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ENGINEERING CHANGE NOTICE

H

Page 1 of 2

1. ECN 661030

Proj. ECN

!. ECN Category (mark one)	3 Originator's Name, Organization. MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ☐ Direct Revision [XI Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	L. I. Covey, 3N500, 56-51, 372-0296	☐ Yes ☒ No	August 11, 2000
	6. Project Title/No./Work Order No. WESF	7. Bldg./Sys./Fac No. 225B/NA/WESF	8 Approval Designator SQD
	9 Document Numbers Changed by this ECN (includes sheet no. and rev.) See block 13a	10 Related ECN No(s) NA	11. Related PO No NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
☐ Yes (fill out Blk. 12b) ☒ No (NA Elks. 12b, 12c, 12d)	NA	NA Design Authority/Cog. Engineer Signature & Date	NA Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [XI Yes ☐ No

Block 9.
HNF-SD-WM-BIO-002, Rev. 0
HNF-SD-WM-IOSR-001, Rev. 0

rhis update to the WESF Basis for Interim Operation (BIO) and Interim Operational Safety Requirements (IOSRs) satisfies the annual update requirement in HNF-PRO-700. This update includes incorporation of the analyzes and controls in the WIXM Safety Analysis Document (HNF-2316), deletion of two Administrative Controls (AC 5.11 and 5.13), and development of LCO 3.2.

14a. Justification (mark one)

- Criteria Change ☐
- Design Improvement ☐
- Environmental ☐
- Facility Deactivation
- As-Found ☒
- Facilitate Const. ☐
- Const. Error/Omission ☐
- Design Error/Omission ☐

14b. Justification Details

This is the annual update for the WESF BIO and IOSRs as required by HNF-PRO-700 and DOE Order 5480.23. Approval designator SQD was selected per HNF-PRO-233. Design verification by review per FSP-WESF-001 EN-1 and HNF-PRO-1819. A USQ screening is not required since this document will be approved by RL.

15. Distribution (include name, MSIN, and no. of copies)

L. I. Covey S6-51 (2)

RELEASE STAMP

NOV 28 2000

DATE

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HANFORD RELEASE

ID 18

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1. ECN (use no. from pg. 1): 661030

6. Design Verification Required	17. Cost Impact ENGINEERING		CONSTRUCTION		18. Schedule Impact (days)	
☒ Yes	Additional ☐	$ NA	Additional ☐	$ NA	Improvement ☐	NA
☐ No	Savings ☐	$ NA	Savings ☐	$ NA	Delay ☐	NA

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec.	☐	Maintenance Procedure	☒	ASME Coded item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☐	Operating Procedure	☒	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAWSAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	Training	[X]
Environmental Permit	☐	Inventory Adjustment Request	☐		☐

10. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
WESF EPAPC **WESF IOSR Training** **FSP-WESF-001, Sections** NS-1 and NS-2	**WESF Operating and maintenance procedures which implement IOSRs**	

11. Approvals

	Signature	Date		Signature	Date
Design Authority	J. L. Pennock	8-14-00	Design Agent		
Cog. Eng.	NA		PE		
Cog. Mgr.	NA		QA		
QA	M. A. Hill	8-14-00	Safety		
Safety	D. R. Ellingson	8/15/00	Design		
Environ.	NA		Environ.		
Other			Other		

Design Verification L. I. Covey 8/14/00

Facility Manager B. Oldfield 8/14/00

Ops/Maint Manager **P.T. Saueressig** 8/14/00

Training S.R. Stark 8/14/00

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

HNF-SD-WM-IOSR-001
Revision 1
ECN 661030

Waste Encapsulation and Storage Facility Interim Operational Safety Requirements

Document Type: IOSR Division: WM

L. I. Covey
Fluor Hanford

Date Published
November 2000

Prepared for the **U.S.** Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

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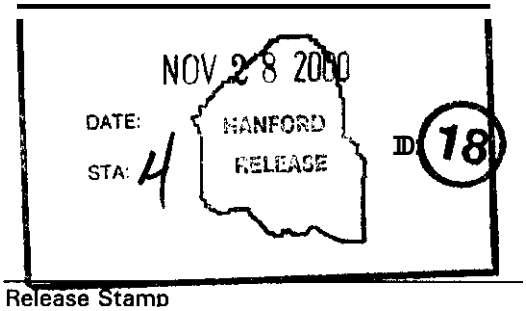

Release Approval 11/28/00 Date

Release Stamp

Approved for public release; further dissemination unlimited

HNF-SD-WM-IOSR-001
Revision 1

Waste Encapsulation and Storage Facility Interim Operational Safety Requirements

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

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U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington

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RECORD OF REVISION

(1) Document Number: HNF-SD-WM-IOSR-001

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
	(7) Originally released May 4, 1998 (EDT 620310)		
1 RS	IOSRs revised to reflect facility modifications and incorporate HNF-2316 (ECN 661030)	L I Covey	J. J. Pennock 11-27-00

A-7320-005 (10/97)

PREFACE

The Interim Operational Safety Requirements (IOSRs) for the Waste Encapsulation and Storage Facility (WESF) defme acceptable conditions, safe boundaries, bases thereof, and management or administrative controls required to ensure safe operation during receipt and inspection of cesium and strontium capsules from private irradiators; decontamination of the capsules and equipment; surveillance of the stored capsules; and maintenance activities. Controls required for public safety, significant defense-in-depth, significant worker safety, and for maintaining radiological consequences below risk evaluation guidelines (EGs) are included.

The IOSRs are based on the preventive and mitigative features determined to he essential in HNF-SD-WM-BIO-002, ***Waste Encapsulation and Storage Facility Basis for Interim Operation,*** Chapter 3.0, "Hazard and Accident Analyses." The IOSRs are part of the WESF Basis for Interim Operation (BIO) prepared according to the *Implementation Plan for DOE Orders 5480.22 and 5480.23* (external letter FDH-9955894AR2 [Hanson 1999]) and in compliance with HNF-PRO-700 *Safety Analysis and Technical Safety Requirements.* The BIO is to be replaced later with an upgraded Final Safety Analysis Report (FSAR) that meets the requirements of DOE Order 5480.23, ***Nuclear Safety Analysis Reports.*** At that time, the IOSRs will be revised as necessary and become Technical Safety Requirements (TSRs) that meet DOE Order 5480.22, ***Technical Safety Requirements.*** The WESF IOSRs constitute an agreement or contract between the U.S. Department of Energy (DOE) and the Contractor regarding the safe operation of WESF. As such, once approved, the IOSRs cannot be changed without the approval of the Cognizant Secretarial Officer (CSO) or designee.

The format and content for the WESF IOSRs are based on DOE Order 5480.22, the Contractor's IOSR policy, and NUREG 1431, ***Standard Technical Specifications, Westinghouse Plants*** and meets the current requirements of HNF-PRO-700. The IOSRs are part of the WESF BIO, but will be maintained as a separate, controlled document (HNF-SD-WM-IOSR-001, ***Waste Encapsulation and Storage Facility Interim Operational Safety Requirements).***

The IOSRs apply to the 225-B Building and the support buildings and systems listed in HNF-SD-WM-BIO-002, Chapter 2.0 "Facility Description."

The WESF IOSRs do not cover environmental regulatory requirements (i.e., those contained in the 40 series of the ***Code of Federal Regulations,*** "Protection of Environment"). Environmental protection is assured as part of the WESF environmental compliance program.

Protection of occupational workers from nuclear risks is achieved by hardware systems and integrated safety management programs that **ensure** control and discipline of operations for added prevention. The programs are detailed in respective regulatory and contractual systems of basic requirements. The safety management programs applicable to WESF are discussed in HNF-SD-WM-BIO-002, Chapter **6.0,** "Safety Related Programs and Controls," and therefore, are not included in the IOSRs. Significant facility worker safety is also achieved in the IOSRs with Limiting Conditions for Operation and Surveillance Requirements.

TABLE OF CONTENTS

LIST OF TERMS

AC	Administrative Control
ALARA	as low as reasonably achievable
ARM	area radiation monitor
BIO	Basis for Interim Operation
Ci	Curie
cm	centimeter
c s	Cesium
CSO	Cognizant Secretarial Officer
DOE	U.S. Department of Energy
EG	Evaluation Guideline
FSAR	Final Safety Analysis Report
g	gram
gpm	gallons per minute
gal	gallon
HEPA	high-efficiency particulate air (filter)
hr	hour
IOSR	Interim Operational Safety Requirement
k	kilo
LCO	Limiting Condition for Operation
LCS	Limiting Control Setting
m	milli
PM	Program Manager
R	Roentgen
SL	Safety Limit
Sr	Strontium
SR	Surveillance Requirement
TSR	Technical Safety Requirement
USQ	unreviewed safety question
W	watt
WESF	Waste Encapsulation and Storage Facility
>	greater than
≥	greater than or equal to
<	less than
ft^2	square feet

1.0 USE AND APPLICATION

1.1 Definitions

NOTE----------

The defined terms of this section are unique definitions. They appear in CAPITALIZED lype and are applicable throughout these Interim Operational Safety Requirements (IOSRs) and BASES. Some terms in this section refer the user to another section for the definition. This approach will prevent a shortened definition from being supplied and used out of context. Source documents from which the definitions are taken are referenced at the end of each definition Definitions that have been annotated technically, are noted as such.

ACTIONS	ACTIONS shall be that part of a Limiting Condition for Ooeration (LCO) that orescribes Required Actions to be taken under designated Conditions within specified Completion Times. (NUREG 1431)
ACTIVE POOL CELL(S)	A pool cell that contains capsules.
AND	See Section 1.2, Logical Connectors. (NUREG 1431)
BASES	BASES shall be pertinent information and details supporting IOSR elements and specific values or characteristics (see Appendix A, BASES). (DOE Order 5480.22) - annotated.
CALIBRATION	CALIBRATIONS provide OPERABILITY of a specific component in an instrument loop. CALIBRATIONS provide testing of parameters to assure range, accuracy, and linearity.
DESIGN FEATURES	See Appendix B, DESIGN FEATURES. (DOE Order 5480.22) - annotated.
FUNCTIONAL TEST	FUNCTIONAL TESTS VERIFY the OPERABILITY of a defined system instrumentation loop. Testing requires introducing a simulated or actual signal to the primary instrument or as close as practical. Functions are VERIFIED as the instrument is adjusted through its range of operation. Control functions, setpoints, interlocks, and alarms are VERIFIED.
MODE	MODES are used (1) to determine SL, LCS, LCO, and AC program applicabilities, (2) to distinguish facility operational conditions, (3) to determine minimum staffing requirements, and (4) to provide an instant facility status report. See also Section **1.6,** MODES. (DOE Order 5480.22) - annotated.
OPERABLE/OPERABILITY	A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s), and: a) setpoints are within limits, b) operating parameters necessary for OPERABILITY are within limits, and c) when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication, or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its safety function(s) are also capable of performing their related safety support function(s). (DOE Order 5480.22) - annotated.
OR	See Section 1.2, Logical Connectors. (NUREG 1431)
VERIFY/VERIFICATION	A qualitative assessment to confirm or substantiate that specific plant conditions exist. This may include collecting sample data or quantitative data; taking instrument readings; recording data and information on **logs,** data sheets, or electronic media; and evaluating data and information according to administrative procedures.
VIOLATION	See Section 5.4, **IOSR** VIOLATIONS. (DOE Order 5480.22) - annotated.

1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors with specific examples.

Logical connectors are used in Interim Operational Safety Requirements (IOSR) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that appear in IOSRs are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND

Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors.

When logical connectors are used to state a Condition, usually only the first level of logic is used, and the logical connector is left justified with the Condition statement. In a few cases, successive levels of logic are used. This is identified solely by indenting the logical connector, since subparts of a Condition statement are not numbered separately.

When logical connectors are used to state a Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Completion Time, Surveillance, or Frequency.

1.2.1 Logical Connector Examples

The following examples illustrate the use of logical connectors.

Example 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. System inoperable.	A.1 Restore _____	x hours
	AND	
	A.2 Be in _____	y hours

In hypothetical Example 1.2-1 the logical connector AND is used to demonstrate that when in Condition A, both Required Actions A.1 and A.2 must be completed.

Examole 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. System inoperable.	_____	s hours
	_____	t hours
	_____	u hours
	AND	
	A.3.2.1 Reduce _____	v hours
	OR	
	A.3.2.2 Perform _____	w hours

Hypothetical Example 1.2-2 represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.3.1 is chosen, an additional requirement, indicated by the indented logical connector AND, is imposed. This additional requirement is met by choosing A.3.2.1 or A.3.2.2. The indented position of the logical connector OR indicates that A.3.2.1 and A.3.2.2 are alternate and equal choices, only one of which must be performed.

