

RECORDS MANAGEMENT DEPARTMENT

50-201
POOD-32

TO: C. GLENN
FROM: L.E. KEARNEY

NRC HEADQUARTERS

DATE: 06/12/2002
PAGE: 1

TRANSMITTAL NUM: 000018347

CONTROLLED COPY TRANSMITTAL / RECEIPT ACKNOWLEDGEMENT

Attached is a CONTROLLED COPY of the following document(s) and its applicable index. Add or replace your existing copy with the attached.

CONTROLLED COPY#	PROC ID	REV#	FC#	ISSUE DATE	PROCEDURE TITLE
006	WVDP-218	11		06/12/2002	PREFACE FOR PROCESS SAFETY REQUIREMENTS
006	PSR-6	2		06/12/2002	FISSILE MATERIAL PACKAGING AND STORAGE REQUIREMENTS
006	PSR-18	0		06/12/2002	COLLECTION, PROCESSING, AND STORGE REQUIREMENTS FOR FISSILE-BEARING DEBRIS

Copies made from a controlled document MUST be marked UNCONTROLLED before distribution. Signature below signifies all previous revisions, if applicable, have been destroyed or marked superseded.

I have complied with the above instructions:

Signature (BLACK INDELIBLE INK ONLY)

Date

RETURN BY: 06/26/2002

FOR YOUR CONVENIENCE, A SELF-ADDRESSED, STAMPED ENVELOPE HAS BEEN INCLUDED.

A001

DATE: 06/12/2002
TIME: 08:04

PROCESS SAFETY REQUIREMENTS
WVDP-218
INDEX

PAGE: 1

PROC_ID	REV	EC	PROCEDURE TITLE	STATUS	ISSUE DATE	COGNIZANT MANAGER
WVDP-218	11		PREFACE FOR PROCESS SAFETY REQUIREMENTS	ACTIVE	06/12/2002	CHILSON,L.J.
PSR-1	1		REQUIREMENTS FOR LIQUID TRANSFERS OF FISSILE MATERIAL	ACTIVE	03/15/1996	POTTS,W.J.
PSR-1	1	1	REQUIREMENTS FOR LIQUID TRANSFERS OF FISSILE MATERIAL	ACTIVE	04/03/1997	POTTS,W.J.
PSR-2	2		MAIN PLANT STACK AIRBORNE EFFLUENT SAMPLING SYSTEM REQUIREMENTS	ACTIVE	09/12/2000	POTTS,W.J.
PSR-3	2		BUILDING AND VESSEL VENTILATION SYSTEM REQUIREMENTS	ACTIVE	01/03/2001	POTTS,W.J.
PSR-3	2	1	BUILDING AND VESSEL VENTILATION SYSTEM REQUIREMENTS	ACTIVE	06/29/2001	POTTS,W.J.
PSR-4	3		SPENT FUEL CASK STAGING AND HANDLING REQUIREMENTS	ACTIVE	05/30/2002	POTTS,W.J.
PSR-5	2		STANDBY AND BACKUP POWER REQUIREMENTS	ACTIVE	11/05/1999	POTTS,W.J.
PSR-5	2	1	STANDBY AND BACKUP POWER REQUIREMENTS	ACTIVE	11/23/1999	POTTS,W.J.
PSR-5	2	2	STANDBY AND BACKUP POWER REQUIREMENTS	ACTIVE	02/17/2000	POTTS,W.J.
PSR-5	2	3	STANDBY AND BACKUP POWER REQUIREMENTS	ACTIVE	06/29/2001	POTTS,W.J.
PSR-6	2		FISSILE MATERIAL PACKAGING AND STORAGE REQUIREMENTS	ACTIVE	06/12/2002	KOMASARA,S.M.
PSR-7	2		EMERGENCY PAGING SYSTEM AND SHELTERING ALARM REQUIREMENTS	ACTIVE	10/13/2000	POTTS,W.J.
PSR-8	3		FIRE PROTECTION SYSTEMS REQUIREMENTS	ACTIVE	07/20/2001	POTTS,W.J.
PSR-10	3		HIGH-LEVEL WASTE TANK LEAK DETECTION AND RECOVERY REQUIREMENTS	ACTIVE	02/12/2001	MEESS,D.C.
PSR-11	1		HIGH-LEVEL WASTE TANK SPARE CAPACITY REQUIREMENTS	ACTIVE	03/15/1996	MEESS,D.C.
PSR-11	1	1	HIGH-LEVEL WASTE TANK SPARE CAPACITY REQUIREMENTS	ACTIVE	03/26/1997	MEESS,D.C.
PSR-12	3		VITRIFICATION FACILITY VENTILATION AND OFF-GAS SYSTEMS REQUIREMENTS	ACTIVE	02/21/1997	KOCIALSKI,T.F.
PSR-12	3	1	VITRIFICATION FACILITY VENTILATION AND OFF-GAS SYSTEMS REQUIREMENTS	ACTIVE	11/03/1998	KOCIALSKI,T.F.
PSR-12	3	2	VITRIFICATION FACILITY VENTILATION AND OFF-GAS SYSTEMS REQUIREMENTS	ACTIVE	03/03/1999	KOCIALSKI,T.F.
PSR-12	3	3	VITRIFICATION FACILITY VENTILATION AND OFF-GAS SYSTEMS REQUIREMENTS	ACTIVE	05/20/1999	KOCIALSKI,T.F.
PSR-13	2		VITRIFICATION FACILITY STANDBY POWER REQUIREMENTS	ACTIVE	03/28/1996	KOCIALSKI,T.F.
PSR-13	2	1	VITRIFICATION FACILITY STANDBY POWER REQUIREMENTS	ACTIVE	05/24/1996	KOCIALSKI,T.F.
PSR-13	2	2	VITRIFICATION FACILITY STANDBY POWER REQUIREMENTS	ACTIVE	07/11/1996	KOCIALSKI,T.F.
PSR-15	3		NOX MONITORING INSTRUMENTATION REQUIREMENTS	ACTIVE	09/30/1998	KOCIALSKI,T.F.
PSR-15	3	1	NOX MONITORING INSTRUMENTATION REQUIREMENTS	ACTIVE	11/23/1999	KOCIALSKI,T.F.
PSR-16	6		ANHYDROUS AMMONIA MONITORING INSTRUMENTATION AND STORAGE REQUIREMENTS	ACTIVE	11/12/1998	KOCIALSKI,T.F.
PSR-16	6	1	ANHYDROUS AMMONIA MONITORING INSTRUMENTATION AND STORAGE REQUIREMENTS	ACTIVE	06/27/2000	KOCIALSKI,T.F.

DATE: 06/12/2002
TIME: 08:04

PROCESS SAFETY REQUIREMENTS
WVDP-218
INDEX

PAGE: 2

<u>PROC_ID</u>	<u>REV</u>	<u>EC</u>	<u>PROCEDURE TITLE</u>	<u>STATUS</u>	<u>ISSUE DATE</u>	<u>COGNIZANT MANAGER</u>
PSR-17	4		MINIMUM STAFFING LEVELS FOR SAFE FACILITY OPERATION	ACTIVE	09/24/1999	COVERT, B.C.
PSR-17	4	1	MINIMUM STAFFING LEVELS FOR SAFE FACILITY OPERATION	ACTIVE	05/11/2000	COVERT, B.C.
PSR-17	4	2	MINIMUM STAFFING LEVELS FOR SAFE FACILITY OPERATION	ACTIVE	10/13/2000	COVERT, B.C.
PSR-17	4	3	MINIMUM STAFFING LEVELS FOR SAFE FACILITY OPERATION	ACTIVE	10/26/2000	COVERT, B.C.
PSR-18	0		COLLECTION, PROCESSING, AND STORAGE REQUIREMENTS FOR FISSILE-BEARING DEBRIS	ACTIVE	06/12/2002	SCHNEIDER, K.R.

