STA. # 2 OCT 26 1994	18	ENGINEERING DATA TRANSMITTAL	Page 1 of 1 1. EDT 606957
--------------------------------	-----------	-------------------------------------	-------------------------------------

2. To: (Receiving Organization) B Plant Complex Operations	3. From: (Originating Organization) B Plant Environmental Engineering	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Transition Projects	6. Cog. Engr.: T. G. Beam	7. Purchase Order No.: N/A
8. Originator Remarks: Owners or operators of facilities that treat, store, and/or dispose of dangerous waste and/or mixed waste as defined by WAC 173-303, "Dangerous Waste Regulations," must inspect their facilities to prevent malfunctions and deteriorations, operator errors, and discharges that may cause or lead to the release of hazardous waste constituents to the environment and/or cause a threat to human health. The WAC regulations require a written inspection schedule be developed, implemented, and kept at the facility.		9. Equip./Component No.: 10. System/Bldg./Facility: B Plant Complex
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A 13. Permit/Permit Application No.: N/A 14. Required Response Date:

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	WHC-SD-WM-IP-007	-	0	B Plant Complex Treatment, Storage, and Disposal Units Inspection Plan	E	1	1	1

16. KEY		
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Rea-son	Dis-p.	(J) Name	(K) Signature (M) MSIN	(L) Date	(J) Name	(K) Signature (M) MSIN	(L) Date	Rea-son	Dis-p.
1	1	Cog. Eng.: T. G. Beam	<i>Thomas G. Beam</i>	10/25/94 S6-70	G.S.F. Voyles		S6-60	3	
1	1	Cog. Mgr.: S. E. Killoy	<i>S.E. Killoy</i>	10/25/94 S6-70	D. K. Smith		S6-70	3	
1	1	ECO: S.E. Killoy	<i>S.E. Killoy</i>	10/25/94 S6-70	Central Files		L8-04	3	
3		R. J. Julian		S6-65	OSTI (2)		L8-07	3	

18. Signature of EDT Originator <i>T. G. Beam</i> Date 10/25/94	19. Authorized Representative for Receiving Organization <i>S.E. Killoy</i> Date 10/25/94	20. Cognizant Manager <i>S.E. Killoy</i> Date 10/25/94	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
--	--	---	---

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, make any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-IP-007, REV 0

Document Title: B Plant Complex Treatment, Storage, and Disposal
Units Inspection Plan

Release Date: 10/25/94

This document was reviewed following the
procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Kara M. Broz

October 25, 1994

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

This report has been reproduced from the best available copy. Available in paper copy and microfiche. Printed in the United States of America. Available to the U.S. Department of Energy and its contractors from:

U.S. Department of Energy
Office of Scientific and Technical Information (OSTI)
P.O. Box 62
Oak Ridge, TN 37831
Telephone: (615) 576-8401

Available to the public from: U.S. Department of Commerce
National Technical Information Service (NTIS)
5285 Port Royal Road
Springfield, VA 22161
Telephone: (703) 487-4650

MASTER

ds
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

SUPPORTING DOCUMENT

1. Total Pages 38

2. Title

B Plant Complex Treatment, Storage, and Disposal
Units Inspection Plan

3. Number

WHC-SD-WM-IP-007

4. Rev No.

0

5. Key Words

6. Author

Name: T. G. Beam

Thomas G. Beam 10/25/94
Signature

Organization/Charge Code 16610/KB3A2

**APPROVED FOR
PUBLIC RELEASE**

7. Abstract

Owners or operators of facilities that treat, store, and/or dispose of dangerous waste and/or mixed waste as defined by WAC 173-303, "Dangerous Waste Regulations," must inspect their facilities to prevent malfunctions and deteriorations, operator errors, and discharges that may cause or lead to the release of hazardous waste constituents to the environment and/or cause a threat to human health. The WAC regulations require a written inspection schedule be developed, implemented, and kept at the facility.