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use. (Note: The MODES used in the examples below are generic hypothetical MODES and are not the **same** as the MODES for WESF.)
BACKGROUND	Limiting Conditions for Operation (LCOs) specify minimum requirements for ensuring safe operation of the facility. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to he met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
IMMEDIATE COMPLETION TIME	In some cases Immediately is used as a special Completion Time. In this case, the Required Action is to be commenced without delay, and continuously pursued in a controlled manner until complete. The **use** of Immediately implies the highest sense of urgency. Implementation of Immediately shall be given top priority over all other activities.
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., inoperable equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, provided the unit is in a MODE or specified condition stated in the Applicability of the LCO. Required Actions must he completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions must be applied until the Condition no longer exists or the unit is not within the LCO Applicability. If situations are discovered that require entry into more than one Condition at a time within a single LCO (multiple Conditions), the Required Actions for each Condition must be performed within the associated Completion Time. When in multiple Conditions, separate Completion Times ***are*** tracked for each Condition starting from the time of discovery of the situation which required entry into the Condition. Once a Condition has been entered, subsequent systems or variables expressed in the Condition discovered to be inoperable or not within limits, will result in separate entry into the Condition for each discovery. The Required Actions and the associated Completion Times of the Condition then apply to each additional discovery independently.

1.3.1 Completion Time Examples

The following examples illustrate the use of Completion Times with different types **of** Conditions and changing Conditions.

Example 1.3-1

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action A.1 and associated Completion Time not met within X hours.	B.1 Be in STANDBY MODE. AND B.2 Be in REPAIR MODE.	***6* hours** 12 hours

AND

Example 1.3-2

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more valves inoperable.	A.1 Restore valve to OPERABLE status.	**4** hours
B. Required Action A.1 and associated Completion Time not met within **4** hours.	B.1 Be in STANDBY MODE. AND B.2 Be in REPAIR MODE.	***6*** hours 12 hours

If the Completion Time associated with a valve in Condition A expires, Condition B is entered for that valve. If the Completion Times associated with subsequent valves in Condition A expire, Condition B is entered separately for each valve and separate Completion Times start and are tracked for each valve. If a valve which caused entry into Condition B is restored to OPERABLE status, Condition B is exited for that valve.

Example **1.3-3**

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Primary tank WASTE level outside limit.	A.1 Perform SR **3.X.X.X** OR A.2 Restore primary tank WASTE level to within limit.	Once per 2 hours 7 days
B. Required Action and associated Completion Time for Condition A not met.	B.1 Be in STANDBY MODE	***6*** hours

In hypothetical Example **1.3-3,** entry into Condition A offers a choice between Required Action A.1 or A.2. Required Action A.1 has a "Once per" Completion Time, which qualifies for the **25%** extension per SR **3.0.2,** Frequencies, to each performance after the initial performance. If Required Action A.1 is followed, and the Required Action is not met within the Completion Time (including the **25%** extension allowed by SR **3.0.2,** Frequencies), Condition B is entered. If Required Action A.2 is followed and the Completion Time of **7** days is not met, Condition B is entered.

If after entry into Condition B, Required Action **A.1** or A.2 is met, Condition B is exited and operation may then continue in Condition A

Examule **1.3-4**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One system inoperable.	A.1 Perform SR **3.X.X.X** AND A.2 Restore system to OPERABLE status.	2 hours Once per **8** hours thereafter 7 days

B. Required Action A.1 and associated Completion Times not met.	B.I Be in STANDBY MODE. AND 8.2 Be in REPAIR MODE.	6 hours 12 hours

1.4 Frequency

PURPOSE

The purpose of this section is to defme the proper use and application of Frequency requirements. Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Condition for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

(Note: The MODES used in the examples below are generic hypothetical MODES and are not the same as the MODES for WESF.)

FREQUENCIES

The Frequencies and allowable extensions, as used in Surveillance Requirements and ACTIONS statements, are specified as follows. See SR **3.0.2,** Frequencies, for application of the **25%** extension.

NOTATION	FREQUENCY	WITH 25% EXTENSION*
Not Applicable	At least once per 24 hours	Not Allowed
Weekly	At least once per 7 days	8 days
Semi-annually	At least once per 184 days	230 days
Annually	At least once per 365 days	456 days

'No partial days are allowed, i.e., the 25% extension shall be rounded conservatively (e.g., **456** days instead of **456.25** days). The allowable **25%** extension is not intended to be used repeatedly merely as an operational convenience to extend Surveillance intervals or periodic Completion Time intervals beyond those specified.

1.4.1 Frequency Examples

The following examples illustrate the various ways that Frequencies are specified. In these examples, the Applicability of the LCO (LCO not shown) is OPERATION, STANDBY and REPAIR MODES.

Example **1.4-1**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Perform VERIFICATION.	24 hours

Hypothetical Example **1.4-1** contains the type of SR most often encountered in the Interim Operational Safety

Requirements (IOSR). The Frequency specifies an interval **(24** hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent **24** hour interval. Although the Frequency is stated as **24** hours, an extension of the time interval ***to*** **1.25** times the stated Frequency is allowed by SR **3.0.2,** Frequencies, for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR **3.0.1,** SR Met, (such as when the equipment is inoperable, a variable is outside specified limits, or the unit is outside the Applicability of the Limiting Condition for Operation). If the interval specified by SR **3.0.2,** Frequencies, is exceeded while the unit is in a MODE or other specified condition in the Applicability of the LCO, and the performance of the Surveillance is not otherwise modified (refer to Examples **1.4-3** and **1.4-4),** then SR **3.0.3,** Delay of Required Actions, becomes applicable.

If the interval as specified by SR **3.0.2,** Frequencies, is exceeded while the unit is not in a MODE or other specified condition in the Applicability of the LCO for which performance of the SR is required, the Surveillance must he performed within the Frequency requirements of SR 3.0.2, Frequencies, prior to entry into the MODE or other specified condition. Failure to do so would **result** in SR **3.0.4,** MODE Changes, not being met.

Sometimes special conditions dictate when a Surveillance is to be met. These conditions apply to the Surveillance or ***to*** the Frequency or both. They are "otherwise stated" conditions allowed by SR 3.0.1, SR Met. They may he stated as clarifying Notes in the Surveillance, in the Frequency, or both. The remaining examples discuss these special conditions.

Example **1.4-2**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
VERIFY temperature is within limits	Once within **8** hours after start of transfer AND **24** hours thereafter during transfer

Hypothetical Example **1.4-2** has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. The Surveillance must initially be performed within **8** hours after the **start** of each transfer.

The use of "Once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the **25%** extension allowed hy SR 3.0.2, Frequencies. "Thereafter" indicates future performances must be established per SR **3.0.2,** Frequencies, but only after a specified condition is first met (i.e., the "Once" performance in this example). Once the transfer is complete, the measurement of both intervals stops. New intervals **start** upon the start of the next transfer.

Examole 1.**4-3**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
----------NOTE---------- Not required to be performed until 8 hours after start of transfer. ----------	
VERIFY temperature is within limits.	**24** hours

The Surveillance shown in hypothetical Example **1.4-3** need only be performed during transfers. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example 1.4-1. If the Surveillance was not performed within the **24** hour interval (including the **25%** extension allowed by SR 3.0.2, Frequencies), but transfers are not occurring, it would not constitute a failure of the SR or failure to meet the LCO. Therefore, SR **3.0.4,** MODE Changes, is not applicable when changing MODES, even with the **24** hour Frequency not met, provided transfers *are* not occurring.

Once transfers are occurring, **8** hours would he allowed for completing the Surveillance. If the Surveillance was not performed within this 8 hour interval, there would then be **a** failure to perform ***a*** Surveillance within the specified Frequency; then MODE changes would he restricted in accordance with SR **3.0.4,** MODE Changes, and the provisions of SR **3.0.3,** Delay of Required Actions, apply.

Examole **1.4-4**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
----------NOTE---------- Not required to be performed until transfers are occurring.	
VERIFY temperature is within limits.	**24** hours

Hypothetical Example **1.4-4** specifies that the requirements of this Surveillance do not have to be met until transfers *are* occurring. The interval measurement for the Frequency of this Surveillance continues at all times, as described in Example **1.4-1**. If the Surveillance was not performed within the **24** hour interval (including the **25%** extension of SR **3.0.2,** Frequencies), but the unit is not performing transfers, there would be no failure of the SR nor failure to meet the LCO. Therefore, SR **3.0.4,** MODE Changes, is not applicable when changing MODES, even with the **24** hour Frequency not met. Prior to performing transfers, (assuming again that the **24** hour Frequency was not met), the SR must be satisfied.

This example, specifying when the Surveillance is "required to be met," differs from the other examples, which only specified performance allowances/requirements. When a Surveillance is not required to be "met," the acceptance criteria is not required to be applied to consideration of OPERABILITY. That is, SR **3.0.1,** SR Met, requires "failure to meet a Surveillance, whether such failure is experienced during performance of the Surveillance or hetween performances of the Surveillance, shall be failure to meet the LCO." Therefore, when the Surveillance is not required to he met, failure does not constitute failure to meet the LCO.

1.5 Notes

PURPOSE

Notes provide additional clarification in the Limiting Conditions for Operation (LCOs), Applicability, ACTIONS and Surveillance Requirements (SRs). Notes in the LCOs and Applicability are placed after the text they amplify. Notes in the ACTIONS and SRs are placed before the text they amplify. All Notes are preceded by the centered heading "NOTE" in uppercase type.

(Note: The MODES used in the examples below are generic hypothetical MODES and are not the same as the MODES for WESF.)

1.5.1 Notes Examples

The following examples illustrate the various ways that Notes are specified

Example 1.5-1

LCO **3.X.X** Conductivity probe leak detection systems installed in process pipeline encasements and clean-out boxes (COBs), diversion boxes, valve pits, pump pits, and drain pits shall be OPERABLE.

----------NOTE----------
Conductivity probe *leak* detections systems may be inoperable for planned work activities (e.g., maintenance):

1. For $\leq$ 1 hour, or

2. When constant surveillance is provided at the locations where *leak* detection systems are inoperable, or

3. For process pipeline encasements that drain to pits where leak detection systems are OPERABLE.

In hypothetical Example 1.5-1 the Note is placed after the LCO requirement,

Example 1.5-2

APPLICABILITY: OPERATION, SHUTDOWN, and REPAIR MODES

----------NOTE----------
LCO 3.0.4, MODE Changes, is not applicable.

In hypothetical Example 1.5-2 the Note is placed after the Applicability statement,

Example 1.5-3

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. System inoperable.	_____	X hours
	_____	X hours
	stop _____	X hours

In hypothetical Example **1.5-3** the Note is placed before Required Action A.3

Example 1.5-4

SURVEILLANCE	FREQUENCY
SR 3.X.X.X ----------NOTE---------- Only required to be performed in OPERATION and REPAIR MODES. ----------	
VERIFY _____	X days

In hypothetical Example 1.5-4 the Note is placed before the Surveillance Requirement.

1.6 MODES

1.6.1 MODES Defined for WESF

OPERATION Cesium and strontium capsules are being stored. Receipt, inspection, and decontamination of the capsules are authorized. Routine operational, surveillance, and maintenance activities are authorized.

RESTRICTED Cesium and strontium capsules are being stored. An abnormal facility condition in which only certain restricted activities defmed in a recovery plan are authorized.

1.7 SAFETY LIMITS (SLS)

SLs are limits on process variables (e.g., temperature, pressure) associated with those physical barriers (e.g., tanks, piping), generally passive, that are necessary for the intended facility function. Exceeding SLs could directly cause the failure of one or more of the barriers that prevent the uncontrolled release of radioactive material. The limits are stated in measurable units such as degrees Celsius and are placed on primary barriers closest to the material source. SLs, if absolutely necessary, are reserved for a small set of safety requirements to which the facility is committed to protect the integrity of the primary barriers.

Applying the quantitative risk evaluation guidelines (EGs) provided in **HNF-SD-WM-BIO-002,** Chapter **3.0,** SLs are those limits required to maintain radiological consequences to the offsite public below EGs.

1.8 LIMITING CONTROL SETTINGS (LCSS)

LCSs are setpoints on safety systems that control process variables to prevent exceeding SLs. The specific setpoints are chosen such that if exceeded, sufficient time is available to automatically or manually correct the condition before exceeding SLs.

The LCSs are combined with their respective LCOs with all setpoints and requirements contained within the LCOs. By combining the LCSs with the LCOs, the LCS setpoint (within limits) becomes part of the OPERABILITY of the system. Furthermore, safety is enhanced by placing the Applicability, ACTIONS and SRs for a system in a single location and reduces the complexity of the IOSR document.