West Valley Demonstration Project

Doc. ID Number WVDP-218

Revision Number 11

Revision Date 06-12-2002

PROCESS SAFETY REQUIREMENTS

TITLE: **PREFACE FOR PROCESS SAFETY REQUIREMENTS**

APPROVED BY: *D. Westcott* 10/18/01
Manager Date
Environmental Programs & Regulatory Affairs

APPROVED BY: *J. G. ...* 10/19/01
Radiation & Safety Committee, Date
Chairman

AUTHORIZATION TO IMPLEMENT: *S. M. ...* 6/11/02
Manager Date
Site Services

AUTHORIZATION TO IMPLEMENT: *J. ...* 6/11/02
Manager Date
Site Closure Projects

AUTHORIZATION TO IMPLEMENT: *B. J. Valant* 6-11-02
Manager Date
High-Level Waste Projects



Westinghouse
A Member of Washington Group International, Inc.

West Valley Nuclear Services Co.
10282 Rock Springs Road
West Valley, NY 14171-9799

PREFACE FOR PROCESS SAFETY REQUIREMENTS

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
INTRODUCTION	3
REPORTING REQUIREMENTS	3
VIOLATION CRITERIA	3
APPLICABILITY OF LIMITING CONDITIONS FOR OPERATION	4
APPLICABILITY OF SURVEILLANCE REQUIREMENTS	4
DEFINITIONS	5
Table 1 - Approval Authorities for PROCESS SAFETY REQUIREMENTS	15
Table 2 - PSR IMPLEMENTING PROCEDURES	16

PROCESS SAFETY REQUIREMENTS

INTRODUCTION

PROCESS SAFETY REQUIREMENTS (PSRs) are those administrative controls imposed upon Project facilities and operations in the interest of health and safety of on-site personnel and facility operators.

PSRs define LIMITING CONDITIONS FOR OPERATION (LCOs), ACTIONS, SURVEILLANCE REQUIREMENTS (SRs), and the associated bases for systems and/or components under the direct control of the operator that meet the radiological criterion, nonradiological criterion, or the worker risk reduction criteria provided in WV-365, *Preparation of WVDP Safety Documents*. WV-365 also provides format and content guidance for the development of PSRs. Bases are not part of the PSR and are included for background information only. Bases may be modified without DOE approval as long as the intent of the PSR remains unchanged.

Table 1 indicates the PSR number, its title, the PSR Criterion implemented, and the approval authority for that specific PSR. The table also provides a cross reference between canceled Operational Safety Requirements (OSRs) or Technical Requirements (TRs) and the PSRs.

REPORTING REQUIREMENTS

WVDP-242, *Event Investigation and Reporting Manual*, establishes the reporting requirements for notifications of violation of a PSR and/or non-compliance with LCOs and SRs.

VIOLATION CRITERIA

Violation of a PSR occurs solely as a result of failure to take the required ACTION(S) (within the specified time frame) following:

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

- (2) failure to meet a SURVEILLANCE REQUIREMENT (SR), based upon the 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 CONDITIONS FOR OPERATION

- Compliance with an LCO contained in the SPECIFICATIONS is required during the conditions specified therein; however, systems or components may be removed from service for planned maintenance activities or for investigation or resolution of operational problems. Upon failure to meet the LCO (for any reason), 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 an LCO are applicable from the time it is identified that the LCO is not met.
- Non-compliance 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 an LCO, by itself, is not considered non-compliance 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.

- Two concurrent conditions constitute non-compliance with the associated LCO:
1) Failure to meet a SURVEILLANCE REQUIREMENT, based upon the performance of SURVEILLANCE TESTS, within the applicable SURVEILLANCE INTERVAL plus a 25% extension; and 2) subsequent failure to perform the associated SURVEILLANCE TEST within the permitted DELAY PERIOD (24 hours or the SURVEILLANCE INTERVAL, whichever is less).

If this failure to perform the associated SURVEILLANCE TEST within the permitted DELAY PERIOD occurs, non-compliance with the associated LCO must be IMMEDIATELY declared and the associated ACTION must be taken.

If the SURVEILLANCE TEST is performed within the DELAY PERIOD but establishes that the associated LCO has not been met, then, again, the LCO must be IMMEDIATELY declared not met and the associated ACTION taken.

- If the results 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 TESTS do not have to be performed on INOPERABLE equipment.

DEFINITIONS

Defined terms appear in capitalized type throughout the PSRs and are intended to accurately convey a meaningful interpretation of what is meant by the terms and to enhance uniform interpretation of the PSRs.

ACTION:

The part of a SPECIFICATION that prescribes remedial measures required under specified conditions.

| **AREA:**

| A distinct part of a building, such as a cell, operating aisle, or crane room,
| set aside for a specific function.

| **ARRAY:**

| Two or more drums in an AREA.

| **BACKUP POWER:**

| A reserve or alternative means of supplying mechanical power to operate a
| system or device in the event of a normal electrical power failure.

| **BELOW-GRADE CELL:**

| Any cell or area of the Main Plant having a floor elevation that is below the
| 100-foot elevation plant datum (EPD). This includes the General Purpose Cell
| (GPC), GPC Crane Room (GCR), GCR Extension (GCRX), Miniature Cell (MC), and
| GPC Operating Aisle (GOA).

| **CAMPAIGN:**

| Operations undertaken to achieve a processing goal.

| **COLLECTION COMPONENT:**

| A scoop, shovel, vacuum knockout container, or other device used for handling
| debris containing FISSILE MATERIAL.

| **COLLECTION CONTAINER:**

| A steel container having a maximum outer height that is not greater than 29.0
| inches (with the lid in place) and having a maximum inner diameter that is not
| greater than 18.5 inches.

| **DELAY PERIOD:**

| Twenty-four hours or the SURVEILLANCE INTERVAL, whichever is less, after
| discovery of a missed SURVEILLANCE TEST.

ERPG-1:

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing other than mild, transient adverse health effects or perceiving a clearly defined objectionable odor.

ERPG-2:

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protection actions.

ERPG-3:

The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing life-threatening health effects.

55-GALLON DRUM:

A cylindrical carbon-steel or stainless-steel container having a nominal capacity of 55 gallons; having a minimum inner diameter that is not less than 22 inches; and having a minimum outer height that is not less than 34 inches (with the lid in place).

FILTER BANK:

A single filter; or a set of filters with the same design particulate removal efficiency arranged in parallel.

FILTER MODULE:

A grouping of two or three HEPA filters in parallel. A Secondary Filter Sub-Unit consists of multiple FILTER MODULES.

FILTER TRAIN:

A set of FILTER BANKS arranged in series.