8. RELEASE STAMP

OFFICIAL RELEASE
BY WHC

DATE OCT 26 1994

STA. # 2

RECORD OF REVISION

(1) Document Number

WHC-SD-WM-IP-007

Page 1

(2) Title

B Plant Complex Treatment, Storage, and Disposal Units Inspection Plan

CHANGE CONTROL RECORD

(3) Revision

(4) Description of Change - Replace, Add, and Delete Pages

Authorized for Release

(5) Cog. Engr.

(6) Cog. Mgr.

Date

RS 0

(7) Engineering Data Transmittal #606957

Thomas G. Beam
T. G. Beam

S. E. Kijloy 10/25/94
S. E. Kijloy

B Plant Complex Treatment, Storage, and Disposal
Units Inspection Plan

B Plant Environmental Engineering

October 1994

This page intentionally left blank.

CONTENTS

1.0	INTRODUCTION	1-1
2.0	PURPOSE	2-1
3.0	SCOPE	3-1
4.0	RESPONSIBILITY	4-1
5.0	GENERAL INSPECTION	5-1
5.1	GENERAL INSPECTION REQUIREMENTS	5-1
5.2	B PLANT GENERAL INSPECTIONS	5-1
5.2.1	Security Inspections	5-1
5.2.2	General Facility Surveillance	5-2
5.2.3	Communication Equipment Inspections	5-3
5.2.4	Safety and Emergency Equipment Inspections	5-3
5.2.5	Fire Protection Systems Inspection	5-4
5.2.6	Emergency Alarm Systems Inspection	5-6
6.0	CONTAINER INSPECTION	6-1
6.1	CONTAINER INSPECTION REQUIREMENTS	6-1
6.2	B PLANT COMPLEX CONTAINER INSPECTION	6-1
6.2.1	Cell 4 Container Storage Area	6-1
6.2.2	Cell 4 Inspections	6-2
7.0	TANK SYSTEMS INSPECTION	7-1
7.1	TANK SYSTEM INSPECTION REQUIREMENTS	7-1
7.2	B PLANT COMPLEX TANK SYSTEM INSPECTIONS	7-1
7.2.1	Monitoring Data From Leak Detection Equipment	7-3
7.2.2	Overfill/Spill Control Equipment	7-3
7.2.3	Inspection of Above Ground Portions of Tank System For Corrosion or Releases	7-4
7.2.4	Inspection of Construction Materials and Area Immediately Surrounding Externally Accessible Portions of the Tank System, Including Secondary Containment	7-4
7.2.5	General Inspection of Security Devices and Safety and Emergency Equipment	7-4
8.0	CONTAINMENT BUILDING INSPECTION	8-1
8.1	CONTAINMENT BUILDING INSPECTION REQUIREMENTS	8-1
8.2	B PLANT COMPLEX CONTAINMENT BUILDING INSPECTIONS	8-1
8.2.1	221-B Building and Surrounding Area Inspections	8-1
8.2.2	Canyon Ventilation System Inspections	8-2
8.2.3	Canyon Emissions Monitoring Equipment Inspections	8-3

APPENDICES

A	B PLANT COMPLEX OPERATION TICKLERS FOR GENERAL FACILITY INSPECTIONS, INSPECTIONS OF FIRE PROTECTION SYSTEMS, AND EMERGENCY EQUIPMENT INSPECTIONS	A-1
---	--	-----

B	HANFORD FIRE DEPARTMENT AND FIRE SYSTEM MAINTENANCE INSPECTION/MAINTENANCE SCHEDULE FOR THE B PLANT COMPLEX	B-1
C	LEAK DETECTION INSTRUMENTATION SUMMARY FOR B PLANT COMPLEX STORAGE AND TREATMENT TANK SYSTEMS	C-1

FORWARD

Specific components of the B Plant Complex have been classified as either a containment building, which is regulated under the provisions of the U.S. Environmental Protection Agency (EPA) regulations provided in 40 *Code of Federal Regulation* (CFR) 265; a tank system, which is regulated under provisions of the Washington State Department of Ecology (Ecology) Dangerous Waste Regulations, *Washington Administrative Code* (WAC) Chapter 173-303; or a container storage area, which is also regulated by WAC 173-303.