1.9 LIMITING CONDITIONS FOR OPERATION (LCOS)

LCOs *are* the lowest functional capability or performance level of structures, systems, and components **(SSCs)** (and their support systems) required for normal, safe operation of the facility. LCOs are based on keeping the **SSCs** OPERABLE, or on maintaining conditions within specified limits. LCOs are prepared for those **SSCs** that are identified in the accident analyses as preventing or mitigating accidents or hansient events that involve the assumed failure of, or present a challenge to, the integrity of a physical barrier that prevents the uncontrolled release of radioactive material. LCOs are established only for those mitigative **SSCs** that are **part** of the primary success path of an accident sequence analysis; i.e., the assumed sequence of events that leads to the conclusion of an accident for which the risk is judged to be acceptable.

Applying the quantitative risk EGs provided in HNF-SD-WM-BIO-002, Chapter **3.0,** LCOs are established for those preventive and mitigative SSCs or conditions required to maintain radiological consequences to the offsite public and onsite workers below EGs.

1.10 SURVEILLANCE REQUIREMENTS (SRS)

SRs are requirements relating to testing, calibration, or inspection of SSCs or conditions. SRs provide assurance that the necessary quality of **SSCs** is maintained; the facility operation will be within the SLs; and the LCSs and the LCOs will be met.

1.11 ADMINISTRATIVE CONTROLS (ACS)

ACs are the provisions relating to organization and management, procedures, recordkeeping, reviews, audits, and specific program requirements for risk reduction necessary to ensure safe operation of the facility. The IOSRs (i.e., SLs, LCSs, LCOs and ACs) establish administrative requirements that ensure IOSR requirements are met in the operation of the facility and the procedures that are followed should an IOSR not be met. ACs are normally written at the program level and contain program key elements, as applicable. ACs are established (1) if a safety function is best satisfied by a program instead of a hardware system, (2) if control of a condition is not measured in real-time or near to real-time, **(3)** if control of a condition is not under the immediate control of the operator, **(4)** if a condition does not require immediate action and sufficient recovery time exists to permit mitigating action, or ***(5)*** if a condition requires an evaluation based on prevalent conditions. ACs do not require ACTIONS statements or SRs. SRs necessary to demonstrate compliance with an AC and the actions taken should an AC requirement not be met are performed according to administrative procedures.

Applying the quantitative risk EGs provided io HNF-SD-WM-BIO-002, Chapter 3.0, ACs are established for those programs required to maintain radiological consequences to the offsite public and onsite workers below EGs.

2.0 SAFETY LIMITS (SLs) AND LIMITING CONTROL SETTINGS (LCSs)

2.1 SLs and LCSs

No SLs are identified for **WESF** based on the selection criteria in Section 1.7, Safety Limits, and the conclusions found in **HNF-SD-WM-BIO-002,** Chapter **3.0.** Since no SLs are identified for WESF, there are no LCSs based on the selection criteria in Section **1.8,** Limiting Control Settings.

3.0 OPERATING LIMITS AND SURVEILLANCE REQUIREMENTS

LCO 3.0.1 LCO Met	LCOs shall he met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, ACTION Met.
LCO 3.0.2 ACTION Met	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall he met. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.
LCO 3.0.3 ACTION Not Met	For ACTIONS not met (VIOLATION), proceed in accordance with Administrative Control Section 5.4.3, Response to a Limiting Condition for Operation and Limiting Control Setting VIOLATION.
LCO 3.0.4 MODE Changes	When an LCO is not met, entry into a MODE **or** other specified condition in the Applicability shall not he made except when the associated ACTIONS to he entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This LCO shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. Exceptions to this LCO are stated in the individual LCOs. These exceptions allow entry into MODES or other specified conditions in the Applicability when the associated ACTIONS to he entered allow unit operation in the MODE or other specified condition in the Applicability only for a limited period of time.
LCO 3.0.5 Return to Service	Equipment removed from service **or** declared inoperable to comply with ACTIONS may he returned to service under administrative control solely to perform testing required to demonstrate its OPERABILITY or the OPERABILITY of other equipment. This is an exception to LCO 3.0.2, ACTION Met, for the system returned to service under administrative control to perform the testing required to demonstrate OPERABILITY.
LCO **3.0.6** Support System LCO Not Met	When a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to he entered. Only the support system LCO ACTIONS are required to he entered. This **is** an exception to LCO 3.0.2, ACTION Met, for the supported system. When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall he entered in accordance with LCO 3.0.2, ACTION Met.
LCO 3.0.7 Emergency Exceptions	Emergency actions may he taken that depart from the approved Interim Operational Safety Requirements (IOSRs) when no actions consistent with the IOSRs are immediately apparent, and when these actions are needed to protect the public health and safety. Such actions shall he approved, as a minimum, by a certified operator or other qualified person certified on that

system through an approved training program. If emergency actions are taken, verbal notifications shall he made to the Head of the Field Element (RL) within 2 hours and by written reports to the Cognizant Secretarial Officer (CSO) or designee, within **24** hours, in accordance with Section 5.5, Occurrence Reporting.

If emergency actions are taken, verbal notifications shall he made to the Head of the Field Element (RL) within **2** hours and by written reports to the Program Manager (PM) within **24** hours, in accordance with Section ***5.5,*** Occurrence Reporting.

SR 3.0.1
SR Met

SRs shall he met during the MODES or other specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a Surveillance, whether such failure is experienced during or between the performances of the Surveillance, shall he failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall he failure to meet the LCO except as provided in SR **3.0.3,** Delay of Required Actions. If in an ACTIONS statement, performance of SRs required to demonstrate compliance with an LCO is not required.

SR 3.0.2
Frequencies

The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the previous performance or as measured from the time a specified condition of the Frequency is met. For Frequencies specified as "once," the interval extension does not apply.

If a Completion Time requires periodic performance on a "once per. . ." basis, the above Frequency extension applies to each performance after the initial performance. Exceptions to this **SR** are stated in the individual LCOs.

SR **3.0.3**
Delay of Required Actions

If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may he delayed, from the time of discovery, **up** to **24** hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must he entered. The Completion Times of the Required Actions hegin immediately upon expiration of the delay period.

When the Surveillance is performed within the delay period and the Surveillance is not met, the LCO must immediately he declared not met, and the applicable Condition(s) must he entered. The Completion Times of the Required Actions hegin immediately upon failure to meet the Surveillance.

SR 3.0.4
MODE Changes

Entry into a MODE or other specified condition in the Applicability of an LCO shall not he made unless the LCO's Surveillances have been met within their specified Frequency. This provision shall not prevent passage through or to MODES or other specified conditions in compliance with Required Actions.

3.1 POOL CELL WATER LEVEL LCO

3.1.1 Pool Cell Water Loss Detection System

LCO 3.1.1 Water level in Pool Cells 1 and 3 through 7 shall b e t 130 inches. Water level in Pool Cell 12 shall he ≥ 100 inches.

Pool cell water **loss** detection shall be provided as follows:

a. An OPERABLE water level monitoring system with a setpoint **of** 130 inches for Pool Cells 1, and 3 through 7, and a setpoint **of** 100 inches for Pool Cell 12.

AND

b. An OPERABLE area radiation monitor (ARM) system consisting of at least one operating ARM in the Pool Cell **Area** with a setpoint of ≤ 10 **mR/hr**.

----------NOTE ----------
Water **level** monitoring system AND/OR area radiation monitoring system may be inoperable for **planned** work activities (e.g., maintenance) for ≤ 30 minutes without implementing Required Actions. The system(s) cannot he inoperable for concurrent 30-minute periods.

MODE APPLICABILITY: OPERATION and RESTRICTED.

PROCESSAREA APPLICABILITY:
a. Pool Cells 1. 3 through 7 and 12
b. Pool Cell **Area.**

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Water level in Pool Cells 1, 3 through 7 is < 130 inches OR Water level in Pool Cell 12 is < 100 inches Radiation level is > 10 mR/hr	A.1 Initiate water addition to Pool Cells ----------NOTE---------- Operator will iiot initiate water addition to **pool** cells if it is verified within the I-hour COMPLETION **TIME** that **the** radiation alarm is **indicating** capsule failure instead of a loss ofpool cell water level.	1 hour

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Water level monitoring system is inoperable for one or more pool cells (Pool Cells 1, 3 through 7 and 12), but OPERABLE in at least one pool cell.	B.1 VERIFY ARM system is OPERABLE and no radiation **alarms** exist.	Immediately
	B.2 Open transfer port(s) between Pool Cell 12, the pool cell(s) with inoperable level monitoring, and a pool cell with operable level monitoring.	Immediately
	B.3 Restore inoperable level monitor(s) to OPERABLE status.	30 days
C. Water level monitoring is inoperable for all pool cells.	C.1 VERIFY ARM system is OPERABLE and no radiation alarms exist.	Immediately
	AND	
	C.2 Open transfer ports between Pool Cells 1, 3 through 7 and Pool Cell 12.	Immediately
	AND	
	C.3 Restore level monitoring system to OPERABLE status for at least one pool cell.	***5*** days
	AND	
	C.4 Restore remaining inoperable level monitor(s) to OPERABLE status.	30 days
D. **All** ARMs are inoperable.	D.1 VERIFY water level is ≥ 130 inches for Pool Cells 1, 3 through 7 and ≥ 100 inches for Pool Cell 12 using the level monitoring instrumentation.	Immediately
	AND	
	D.2 Open transfer ports between Pool Cells **1.3** through 7 and Pool Cell 12.	Immediately
	D.3 Restore one ARM in the Pool Cell Area to OPERABLE status.	***5*** days

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. All pool cell level monitoring and ARMs are inoperable.	E.l VERIFY radiation levels are not above normal background using a portable radiation instrument upon entering the Pool Cell **Area.**	Immediately AND once per 24 hours thereafter until at least one pool cell level monitor and ARM are OPERABLE
	AND	
	E.2 Open transfer ports between Pool Cells 1.3 through 7 and Pool Cell 12.	Immediately
	AND	
	E.3.1 Restore at least one pool cell level monitor to OPERABLE status.	5 days
	OR	
	E.3.2 Restore one ARM in the Pool Cell Area to OPERABLE status.	***5*** days
	AND	
	E.4 Restore pool cell level monitoring to Pool Cells 1.3 through 7 and 12.	30 days
	AND	
	E.5 Restore one ARM in the Pool Cell Area to OPERABLE status if not completed in Action E.3.2.	30 days

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	REQUENCY
3.1.1.1	VERIFY **pool** cell water level monitors in Pool Cells 1, 3 through 7 and Pool Cell **12** are OPERABLE.	7 days
3.1.1.2	Perform FUNCTIONAL TEST of **pool** cell water level monitors in Pool Cells **1,** 3 through 7 and Pool Cell 12.	**184** days
3.1.1.3	Perform CALIBRATION of **pool** cell water level monitors in Pool Cells 1, 3 through 7 and Pool Cell **12.**	**365** days
3.1.1.4	VERIFY Pool Cell Area ARMs are OPERABLE.	7 days
3.1.1.5	Perform FUNCTIONAL TEST of Pool Cell Area ARMs.	**184** days
3.1.1.6	Perform CALIBRATION of Pool Cell Area ARMs.	**365** days
3.1.1.7	VERIFY transfer port valves for ACTIVE POOL CELLS are OPERABLE.	365 days

3.2 K-3 HEPA FILTER EFFICIENCY LCO

LCO 3.2 A HEPA filter with a particulate removal efficiency of ≥ 99.90% must be provided for the K-3 ventilation system.

MODE APPLICABILITY: OPERATION and RESTRICTED.

PROCESS AREA APPLICABILITY: K-3 HEPA Filter(s)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The overall particulate removal efficiency of the online K-3 HEPA filter unit is < 99.90%.	A.1 Switch to the other K-3 HEPA filter.	3 hours
B. The overall particulate removal efficiency of both K-3 HEPA filter units is < 99.90%.	B.1 Lockout motor of the K-3 exhaust fans. AND	4 hours
	B.2 Develop a recovery plan.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
3.2.1	VERITY overall particulate removal efficiency of the online K-3 HEPA filter unit is ≥ 99.90%	365 days

4.0 SURVEILLANCE REQUIREMENTS

Limiting Conditions for Operation (LCOs) and their associated Surveillance Requirements (SRs) are integral. Therefore, SRs are found in Section **3,** Operating Limits and Surveillance Requirements. SRs are numbered according to their respective LCOs (i.e., SR 3.1.1.1 is the first SR associated with LCO 3.1.1).