FIRE PROTECTION SYSTEM:

Any system designed to detect, extinguish, and limit the extent of fire damage or enhance life safety. This includes:

1. Automatic suppression systems, such as sprinkler systems, special extinguishing systems, explosion suppression, or other specialized extinguishing systems plus appropriate alarms. Adequate supply, storage and distribution systems are an essential element.
2. Automatic fire detection, occupant warning, manual fire alarms, and fire alarm reporting systems combined with properly equipped and adequately trained fire departments or brigades.
3. Fire barrier systems or physical separation for outdoor locations.
4. Other systems as approved by the OH/WVDP Director.

FISSILE MATERIAL STORAGE DRUM:

A sealed steel drum containing FISSILE MATERIAL and having a maximum outer height that is not greater than 29.0 inches (with the lid in place); having a minimum outer height that is not less than 28.5 inches (with the lid in place); having a maximum inner diameter that is not greater than 18.5 inches; having a minimum inner diameter that is not less than 17.7 inches; and having a water-resistant HEPA filter (such as the Nuclear Filter Technology Incorporated NucFil 013 filter with Gore-Tex, or equivalent) for ventilation.

FISSILE MATERIAL:

FISSILE URANIUM or FISSILE PLUTONIUM.

FISSILE PLUTONIUM:

Pu-239 and Pu-241.

FISSILE URANIUM:

U-233 and U-235.

IMMEDIATE/IMMEDIATELY:

Without delay and as soon as physically possible, yet not with such haste so as to endanger personnel or violate protocol established by applicable WVDP and WVNS policies, plans, and procedures, unless the situation clearly warrants speedy or rash efforts and/or violation of protocol to prevent significant harm to the health and safety of personnel or major PROPERTY damage.

IMPLEMENTING PROCEDURE:

The procedure that is required to be followed to perform a SURVEILLANCE TEST. The documentation generated as a result of executing the IMPLEMENTING PROCEDURE establishes the historical record of this activity. An IMPLEMENTING PROCEDURE may take the form of a Standard Operating Procedure (SOP), a Job Card, an Environmental Monitoring Program (EMP) Procedure, an Environmental Monitoring (EM) Procedure, a Conduct of Security Position (COS-POS) Procedure, a WVDP manual, a Work Order (WO), run plan, or a standing order.

INOPERABLE/INOPERABILITY:

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 (LCO):

The part of a SPECIFICATION that prescribes the requirements for safe operation.

MODERATED:

Containing greater than 5 volume percent water.

NORMAL OPERATIONS:

Operations being conducted when power is being supplied routinely, i.e., STANDBY and/or BACKUP POWER are not being relied upon.

OPERABLE/OPERABILITY:

A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s), and when all 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 also capable of performing their related support function(s) as demonstrated by fulfillment of required SURVEILLANCE REQUIREMENTS.

OPERATING:

A system, subsystem, train or component or device shall be OPERATING when it is performing its specified function(s), and when all 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 also performing their related support function(s).

PROCESS SAFETY REQUIREMENT (PSR):

A requirement that contains one or more SPECIFICATIONS that prescribe LIMITING CONDITIONS FOR OPERATION (LCOs), ACTIONS, SURVEILLANCE REQUIREMENTS (SRs), and the associated bases for systems and/or components under the direct control of the operator that meet any of the criteria defined in Attachment C of WV-365, *Preparation of WVDP Safety Documents*.

PROPERTY:

All government-owned or -leased structures and contents for which the Department of Energy has responsibility, including:

1. All DOE land, structures, and contents.
2. All leased locations.
3. All other government PROPERTY on DOE land or in DOE structures.
4. Other PROPERTY that occupies DOE land or is in DOE structures.

SPECIFICATION:

The part of a PSR that prescribes one or more LCOs, ACTIONS, and SURVEILLANCE REQUIREMENTS.

STANDBY POWER:

A reserve or alternative electrical power generation or supply with switching devices that will supply power to selected loads in the event of a normal power failure. It is not required to have redundant equipment or to operate through events more severe than those specified in the Uniform Building Code.

SURVEILLANCE INTERVAL:

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

PRIOR	Within 72 hours before initiation of an event
HOURLY	At least once per hour
(once per) SHIFT	At least once per 8 hours in facilities with an 8-hour SHIFT <u>or</u> at least once per 12 hours in facilities with a 12-hour SHIFT
DAILY	At least once per 24 hours
WEEKLY	At least once per 7 days
MONTHLY	At least once per 31 days
QUARTERLY	At least once per 92 days
SEMI-ANNUALLY	At least once per 184 days
ANNUALLY	At least once per 365 days

SURVEILLANCE REQUIREMENT (SR):

The part of a SPECIFICATION that prescribes the activity (SURVEILLANCE TEST) to be conducted within a specified time interval (SURVEILLANCE INTERVAL) in order to establish compliance with the associated LCO.

SURVEILLANCE TEST:

The activity required to be performed to satisfy a SURVEILLANCE REQUIREMENT.

THRESHOLD PLANNING QUANTITY (TPQ):

The quantity of a substance listed in Appendices A and B to 40 CFR 355, Emergency Planning and Notification, in the column "threshold planning quantity" for that substance.

| **WASTE STORAGE BOX:**

| A carbon-steel or stainless-steel container.

| **WATER COLUMN (W. C.):**

| The vertical height of a column of water that could be supported by the pressure difference existing between the bottom and the top of the column.

Table 1
Approval Authorities for PROCESS SAFETY REQUIREMENTS
***** For Information Only *****

PSR Number (*)	PSR Title	PSR Criterion	PSR Approval Authority
PSR-1 (OSR/GP-7)	Requirements for Liquid Transfers of Fissile Material	3.a	OH/WVDP
PSR-2 (OSR/GP-10)	Main Plant Stack Airborne Effluent Sampling System Requirements	3.a	OH/WVDP
PSR-3 (OSR/GP-3)	Building and Vessel Ventilation System Requirements	3.b	WVNS
PSR-4 (OSR/GP-11 and OSR/GP-17)	Fuel Assembly Storage and Handling Requirements	3.a, 4	OH/WVDP
PSR-5 (OSR/GP-5)	Standby and Backup Power Requirements	3.c	WVNS
PSR-6 (OSR/GP-12)	Fissile Material Packaging and Storage Requirements	3.a	OH/WVDP
PSR-7 (TR/GP-13)	Emergency Paging System and Sheltering Alarm Requirements	3.g	WVNS
PSR-8 (TR/GP-16)	Fire Protection Systems Requirements	2, 3.f	OH/WVDP
PSR-10 (OSR/IRTS-1 and OSR/IRTS-3)	High-Level Waste Tank Leak Detection and Recovery Requirements	3.d	OH/WVDP
PSR-11 (OSR/IRTS-3)	High-Level Waste Tank Spare Capacity Requirements	3.e	WVNS
PSR-12	Vitrification Facility Ventilation and Off-Gas Systems Requirements	3.b	WVNS
PSR-13	Vitrification Facility Standby Power Requirements	3.c	WVNS
PSR-15	NO _x Monitoring Instrumentation Requirements	3.h	WVNS
PSR-16	Anhydrous Ammonia Monitoring Instrumentation and Storage Requirements	2	OH/WVDP
PSR-17	Minimum Staffing Levels for Safe Facility Operation	3.i	OH/WVDP
PSR-18	Collection, Processing, and Storage Requirements for Fissile Material from the Head End Cells	3.a	OH/WVDP

(*) The information given in the parentheses provides a cross-reference between canceled Operational Safety Requirements (OSRs) or Technical Requirements (TRs) and the Process Safety Requirements (PSRs).

NOTE: Table 1 is provided for information only and does not require OH/WVDP approval. It is updated periodically to reflect current information.