No facility or building at the B Plant Complex operates as a dangerous waste surface impoundment, waste pile, land treatment unit, landfill, or incinerator. In addition, no underground storage tanks are present, and no dangerous waste is treated, stored, or disposed of in a surface impoundment or landfill at the B Plant Complex.

The canyon deck and process cells of the 221-B Building are being regulated as part of a containment building. This does not conform to the description of any existing unit as provided in WAC 173-303. This dictates the 221-B Building be subject to requirements in 40 CFR 265, Subpart DD, "Containment Buildings." The neutralized current acid waste (NCAW) tank treatment system, the low-level waste concentrator, the low-level waste treatment tanks, and the organic waste storage system, which are located in a number of process cells in the 221-B Building, are being permitted as tank systems. Units classified as tank systems are addressed in the Washington Administrative Code and are subject to regulations in WAC 173-303-640, "Tank Systems." The container storage area, located in Cell 4 of the 221-B Building, is regulated by WAC 173-303-630, "Use and Management of Containers."

The design and operation of a containment building, container storage area, and a tank system are addressed throughout this document for those components of the B Plant Complex that have been classified as such. However, because of the high levels of radiation present at those components, certain inspection and labeling requirements prescribed by 40 CFR 265 and WAC 173-303 are not practical while maintaining radiation exposure to personnel as low as reasonably achievable (ALARA). The rationale for the operations associated with the B Plant Complex is addressed further in a proposed petition for rule making changes submitted to Ecology and the EPA (Freeberg 1989) in fulfillment of a September 1989 *Hanford Facility Agreement and Consent Order* (Tri-Party Agreement) interim milestone (M-22-01). This proposed petition identifies areas where it is not practical to perform inspections and other activities prescribed by the *Resource Conservation and Recovery Act of 1976* (RCRA) and Washington Dangerous Waste Regulations.

LIST OF ACRONYMS/ABBREVIATIONS

ALARA	as low as reasonably achievable
CAM	continuous air monitor
CBRS	component-based recall system
CFR	<i>Code of Federal Regulations</i>
CSCP	cell spray control panel
DOE	U.S. Department of Energy
DP	differential pressure
ECOLOGY	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
FACP	fire alarm control panel
FEARS	fire equipment automated recall system
FHAS	fixed head air sampler
FPMCS	facility process monitor control system
FSM	Fire Systems Maintenance
HEPA	high efficiency particulate air
HFD	Hanford Fire Department
HWC	hazardous waste coordinator
NCAW	neutralized current acid waste
NFPA	National Fire Protection Association
OIU	operator interface unit
OPS	Facility Operations
OSR	Operational Safety Requirements
PM	preventive maintenance
POP	Plant Operating Procedure
RAM	radiation area monitor
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
RL	U.S. Department of Energy, Richland Operations Office
SCBA	self-contained breathing apparatus
TSD	treatment/storage/disposal
WAC	<i>Washington Administrative Code</i>
WESF	Waste Encapsulation and Storage Facility
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION

The Hanford Site is owned and operated by the United States government and is managed by the U.S. Department of Energy (DOE) Richland Operations Office (RL). Westinghouse Hanford Company (WHC) is the primary operation and engineering contractor for RL. The Hanford Site covers approximately 560 square miles of semi-arid land in south-central Washington State. Richland, Washington, the nearest population center, adjoins the southeastern Hanford Site boundary.

The Hanford Site produces mixed waste, which is waste containing both radioactive and dangerous materials. The DOE interprets the radioactive portion of the mixed waste to be regulated under the *Atomic Energy Act of 1954* and the nonradioactive dangerous portion of the mixed waste under RCRA and WAC 173-303. For purposes of RCRA compliance, RL is the owner/operator and Westinghouse Hanford is a co-operator, with RL, of certain dangerous waste management units on the Hanford Site that are regulated under RCRA. The B Plant Complex is a group of facilities and support buildings located in the 200 East Area of the Hanford Site.