5.0 ADMINISTRATIVE CONTROLS

5.1 PURPOSE

5.1.1 The purpose of the Administrative Controls (ACs) is to state the provisions relating to organization and management, procedures, recordkeeping, reviews, audits, and specific program requirements for risk reduction necessary to ensure safe operation of WESF.

5.1.2 Applicability

Unless otherwise noted, these ACs apply during all WESF MODES (OPERATION and RESTRICTED).

5.2 CONTRACTOR RESPONSIBILITY

5.2.1 The Contractor is responsible to DOE for the safe operation of the DOE-owned WESF in accordance with the IOSRs as approved **by** the CSO or designee, including any modification by the CSO. The Contractor shall be responsible for maintaining the current DOE-approved IOSRs as a controlled document.

5.2.1.1 Project Manager

The Project Manager shall be responsible for overall WESF operation and shall delegate in writing the succession tn this responsibility, as appropriate.

5.2.1.2 On-Call Building Emergency Director (OBED)

The OBED shall be responsible for the local command function and is available on **a** 24-hour basis. During any absence of the OBED, a designated, qualified individual shall assume the command function.

5.3 COMPLIANCE

5.3.1 The Project Manager is responsible for ensuring that the requirements of the WESF IOSRs are met. Compliance shall be demonstrated by:

a. Operating within the Limiting Conditions for Operation (LCOs), and the associated Surveillance Requirements (SRs) during their Applicability.

b. Operating within the ACTIONS of LCOs when required

c. Performing all SRs when required

d. Establishing, implementing, and maintaining the required ACs

e. Maintaining required DESIGN FEATURES.

5.4 INTERIM OPERATIONAL SAFETY REQUIREMENT VIOLATIONS

5.4.1 VIOLATION Criteria

VIOLATIONS of the IOSRs occur as the result of any of four circumstances:

a. Exceeding an SL.

b. Failure to take the ACTIONS required within the required time limit following:

1. Exceeding an LCS.

2. Failure to meet an LCO.

3. Failure to successfully meet an SR.

c. Failure to perform an SR within the required time limit.

d. Failure to comply with an AC requirement.

NOTE----------

1. A VIOLATION relates only to failure to comply with an ACTIONS statement. Exceeding an LCO limit by itself, or failure of an SR by itself (acceptance criteria not met), is not considered a VIOLATION.

2. Failure to perform an SR within the required time limit includes the allowable 25% extension (see SR **3.0.2,** Frequencies). The extension shall not he used routinely as an operational convenience to extend SR intervals or periodic Completion Time intervals beyond those specified.

3. AC requirements are found in each AC program requirement section. Minimum requirements for each AC program are found in the program key elements section. Failure to comply with an AC program or the intent of an AC program is considered a VIOLATION. A noncompliance within a specific procedure that implements an AC program is not necessarily a VIOLATION.

4. Planned maintenance activities, which render a system inoperable and which are performed within Completion Times specified in ACTIONS statements, do not constitute a VIOLATION.

5.4.2 Response to a Safety Limit VIOLATION

No SLs are identified for WESF based on the selection criteria in Section 1.7, "Safety Limits," and the conclusions found in HNF-SD-WM-BIO-002, Chapter **3.0.**

5.4.3 Response to a Limiting Condition for Operation and Limiting Control Setting VIOLATION.

Since no SLs are identified for WESF, there are no LCSs based on the selection criteria in Section **1.8,** "Limiting Control Settings."

If a VIOLATION of an LCO occurs, proceed as follows:

a. Place the unit in a safe and stable condition Immediately

b. Notify the DOE of the VIOLATION and prepare an occurrence report in accordance with Section **5.5,** "Occurrence Reporting."

c. Prepare a recovery plan describing the steps leading to operation in a compliant condition.

5.4.4 Response to a Surveillance Requirement VIOLATION

If a VIOLATION of an SR occurs, proceed as follows:

5.4.4.1 Failure to Implement ACTIONS Upon Failure to Successfully Meet an SR

a. Notify the DOE of the VIOLATION and prepare an occurrence report in accordance with Section **5.5,** "Occurrence Reporting."

5.4.4.2 Failure to Perform an SR Within the Reauired Time Limit

a. Enter SR **3.0.3,** Delay of Required Actions, and perform the SR within **24** hours **or** up to the limit of the specified Frequency, whichever is **less.**

1. If the SR is successfully met (i.e., SR acceptance criteria satisfied), exit SR 3.0.3, "Delay of Required Actions," and continue operation in a compliant condition.

2. If the SR is not successfully met (i.e., SR acceptance criteria not satisfied), evaluate whether the LCO is met. If the LCO is met, continue operation in a compliant condition. If the LCO is not met, enter the LCO ACTIONS. If the ACTIONS Completion Times are met, continue operation in a compliant condition. If the ACTIONS Completion Times are not met, proceed in accordance with Section **5.4.4.1.**

b. Notify the DOE of the VIOLATION and prepare an occurrence report in accordance with Section **5.5,** "Occurrence Reporting.''

5.4.5 Response to an AC VIOLATION

If a VIOLATION of an AC occurs, proceed as follows:

a. Notify the DOE of the VIOLATION and prepare an occurrence report in accordance with Section **5.5,** Occurrence Reporting.

b. Prepare a recovery plan describing the steps leading to compliance with the AC.

c. Perform and document a technical evaluation, if appropriate, of the AC VIOLATION to determine if any damage may have occurred.

5.5 OCCURRENCE REPORTING (AC 5.5)

5.5.1 Reauirement for Occurrence Reporting

A program shall be established, implemented, and maintained for occurrence reporting of events and conditions, which may involve health and safety. It is the policy of the Contractor to encourage a positive attitude toward reporting occurrences. Consistent reporting of occurrences assures that both DOE and contractor line management are kept fully and currently informed of all events which could have the following results: (1) affect the health and safety of the public or *(2)* endanger the health and safety of workers.

5.5.2 Program Kev Elements

The program key elements include the following:

a. Timely identification, categorization, notification, and reporting to DOE and contractor management of all reportable occurrences at DOE-owned or operated facilities.

b. Timely evaluation of and implementation of appropriate corrective actions.

c. Review of reportable occurrences to assess significance, root causes, generic implications, and the basis for any corrective actions taken to prevent recurrence.

5.5.3 IOSR VIOLATIONS shall be reported in accordance with DOE occurrence reporting requirements.

5.5.4 Unplanned entry into ACTIONS statements is reportable. Planned entry into **ACTIONS** statements to perform Surveillance, maintenance or investigation of operational problems is not reportable.

5.6 ORGANIZATION (AC 5.6)

5.6.1 Lines of authority, responsibility, and communication shall be established and defined for the highest management levels through intermediate levels to and including all safety and operating organization positions. These relationships shall be documented and updated, as appropriate, in the form of organization charts, functional descriptions of departmental responsibilities and relationships, and job descriptions for key personnel positions, **or** in equivalent forms of documentation.

The individuals who train the operating staff and those who cany out safety and quality assurance functions may report to the Project Manager. However, they shall have sufficient organizational freedom to ensure their independence from operating pressures.

5.6.1.1 Project Manager

The Project Manager shall he responsible **for** safe operation within the facility. Safe operation shall include, as necessary, interface requirements with other onsite organizations and facilities.

5.6.1.2 Minimum Operations Shift Complement

The number of oil-call building emergency director (OBED), operators, and support personnel shall he adequate tn operate and support WESF safely. Abnormal plant conditions shall be considered in determining operator assignments. Management shall provide additional personnel, as necessary, to support other activities.

The minimum complement can be 1 less than the required number for a period of time not to exceed **2** hours in OPERATION and RESTRICTED MODES, to accommodate unexpected absences, provided immediate action is taken to restore the shift complement to within the minimum requirements specified in Table 5.6-1.

Individuals (e.g., engineers, managers) who are also trained in an approved training program, including facility-specific operating procedures, may be substituted for operators. See also LCO 3.0.7, Emergency Exceptions.

Table **5.6-1.** WESF Minimum Operations Shift Complement.

	MINIMUM OPERATIONS SHIFT COMPLEMENT	
POSITION	OPERATION MODE	RESTRICTED MODE
On-Call Building Emergency Director (OBED)	0[a]	As required[c]
Operators	1[b]	As required[c]
support	1[b]	As required")

(a) An OBED is on-call at all times to assist the qualified, responsible operator and the support person (backup).

(h) The operator is a qualified operator who is responsible for the facility status and systems condition and control at all times.

The support person (e.g., operator, other person) serves as a backup to the qualified, responsible operator. The support person is not required to be qualified and is not required to be responsible for the facility status and systems condition and control. The support person is only required to be responsible tn make notifications if the qualified operator is unable in the event of an abnormal or emergency situation.

(c) Staffing requirements shall be defined in the specific recovery plan prepared when WESF has been placed in RESTRICTED MODE.

5.7 SOURCE INVENTORY CONTROLS (AC 5.7)

5.7.1 Reauirement for Source Inventory Controls

A program shall be established, implemented, and maintained to ensure the initial conditions assumed in the accident analyses will not be exceeded without additional analyses.

5.7.2 Program Kev Elements

The following source inventories and assumptions identified in HNF-SD-WM-BIO-002, ***Waste Encapsulation and Storage Facility Basis for Interim Operation,*** Chapter 3.0, "Hazard and Accident Analyses," Table 3-3, "Hazard Identification Results for **WESF**" shall be maintained.

a. Radioactive Material Inventories and Assumptions:

Hot Cells

- A Cell:
  - Maximum 15,000 Ci ^{137}Cs and ^{90}Sr (contained in steel drums) with 200 kg total combustible waste.
  - Solid waste shall be packaged to preclude free flow of air up through the combustible material and shall preclude water infiltration through the waste. An open steel drum is acceptable for packaging.
- F Cell:
  - Maximum 940,000 Ci ^{137}Cs (encapsulated ^{137}Cs and ^{90}Sr) not to exceed thermal limit of 5.7.2.b.

Truckport

- WESF Hot Cell Waste Drum(s):
  - Maximum 5,000 Ci ^{137}Cs and/or ^{90}Sr.
- WIXM:
  - Maximum 25.200 Ci ^{90}Sr or 31.500 Ci ^{137}Cs or 25.200 Ci combined ^{90}Sr and ^{137}Cs with no less than 100 kg renin material.

K-3 High-Efficiency Particulate Air (HEPA) Filter System

- Each K-3 HEPA filter system (train):
  - Maximum **240** Ci ^{137}Cs and 18,000 Ci ^{90}Sr.

b. Thermal (Heat Load) Inventories and Assumptions:

Hot Cells

- Heat load of stored capsules in hot cell:
  - Maximum 1.8 kW assuming no cell ventilation.
  - Maximum **4.5** kW assuming cell ventilation flowrate of 250 cfm.
- Distance from stored capsules to hot cell structure surface:
  - Minimum **20** cm

Pool Cells

- Heat load of a single pool cell:
  - Maximum 149 kW

5.7.3 Applicability

This program applies to the hot cells, pool **cells,** Truckport, capsules, and each **K-3** HEPA filter system.

5.8 POOL CELL WATER MAKEUP (AC *5.8)*

5.8.1 Requirement for Pool Cell Water Makeup

A program shall be established, implemented, and maintained to ensure that emergency pool cell water makeup is available at all times to keep the cesium and strontium capsules in the pool cells covered with water.

5.8.2 Program Key Elements

a. Designated emergency pool cell water makeup sources include the following (without regard to operational desirability):

- Raw water feed to WESF
- Sanitary water feed to **WESF**
- WESF-operated deep well (282B)
- WESF-operated deep well (282BA)

b. At least **two** of the four designated emergency pool cell water makeup sources identified above shall be available at all times.

c. Pool cell water makeup supply shall be capable of delivering **150** gpm and have a minimum reservoir capacity of **83,000** gal.

d. Periodic surveillances of the emergency pool cell water makeup systems (active functions) shall be performed to ensure water makeup capability.

e. Air vents into Pool Cell 12 from Pool Cells 9, 10, and 11 shall be maintained closed.

f. Air vents into Pool Cell 12 from ACTIVE POOL CELLS shall be maintained open.

5.8.3 Applicability

This program applies to ACTIVE POOL CELLS

5.9 HYDROGEN PREVENTION CONTROLS (AC *5.9)*

5.9.1 Reauirement for Hydrogen Prevention Controls

A program shall be established, implemented, and maintained to prevent potential hydrogen buildup in the Pool Cell Area and the hot cells.