Table 2
PSR IMPLEMENTING PROCEDURES
***** For Information Only *****

PSR #	PSR TITLE	IMPLEMENTING PROCEDURES
1	Requirements for Liquid Transfers of Fissile Material	SOP 06-02 Vessel Off-Gas System Operation SOP 07-08 Process Building Liquid Waste Handling SOP 71-06 Tank 12-35104, Tank 7D-13, and Tank 13D-8 Transfers
2	Main Plant Stack Airborne Effluent Sampling System Requirements	EMP-300 Routine WVDP Stack Air Effluent Monitoring and Sampling EMP-301 Calibrating, Maintaining, and Operating WVDP Stack Air Effluent Monitoring & Sampling Systems EM-8 Calibration of Air Sampling Equipment Job Card: 203-FI-0023
3	Building and Vessel Ventilation System Requirements	SOP 00-29 Main Plant Surveillance Data Sheet Control SOP 06-02 Vessel Off-Gas System Operation SOP 08-26 HLW Operations WTF Rounds SOP 15-28 In Place Leak Test of HEPA Filters SOP 30-03 STS Quarterly Electrical Outage Test SOP 30-05 Main Plant Quarterly Power Outage Test Job Cards: 6T-2, 6T-2A, 6T-3, 6T-3A, 6-PDAH-10, 6-PDR-17R, 6-PDR-17T, 8-PDR-10R, 8-PDR-10T, 8-PDR-10AR, 8-PDR-10AT, 8-PDAH-26, 8-PDAH-26A, 8T-1/1/1, 8T-1A/1/1, 15T-49, 15T-49A, 15T-73, 15T-73A, 15-PDR-45R, 15-PDR-45T, 15-PDR-45AR, 15-PDR-45AT, 15-PDR-11R, 15-PDR-11T, 15-PDR-6R, 15-PDR-6T, 15-PDR-44R, 15-PDR-44T, 15-PDR-44AR, 15-PDR-44AT, 15-PDR-10R, 15-PDR-10T, 15-PDR-5R, 15-PDR-5T, 15-PDAH-34, 15-PDAH-34A, 15-PDAL-35, 15-PDAL-35A, 15-PDAH-11, 15-PDAH-6, 15-PDAL-6A, 15-PDAL-3A, 56-T-203, 56-T-204, 56-T-203A, 56-T-204A, 56-PDR-229, 56-PDR-230, 56-PDR-231, 56-PDR-232, 56-PDAL-229, 56-PDAL-230, 56-PDAH-229, 56-PDAH-230, TC-LW-5021, TC-3070

Table 2 (Continued)
PSR IMPLEMENTING PROCEDURES
(For Information Only)

PSR #	PSR TITLE	IMPLEMENTING PROCEDURES
4	Fuel Assembly Storage and Handling Requirements	SOP 1-11 Emplacement and Removal of the Fuel Pool Gate (1M-2) SOP 1-12 Fuel Pool Water Treatment System SOP 1-14 FRS Accountability SOP 1-55 Cask Preparation Operations SOP 1-57 TN-BRP and TN-REG Cask Lifting Procedure SOP 1-62 Loading of the TN-BRP Cask SOP 1-63 Loading of the TN-REG Cask Job Card: TC-3424
5	Standby and Backup Power Requirements	SOP 00-29 Main Plant Surveillance Data Sheet Control SOP 30-05 Main Plant Quarterly Power Outage Test SOP 30-08 STS/PVS Standby Generator Operation Job Cards: 15K-10A, 15K-21/2/3, 30-P-2, 30-P-1
6	Fissile Material Packaging and Storage Requirements	SOP 09-21 Lag Storage Operations SOP 09-24 Lag Storage Inspection SOP 300-07 On-Site Waste Generation, Packaging, and Transportation SOP 300-09 Interim Waste Storage Facility Operation WM-230 Determining Radioactivity in a Waste Package WM-250 Waste Container Characterizations WVDP-370 WVDP Radioactive Waste Acceptance Program
7	Emergency Paging System and Sheltering Alarm Requirements	WV-920 "812" All Page Speaker Annual Functional Test COS-POS-004 Main Gate Desk Job Cards: MP5018, TC-3293
8	Fire Protection Systems Requirements	WVDP-177 WVDP Fire Protection Manual SOP 00-04 Safety Equipment Release Form SOP 33-02 Maintenance and Testing Fire Pumps SOP 63-69 Operation of the Vitrification Fire Protection Systems Job Cards: 7-FP-GT-0005, 33G-1, 33G-2, 33G-2-MPO, 33-FAP-020, 33-FAP-024, 33-FAP-025, 33-FAP-033, 33-FAP-034, 33-FAP-037, 33-FP-OSY-0046, 33-FP-OSY-0047, 33-FP-OSY-0050, 33-FP-OSY-0053, 33-FP-BU-0072, 33-FP-OSY-0137, 33-FP-BB-0365, 33-FP-HYD-0612, TC-3443

Table 2 (Continued)
PSR IMPLEMENTING PROCEDURES
(For Information Only)

PSR #	PSR TITLE	IMPLEMENTING PROCEDURES
10	High-Level Waste Tank Leak Detection and Recovery Requirements	SOP 08-22 WTF Water Monitoring and Control Procedure SOP 08-26 HLW Operations WTF Rounds SOP 55-10 Zeolite Transfer SOP 55-12 Tank 8D-2 Waste Transfer Job Cards: 8LR-1, 8LR-1T, 8LR-1R, 8LAH-1, 8LR-5, 8LR-5T, 8LR-5R, 8LAH-7, 8G-5
11	High-Level Waste Tank Spare Capacity Requirements	SOP 07-08 Process Building Liquid Waste Handling SOP 08-22 WTF Water Monitoring and Control Procedure SOP 08-26 HLW Operations WTF Rounds SOP 50-23 Tank 8D-3 Liquid Collection and Transfer Operation SOP 55-05 Operation of the WTF Chemical Addition System SOP 55-13 Waste Return From CFMT SOP 55-14 Waste Transfer from Tank 8D-4 to Tank 8D-2 SOP 71-23 Transfer of Liquid from LWTS to the Waste Tank Farm Job Cards: 8LI-2, 8LI-6
12	Vitrification Facility Ventilation and Off-Gas Systems Requirements	SOP 15-28 In Place Leak Test of HEPA Filters SOP 63-37 Vitrification Operations Surveillance Data Sheet Control SOP 63-81 Vitrification Alarm Responses SOP 63-83 Standby Diesel Generator and Electrical Distribution System Operation SOP 64-01 NO _x Abatement and Radioactive Particulate Reduction System SOP 64-06 Ex-Cell Off-Gas HEPA Filter Replacement (on hold) SOP 67-01 Vitrification Facility HVAC System SOP 67-06 Filter Change Procedure for VF HVAC Secondary Filters (on hold) Job Cards: 64-T-009A, 64-T-009B, 67-T-001A, 67-T-001B, 67-T-001C, 67-T-002A/A, 67-T-002A/B, 67-T-002A/C, 67-T-002B/D, 67-T-002B/E, 67-T-002B/F, 67-T-002B/G, 67-T-002B/H, 67-T-002B/I, 67-T-002B/J, 67-T-002B/K, 67-T-002B/L, TC-3238, TC-3380, TC-3381, TC-3382, TC-3383, TC-3384, TC-3601, TC-3602, 64-K-003A, 64-K-003B, 64-K-003C, 64-PDR/PDT-6305, 64-PDR/PDT-6308, 64-PDR/PDT-6405, 64-PDR/PDT-6408, 67-PDR/PDT-0056A, 67-PDR/PDT-0056B, 67-PDR/PDT-0056C, 67-PDR/PDT-0063A, 67-PDR/PDT-0063B, 67-PDR/PDT-0063C, 67-PDR/PDT-0081, 67-PDR/PDT-0082, 67-PDR/PDT-0083, 67-PDR/PDT-0084, 67-PDR/PDT-0085, 67-PDR/PDT-0086, 67-PDR/PDT-0087, 67-PDR/PDT-0088, 67-PDR/PDT-0089