Owners or operators of facilities that treat, store, and/or dispose of dangerous waste and/or mixed waste as defined by WAC 173-303, "Dangerous Waste Regulations," must inspect their facilities to prevent malfunctions and deteriorations, operator errors, and discharges that may cause or lead to the release of hazardous waste constituents to the environment and/or cause a threat to human health.

Both the RCRA and WAC regulations require a written inspection schedule be developed, implemented, and kept at the facility. The schedule must address both General Facility Inspection and Unit-Specific Inspection Requirements. The general inspection requirements apply to inspection of the portions of the treatment, storage, and disposal (TSD) facility other than the actual TSD units (containers, tanks, etc.). Unit-specific inspection requirements apply to the individual units.

2.0 PURPOSE

The intent of this document is to describe how the inspection requirements for TSD units under 40 CFR 265 and WAC 173-303 are met at the B Plant Complex. The inspection methods described are those which prevent equipment malfunction and deterioration, operating errors, and discharges to the environment. These methods exhibit an inspection plan which will identify and correct problems before human health and/or the environment is threatened.

3.0 SCOPE

In general, this inspection plan applies to the systems used to treat or store dangerous waste and include operating and structural devices and equipment that help prevent, detect, and/or are used in the response to hazards posed by dangerous waste to employees, the public, and/or the environment.

This inspection plan outlines the requirements in 40 CFR 265 and WAC 173-303 for inspecting: (1) the monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment involved with prevention, detection, or response to hazards posed by hazardous waste, (2) the containers containing dangerous wastes, (3) the tank systems used to treat or store dangerous waste, and (4) the dangerous waste containment building.

Some specific requirements include: a comprehensive written inspection plan, documentation of inspections, malfunctions, and any remedial actions in an operating record log kept for at least five years, and inspections of areas subject to spills daily when those areas are in use and according to the applicable regulations when areas are not in use.

4.0 RESPONSIBILITY

Owners and operators of RCRA and WAC 173-303 regulated TSD facilities are required to develop, implement, and keep written inspection schedules in the facility operating records. The B Plant Complex is responsible to comply with the inspection requirements for facility operators in 40 CFR 265 (containment buildings); WAC 173-303-320 (general inspections); WAC 173-303-630 (use and management of containers); and WAC 173-303-640 (tank systems); and other applicable regulations.

5.0 GENERAL INSPECTIONS

This section describes the inspections performed that satisfy the general inspection requirements in WAC 173-303 and 40 CFR 265.

5.1 GENERAL INSPECTION REQUIREMENTS

Requirements for the general inspection of a facility are located in WAC 173-303-320, "General Inspection" and 40 CFR 265.15, "General Inspection Requirements." The owner or operator is required to develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment that help prevent, detect, or respond to hazards to the public health or the environment.

The schedule must be kept at the facility and must identify types of problems which are to be looked for during inspections. An inspection log shall be kept, including the date and time of the inspection, the printed and handwritten signature of the inspector, a notation of the observations made, and the date and nature of any repairs or remedial actions taken. Under the WAC requirements, the log or summary must be kept at the facility for at least five years from the date of the inspection.

5.2 B PLANT COMPLEX GENERAL INSPECTIONS

The following describes the general inspections regarding the security measures, warning signs, and emergency and safety equipment at the B Plant Complex.

5.2.1 Security Inspections

The entire Hanford Site is a controlled access facility. The Hanford Site maintains an around-the-clock surveillance for protection of government property, classified information, and special nuclear materials. The Hanford Patrol furnishes armed guards to provide site security. Manned barricades are maintained at checkpoints on the access roads leading to the Hanford Site. Vehicle operators wishing to enter the Hanford Site must possess and display a DOE-issued security badge at the checkpoints. Individuals entering or leaving the site may also be subject to a personal and vehicle search for items forbidden to be brought on or taken off the site.