5.9.2 Program Key Elements

a. Pool Cell Area

- If cover blocks are installed on ACTIVE POOL CELLS, air flow under the cover blocks shall be established to prevent potential hydrogen buildup.
- If the K-1 ventilation system is inoperable for more than 9 days, a natural convection flow path shall be established by opening the Pool Cell Area north door (or equivalent opening of about 21 ft') to allow venting of potential hydrogen buildup in the Pool Cell Area.

b. Hot Cells

- VERIFICATIONS shall he performed at least once every 9 days to detect water leakage into the hot cells. If water is visible, air flow shall be established through the affected cell(s), OR the water shall be removed within 9 days from the last VERIFICATION.

5.9.3 Applicability

This program applies to the Pool Cell Area and the hot cells.

5.10 HEAVY LOADS OVER POOL CELLS (AC 5.10)

5.10.1 Requirement for Heavy Loads Over Pool Cells

A program shall be established, implemented, and maintained to control the installation and movement of cover blocks and other heavy loads (with the potential to damage capsules) over ACTIVE POOL CELLS.

5.10.2 Program Key Elements

a. Installation of cover blocks on ACTIVE POOL CELLS is prohibited unless performed according to a recovery plan or an emergency response procedure

b. Movement of heavy loads over ACTIVE POOL CELLS is prohibited unless performed according to a recovery plan or an emergency response procedure.

5.10.3 Applicability

This program applies to heavy loads over ACTIVE POOL CELLS.

5.11 DELETED

(AC 5.11 was converted to LCO 3.2)

5.12 FIRE PROTECTION PROGRAM (AC 5.12)

5.12.1 Reauirement for Fire Protection Program

The **WESF fire** protection program shall include the following specific key elements for the hot cells.

5.12.2 Program Key Elements

a. Hot Cells

- All Hot Cells:

  Cell-to-cell pass- oughs it have doors shall remain closed except when performing specific operations that require they be open.

- B-E Cells:

  (1) Plug ports and cover blocks shall remain in place at all times when stored combustibles are present.

  (2) Storage of combustible material in either B/C Cells combined **or** D/E Cells combined shall not exceed the combustible loading equivalent to 18 kg of polystyrene in order to prevent plugging of the **K-3** HEPA filters during a hot cell fire. NOTE: The hot ccll window oil has already been accounted for and is not to be included in the 18 kg limit.

- F and G Cells:

  The following concurrent conditions shall be precluded:

  (1) exposed capsules (out of cask),
  (2) presence of stored combustibles, and
  (3) plug port **or** cover block removed.

5.12.3 Applicability

The key program elements apply as part of the overall WESF fire protection program for the hot cells and Truckport.

5.13 DELETED

5.14 FLAMMABLE GAS CONTROLS (AC **5.14)**

5.14.1 Requirement for Flammable Gas Controls

As an interim control, a program shall be established, implemented and maintained to control the storage and use of flammable gases, such as propane and acetylene, and highly volatile fuels, including gasoline, in the facility. Diesel fuel (i.e., diesel trucks and forklifts) is excluded from this control.

5.14.2 Program Kev Elements

a. No flammable gases, such as propane and acetylene, and no highly volatile fuels, including gasoline, shall he used or stored in the facility. Diesel fuel is excluded from this control.

If flammable gas or highly volatile fuel needs to be used in the facility, the USQ process will he implemented and a safety assessment will he completed to determine the impacts of an explosion on the Pool Cell Area and hot cell structures.

5.14.3 Applicability

This program applies to the use and storage of flammable gas in WESF.

5.15 POOL CELL AREA RADIATION MONITORS (AC **5.15)**

5.15.1 Requirement for Radiation Detection in Pool Cell Area

A program shall be established, implemented, and maintained to provide two radiation monitors in the Pool Cell Area to evacuate personnel upon high radiation levels.

5.15.2 Program Kev Elements

a. At least two radiation monitors are provided at all times for the Pool Cell Area to evacuate personnel upon high radiation fields due to a capsule failure.

5.15.3 Applicability

This program applies to the Pool Cell Area.

5.16 WIXM RADIATION MONITORING ANI) VENTING (AC 5.16)

Requirement for WXIM Radiation Monitoring and Venting

A radiation monitoring program shall be established, implemented, and maintained to detect the presence of elevated levels of beta/gamma radiation in the vicinity of the WIXM and alert facility workers of the condition. A program shall also be established to ensure a contaminated WIXM is vented sufficiently to prevent pressurization.

Program Key Elements

5.16.2

a. Continuous direct radiation monitoring capabilities shall be established, implemented, and maintained near a WIXM containing resin contaminatcd with ^{137}Cs and ^{90}Sr while not covered by the SARI' (IINF 1998d) as follows:

The radiation monitoring shall be established (equipment calibrated and confirmed operating normally) prior to commencement of WIXM operation with contaminated feed streams: such configuration shall be maintained after WIXM contact with contaminated feed streams, until such time as the WIXM has been removed from the facility.

- The radiation monitoring shall be capable of detecting beta and gamma radiation.

- Tlic radiation monitoring sliall provide local visual and audio alarms within the Truckport.

Procedures shall include provisions for evacuation ofthe area upon radiation monitoring alarm.

b. A program/procedure shall be developed to cnsurc a vent capable of preventing pressurization is placed on the WIXM.

Applicability

5.16.3

This program applies when the potential exists for ^{137}Cs and/or ^{90}Sr contamination to be present on the resin in the WIXM.

5.17 WIXM POST-USE FILLING OF VOID SPACE (AC 5.17)

5.17.1 Requirement for WIXM Radiation Monitoring and Venting

A program shall he established, implemented, and maintained to cnsurc that the void spaces in WIXM vessels are filled to the extent possible with uncontaminated, inert (not able Lo remove ^{137}Cs and/or ^{90}Sr) material after the WIXM has been used.

Program Key Elements

5.17.2

a. The material used to fill the WIXM vessel after use must hc an uncontaminated, inert solid with the following characteristics. (The material commonly used will hc tlic WIXM anion resin).

- Tlic material shall not be of a smaller particle size, on average, than the resin. and the iiiaterial shall not have a greater hulk density than tlie resin. This ensures that llie material will not significantly settlc into tlic resin bed or to the bottom ofthe WIXM vessel. creating a void volume in the top of the vessel.

- The material shall not be capable of trapping or bonding with ^{137}Cs and/or ^{90}Sr. 'This ensures that tlie material will iiot collect additional radioactive materials.

b. Tlic quantity of resin added to the WIXM prior to placing it into operation shall be documented so that the quantity of material that must he added after operations can he determined.

c. The necessary quantity of material shall hc procured and available for use prior to commencement of operations with tlie WIXM.

d. The iiiaterial shall be added prior to. or during draining of the hulk water froin llie WIXM so as to preclude the formation of a void, or air volume, above the resin bed.

Applicability

5.17.3

This administrative control applies to all WIXMs used at WESF

6.0 REFERENCES

The following references are for the Preface, Section 1, Section 2, and Section 5. The references for Appendix A and B are contained within each appendix.

DOE Order 5480.22, 1992, *Technical Safety Requirements,* Change 1 (1992), and Change 2 (1996), U.S. Department of Energy, Washington, D.C.

DOE Order 5480.23, 1992, *Nuclear Safety Analysis Reports,* Change 1 (1994), U.S. Department of Energy, Washington, D.C.

Iley. B. E., 1999. *Supporting Calculations and Documentation for the WESF Basis Interim Operation*, HNF-SD-WM-TI-733, Kev 1 A. B&W Hanlord Company, Richland, Washington.

Hanson 1999 - Contract number DE-AC06-95RL13200-"Implementation Plan for DOE orders 5480.22 and 5480.23," (external letter FDH 9955894A42 to K. A. Klein, September 22, 1999) Fluor Daniel Hanford, Inc., Richland, Washington.

Mertz, D W., 1998, *Fire Hazard Analysis for Building 225-B Waste Encapsulation and Storage Facility (WESF),* HNF-SD-WM-FHA-019 REV 2, B&W Hanford Company, Richland, Washington.

NUREG 1431, 1992, *Standard Technical Specifications, Westinghouse Plants,* Rev. 0, U.S. Nuclear Regulatory Commission, Washington D.C.

HNF-SD-WM-BIO-002, 1998, *Waste Encapsulation and Storage Facility Basis for Interim Operation,* Rev. 0, B & W Hanford Company, Richland, Washington.

APPENDIX A BASES

This Appendix provides summary statements of the reasons for the Limiting Conditions for Operation and the associated Surveillance Requirements. The BASES describe how the limit(s), the Applicability, the Condition(s) and the Surveillance(s) will maintain operation of the facility within the safety envelope. The primary purpose for describing the BASES for these requirements is to provide the operations and engineering staff with the necessary information to maintain operation of the facility within the safety envelope and to ensure that any future changes to these requirements will not affect their original intent or purpose.

Bases 3.0 GENERAL LIMITING CONDITIONS FOR OPERATION AND SURVEILLANCE REQUIREMENTS

LCO **3.0.1,** LCO Met, through LCO **3.0.7,** Emergency Exceptions, establish the general requirements applicable to all LCOs and apply at all times, unless otherwise stated.

LCO 3.0.1 - LCO Met

LCO **3.0.1** establishes the Applicability statement within each individual LCO as the requirements for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each LCO).

LCO **3.0.2** - ACTION Met

LCO **3.0.2** establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This LCO establishes that:

a. Completion of the Required Actions within the specified Completion Times constitutes compliance with an LCO; and

b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified.

There are **two** basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit io a MODE or condition in which the LCO is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS). The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

Completing the Required Actions is not required when an LCO is met or is no longer applicable within the associated Completion Time, unless otherwise stated in the individual LCOs.

The nature of some Required Actions of some Conditions necessitates that, once the Condition is entered, the Required Actions must be completed even though the associated Conditions are resolved. The individual LCOs ACTIONS specify the Required Actions where this is the case.

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reasons for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional

entry into ACTIONS should not be made for operational convenience. Alternatives that would not result in redundant equipment being inoperable should be used instead. Doing so limits the time both subsystems/trains of a safety function are inoperable and limits the time other conditions exist which result in LCO **3.0.3,** "ACTION Not Met or ACTION Not Provided," being entered. Individual LCOs may specify a time limit for performing an SR when equipment is removed from service or bypassed for testing. In this case, the Completion Times of the Required Actions are applicable when this time limit expires, if the SR has not been completed.

When a change in MODE or other specified condition is required to comply with Required Actions, the unit may enter a MODE or other specified condition in which a new LCO becomes applicable. In this case, the Completion Times of the associated Required Actions would apply from the point in time that the new LCO becomes applicable, and the ACTIONS Condition(s) are entered.

LCO **3.0.3 -** ACTION Not Met

For ACTIONS not met (VIOLATION), proceed in accordance with Administrative Control Section **5.4.3,** "Response to a Limiting Condition for Operation and Limiting Control Setting VIOLATION."

LCO **3.0.4-** MODE Changes

LCO **3.0.4** establishes limitations on changes in MODES or other specified conditions in the Applicability when a LCO is not met. It precludes placing the unit in a different MODE or other specified condition when the following exist:

a. The requirements of an LCO in the MODE or other specified condition to be entered are not met; and

b. Continued noncompliance with these requirements would result in the unit being required to be placed in a MODE or other specified condition in which the LCO does not apply to comply with the Required Actions.

Compliance with Required Actions that permit continued operation of the unit for an unlimited period of time in a MODE or other specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the unit before or after the MODE change. Therefore, in such cases, entry into a MODE or other specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this LCO should not he interpreted as endorsing the failure to exercise the good practice of restoring systems or components to OPERABLE status before unit startup.

The provisions of LCO **3.0.4** shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO **3.0.4** shall not prevent changes in MODES or other specified conditions in the Applicability that result from a normal shutdown.

Exceptions to LCO **3.0.4** are stated in the individual LCOs. Exceptions may apply to all of the ACTIONS or to a specific Required Action of an LCO.

When changing MODES or other specified conditions while in an ACTIONS Condition, in compliance with LCO **3.0.4,** or where an exception to LCO **3.0.4** is stated, the ACTIONS defme the remedial measures that apply. Surveillances do not have to be performed on the associated inoperable equipment (or on variables outside the specified limits), as permitted by SR **3.0.1,** "SR Met." Therefore, a change in MODE or other specified condition in this situation does not cause SR **3.0.1,** "SR Met," or SR **3.0.4,** "MODE Changes," to be not met for those Surveillances that do not have to be performed due to the associated inoperable equipment. However, SRs must be met to demonstrate OPERABILITY prior to declaring the associated equipment OPERABLE (or variable within limits) and restoring compliance with the affected LCO.

