIRBORNE RADIOACTIVITY RELEASED DOES NOT EXCEED 7.8 MILLICURIES/STACK GROSS BETA ACTIVITY OR 0.078 MILLICURE/STACK GROSS ALPHA ACTIVITY IN ANY ONE MONTH.

3. RECOVERY

IF THE RELEASE RATES SPECIFIED IN THE SURVEILLANCE REQUIREMENT ARE EXCEEDED, OPERATIONS SHALL BE CURTAILED AND CONDITIONS EVALUATED AND CORRECTED TO ASSURE THAT THE QUARTERLY LIMITS CAN BE MET BEFORE FURTHER OPERATIONS ARE PERMITTED.

BASIS

Per DOE Order 5400.5 and 40 CFR 61 Subpart H, the committed effective dose equivalent (EDE) from all stack effluents is limited to 10 mrem/year to any off-site resident, with an administrative surveillance level set at 1/12 of 10 percent of this limit per month for each stack or vent requiring monitoring. The straight line gaussian plume dispersion model, the terrestrial food-chain pathway models in NRC's Regulatory Guide 1.109, and external and internal dose factors (using the ICRP's organ weighted risk model), are incorporated in the computer model required by 40 CFR 61. This model forms the calculational basis for the radionuclide release limits in the Limiting Conditions for Operation (LCO) and the Surveillance Requirement (SR) of this OSR.

Annual average measurements of stack effluents show that the concentration of long-lived gross beta activity is typically on the order of 100 times the long-lived gross alpha component. Measured effluent ratios of Sr-90 to Cs-137 are approximately 1:1; effluent ratios of Pu-239 to Am-241 are approximately 1:3. Using these data, gross beta activity is conservatively assumed to be 50 percent Sr-90 plus 50 percent Cs-137, and gross alpha activity is assumed to be 25 percent Pu-239 and 75 percent Am-241. The ventilation flow rates are not factors in the computer model.

The four radionuclides in the above ratios were input to the EPA-approved air dispersion and dose assessment code AIRDOS-PC (Version 3.0, 1990). One computer run was performed for the main plant stack using wind data collected during 1989 at the 60 meter elevation of the on-site meteorological tower.

Another run was performed for all other stacks (assuming a 10 meter release height) using wind data collected at an elevation of 10 meters.

As determined from the AIRDOS-PC predictions and a survey of nearby residences, the maximally exposed off-site individual (for both elevated and ground-level releases) lives approximately 1900 meters NNW from the main plant stack.

The results from the computer runs were used to scale the radionuclide release rates so that the EDE to the maximally exposed resident from any stack or vent that requires monitoring would not exceed 10 percent of the limit (i.e., 1 mrem/year) if the LCOs were met. If, in the future, more than ten stacks (including the main plant stack) require monitoring, this limit on each stack will be revised to accommodate the additional stacks.

The administrative level of 1/12 mrem/month from any monitored stack or vent was obtained by reducing the 10 mrem/yr limit by a factor of 10 and dividing by 12 months. To obtain the monthly limits in SR Parts A and B, the release rate limits in LCO Parts A and B, respectively, were multiplied by the number of seconds in 30 days. Procedurally, action is required to investigate and report to management release levels at or above 75 percent of OSF limits (EM-11). In addition, monthly tracking of airborne releases is provided to site management.

ATTACHMENTS

None

REFERENCES

DOE/EP-0096, A Guide for Effluent Radiological Measurements at DOE Installations, 7/83.

DOE/EP-0023, A Guide for Environmental Radiological Surveillance at U.S. Department of Energy Installations, 7/81.

DOE Order 5400.5, Radiation Protection of the Public and the Environment, 2/90.

40 CFR 61, Subpart H, National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities.

DOE-ID Order 5400.1 General Environmental Protection Program, 8/12/91

West Valley Demonstration Project

Doc. Number OSR/IRTS-12

Revision Number 0

Revision Date 04/29/92

Engineering Release #2333

TITLE: SUPERNATANT TREATMENT SYSTEM FEED REQUIREMENTS

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DOE Approved: DW:92:0546
Dated: April 17, 1992

RECORD OF REVISION

PROCEDURE

If there are changes to the procedure, the revision number increases by one. These changes are indicated in the left margin of the body by an arrow (>) at the beginning of the paragraph that contains a change.