The B Plant Complex is located in the 200 East Area. The perimeter of the entire 200 East Area is fenced which isolates the area from other areas on the Hanford Site. Openings in the fenced perimeter provide access for authorized vehicles and personnel into the area. Signs are posted within the B Plant Complex at the main and support facilities that indicate particular hazards present, that note only authorized personnel are allowed, and display instructions for entering or leaving the facility (including appropriate

points of contact and applicable phone numbers). These signs are maintained at all times. If missing or removed signs are observed during general surveillance, which occurs every four hours, management is notified and the observation is noted in the General Surveillance Log Book.

5.2.2 General Facility Surveillance

General inspections of the 221-B Building, the 271-B Building, and their support facilities are performed approximately every four hours (two surveillance tours per shift) under Plant Operating Procedure (POP) BO-040-002, "Perform General Surveillance on A, B, C, and D Shifts." General inspections of the 225-B Building, the Waste Encapsulation and Storage Facility (WESF), and its support buildings are performed twice per shift per POP EO-040-002, "Perform General Surveillance." Observations that occur during general inspections are: the presence of smoke or fire, liquid leaks, unusual odors or sounds, and off normal operating conditions. Housekeeping is also observed during general inspections. This involves picking up all miscellaneous trash, checking for unusual radiological conditions, and notifying supervision of any maintenance needs or unusual conditions.

Additional routine inspections of the B Plant Complex are performed per Operation Ticklers A-02, "Inspection of Out Buildings Around B Plant/WESF," on an annual basis, and M-07, "Inspect Outside Lights and Stairwell Doors," on a monthly basis.

Non-routine surveillance includes fire watches every two hours on all areas of buildings where fire suppression and detection equipment are out of service. During freezing weather, surveillance of the support facilities is also performed approximately every two hours to monitor the temperature in each building. All observations and comments are recorded in the General Surveillance Log Book and the appropriate Data Sheets identified in BO-040-002 and EO-040-002.

In the 221-B and 271-B Buildings, the Operator Interface Unit (OIU) displays are also observed during the general facility surveillance per BO-040-002. The OIU displays alarms and process conditions from the facility process monitoring control system (FPMCS) which manages information relayed from monitoring equipment that are interfaced with facility process systems. All tag displays that appear out of the ordinary on the OIU are noted. All observations and comments are recorded in the General Surveillance Log Book.

Surveillance data is also collected per the general surveillance procedure, BO-040-002, for the active process tanks, storage tanks, and the designated TSD tanks. Surveillance of the active tanks and tank systems will be discussed in Section 7.0, Tank Systems Inspections, of this inspection plan. The Product and Solution Storage Tank Data Sheets identify weight factor, specific gravity, and/or other instrument readings to be taken for each tank. The data is recorded on the Product and Solution Tank Data Sheets and compared to previous readings to identify trends.

In the 225-B Building, surveillance data is collected from panel board instrumentation identified on the POP EO-040-002 Surveillance Data Sheet. These readings are compared to previous data to determine if any abnormal conditions are present. Any abnormal readings are reported to shift supervision.

5.2.3 Communication Equipment Inspections

Most of the B Plant Complex buildings are equipped with internal communication systems to relay emergency or other information to personnel working in controlled areas. These systems include telephones, PAX phones, and various alarms. Hand-held or two-way radios are also available and are usually used where telephones are not available or as a backup.

When problems with telephones are observed, the onsite telephone repair organization is notified. The PAX phone system is a public address system frequently used at the B Plant Complex. The system is capable of contacting personnel anywhere on the complex grounds. Problems or deficiencies in the system are easily recognized. If a problem is observed, the cognizant engineer of the system is then notified to correct the problem. Routine functional testing of the PAX phone system is performed by Operations per Tickler M-23, "Siren Alarm and B Plant/WEP Pax System Alarm Test" (see Appendix A). When radios develop problems, the onsite radio maintenance organization is notified. Alarms associated with the B Plant Complex are discussed in section 5.2.6 of this plan.