LCO **3.0.5** - Return to Service

LCO **3.0.5** establishes the allowance of restoring equipment to service under administrative controls when it has been removed from service or declared inoperable to comply with ACTIONS. The **sole** purpose of this LCO is to provide an exception to LCO **3.0.2,** ACTION Met, to allow the performance of SRs to demonstrate:

a. The OPERABILITY of the equipment being returned to service; or

b. The OPERABILITY of other equipment.

The administrative controls are to ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed SRs. This LCO does not provide time to perform any other preventive or corrective maintenance.

An example of demonstrating the OPERABILITY of the equipment being returned to service is reopening a containment isolation valve that has been closed to comply with Required Actions, and must be reopened to perform the SRs.

An example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to prevent the trip function from occurring during the performance of an SR on another channel in the other trip system. A similar example of demonstrating the OPERABILITY of other equipment is taking an inoperable channel or trip system out of the tripped condition to permit the logic to function and indicate the appropriate response during the performance of an SR on another channel in the same trip system.

LCO **3.0.6** - Support System LCO Not Met

LCO **3.0.6** establishes an exception to LCO **3.0.2,** "LCO Not Met," for support systems that have an LCO specified in the Interim Operational Safety Requirements (IOSR). This exception is necessary because LCO **3.0.2,** "LCO Not Met," would require that the Conditions and Required Actions of the associated inoperable supported system LCO be entered solely due to the inoperability of the support system. This exception is justified because the actions that ensure the unit is maintained in a safe condition are specified in the support system LCOs Required Actions. These Required Actions may include entering the supported system's Conditions and Required Actions or may specify other Required Actions.

When a support system is inoperable and there is an LCO specified for it in the IOSRs, the supported system(s) is required to be declared inoperable **if** determined to be inoperable **as** a **result** of the support system inoperability. However, it is not necessary to enter into the supported systems' Conditions and Required Actions unless directed to do ***so*** by the support system's Required Actions. The confusion and inconsistency in interpretation of requirements related to the entry into multiple LCOs' Conditions and Required Actions are eliminated by providing all the actions that are necessary to ensure the unit is maintained in a safe condition in the support system's Required Actions.

However, there are instances where a support system's Required Action may either direct a supported system to be declared inoperable or direct entry into Conditions and Required Actions for the supported system. This may occur immediately or after some specified delay to perform some other Required Action. Regardless of whether it is immediate or after some delay, when a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO **3.0.2,** "LCO Not Met."

LCO **3.0.7** - Emergency Exceptions

LCO **3.0.7** establishes that in an emergency, if a situation develops that is not addressed by the IOSRs, facility operating personnel are expected to utilize their training and expertise in taking actions to correct or mitigate the situation. This LCO applies to both LCOs and ACs.

Operations personnel may take actions that depart from a requirement in the IOSRs provided that: 1) an emergency situation exists, **2)** these actions are immediately needed to protect the health and safety of the public, and **3)** no action

consistent with the IOSRs can provide adequate or equivalent protection. If emergency actions are taken, verbal notifications shall be made to the Head of the Field Element (RL) within two hours and by written reports to the Program Manager (PM) within **24** hours, in accordance with Section **5.5,** Occurrence Reporting.

SR **3.0.1,** "SR Met," through SR **3.0.4,** "MODE Changes," establish the general requirements applicable to all LCOs and apply at all times unless otherwise stated.

SR **3.0.1 -** SR Met

SR **3.0.1** establishes the requirement that SRs must be met during the MODES or other specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This SR is to ensure that Surveillances are performed to verify the OPERABILITY of systems and components, and that variables are within specified limits. Failure to meet a Surveillance within the specified Frequency, in accordance with SR **3.0.2,** "Frequencies," constitutes a failure to meet an LCO.

Systems and components are assumed to be OPERABLE when the associated SRs have been met. Nothing in this SR, however, is to be construed as implying that systems or components are OPERABLE when:

a. The systems or components are known to be inoperable, although still meeting the SRs; or

b. The requirements of the Surveillance(s) are known not to be met between required Surveillance performances.

Surveillances do not have to be performed when the unit is in a MODE or other specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified. The SRs associated with a test exception are only applicable when the test exception is used as an allowable exception to the requirements of an LCO.

Surveillances, including Surveillances invoked by Required Actions, do not have to be performed on inoperable equipment because the ACTIONS define the remedial measures that apply. SRs have to be met in accordance with SR **3.0.2,** "Frequencies," prior to returning equipment to OPERABLE status.

Upon completion of maintenance, appropriate post maintenance testing is required to declare equipment OPERABLE. This includes meeting applicable SRs in accordance with SR **3.0.2,** Frequencies. Post maintenance testing may not be possible in the current MODE or other specified conditions in the Applicability due to the necessary unit parameters not having been established. In these situations, the equipment may be considered OPERABLE provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a MODE or other specified condition where other necessary post maintenance tests can be completed.

SR **3.0.2 -** Frequencies

SR **3.0.2** establishes the requirements **for** meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per. . ." interval.

SR **3.0.2** permits a **25%** extension of the interval specified in the Frequency (see Section **1.4,** "Frequency"). This extension facilitates Surveillance scheduling and considers plant operating conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The **25%** extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the SRs. The exceptions to SR **3.0.2** are those Surveillances for which the **25%** extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual LCOs. An example of where SR **3.0.2** does not apply is a Surveillance with a Frequency of "in accordance with 10 CFR 50, Appendix J, as modified by approved exemptions." The requirements of regulations take precedence over the IOSRs. The IOSRs cannot in and of themselves extend a test interval specified in the regulations. Therefore, there would be a Note in the Frequency stating, "SR 3.0.2 is not applicable."

As stated in SR **3.0.2,** the **25%** extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per ..." basis. The **25%** extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance or some other remedial action, is considered a single action with a single Completion Time. One reason for not allowing the **25%** extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR **3.0.2** are not intended to be used repeatedly merely **as** an operational convenience to extend Surveillance intervals or periodic Completion Time intervals beyond those specified.

SR **3.0.3** - Delay of Reauired Actions

SR **3.0.3** establishes the flexibility to defer declaring affected equipment inoperable or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to **24** hours applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with SR **3.0.2,** "Frequencies," and not at the time that the specified Frequency was not met.

This delay period provides an adequate time limit to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures would be required that might preclude completion of the Surveillance.

The basis for this delay period includes consideration of unit conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the SRs.

When a Surveillance with a Frequency based not on time intervals, but upon specified unit conditions or operational situations, is discovered **not** to have been performed when specified, SR **3.0.3** allows the **full** delay period of **24** hours to perform the Surveillance.

SR **3.0.3** also provides a time limit for completion of Surveillances that become applicable as a consequence of MODE changes imposed by Required Actions.

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR **3.0.3** is a flexibility which is **not** intended to be used as an operational convenience to extend Surveillance intervals.

If a Surveillance is not completed within the allowed delay period, then the equipment is considered inoperable or the variable is considered outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment is inoperable, or the variable is outside the specified limits and the Completion Times of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this SR, or within the Completion Time of the ACTIONS, restores compliance with SR **3.0.1,** SR Met.

SR **3.0.4** - MODE Changes

SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a MODE or other specified condition in the Applicability.

This SR ensures that system and component OPERABILITY requirements and variable limits are met before entry into MODES or other specified conditions in the Applicability for which these systems and components ensure safe operation of the unit. This SR applies to changes in MODES or other specified conditions in the Applicability

associated with unit shutdown as well as startup.

The provisions of SR **3.0.4** shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS.

The precise requirements for performance of SRs are specified such that exceptions to **SR 3.0.4** are not necessary. The specific time frames and conditions necessary for meeting the SRs in accordance with the requirements of **SR 3.0.4** are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the MODE or other specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, **or** time has been reached. The SRs are annotated consistent with the requirements of Section **1.4,** "Frequency."

Bases **3.1** POOL CELL WATER LEVEL

Bases **3.1.1 Pool** Cell Water Loss Detection **System**

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BACKGROUND

The current Waste Encapsulation and Storage Facility (WESF) mission is to receive and store cesium and strontium capsules safely. The capsules are stored in pool cells located in the WESF Pool Cell Area. The pool cells use deionized water for normal makeup, and sanitary or raw water can be added **through** a fill pipe located on the north wall of the Pool Cell Area for emergency water makeup.

Maintaining water over the capsules provides both radiation shielding for the workers and cooling for the capsules. The normal pool cell water level is between 150 and 156 inches

Water can be lost from the pool cells by slow water **loss** (i.e., evaporation) or rapid water loss (circulation/drain line failure). Routine checks of water levels and makeup are performed as part of normal operating procedures related to slow water loss. A water **loss** detection system is used to detect a rapid **loss** of pool cell water.

The safety function of the pool cell water **loss** detection system is to alert the operator at the **start** of a rapid water **loss** situation so that appropriate actions (i.e., hegin water makeup) can he taken before loss of institutional control occurs due to an adverse and inaccessible environment. This supports the as low as reasonably achievable (ALARA) concept for worker safety and would prevent the **loss** of all pool cell water, which could result in the loss of institutional control and eventual unacceptable offsite radiological dose consequences. Refer to HNF-SD-WM-BIO-002, ***Waste Encapsulation and Storage Facility Basis for Interim Operation,*** Chapter 2.0, "Facility Description," for descriptions of the level monitoring system and the area radiation monitoring (ARM) system.

The water level monitors are used to ensure that the normal operating water level of **150** to **156** inches is maintained and provides level indication for normal water makeup activities (i.e., evaporation). The LCO alarm at 130 inches would alert the operator that a rapid water loss event has started so that appropriate water makeup can he initiated prior to loss of institutional control.

The ARM system is normally used as part of the ALARA program; however, if pool cell water loss was not detected by the water level monitoring system, then the ARM would alert the operator that **loss** of pool cell water (i.e., loss of shielding) was occurring or that a significant capsule failure had occurred. The operator would have one hour to determine if the ARM was due to **a loss** of pool cell water. a loss of capsule integrity. or instrument malfunction.

Loss of water represents the greatest threat to loss of institutional control due to high doses to facility and onsite workers, and eventual significant offsite dose consequences.

APPLICABLE SAFETY ANALYSES

Loss of pool cell water is analyzed in HNF-SD-WM-BIO-002, Chapter 3.0, "Hazard and Accident Analyses," Section **3.4.2.7**. Based on the results of the analysis in Chapter **3.0,** the unmitigated release of radioactive material could exceed offsite and onsite risk evaluation guidelines. Maintaining water over the capsules provides significant facility worker safety and prevents **loss** of institutional control, which could lead to complete

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loss of pool cell water, eventual capsule failure, and the potential for offsite consequences. The pool cell water **loss** detection system is credited in the analysis to prevent and mitigate the **loss** of pool cell water.

The pool cell ARMs would also alert the operator if there were a capsule failure due to corrosion and whether the pool cell beta monitor had failed (see HNF-SD-WM-BIO-002, Chapter **3.0,** Section **3.4.2.6.1).**

LCO 3.1.1 maintains water level ≥ **130** inches for Pool Cells 1 and 3 through 7 and ≥100 inches for Pool Cell **12.** The pool cell drain lines and circulation lilies enter llic pool cell from tlie pipe tunnel at the 36-inch (centerline) level. Upon failure of tlie drain linc or circulation linc, the pool cell water level could gravity drain to **34.5** inches (bottom of pipe) in approximately one hour if no mitigating actions are initiated. An alarm at 130 inches for Pool Cells 1 and 3 through 7 and 100 inches for Pool Cell 12 alerts the operator that a rapid **loss** of pool cell water event **is** starting and provides adequate time to begin water addition to the pool cells. At a water level of **34.5** inches, it would take several ***(5.5)*** hours to evaporate the water to the top of the capsules (29 inches) assuming an evaporation rate of 1 in/hr (Hey 1999). Capsule integrity is not affected provided water remains over the capsules. At a pool cell level of **130** inches for Pool Cells 1 and 3 through 7 and 100 inches for Pool Cell 12, no other event besides rapid **loss** of water could he occurring. Failure of the pump or misalignment of the recirculation lines could only decrease the water to 146 inches and 138 inches respectively. Notification of the rapid water **loss** event at **130** inches for Pool Cells 1 and 3 through 7 and 100 inches for Pool Cell 12 provides an adequate margin of safety to begin water makeup and maintain institutional control.

When the level of a pool cell is **34.5** inches, the dose rate at the fill pipe located outside near the Pool Cell Area north door could be as high as **29 R/hr** (HNF-SD-WM-BIO-002). This dose rate is acceptable during an emergency condition for the short duration required lo connect a water source to the fill pipe. Note: the actual dose rate would likely be less due to the conservative capsules configuration assumed in the dose rate calculations.

Normal pool cell water level is hetween 150 to 156 inches. Normal plant procedures in conjunction with the ALARA program will result in pool cell water makeup responses occurring well above the LCO limit.