Example:

> The arrow in the margin indicates a change

Rev. No.	Description of Changes	Revision On Page (s)	Dated
0	Original Issue	All	04/29/83

RECORD OF REVISION (CONTINUATION SHEET)

Rev. No.	Description of Changes	Revision On Page(s)	Dated

OPERATIONAL SAFETY REQUIREMENT IRTS-12

TITLE: Supernatant Treatment System (STS) Feed Requirements

CRITERIA:

1. The concentration of the STS liquid feed from Tank 8D-2, sludge wash solution, shall be less than 0.25 μCi ALPHA Pu/mL during the first WASH CYCLE and 0.1 μCi ALPHA Pu/mL for each of the remaining 3 WASH CYCLES.

2. Less than 264,000 gals. (≈1,000,000 L) of undiluted sludge wash solution from Tank 8D-2 during the first WASH CYCLE shall be processed through any ion exchange column charge loaded with Ti-treated zeolite between its Ti-treated zeolite discharges.

3. Less than 792,000 gals. (≈3,000,000 L) of undiluted sludge wash solution from Tank 8D-2 in the last 3 WASH CYCLES shall be processed through any ion exchange column charge loaded with Ti-treated zeolite between its Ti-treated zeolite discharges; however, if a Ti-treated zeolite charge is used in the first WASH CYCLE and continues to be used in subsequent WASH CYCLES then 2.5 times the volume processed through the charge from the first WASH CYCLE must be included as part of the volume limit for the remaining 3 WASH CYCLES.

UNACCEPTABLE EVENTS:

1. Processing undiluted sludge wash solution with a concentration greater than 0.25 μCi ALPHA Pu/mL for the first WASH CYCLE or 0.1 μCi ALPHA Pu/mL for the remaining 3 WASH CYCLES through Ti-treated zeolite.

2. Processing greater than 264,000 gals. (≈1,000,000 L) of undiluted sludge wash solution during the first WASH CYCLE through any ion exchange column charge loaded with Ti-treated zeolite without the Ti-treated zeolite being discharged.

3. Processing greater than 792,000 gals. (≈3,000,000 L) of undiluted sludge wash solution in the last 3 WASH CYCLES through any ion exchange column charge loaded

with Ti-treated zeolite without the Ti-treated zeolite being discharged; however, if a Ti-treated zeolite charge is used in the first WASH CYCLE and continues to be used in subsequent WASH CYCLES then 2.5 times the volume processed through the charge from the first WASH CYCLE must be included as part of the volume limit for the remaining 3 WASH CYCLES.

REPORTING REQUIREMENTS: For Operational Safety Requirement (OSR) violations, WV-987 "Occurrence Investigation and Reporting" shall be followed.

Operational Safety Requirement (OSR)/IRTS-12 Page No.

IMPLEMENTING PROCEDURES: The following procedures are listed for information only, thus changes to these procedures do not require an Unreviewed Safety Question Determination (USQD) in accordance with DOE 5480.21 "Unreviewed Safety Questions" Chapter II, Section 3.a.

SOP 00-13

OPERATIONAL SAFETY REQUIREMENT

SUPERNATANT TREATMENT SYSTEM FEED REQUIREMENTS

APPLICABILITY

This Operational Safety Requirement (OSR) applies to the requirements of the liquid feed (sludge wash solution) for the Supernatant Treatment System (STS) while processing through ion exchange columns containing Ti-treated zeolite.

OBJECTIVES

1. To assure that the concentration of undiluted sludge wash solution from Tank 8D-2 to the STS is less than 0.25 μCi ALPHA Pu/mL during the first WASH CYCLE and 0.1 μCi ALPHA Pu/mL for each of the 3 remaining WASH CYCLES while processing through any ion exchange column loaded with Ti-treated zeolite.

2. To assure that less than 264,000 gals. (≈1,000,000 L) of undiluted sludge wash solution from Tank 8D-2 during the first WASH CYCLE shall be processed through any ion exchange column charge loaded with Ti-treated zeolite without the Ti-treated zeolite being discharged.

3. To assure that less than 792,000 gals. (≈3,000,000 L) of undiluted sludge wash solution from Tank 8D-2 in the last 3 WASH CYCLES shall be processed through any ion exchange column charge loaded with Ti-treated zeolite without the Ti-treated zeolite being discharged; however, if a Ti-treated zeolite charge is used in the first WASH CYCLE and continues to be used in subsequent WASH CYCLES then 2.5 times the volume processed through the charge from the first WASH CYCLE must be included as part of the volume limit for the remaining 3 WASH CYCLES.