Table 2 (Continued)
PSR IMPLEMENTING PROCEDURES
(For Information Only)

PSR #	PSR TITLE	IMPLEMENTING PROCEDURES
13	Vitrification Facility Standby Power Requirements	SOP 63-37 Vitrification Operations Surveillance Data Sheet Control SOP 63-43 Uninterruptible Power Supply Operation SOP 63-81 Vitrification Alarm Responses SOP 63-83 Standby Diesel Generator and Electrical Distribution System Operation SOP 64-01 NO _x Abatement and Radioactive Particulate Reduction System Job Card: TC-3232
15	NO _x Monitoring Instrumentation Requirements	SOP 63-43 Uninterruptible Power Supply Operation SOP 63-81 Vitrification Alarm Responses Job Cards: TC-3199, 64-AIS-7201, 64-AIS-7203, 64-AIS-7204, 64-AIS-7205, 64-AIS-7206, 64-AIS-7208, 64-AT-7201, 64-AT-7203, 64-AT-7204, 64-AT-7205, 64-AT-7206, 64-AT-7208
16	Anhydrous Ammonia Monitoring Instrumentation and Storage Requirements	SOP 63-43 Uninterruptible Power Supply Operation SOP 63-81 Vitrification Alarm Responses SOP 64-05 Receipt of Bulk Anhydrous Ammonia Job Cards: TC-3201, TC-3209, TC-3286, 64-AT-7211, 64-AT-7213, 64-AT-7214, 64-AT-7215A, 64-AT-7216, 64-AT-7218, 64-AI-8200, 64-AI-8201, 64-AI-8202, 64-AI-8203, 64-AI-8204, 64-LIT-7305
17	Minimum Staffing Levels for Safe Facility Operation	WVNS-IRP-002 Phase II Vitrification Facility Radioactivity Operation Run Plan
18	Collection, Processing, and Storage Requirements for Fissile Material from the Head End Cells	SOP 02-40 Tool and Material Movement into Process Mechanical Cell and the General Purpose Cell SOP 02-41 Process Mechanical Cell Waste Clean-up SOP 09-21 Lag Storage Operations SOP 09-24 Lag Storage Inspection SOP 300-07 On-Site Waste Generation, Packaging, and Transportation WM-210 Waste Stream Characterization WM-230 Determining Radioactivity in a Waste Package WM-250 Waste Container Characterizations WVDP-370 WVDP Radioactive Waste Acceptance Program

NOTE: Table 2 is provided for information only and does not require OH/WVDP approval. It is updated periodically to reflect current IMPLEMENTING PROCEDURES.

WVNS RECORD OF REVISION

<u>Rev. No.</u>	<u>Description of Changes</u>	<u>Revision On Page(s)</u>	<u>Dated</u>
11	Added definitions of BELOW-GRADE CELL, COLLECTION CONTAINER, 55-GALLON DRUM, FISSILE-BEARING DEBRIS, FISSILE-BEARING DEBRIS STORAGE DRUM, FISSILE MATERIAL, POTENTIALLY MODERATED FISSILE-BEARING DEBRIS, and WASTE STORAGE BOX to accommodate changes to PSR-6 and the creation of PSR-18.	6, 8, 10	06/12/02
	Minor editorial corrections throughout.	All	
	This revision affects Site Services, Site Closure Projects, and High-Level Waste Projects.		
	OH/WVDP approval contained in Letter DW:2002:0071, dated 02/11/2002		

West Valley Demonstration Project

Doc. ID Number PSR-6
Revision Number 2
Revision Date 06-12-2002

PROCESS SAFETY REQUIREMENT

FISSILE MATERIAL PACKAGING AND STORAGE REQUIREMENTS

APPROVED BY  R.S. Roberts 10-19-01
Cognizant Manager Date

APPROVED BY  10/19/01
Radiation & Safety Committee, Chairman Date

AUTHORIZATION  6/11/02
TO IMPLEMENT Site Closure Projects Manager Date



Westinghouse
A Member of Washington Group International, Inc.

West Valley Nuclear Services Co.
10282 Rock Springs Road
West Valley, NY 14171-9799

PROCESS SAFETY REQUIREMENT - 6

TITLE: FISSILE MATERIAL Packaging and Storage Requirements

CRITERIA: Prevention of criticality during handling and storage of wastes containing FISSILE MATERIAL. (PSR Criterion 3.a.)

UNACCEPTABLE EVENTS: Accumulation of potentially critical concentrations of FISSILE MATERIAL in waste containers.

Process Safety Requirement - 6

Page No.

APPLICABILITY	3
OBJECTIVE	3
SPECIFICATIONS	3
BASIS	4
ATTACHMENT	8
REFERENCE	8
TABLE 1 - FISSILE MATERIAL Mass Limits for WASTE STORAGE BOXES	9

PROCESS SAFETY REQUIREMENT
FISSILE MATERIAL PACKAGING AND STORAGE REQUIREMENTS

APPLICABILITY

This Process Safety Requirement (PSR) applies to the packaging and storage of wastes that contain greater than 1 gram of FISSILE MATERIAL. This PSR does not apply to packaged FISSILE MATERIAL for which a specific nuclear criticality safety evaluation has been performed.

OBJECTIVE

The objective of this PSR is to assure that radioactive wastes containing FISSILE MATERIAL are packaged and stored in a subcritical configuration.

SPECIFICATIONS

1. LIMITING CONDITION FOR OPERATION

The total mass of FISSILE MATERIAL to be packaged in a 55-GALLON DRUM shall not exceed 125 g.

ACTION

If the total mass of FISSILE MATERIAL in a 55-GALLON DRUM is found to exceed 125 g, IMMEDIATE notification shall be made to the Facility Manager and the Nuclear Criticality Safety (NCS) Manager. All FISSILE MATERIAL handling operations in the facility shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

Wastes that may contain greater than 1 gram of FISSILE MATERIAL shall be sampled and analyzed per the requirements of an approved IMPLEMENTING PROCEDURE to determine the FISSILE MATERIAL content of the waste before packaging.

2. LIMITING CONDITION FOR OPERATION

The total mass of FISSILE MATERIAL to be packaged in a WASTE STORAGE BOX shall not exceed that specified in Table 1.

ACTION

If the total mass of FISSILE MATERIAL in a WASTE STORAGE BOX is found to exceed the limit specified in Table 1 for that box, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL handling operations in the facility shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

Wastes that may contain greater than 1 gram of FISSILE MATERIAL shall be sampled and analyzed per the requirements of an approved IMPLEMENTING PROCEDURE to determine the FISSILE MATERIAL mass of the waste before packaging.