This LCO also requires that pool cell water **loss** detection capability be provided by having OPERABLE water level monitoring systems and at least one OPERABLE ARM system.

OPERABILITY of the level monitoring system is defined as having a level readout that indicates a water level (visual inspection of the pool cells can provide assurance that the readout approximates llic actual level). Having a readout VERIFIES air and power are available to the system and that the system is OPERABLE. The LCO alarm setpoint for Pool Cells 1 and *3* through 7 is 130 inches. This setpoint notifies the operator that a rapid pool **cell** water **loss** event has begun and to initiate water makeup. This setpoint is **95.5** inches above the **34.5** inch level the water will gravity drain to during a drain line failure and 101 inches above the top of the capsules. The LCO alarm setpoint for Pool Cell 12 is 100 inches. The floor of Pool Cell 12 is **30** inches higher, and a setpoint of 100 inches is equal with Pool Cells 1 **and** 3 through 7 at 130 inches. This setpoint **is 65.5** inches above the **34.5** inch level the water will gravity drain to during a drain line failure and 71 inches above the top of any capsules stored in Pool Cell 12. These large

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margins allow for any calibration inaccuracies or instrument drift. An alarm will result if a system component, the air supply, or the electrical power fails.

OPERABILITY of the ARM system is defmed as having an illuminated failsafe button and a dynamic reading on the radiation indicator (the meter indicator is moving indicating that the detector is operational). Having an illuminated failsafe button and a dynamic reading VERIFIES power is available **to** the system and that system components are functioning. The LCO setpoint for the ARMs is some value less than or equal to 10 mR/hr (HNF-SD-WM-BIO-002). The 10 **mR/hr** will notify the facility if a rapid pool cell water **loss** is occurring, but the facility will normally operate with a lower setpoint value for ALARA reasons. An alarm will result if a system component or the electrical power fails.

MODE APPLICABILITY

LCO **3.1.1** applies during OPERATION and RESTRICTED MODES because cesium and strontium capsules are stored in the pool cells in both of these MODES and **loss of** pool cell water could potentially occur in either MODE.

PROCESSAREA APPLICABILITY

LCO 3.1.1 level and level monitoring applies to Pool Cells 1 and 3 through 7 and Pool Cell 12 and the ARMs in the Pool Cell Area.

ACTIONS

Failure to take the ACTIONS required within the required time limit following failure to meet the LCO is a VIOLATION. For this situation, proceed according to Administrative Control Section **5.4.3,** "Response to a Limiting Condition for Operation and Limiting Control Setting VIOLATION."

See Section **1.3,** "Completion Times," for the definition of "Immediately."

A.1

Water addition is to begin within 1 hour upon detection of a water level < 130 inches for Pool Cells 1 and 3 through *7* or < 100 inches for Pool Cell 12, or if the radiation level is > 10 mR/hr. Provided water addition begins within 1 hour, the designated pool cell water makeup systems (reference AC 5.8) can supply sufficient flow to maintain water over the capsules. Action to provide water makeup is to continue until water level is restored to ≥ 130 inches for Pool Cells 1 and 3 through 7 and ≥ 100 inches for Pool Cell **12.** The integrity of the capsules is not affected as long as water remains over the capsules, and water addition can be ensured with the fill pipe into Pool Cell 12.

An increase in radiation level could also indicate a significant **capsule** failure. The operator has 1 hour to initiate water addition to the pool cells upon an **ARM** alarm. If the operator can verify that the alarm is not caused by **a loss** of pool cell water within the 1-hour completion time. water will riot be added to the pool cells.

B.1

Immediate VERIFICATION that the ARM system is still OPERABLE and that no radiation alarms exist provides assurance that the redundant means of water **loss** detection is still available and the radiation dose rate is such that the worker can safely enter the Pool Cell Area.

B.2

BASES

At least one of the pool cells has an OPERABLE level monitoring system. Immediately opening the transfer ports between Pool Cell 12, the pool cell(s) with inoperable level monitoring, and a pool cell with operable level monitoring. The equalization between pool cells allows the pool cell(s) with an OPERABLE level monitoring system(s) to monitor the pool cell(s) without an OPERABLE level monitoring system. During this action the ARM system is OPERABLE and Pool Cells 1 and 3 through 7 are ≥ 130 inches and Pool Cell 12 is ≥100 inches.

B.3

Restoring the inoperable level monitoring system(s) to OPERABLE status within 30 days provides the assurance that full capability of a safety class system will be restored in a reasonable period of time.

During this 30-day period, both water level monitoring and alarm functions and ARM and alarm functions are available to provide sufficient operator notification of loss of water conditions. Allowing 30 day to restore the level monitoring system(s) is judged to be a reasonable time (allowing for troubleshooting, procurement and installation of equipment) to return to a normal operating condition since a redundant method of detecting rapid loss of pool cell water is provided.

C.1

Immediate VERIFICATION that the ARM system is still OPERABLE and that no radiation alarms exist provides assurance that the redundant means of water loss detection is still available and the radiation dose rate is such that the worker can safely enter the Pool Cell Area.

C.2

Immediately opening the transfer ports between Pool Cells 1 through 8 and Pool Cell 12 allows pool cell water level to equalize via Pool Cell 12. The equalization between pool cells provides a passive harrier to loss of pool cell water. Equalizing Pool Cells 1 and 3 through 7 through Pool Cell 12 would maintain the pool cell levels between 74 and 90 inches (depending on the assumed starting level) even if the accident condition identified (drain line failure) were to occur (Hey 1999). This would significantly lower the dose rate in the Pool Cell Area following a drain line failure. lower the water evaporation rate for the failed pool cell due to the large volume of water available, and significantly increase tlie response time available to restore water. During this action the ARM system is OPERABLE and Pool Cells 1 and 3 through 7 are ≥130 inches and Pool Cell 12 is ≥100 inches.

C.3

Restoring the inoperable level monitoring systems for one pool cell to OPERABLE status within 5 days provides the assurance that level monitoring capability will he restored to the pool cells within a reasonable period of time.

During this 5-day period, area radiation monitoring and alarm functions are available to provide sufficient operator notification of loss of water conditions. The opened transfer ports (Required Action C.2) allow the pool cell water level to equalize via Pool Cell 12. This provides a passive harrier to loss of pool cell water. Keeping llic transfer ports open is not a normal operating condition. Allowing 5 days to restore at least one level monitoring system is judged to he a reasonable time (allowing for possible

troubleshooting and repair of equipment) to return the redundant method for detecting a rapid water **loss** event to OPERABLE. The likelihood is low that during the 5 days to restore the redundant detection both a water **loss** event occurs and the ARM system fails.

C.4

Restoring the inoperable level monitoring systems for all pool cells to OPERABLE status within 30 days provides the assurance that **full** capability will be restored to a safety class system in a reasonable period of time.

During this 30-day period area radiation monitoring and alarm functions are available and for a minimum of 25 days the level monitoring and alarm functions are available to provide sufficient operator notification of **loss** of water conditions. The pool cell transfer ports have also been opened per Required Action C.2 to equalize the water level and prevent the water from gravity draining below the top of the capsules (water from Pool Cells 1, 3 through 7, and 12 **would** equalize with the pipe tunnel **between** 73 aiid **90 inches** depending on tlie assumed **starting** level). Keeping the **transfer** port valves open is not a normal operating condition. Allowing 30 days to restore the level monitoring system(s) isjudged to be a reasonable time (allowing for troubleshooting, procurement and installation of equipment) to return to a normal operating condition since a redundant method of detecting rapid **loss** of pool cell water is provided.

D.1

Immediate VERIFICATION that there is at least 130 inches of water in Pool Cells **1** and 3 through 7 and at least **100** inches in Pool Cell **12** using the level monitoring instrumentation provides assurance that rapid water **loss** (i.e., drain failure) has not occurred. Using the instrumentation to VERIFY the level prevents the worker from possibly entering an unsafe condition in the Pool Cell Area. The ALARA program also provides requirements for the control of radiation exposure to the facility worker.

D.2

Immediately opening the transfer ports between Pool Cells 1 through **8** and Pool Cell 12 allows pool cell water level to equalize via Pool Cell 12. The equalization between pool cells provides a passive barrier to **loss** of pool cell water. Equalizing Pool Cells 1 and 3 through 7 through Pool Cell **12** would **maintain** the pool cell levels between **74 and 90** inches **(depending** on the assumed starling level) even ifthe accident condition identified (drain line failure) were to occur. This would **significantly** lower the dose rate in the Pool Cell Area following a drain line failure, lower the pool cell **water** evaporation rate; arid significantly increase the response time available to restore **water.** During this action, the level monitoring system is OPERABLE and Pool Cells 1 aiid 3 through 7 are ≥130 inches and Pool Cell 12 is ≥100 inches.

D.3

Restoring one ARM to OPERABLE status within 5 days will provide the redundant and diverse means to detect rapid water **loss** as well **as** addressing ALARA issues within a reasonable time.

The opened transfer ports (Required Action D.2) allow the pool cell water level to equalize via Pool Cell **12.** This provides a passive barrier to **loss** of pool cell water. Equalizing the pool cells through Pool Cell 12 will not allow the water level to gravity drain below the top ofthe capsules (water **from** Pool Cells 1, 3 through 7, and 12 would

equalize with tlic pipe tunnel between 74 and 90 inches depending on the assumed starting level) even ifthe accident condition identified (drain line failure) were to occur-. keeping the transfer port **valves** open is not a normal operating condition. Allowing **5** days to restore an ARM to OPERABLE isjudged to he a reasonable time (allowing for possible troubleshooting and repair of equipment) to return the redundant method **for** detecting a rapid water **loss** event to OPERABLE. The likelihood is low that during the **5** days to restore the redundant detection both a water **loss** event occurs and all of the pool cell level monitors fail.

E.1

Immediate VERIFICATION that the radiation levels in the Pool Cell Area are not above normal ALARA levels using a portable radiation monitor provides assurance that rapid **loss** of water has not occurred and the radiation level in the Pool Cell Area is not unsafe for workers. The ALARA program also provides requirements for the control of radiation exposure to the facility worker.

A periodic surveillance of the Pool Cell Area is also required to be performed once per 24 hours while the rapid **loss** of water detection systems are inoperable using a hand-held radiation monitor. A radiation monitor is used while approaching the Pool Cell Area airlock to ensure the loss of water has not occurred and radiation levels are not endangering the worker. The basis for the 24-hour periodic surveillance is provided below.

The level of Pool Cells 1 and 3 through 7 is assumed to he ≥130 inches and the level of Pool Cell 12 is assumed to be 2100 inches (LCO requirement). If the drain failure occurred, with the transfer ports open (Action E.2) for Pool Cells I and 3 though 7 and 12, the water level would equalize with the pipe tunnel between 74 and 90 inches. The evaporation rate ofthe pool cells with the transfer ports open is **approximately** 0.38 inches/hr (0.33 **inches/hr** assuming the transfer ports for Pool Cells 7 arid 8 arc also open). In 24 hours, the pool cell levels would be **between** 64 and 80 inches.

The radiation level at the Pool Cell Area airlock assuming a water level of 64 inches would he approximately 1 R/hr (HNF-SD-WM-BIO-002). This radiation field is acceptable for the worker to detect while approaching the airlock to the Pool Cell Area.

E.2

Immediately opening the transfer ports between Pool Cells I and 3 through 7 and Pool Cell 12 allows pool cell water level to equalize via Pool Cell 12. The equalization between pool cells provides a passive harrier to **loss** of pool cell water. Equalizing Pool Cell I and 3 through 7 through Pool Cell 12 would maintain the pool cell levels between 74 and 90 inches (depending on the assumed starting level) even ifthe accident condition identified (drain linc failure) were to occur. The pool cell water level has been immediately VERIFIED to he 2130 inches for Pool Cells 1 and 3 through 7 and ≥100 inches lor Pool Cell 12 and will continue to he VERIFIED every 24 hours until the Pool Cell Area ARM is OPERABLE and at least one of the pool cell level monitors is OPERABLE.