VIOLATION CRITERIA

Violation of this OSR occurs solely as a result of failure to take the required ACTIONS within the required time limit following:

(1) failure to meet a LIMITING CONDITION FOR OPERATION (LCO), or

(2) failure to meet a SURVEILLANCE REQUIREMENT (based on performance of SURVEILLANCE TESTS), or

(3) failure to perform a SURVEILLANCE TEST within 24 hours or the SURVEILLANCE INTERVAL, whichever is less, when it is discovered that the delinquent SURVEILLANCE TEST was not performed within the applicable SURVEILLANCE INTERVAL plus a 25% extension.

APPLICABILITY OF LIMITING CONDITION FOR OPERATION

- Compliance with a LCO contained in the SPECIFICATIONS is required during the conditions specified therein except that upon failure to meet the LCO, the associated ACTION shall be met. Completing the associated ACTION within the specified time interval is considered compliance with the SPECIFICATION.

- The time limits of the ACTION associated with a LCO are applicable from the time it is identified that the LCO is not satisfied.

- Noncompliance with a SPECIFICATION shall exist when the requirements of the LCO and the associated ACTION are not met within the specified time intervals. If the LCO is restored before expiration of the specified time intervals, completion of the ACTION is not required. Thus, not meeting the requirements of a LCO, by itself, is not considered noncompliance with a SPECIFICATION.

APPLICABILITY OF SURVEILLANCE REQUIREMENTS

- SURVEILLANCE REQUIREMENTS shall be met during the conditions specified for an individual LCO unless otherwise stated in an individual SURVEILLANCE REQUIREMENT.

- Each SURVEILLANCE TEST shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the SURVEILLANCE INTERVAL.

- Failure to meet a SURVEILLANCE REQUIREMENT within the applicable SURVEILLANCE INTERVAL plus 25% extension shall constitute noncompliance with the associated LCO if, upon discovery, the associated SURVEILLANCE TEST is not performed within the permitted DELAY PERIOD (24 hours or the SURVEILLANCE INTERVAL, whichever is less). If the SURVEILLANCE TEST is not performed within the DELAY PERIOD, the associated LCO must be IMMEDIATELY declared not met and the associated ACTION taken. When the SURVEILLANCE TEST is performed within the DELAY PERIOD and establishes that the associated LCO is not met, the LCO must be IMMEDIATELY declared not met and the associated ACTION taken.

- If the result of any SURVEILLANCE TEST executed to comply with a SURVEILLANCE REQUIREMENT is unsatisfactory, thus establishing that the associated LCO is not met, then the time limits of the associated ACTION are applicable from the time it is identified that the LCO is not met.

- If the results of all required SURVEILLANCE TESTS executed to comply with SURVEILLANCE REQUIREMENTS are satisfactory, then the associated LCO is met unless otherwise determined.

- SURVEILLANCE REQUIREMENTS do not have to be performed on INOPERABLE equipment.

DEFINITIONS

Defined terms appear in capitalized type throughout this OSR.

ACTION - ACTION shall be that part of a SPECIFICATION which prescribes remedial measures required under designated conditions.

ALPHA Pu - ALPHA Pu consists of Pu-238, Pu-239, Pu-240, and Pu-242.

DELAY PERIOD - Twenty four hours or the SURVEILLANCE INTERVAL, whichever is less.

IMMEDIATE/IMMEDIATELY -

As soon as practicable, yet without delay due to other distractions.

INOPERABLE -

A system, subsystem, train, component or device shall be INOPERABLE when it is not capable of performing its specified function(s), or when any necessary attendant instrumentation, controls, power systems or other auxiliary equipment that are required for the system, subsystem, train, component or device to perform its function(s) are not capable of performing their related support function(s).

LIMITING CONDITION FOR OPERATION-

LIMITING CONDITION FOR OPERATION shall be that part of a SPECIFICATION which prescribes the minimum limits for safe operation.

SPECIFICATION- SPECIFICATION shall be that part of an OSR which prescribes the LCO, ACTION and SURVEILLANCE REQUIREMENT(S).

SURVEILLANCE REQUIREMENTS -

SURVEILLANCE REQUIREMENTS shall be that part of a SPECIFICATION which prescribes activities to be conducted within a specified time interval (SURVEILLANCE INTERVAL) in order to establish compliance with the associated LCO.

SURVEILLANCE INTERVAL -

SURVEILLANCE INTERVAL shall be that time interval in which the event, action, activity, etc., shall be executed. Specific SURVEILLANCE INTERVALS are defined as follows:

PRIOR	Within 72 hours before initiation of an event
DAY	24 hours
DAILY	At least once per 24 hours
WEEKLY	At least once per 7 days

SURVEILLANCE TESTS - SURVEILLANCE TESTS shall be those activities required to be performed to satisfy a SURVEILLANCE REQUIREMENT.