5.2.4 Safety and Emergency Equipment Inspections

The following discusses the safety and emergency equipment within the B Plant Complex.

5.2.4.1 High Radiation Alarms. Three types of radiation monitors are used to monitor ambient air: continuous air monitors (CAM), fixed head air samplers (FHAS), and radiation area monitors (RAM). These monitors are located throughout 221-B galleries, 225-B Building, and several support buildings. The CAMs and FHASs are tested, tracked, and maintained via the component-based recall system (CBRS) on a semiannual basis. The RAMs are maintained by the CBRS on an annual basis. The CBRS is a system established to support the maintenance, calibration, and control of various equipment. This program uses a computerized data base to document and forecast plant installed instrument and equipment calibrations and verifications. The system uses read-only computer database files and produces hard-copy reports for the status of all equipment within the files.

5.2.4.2 Emergency Lanterns. Emergency lighting systems are used in a number of buildings and facilities throughout the B Plant Complex. The emergency lanterns are inspected and operationally tested monthly per preventive maintenance (PM) procedure 2B22009, "Emergency Lantern Inspection." This is to ensure the lamps are not damaged, the units are securely mounted, the lamps are properly positioned to illuminate the required areas, and the lamps illuminate within 10 seconds of switching to the backup power supply. The lanterns are also inspected and tested annually per PM procedure 2B22038,

"Emergency Annual Test." This is to operationally test the lamps for a minimum of 1-1/2 hours to ensure battery capability. If the battery does not produce the required voltage at the end of the test, the battery is replaced. The appropriate Data Sheets for each procedure are completed, signed, and dated by the inspector.

5.2.4.3 Emergency Acid Suit Lockers. Emergency acid suit lockers are inspected monthly by Operations per Ticklers M-19, "Check Acid Suit Lockers - B Plant," and M-27, "Check Acid Suit Lockers - WESF" (see Appendix A). Operation Ticklers are established to support and control the performance of various maintenance and inspection tasks. This program uses a computerized data base to document and forecast routine plant maintenance and inspection activities. The lockers are inspected for proper seal, cleanliness, completeness, damage, and wear of required clothing. Clothing is replaced if necessary. The locker is also checked to ensure access is not obstructed. The date is then checked, posted, and the locker resealed. The tickler check sheet is completed by the inspector and maintained by the B Plant Complex Plant Surveillance organization.

5.2.4.4 Emergency SCBA. The emergency self-contained breathing apparatus (SCBA) at the B Plant Complex are inspected weekly by Operations per Ticklers M-01, "Check All S.C.B.A. Fresh Air Packs," and M-25, "Inspection of Scott Air Paks - WESF," for full tanks and complete equipment.

5.2.4.5 Portable Eye Washes. The portable eye washes are inspected monthly per Operation Tickler M-47, "Monthly Inspection of Portable Eye Wash Stations," for non-obstructed access, operating condition, and proper pressure. The inspection tag is initialed, and the tickler check sheet is completed by the inspector and maintained by the B Plant Complex Plant Surveillance organization. Semiannually, the portable eye wash saline solution is flushed and replaced per Operations Tickler S-07, "Change Out Port. Eye Wash Saline Sol. In Elec. Gallery."

5.2.4.6 Fixed Eye Washes and Safety Showers. Safety showers and fixed eye washes located in the B Plant Complex are inspected weekly per Operations Ticklers W-03, "Safety Shower and Eye Wash Check - WESF," and W-04, "Check of Safety Showers and Eye Washes." Both types of equipment are inspected for good water flow, proper shut off (no leaks), and non-obstructed access. The safety showers are also checked to ensure the shower light is illuminated. The shower and eye wash inspection tags are initialed and the appropriate tickler check sheet is completed by the inspector. The check sheet is maintained by the B Plant Complex Plant Surveillance organization.