3. LIMITING CONDITION FOR OPERATION

The height of an array of containers that contain FISSILE MATERIAL shall not exceed 4 tiers or 12 feet, whichever is greater.

ACTION

If FISSILE MATERIAL containers are found to be stored in an array that is higher than the greater of 4 tiers or 12 feet, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL handling operations in the facility shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

The height of an array of containers containing greater than 1 gram of FISSILE MATERIAL shall be determined ANNUALLY to be less than or equal to the greater of 4 tiers or 12 feet per the requirements of an approved IMPLEMENTING PROCEDURE.

BASIS

The packaging and storage of wastes containing FISSILE MATERIAL may increase the potential for inadvertent criticality. FISSILE MATERIAL mass limits specified in this PSR for WVDP waste packages have been developed to ensure that an inadvertent criticality will remain incredible during normal operations and following all credible accidents.

Applicability and Objective

All wastes at the WVDP, including environmental discharges, include some amount of FISSILE MATERIAL. It is not appropriate to impose criticality safety requirements on wastes containing very small concentrations or masses of FISSILE MATERIAL.

Consequently, a threshold of 1 gram of FISSILE MATERIAL has been specified to ensure that this PSR applies only to those wastes that represent, or have the potential to represent, a nuclear criticality safety concern.

Limits specified in Limiting Conditions for Operation 1 and 2 have been developed using very conservative assumptions regarding the form and composition of the waste media, as well as the distribution, moderation, and reflection of FISSILE MATERIAL in the waste container. These conservative assumptions ensure that a safe storage array will be maintained even when specific information regarding waste matrix parameters or the form or location of FISSILE MATERIAL in the waste container are not well known. For those waste streams for which characterization data exists, such as Vitrification Cell wastes; Process Mechanical Cell (PMC) and General Purpose Cell (GPC) wastes; or Chemical Process Cell (CPC) decontamination wastes, less restrictive limits may be imposed. In these instances, specific Nuclear Criticality Safety Evaluations (NCSEs) have been performed to assess the criticality safety of the stored FISSILE MATERIAL. FISSILE MATERIAL mass limits specified in these evaluations supersede the limits specified in this PSR provided that the conditions assumed in the applicable NCSE are maintained.

Limiting Conditions for Operation

General

The Nuclear Criticality Safety Evaluation that was performed to determine the nuclear criticality safety of WASTE STORAGE BOXES and 55-GALLON DRUMS assumed conditions of optimum internal and external moderation and reflection. The models evaluated both homogenous and heterogenous distributions of FISSILE MATERIAL in the container and confirmed the safety of an array of containers under the most reactive configuration of FISSILE MATERIAL in the array. Because the FISSILE MATERIAL mass limits were developed assuming conditions of optimum external moderation, additional nuclear criticality safety controls for firefighting in areas containing FISSILE MATERIAL containers or container arrays are unnecessary.

Nuclear criticality safety analyses performed for this PSR have assumed specific dimensions for 55-GALLON DRUMS and WASTE STORAGE BOXES listed in Table 1. FISSILE MATERIAL that has been collected in waste containers having dimensions smaller than those specified in LCO 1 or LCO 2 must be overpacked in a container specified in Table 1 prior to storage of the material. For example, FISSILE MATERIAL may be collected in a 5-gallon pail; however, that pail must be overpacked in a 55-GALLON DRUM or appropriately-sized WASTE STORAGE BOX prior to storage. The FISSILE MATERIAL mass limit for the overpack container then determines the maximum number of waste containers that may be stored in the overpack container. That is, if a 5-gallon pail contains 80 grams of FISSILE MATERIAL, then the maximum mass of FISSILE MATERIAL that can be combined with the pail cannot exceed 45 grams if the pail is to be overpacked in a 55-GALLON DRUM.

Specification of container dimensions in this PSR is necessary to ensure that a concentration of FISSILE MATERIAL greater than that analyzed in nuclear criticality safety analyses cannot be achieved in a FISSILE MATERIAL storage array. As identified in the referenced analysis, the maximum array reactivity exists for the condition in which the FISSILE MATERIAL in each of eight adjacent waste packages is concentrated at the point of intersection of the containers. If the FISSILE MATERIAL has been packaged in a manner that prevents this type of concentration, then a less restrictive FISSILE MATERIAL mass limit may apply. That is, if multiple smaller analyzed FISSILE MATERIAL waste containers are to be overpacked in a larger container (for operational practicality or otherwise) then the FISSILE MATERIAL mass limit for the overpack container is the sum of the limits for the smaller contained waste containers, provided that no other FISSILE MATERIAL is placed in the overpack container outside of the smaller waste containers. For example, if it is desired that three 55-GALLON DRUMS be placed in a B-25 box for storage, then the limit for the B-25 box is the total limit for the three 55-GALLON DRUMS, or 375 grams, as opposed to the 200-gram limit that would apply to the B-25 box (provided no other FISSILE MATERIAL is packaged in the box outside of the 55-GALLON DRUMS). Discussion of the specific container limits is provided below.

Limiting Condition for Operation 1 - 55-GALLON DRUMS

A Nuclear Criticality Safety Evaluation (Reference 1) has demonstrated that 125 grams of FISSILE MATERIAL in a 55-GALLON DRUM is critically safe under all credible conditions of moderation and reflection. The evaluation considered a drum having a

minimum inner diameter of 22 inches and a minimum outer height of 34 inches in an infinite 2-dimensional array stacked four drums high. Dimensions specified here are absolute minimum dimensions and include all measurement tolerances.

Limiting Condition for Operation 2 - WASTE STORAGE BOXES

The WVDP uses several different WASTE STORAGE BOXES for the storage of waste containing FISSILE MATERIAL. The specific waste container used is selected based on several considerations, including operational practicality and shielding requirements. FISSILE MATERIAL mass limits have been developed for several WASTE STORAGE BOX sizes. The Nuclear Criticality Safety Evaluation that established these limits (Reference 1) has demonstrated that the mass limits presented in Table 1 result in a safe array of containers having a minimum outer dimension indicated in the table and arranged in an infinite 2-dimensional array stacked 12 feet high. Dimensions specified in Table 1 are absolute minimum dimensions and include all measurement tolerances.

Limiting Condition for Operation 3 - Array Height

Although the analyses for both 55-GALLON DRUMS and WASTE STORAGE BOXES have assumed an infinite 2-dimensional array, it has been assumed in the Nuclear Criticality Safety Evaluation that the storage array is finite in the vertical dimension, having a height of 12 feet. The value of 12 feet was selected to correspond to the height of an array of 55-GALLON DRUMS stacked to a height of four tiers. The FISSILE MATERIAL mass limit does not vary for WASTE STORAGE BOXES for a height greater than 30 inches. Consequently, the stacking requirement for waste containers containing greater than 1 gram of FISSILE MATERIAL is the greater of 12 feet or 4 tiers.

As an example, if it is desired to provide storage for an array of boxes having an outer dimension of 2 feet on all sides, the stacking limit for this array of boxes is six tiers, or twelve feet. As another example, if it is desired to provide storage for an array of large boxes, each container having an outer dimension of 4 feet on all sides, the stacking limit for this array is 4 tiers, or 16 feet. Thus the limit is the greater of 12 feet or 4 tiers.

ATTACHMENT

None.

REFERENCE

1. WVNS-NCSE-001, Nuclear Criticality Safety Evaluation for the Packaging and Storage of Fissile-Bearing Wastes at the WVDP.