WASH CYCLE - WASH CYCLE is defined as the addition of approximately 264,000 gals. (≈1,000,000 L) of dilute caustic solution to Tank 8D-2 and its subsequent processing through the STS.

SPECIFICATIONS

1. SUPERNATANT TREATMENT SYSTEM FEED

1.1 LIMITING CONDITION FOR OPERATION

The concentration of undiluted sludge wash solution from Tank 8D-2 to the STS shall be less than 0.25 μCi ALPHA Pu/mL during the first WASH CYCLE and 0 μCi ALPHA Pu/mL for each of the 3 remaining WASH CYCLES while processing through any ion exchange column loaded with Ti-treated zeolite.

ACTION

A. If the concentration of the undiluted sludge wash solution from Tank 8D-2 to the STS exceeds 0.25 μCi ALPHA Pu/mL during the first WASH CYCLE or 0.1 μCi ALPHA Pu/mL for each of the 3 remaining WASH CYCLES, then processing through Ti-treated zeolite shall be discontinued within 8 hours. The Ti-treated zeolite shall be discharged to Tank 8D-1 as soon as practicable.

and

B. Sufficient sodium hydroxide (NaOH) shall be added to Tank 8D-2 to suppress the plutonium solubility such that the LCO is satisfied before resumption of processing liquid STS feed through Ti-treated zeolite.

SURVEILLANCE REQUIREMENTS

A. PRIOR to initiation of STS processing and WEEKLY while processing, an undiluted sludge wash solution feed sample shall be taken.

B. The sample shall be analyzed to determine the concentration of ALPHA Pu PRIOR to initiation of STS processing and within 4 DAYS from when the sample was taken while processing.

1.2 LIMITING CONDITION FOR OPERATION (During WASH CYCLE 1)

Less than 264,000 gals. (≈1,000,000 L) of undiluted sludge wash solution from Tank 8D-2 during the first WASH CYCLE shall be processed through any ion exchange column charge loaded with Ti-treated zeolite between its Ti-treated zeolite discharges. If more than one ion exchange column charge loaded with Ti-treated zeolite is used during the first WASH CYCLE, then the volume processed through the existing ion exchange column charge loaded with Ti-treated zeolite must be included as part of the volume limit for the additional ion exchange column charges loaded with Ti-treated zeolite.

ACTION

If the volume limit has been exceeded for an ion exchange column charge loaded with Ti-treated zeolite, processing of sludge wash solution shall be discontinued within 8 hours and the Ti-treated zeolite shall be discharged to Tank 8D-[illegible] as soon as practicable.

SURVEILLANCE REQUIREMENT

For each ion exchange column charge loaded with Ti-treated zeolite, the cumulative undiluted sludge wash solution volume shall be determined and documented DAILY while processing sludge wash solution.

1.3 LIMITING CONDITION FOR OPERATION (During WASH CYCLES 2, 3 & 4)

Less than 792,000 gals. (≈3,000,000 L) of undiluted sludge wash solution from Tank 8D-2 in the last 3 WASH CYCLES shall be processed through any ion exchange column charge loaded with Ti-treated zeolite between its Ti-treated

zeolite discharges; however, if a Ti-treated zeolite charge is used in the first WASH CYCLE and continues to be used in subsequent WASH CYCLES then 2.5 times the volume processed through the charge from the first WASH CYCLE must be included as part of the volume limit for the remaining 3 WASH CYCLES. If more than one ion exchange column charge loaded with Ti-treated zeolite is used during the 3 remaining WASH CYCLES, then the volume processed through the existing ion exchange column charge loaded with Ti-treated zeolite must be included as part of the volume limit for the additional ion exchange column charges loaded with Ti-treated zeolite.

ACTION

If the volume limit has been exceeded for an ion exchange column charge loaded with Ti-treated zeolite, processing of sludge wash solution shall be discontinued within 8 hours and the Ti-treated zeolite shall be discharged to Tank 8D-1 as soon as practicable.

SURVEILLANCE REQUIREMENT

For each ion exchange column charge loaded with Ti-treated zeolite, the cumulative undiluted sludge wash solution volume shall be determined and documented DAILY while processing sludge wash solution; however, if a Ti-treated zeolite charge is used in the first WASH CYCLE and continues to be used in subsequent WASH CYCLES then 2.5 times the volume processed through the charge from the first WASH CYCLE must be included as part of the volume limit for the remaining 3 WASH CYCLES .