E.3.1 or E.3.2

Either of the Required Actions E.3.1 or E.3.2 will establish rapid water loss detection capability. Restoring one pool cell level monitor and alarm function or the Pool Cell Area ARM and alarm function to OPERABLE status within **5** days will provide a

redundant means to detect rapid water **loss.**

The opened transfer ports (Required Action E.2) allow the pool cell water level to equalize via Pool Cell 12. Equalizing the pool cells through Pool Cell 12 will not allow the water level to gravity drain below the top of the capsules (water froin Pool Cells 1.3 through 7. and **I2** would equalize with llic pipe tunnel between 74 and 90 inches depending on the assumed starring level) even ifthe accident condition identified (drain line failure) were to occur. Keeping the transfer ports open is not a normal operating condition. Allowing 5 days to restore an ARM or level monitor to OPERABLE is judged to be a reasonable time (allowing for possible troubleshooting and repair of equipment) to return one of the systems for detecting a rapid water **loss** event to OPERABLE. The surveillance every 24 hours will continue until both the level monitoring (for at least one pool cell) and one of the Pool Cell Area ARMs are OPERABLE. The likelihood is low that during the 5 days to restore one of the rapid water **loss** detection systems, both a water **loss** event occurs and the surveillance once every 24 hours is not performed.

E.4 and E.5

Restoring the inoperable level monitoring systems for Pool **Cells** 1 and 3 through 7 and Pool Cell 12, and the ARM (if it had not been restored to OPERABLE status **per** Required Action **E.3.2)** to OPERABLE status within 30 days provides the assurance that full capability of the safety class system will be restored in a reasonable period of time.

During ***25*** days of this 30 day period, either the area radiation monitoring and alarm functions or the pool cell level monitoring and alarm functions are available to provide notification of a rapid **loss** of water event. The pool cell transfer ports have been opened per Required Action E.2 to equalize the water level and prevent the water from gravity draining below the top of the capsules (water from Pool Cells 1, 3 through 7. and I2 would equalize with the pipe tunnel between 74 and 90 inches depending on the assumed starting level). Keeping the transfer ports open is not a normal analyzed operating condition. Allowing 30 days to restore the redundant monitoring system is judged to he a reasonable time (allowing for troubleshooting, procurement and installation of equipment) to return to a normal operating condition since an alternate redundant method of detecting rapid **loss** of pool cell water is provided.

SURVEILLANCE REQUIREMENTS

Failure to successfully meet the SR (i.e., SR acceptance criteria not satisfied) during the Surveillance or between performances of the Surveillance is a failure to meet the LCO. For this situation, entry into the LCO ACTIONS is required. Failure to perform the Surveillance within the specified Frequency (including the allowable 25% extension) is a VIOLATION. For this situation, proceed according to Administrative Control Section 5.4.4.2, "Failure to Perform an SR Within the Required Time Limit."

SR 3.1.1.1

This Surveillance requires VERIFICATION that water level monitors are OPERABLE. A Frequency of once per 7 days is judged to be adequate based upon the expected performance of this system. The components of this system do not fail routinely and failure of the system will result in **an** alarm. In addition, there are redundant and diverse means of detecting rapid pool cell water **loss.**

SR 3.1.1.2

BASES

This Surveillance requires performance of a FUNCTIONAL TEST of pool cell water level monitors in Pool Cells 1 and 3 through 7 and Pool Cell 12. A Frequency of once per 184 days **is** judged to be adequate based upon the expected performance of this system. The components of this system do not fail routinely and failure of the system will result in an alarm. In addition, there are redundant and diverse means of detecting rapid pool cell water **loss.**

SR 3.1.1.3

This Surveillance requires performance of a CALIBRATION of pool cell water level monitors in Pool Cells 1 and 3 **through** 7 and Pool Cell 12. The Frequency of once per 365 days is judged to be adequate based upon the expected performance of this system. There is minimal instrument drift between calibrations, and there is a significant margin between the setpoint at 130 inches and the top of the capsules at 29 inches.

SR 3.1.1.4

This Surveillance requires a VERIFICATION that Pool Cell Area ARMs are OPERABLE. A Frequency of once per **7** days is judged to be adequate based upon the expected performance of this system. The components of this system do not fail routinely and failure of the system will result in an alarm. In addition, there are redundant and diverse means of detecting rapid pool cell water **loss.**

SR 3.1.1.5

This Surveillance requires performance of a FUNCTIONAL TEST of Pool Cell Area ARMs. A Frequency of once per 184 days is judged to he adequate based upon the expected performance of this system. The components of this system do not fail routinely and failure of the system will result in an alarm. In addition, there are redundant and diverse means of detecting rapid pool cell water **loss.**

SR 3.1.1.6

This Surveillance requires performance of a CALIBRATION of the Pool Cell Area ARM. A Frequency of once per 365 days is judged to be adequate based upon the expected performance of this system. This meets the requirements of ANSI N323-1978, ***Radiation Protection and Instrumentation Test and Calibration.*** Additionally, some of the requirements of ANSI N320-1979, ***Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation*** are applied.

SR 3.1.1.7

This Surveillance requires a VERIFICATION that transfer port valves on ACTIVE POOL CELLS are OPERABLE. These transfer ports are manually operated stainless steel ball valves located in deionized water. A frequency of once per 365 days is judged to be adequate based upon the expected performance of this system.

Bases 3.2 K-3HEPA FILTER EFFICIENCY

BASES

BACKGROUND

The WESF Hot Cells arid the Canyon are supplied and exhausted by llie K-3 ventilation system. Each hot cell has two exhaust paths to it common duct. The effluent from the cells is combined with the Canyon exhaust stream and ducted to tlic final K-3 HEPA filter. The ti-3 ventilation system contains two exhaust fans which discharge the effluent from the ti-3 filter to a stack common to the K-1 and ti-? ventilation systems.

Tlic final ti-3 HEPA filler consists of two parallel tiller housing units. Each filtration housing unit is located in a sepal-ate K-3 tilter Pit. Normally, one unit is operating and ttie other is on standby. Each filter housing unit contains a system of impingement vanes. moisture separators. heaters, a built-in sump, and two banks of six HEPA filters. This system is capable of handling large particulate loading if contamination from llie duct migrates toward tlie filter housings.

The safety function of the K-3 HEPA filters is to provide an overall filter efficiency of 99.9% to mitigate the release of radioactive iiiaterial during a 48-lir high flow accidcnt and prevent dose consequences in excess of the onsite and offsite evaluation guidelines

APPLICABLE SAFETY ANALYSES

High flow in the K-3 ventilation system is analyzed in HNF-SD-WM-BIO-002. Chapter 3.0, "Hazard and Accidcnt Analyses." Section 3.4.2.4.1. Based on the results of the analysis in Chapter 3.0, the unmitigated release of radioactive material could exceed offsite arid onsite risk evaluation guidelines. It has been demonstrated iii tlic BIO accident analysis that the filters will maintain integrity during a high tlow event. Ensuring a filter efficiency of 99.90% will mitigate the release of radioactive material below onsite and offsite risk guidelines.

LCO 3.2 ensures the ti-3 ventilation system has a HEPA filter and tliat the online K-3 HEPA filter has a particulate removal efficiency of 99.90%.

During a sustained ti-3 ventilation system high tlow event, it is possible that contamination is broken loose from the ti-3 exhaust duct and released to the online ti-3 HCPA liltcr. The high llow event is assumed to last 48 hours before being discovered arid corrected. The hot cell fire analyses in Section 3.4.2.3.1 of the WESF BIO demonstrates that the HEPA filters will survive a no-flow condition and since the no-flow condition represents tlie maximum pressure that can be applied across the filters. tlic filters would survive any high flow condition (lesser pressure differential).

The overall clliciency of the ti-3 HEPA filters is required to be 99.90% in order Lo reduce the onsite and offsite dose consequences below risk evaluation guidelines.

MODE APPLICABILITY

LCO 3.2 applies during OPERA I ION and RESTRICTED MODES because the ventilation system may be operational in both of these MODES and a high llow event could occur in either MODE.

PROCESS AREA APPLICABILITY

LCO 3.2 applies to the K-3 HEPA filters

BASES

ACTIONS

Failure to take tlic ACTIONS required within Ilie required time limit following failure to meet the LCO is a VIOLATION. For this situation, proceed according to Administrative Control Section 5.4.3, "Response to a Limiting Condition for Operation and Limiting Control Setting VIOLATION."

If the online K-3 HEPA filter unit does not meet the efficiency requirement of 99.90%, switching to the other K-3 HLPA filter will continue lo provide the K-3 ventilation system with a HEPA filter which has an efficiency of 99.90%. Switching the filters within two hours allows for completion of operator actions and provides assurance that adequate filtering capability will he restored to the K-3 ventilation in a reasonable period of time. The likelihood of a high llow event occurring during the two-hour completion time is very low.

B.1

The normal operating condition for the facility is one K-3 exhaust fan operating with the other in standby. If both K-3 HEPA filter units do not meet tlic cllicicncy requirement of 99.90%, locking out one of the K-3 exhaust fans will prevent both fans from operating and potentially causing llic high llow event. Locking out the fan within four hours allows for completion of operator actions and provides assurance tliat the potential for a high-tlow event that releases the radioactive material in the K-3 duct is minimized. Stack monitoring would also he available rind would provide indication of a radioactive material release through the ventilation system. The likelihood of a high flow event during the four-hour completion time is very low.

B.2

Replacing the K-3 HEPA filters would be a resource and time intensive activity arid a recovery plan would need to be developed to determine the best path forward. Thirty days is a reasonable time period to develop a comprehensive plan that addresses safety basis issues as well as environmental concerns.

SURVEILLANCE REQUIREMENTS

Failure to successfully meet the SR (i.e., SR acceptance criteria not satisfied) during the Surveillance or between performances of the Surveillance is a failure to meet the LCO. For this situation, entry into the LCO ACTIONS is required. Failure to perform the Surveillance within tlic specified Frequency (including the allowable 25% extension) is a VIOLATION. For this situation, proceed according to Administrative Control Section 5.4.4.2, "Failure to Perform an SR Within the Required Time Limit."

SR 3.2.1

This Surveillance requires the cllicicncy of the K-3 HEPA filters bc tested cvcry 365 days to ensure a particulate removal efficiency of 99.90%. 'The current ti-3 HEPA filter units been in operation for approximately IO years and have always met particulate removal efficiency requirements.

APPENDIX A REFERENCES

ANSI, 1978, ***Radiation Protection and Instrumentation Test and Calibration,*** ANSI Standard N323-1978, American National Standards Institute, New York, New York.

ANSI, 1979, ***Performance Specifications for Reactor Emergency Radiological Monitoring Instrumentation,*** ANSI Standard N320-1979 (Reaffirmed 1985), American National Standards Institute, New York, New York.

Hey, B. E., 1999, Supporting Calculations and Documentation for the WESF Basis for Interim Operation, HNF-SD-WM-TI-733, Rev 1A, B&W Hanford Company, Richland, Washington.

HNF-SD-WM-BIO-002, 1998, ***Waste Encapsulation and Storage Facility Basis for Interim Operation,*** Rev. 1, Fluor Hanford Company, Inc., Richland, Washington

APPENDIX B DESIGN FEATURES

DESIGN FEATURES are those features not covered elsewhere in the IOSRs and that, if altered **or** modified, would have a significant effect on safety. DESIGN FEATURES are permanently built-in features that do not require, **or** infrequently require, maintenance or surveillance and are normally not subject to change by operations personnel. Until a facility has a DOE-approved FSAR, a DESIGN FEATURES Appendix should be included with the IOSRs. After DOE approves the FSAR, the Appendix may be eliminated, provided that assurance is made that the provisions of the Appendix are present in the approved FSAR *or* elsewhere in the IOSRs. The categories of DESIGN FEATURES to be addressed in accordance with DOE Order 5480.22, ***Technical Safety Requirements,*** include the following:

a. Vital passive components such as piping, vessels, supports, confinement structures, and containers.

b. Configuration and physical arrangement of the facility where safety is a concern including site characteristics such as the locations of public access roads, collocated facilities, facility area boundaries, site boundaries, and distances to the nearest residences.

c. Building materials, if the safe operation of the facility depends on any component being constructed of a particular material.

The DESIGN FEATURES for WESF that, if altered **or** modified, would have a significant effect on safe operation are listed in HNF-SD-WM-BIO-002, Chapter 5.0, "Derivation of Interim Operational Safety Requirements."

Changes to DESIGN FEATURES are considered significant modifications. The unreviewed safety question (USQ) process required by DOE Order 5480.21, *Unreviewed Safety Questions,* ensures that changes to DESIGN FEATURES are appropriately analyzed and controlled so that they do not adversely affect safe operation of WESF.

APPENDIX B DESIGN FEATURES REFERENCES

DOE Order 5480.21, 1991, *Unreviewed Safety Questions,* U.S. Department of Energy, Washington, D.C.

DOE Order 5480.22, 1992, ***Technical Safety Requirements***, U.S. Department of Energy, Washington, D.C.

HNF-SD-WM-BIO-002, 1998, ***Waste Encapsulation and Storage Facility Basis for Interim Operation,*** Rev. ***0,*** B & W Hanford Company, Richland, Washington.