TABLE 1
FISSILE MATERIAL Mass Limits for WASTE STORAGE BOXES

WASTE STORAGE BOX Group*	Minimum WASTE STORAGE BOX Outer Dimension		Total FISSILE MATERIAL Mass Limit (g)
	Greater than or Equal to	But Less than	
None	0 inches	12 inches	WASTE STORAGE BOXES of this size are not authorized for use
A	12 inches	18 inches	15
B	18 inches	24 inches	50
C	24 inches	30 inches	135
D	30 inches	-----	200

* The classification of WASTE STORAGE BOXES presented here is specific to this PSR and is provided to facilitate its implementation.

WVNS RECORD OF REVISION

<u>Rev. No.</u>	<u>Description of Changes</u>	<u>Revision On Page(s)</u>	<u>Dated</u>
2	General revision to: 1) extend the applicability of the PSR to all facilities at the WVDP in which FISSILE MATERIAL containers or arrays of containers are stored or located; 2) clarify the applicability of the PSR to FISSILE MATERIAL waste containers for which waste-specific Nuclear Criticality Safety Evaluations have been performed; 3) validate and supplement the existing bases for fissile mass limits for 55-GALLON DRUMS and B-25 boxes; and 4) provide additional limits for non-standard WASTE STORAGE BOXES having a minimum dimension greater than or equal to 1 foot.	All	06/12/02

This revision affects Site Closure Projects.

OH/WVDP approval contained in Letter DW:2002:0071, dated 02/11/2002.

West Valley Demonstration Project

Doc. ID Number PSR-18
Revision Number 0
Revision Date 06-12-2002

PROCESS SAFETY REQUIREMENT

COLLECTION, PROCESSING, AND STORAGE REQUIREMENTS FOR FISSILE-BEARING DEBRIS

APPROVED BY K. R. [Signature] 10-18-01
Cognizant Manager Date

APPROVED BY [Signature] 10/19/01
Radiation & Safety Committee, Chairman Date

AUTHORIZATION [Signature] 6/11/02
TO IMPLEMENT Site Closure Projects Manager Date



Westinghouse
A Member of Washington Group International, Inc.

West Valley Nuclear Services Co.
10282 Rock Springs Road
West Valley, NY 14171-9799

PROCESS SAFETY REQUIREMENT - 18

TITLE: COLLECTION, PROCESSING, AND STORAGE REQUIREMENTS FOR FISSILE MATERIAL
 FROM THE HEAD END CELLS

CRITERIA: Prevention of criticality during handling and storage of wastes
 containing FISSILE MATERIAL. (PSR Criterion 3.a.)

UNACCEPTABLE EVENTS: Accumulation of potentially critical concentrations of
 FISSILE MATERIAL in collection or storage containers.

Process Safety Requirement - 18

Page No.

APPLICABILITY	3
OBJECTIVE	3
SPECIFICATIONS	3
BASIS	6
ATTACHMENT	9
REFERENCE	9

PROCESS SAFETY REQUIREMENT
COLLECTION, PROCESSING, AND STORAGE REQUIREMENTS
FOR FISSILE MATERIAL FROM THE HEAD END CELLS

APPLICABILITY

This Process Safety Requirement (PSR) applies to the collection, packaging, and storage of waste from the Process Mechanical Cell (PMC), General Purpose Cell (GPC), PMC Crane Room (PMCR), PMCR Enclosure (PMCRE), GPC Crane Room (GCR), GPC Crane Room Extension (GCRX), or GCRX Enclosure (GCRE) that contains greater than 1 gram of FISSILE MATERIAL.

This PSR does not apply to wastes containing less than or equal to 1 gram of FISSILE MATERIAL or to wastes for which a specific nuclear criticality safety evaluation has been performed. This PSR also does not apply to activities that are managed under the requirements of another approved PSR.

OBJECTIVE

The objective of this PSR is to assure that FISSILE MATERIAL from the PMC, GPC, and associated areas is collected, packaged, and stored in a manner that ensures that a subcritical configuration is maintained at all times.

SPECIFICATIONS

1. LIMITING CONDITION FOR OPERATION

Any COLLECTION COMPONENT in use for FISSILE MATERIAL collection shall not be capable of collecting greater than 120 L of FISSILE MATERIAL-contaminated debris.

ACTION

If it is found that a COLLECTION COMPONENT in use for FISSILE MATERIAL collection is capable of collecting greater than 120 L of FISSILE MATERIAL-contaminated debris, IMMEDIATE notification shall be made to the Facility Manager and the Nuclear Criticality Safety (NCS) Manager. All collection, handling, and drying activities involving FISSILE MATERIAL in the AREA shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

Before using a COLLECTION COMPONENT for FISSILE MATERIAL collection, it shall be documented per the requirements of an approved IMPLEMENTING PROCEDURE that the COLLECTION COMPONENT is not capable of collecting greater than 120 L.

2. LIMITING CONDITION FOR OPERATION

No more than two COLLECTION CONTAINERS containing MODERATED FISSILE MATERIAL shall be present at any one time in an AREA in which collection is being conducted.

ACTION

If it is found that more than two COLLECTION CONTAINERS containing MODERATED FISSILE MATERIAL are present in the collection AREA, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL collection, handling, and drying activities in the AREA shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

The number of COLLECTION CONTAINERS containing MODERATED FISSILE MATERIAL in an AREA shall be determined per the requirements of an approved IMPLEMENTING PROCEDURE before initiating collection in a COLLECTION CONTAINER in that AREA.

3. LIMITING CONDITION FOR OPERATION

FISSILE MATERIAL in a storage ARRAY shall be stored only in FISSILE MATERIAL STORAGE DRUMS.

ACTION

If FISSILE MATERIAL is found to be stored in a container other than a FISSILE MATERIAL STORAGE DRUM, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL collection, handling, and drying activities in the AREA shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

FISSILE MATERIAL shall be confirmed to be stored in a FISSILE MATERIAL STORAGE DRUM per the requirements of an approved IMPLEMENTING PROCEDURE before transfer of the drum to a storage ARRAY.

4. LIMITING CONDITION FOR OPERATION

Each FISSILE MATERIAL STORAGE DRUM in a storage ARRAY shall contain less than 5 volume percent water.

ACTION

If a FISSILE MATERIAL STORAGE DRUM contains greater than or equal to 5 volume percent water, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL collection, handling, and drying activities in the AREA shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

The water content in a FISSILE MATERIAL STORAGE DRUM shall be determined to be less than 5 volume percent per the requirements of an approved IMPLEMENTING PROCEDURE before the drum is transferred to a storage ARRAY.

5. LIMITING CONDITION FOR OPERATION

The height of an ARRAY of drums containing FISSILE MATERIAL that are in a BELOW-GRADE CELL shall be limited to one tier.

ACTION

If drums containing FISSILE MATERIAL that are in a BELOW-GRADE CELL are found to be stored in an ARRAY having a height greater than one tier, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL collection, handling, and drying activities in the BELOW-GRADE CELL shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

An ARRAY of drums containing FISSILE MATERIAL shall be inspected per the requirements of an approved IMPLEMENTING PROCEDURE IMMEDIATELY following transfer of the drum to the ARRAY to ensure that the height of the ARRAY does not exceed one tier.

6. LIMITING CONDITION FOR OPERATION

The height of an ARRAY of FISSILE MATERIAL STORAGE DRUMS shall be limited to three tiers. (This LCO does not apply to containers in BELOW GRADE CELLS.)