BASES

Based upon documented criticality safety evaluations, there is no potential for criticality during STS operations. A fault tree analysis analyzed the administrative barriers provided by this OSR and demonstrated that each barrier has an annual probability of failure of less than 1E-06 (Prowse, 1992). To provide an operational envelope for purposes of process control, the maximum concentration of ALPHA Pu is 0.25 μCi/mL. This value results in a maximum of 952 g of fissile Pu in

solution in Tank 8D-2. This is a safe mass, based upon the criticality safety evaluations performed (Caldwell, 1990; Yuan 1991).

The allowable safe fissile material concentration (0.25 μCi ALPHA Pu/mL during the first WASH CYCLE and 0.1 μCi ALPHA Pu/mL for each of the 3 remaining WASH CYCLES) for the entire sludge mobilization and wash system (SMWS) process was established based on the vessel or component having the minimum critical concentration (i.e., the most restrictive vessel). It was determined that approximately 1.0 kg of ^{239}Pu loaded onto Ti-treated zeolite within an ion exchange column in a sphere, radius 22.5 cm, would result in an effective multiplication factor (k_{eff}) + 2σ = 0.95 (Caldwell, 1990 and Yuan, 1991). The ion exchange column is the most restrictive vessel.

This evaluation was made using the KENO-V code and various cross section data sets compiled at the Argonne National Laboratory's IBM mainframe computer systems (Yuan, 1991) and independently verified using TWODANT compiled at the Los Alamos National Laboratory's Cray mainframe computer system (Caldwell, 1990). All differences between calculational model and the actual configuration are conservative (i.e., result in an overestimate of k_{eff}).

Based on currently available Tank 8D-2 inventory data, the initial concentration for alpha plutonium is expected to be less than 0.03 μCi/ml. This results in a maximum of 114 g of fissile plutonium in solution in tank 8D-2 for each WASH CYCLE which is a safe mass per DOE ORDER 5480.5. Thus, there is no potential for a nuclear criticality during the entire SMWS operation under normal and abnormal operating conditions. The soluble fissile Pu mass is less than 952 g at 0.25 μCi ALPHA Pu/mL during the first WASH CYCLE and less than 845 g at 0.1 μCi ALPHA Pu/mL for the entire 3 remaining WASH CYCLES as determined by laboratory analysis on several Tank 8D-2 sludge wash solution samples.

The concentration of ALPHA Pu is determined WEEKLY from a Tank 8D-2 liquid sample of sludge wash solution prior to the transfer to ion exchange columns and dilution. Gradual changes in ALPHA Pu content can then be tracked and active caustic additions made as required to reduce the ALPHA Pu concentration. In addition, inadvertent

additions of low pH solutions to Tank 8D-2 in violation of the limits in OSR/IRTS-1, would be detected in a timely fashion. The 8 hour time interval for completion of the ACTION allows the STS to be placed into a safe stand-by configuration in a methodical fashion. This time duration would have negligible impact on the total mass of fissile plutonium which could be loaded onto the Ti-treated zeolite.

The surveillance interval of DAILY for the volume LCO allows for approximately 10,000 gallons (3,800 L) of liquid to be processed between readings. This verifies that the flow rate through the STS is within expected ranges and allows for intervention in a timely fashion in the event of equipment malfunction. The resultant maximum mass of fissile plutonium processed per day would be less than 30 g or 3% of the safe mass limit for the STS. The 8 hour time interval for completion of the ACTION allows the STS to be placed into a safe stand-by configuration in a methodical fashion. This time duration would have negligible impact on the total mass of fissile plutonium which could be loaded onto the Ti-treated zeolite.

ATTACHMENTS

None

REFERENCES

Caldwell, 1990 J. T. Caldwell. October 1990 (FB:91:0129). "Criticality Safety Analysis for WVNS Sludge Tanks and Related Processing Equipment."

DOE Order 5480.5 September 1986. "Safety of Nuclear Facilities."

Prowse, 1992 J. J. Prowse. March 1992 (FB:92:0061). "Fault Tree for TR-IRTS-12."

WV-937, Rev. 8. February 1992. "Occurrence Investigation and Reporting."

Yuan, 1991 Y. C. Yuan. October 1991 (FB:91:0012). "Criticality Evaluation: Sludge Wash and Mobilization System - Zeolite Column."