ACTION

If FISSILE MATERIAL STORAGE DRUMS that are found to be stored in an ARRAY having a height greater than three tiers, IMMEDIATE notification shall be made to the Facility Manager and the NCS Manager. All FISSILE MATERIAL collection, handling, and drying activities in the AREA shall be stopped IMMEDIATELY and shall not be permitted to resume until written permission from the NCS Manager is obtained.

SURVEILLANCE REQUIREMENT

An ARRAY of FISSILE MATERIAL STORAGE DRUMS shall be inspected per the requirements of an approved IMPLEMENTING PROCEDURE IMMEDIATELY following transfer of a drum to the storage ARRAY to ensure that the height of the ARRAY does not exceed three tiers.

BASES

General

The Process Mechanical Cell (PMC) and General Purpose Cell (GPC) of the Main Plant were originally utilized for the mechanical processing and handling of spent nuclear fuel assemblies. Video surveys of these areas have indicated that a significant amount of small particulate debris remains in these cells from reprocessing operations. Available characterization data is not sufficient to confirm that this material does not contain unirradiated, unprocessed fuel; consequently, it has been assumed that the residual small particulate material in these cells is fuel or contains fuel.

The reactivity of an accumulation of FISSILE MATERIAL is significantly affected by the presence of moderator. Historical video surveys of the GPC have revealed the presence of water in the GPC whereas no such evidence exists for the presence of water in the PMC. It is therefore necessary to take special precautions in the handling of FISSILE MATERIAL in the GPC, should water be present in the cell.

The limits specified in Limiting Conditions for Operation 1 and 2 have been developed based on the specific characteristics of fuel debris in the PMC and GPC. Due to the process employed in the PMC and GPC, surface contamination in these cells is characteristic of the radionuclide content of this fuel debris. Furthermore, contamination on equipment and surfaces in adjacent support cells is also characteristic of the radionuclide content of the fuel debris. Because the limits specified in this PSR correspond to package FISSILE MATERIAL mass limits that are significantly greater than other limits at the WVDP, it may be desirable to apply this PSR to other wastes streams that have nuclear characteristics similar to FISSILE MATERIAL.

Specifications

1. Analyses contained in the Nuclear Criticality Safety Evaluation (NCSE) for PMC and GPC decontamination activities have determined that a COLLECTION CONTAINER containing MODERATED FISSILE MATERIAL is critically safe under all credible normal, abnormal, and accident conditions. The volume of a component used for collection of MODERATED FISSILE MATERIAL must therefore not exceed that of a COLLECTION CONTAINER. COLLECTION CONTAINERS to be used for FISSILE MATERIAL collection in the Head End Cells have a nominal volume of 114 L; however, the Nuclear Criticality Safety Evaluation has evaluated a container having a maximum capacity of 120 L. Therefore, the maximum capacity of a COLLECTION COMPONENT is 120 L. The use of a COLLECTION COMPONENT having a smaller volume is acceptable.

The requirement that the volume of a COLLECTION COMPONENT not exceed 120 L does not preclude the collection of equipment or components whose dimensions are greater than those of a COLLECTION CONTAINER, nor does it preclude the size reduction of that equipment for packaging.

2. The NCSE has demonstrated that two COLLECTION CONTAINERS containing MODERATED FISSILE MATERIAL are safe when brought into proximity with each other under all credible normal, abnormal, and accident conditions. Furthermore the NCSE has demonstrated that nuclear criticality safety is maintained even when two COLLECTION CONTAINERS containing MODERATED FISSILE MATERIAL are brought into proximity with a storage ARRAY of unmoderated FISSILE MATERIAL STORAGE DRUMS or when COLLECTION CONTAINERS are located in the FISSILE MATERIAL debris accumulation in the GPC sump. A limit of two COLLECTION CONTAINERS containing

MODERATED FISSILE MATERIAL in an AREA at any one time is therefore imposed to assure that nuclear criticality safety is maintained. Compliance with this LIMITING CONDITION FOR OPERATION is assured through performance of the SURVEILLANCE REQUIREMENT, which requires that an inventory of containers-in-process is maintained as COLLECTION CONTAINERS are filled.

3. Analyses in the NCSE have evaluated the nuclear criticality safety of packaged FISSILE MATERIAL when that debris is contained in 30-gallon steel drums having an outer height of 28.75 ± 0.25 inches (with the lid in place) and an inner diameter of 18.1 ± 0.4 inches. No other container sizes have been evaluated in the NCSE; consequently, the storage of FISSILE MATERIAL in a container other than a FISSILE MATERIAL STORAGE DRUM cannot be assured. The NCSE further assumes that stored FISSILE MATERIAL contains less than 5 volume percent moderator and that this material, once stored, will not become further moderated. To provide a measure of assurance that further moderation of stored FISSILE MATERIAL will not occur, FISSILE MATERIAL STORAGE DRUMS are ventilated with filters that can withstand a pressure of at least 48 inches W. C. without allowing water infiltration (such as the Nuclear Filter Technology Incorporated NUCFIL 013 filter with Gore-Tex or equivalent).

NOTE: FISSILE MATERIAL STORAGE DRUMS may be overpacked in a larger container if necessary for shielding or other considerations; however, no additional FISSILE MATERIAL may be added to the overpack container. Conversely, FISSILE MATERIAL may be packaged in a container smaller than a FISSILE MATERIAL STORAGE DRUM; however, packages smaller than a FISSILE MATERIAL STORAGE DRUM MUST be overpacked in a FISSILE-DEBRIS STORAGE DRUM before transfer to a storage ARRAY.

4. Analyses performed in the NCSE indicate that a FISSILE MATERIAL STORAGE DRUM containing a maximum of 7 volume percent water is subcritical. For conservatism, LCO 4 establishes that each drum used for storing FISSILE MATERIAL shall contain less than 5 volume percent water.
5. The criticality safety of a large ARRAY of drums containing FISSILE MATERIAL is assured only when minimal moderator exists. Water is the only significant moderator that has been identified in the PMC, GPC, and support cells and

areas; therefore, minimizing the amount of water that may interact with the storage ARRAY will significantly reduce the potential for inadvertent nuclear criticality.

The only areas of the Main Plant where the credible potential for significant water accumulation exists are in BELOW-GRADE CELLS. The NCSE has demonstrated that even under conditions of full external moderation, a three-tier ARRAY of unmoderated FISSILE MATERIAL STORAGE CONTAINERS is subcritical; however, the reactivity of the ARRAY is significantly increased if the interiors of the drums become moderated. Therefore, the height of storage ARRAYS in BELOW-GRADE CELLS is limited to one tier.

6. Analyses in the NCSE have demonstrated that infinite two-dimensional ARRAYS of FISSILE MATERIAL STORAGE DRUMS stacked three tiers high is safe under all conditions of external moderation.

ATTACHMENT

None.

REFERENCE

Criticality Safety Evaluation for the Handling and Storage of Fissile-Bearing Debris in the Head End Cells. June 2000. URS Corporation.

WVNS RECORD OF REVISION

<u>Rev. No.</u>	<u>Description of Changes</u>	<u>Page(s)</u>	<u>Dated</u>
0	Original Issue	All	06/12/02

This revision affects Site Closure Projects.

OH/WVDP approval contained in Letter DW:2002:0071,
dated 02/11/02.