5.2.5 Fire Protection Systems Inspection

Smoke detectors and manual stations (pull boxes) are strategically located throughout the B Plant Complex. Fire sprinkler systems are installed in the 271-B, 221-B, and 225-B Buildings, and a deluge system is also installed in the 276-B Building. These systems have a direct alarm to the Hanford Site Fire Department (HFD) and automatically notify them when an alarm is actuated. Portable fire extinguishers and fire hose stations are also strategically located in these facilities and other support buildings. Fire hydrants are located both north and south of the 221-B Building. Numerous fire barriers, such as fire doors and windows, are also installed throughout

the B Plant Complex facilities. The fire detection and protection equipment in the 221-B canyon cells will be discussed in the section 7.0 of this inspection plan.

Fire systems and fire system equipment are inspected and tested on a regular schedule as required in WHC-4-41, *Fire Protection Program Manual* (see Appendix B). The Hanford Fire Department, Fire System Maintenance (FSM), and facility operations are responsible for performing inspections, maintenance, and testing that are required.

Inspections that are the responsibility of the HFD and FSM are scheduled, tracked, and initiated by the fire equipment automated recall system (FEARS). The FEARS is a computerized data base to document and forecast facility fire system equipment maintenance and inspection. The system uses read-only computer database files and produces hard-copy reports for the status of all equipment within the files. Operations responsibilities for fire system equipment inspection and maintenance are accomplished by Plant Operating Procedures and Operation Ticklers (see Appendix A).

5.2.5.1 Smoke Detectors. Smoke detectors (Ionization or Photoelectric) are inspected semiannually to ensure they are in good condition and that there is nothing to impair proper operation. They are inspected annually to ensure that each smoke detector is operative and produces the intended response. A sensitivity check is performed using manufacturer approved testers or listed control panel equipment every two years. Detector inspections are the responsibility of the HFD and FSM.

5.2.5.2 Manual Stations (Pull Boxes). Manual stations are inspected annually. Each Pull box is actuated to verify that the station transmits an alarm signal to the facility fire alarm panel and the Hanford Fire Department. Pull box inspection is the responsibility of the HFD and FSM.

5.2.5.3 Deluge System. The deluge system's automatic trip mechanism is trip tested annually with the control valve open enough to cause the valve to latch in the open position. The inspection of the deluge system is performed by the HFD and FSM.

5.2.5.4 Sprinklers Systems. The riser components of the sprinkler systems are inspected every four months. A main drain water flow test is conducted to verify the system is fully operable. Gauges are checked monthly to ensure that normal range is indicated. Every five years, the gauges are checked with an inspector's gauge or replaced with a new acceptable gauge that is able to perform the required function. The piping is examined every ten years. The HFD and FSM are responsible for the inspection of sprinkler system components.

5.2.5.5 Hose and Hose Stations. Each hose station is checked monthly to ensure that all equipment is in place and in good working condition, the hose station valves are not leaking, and the hose racks, reels, or nozzles are free from mechanical damage. This inspection is provided by B Plant Operations Tickler M-08, "Inspect Fire Extinguishers and Hose Lines," and Plant Operating Procedure (POP) BO-020-021, "Inspect and Test Fire Protection Water System." Further inspection is performed by the HFD and FSM. Each year, or after each use, the hoses are removed, inspected, and reracked using a different fold pattern. Hoses are service tested at no later than five years from installation and every three years afterwards.

5.2.5.6 Primary and Secondary Valve Check. Inspections of fire system Butterfly, gate, and OS&Y primary and secondary valves are performed monthly per Operations Ticklers M-21, "Primary and Secondary Valve Check," and M-28, Fire Protection Valve Inspection - WESF," and POP BO-020-021, "Inspect and Test Fire Protection Water System."

5.2.5.7 Fire Hydrants. Fire hydrants associated with the B Plant Complex are inspected every four months to verify that the hydrants are visible, accessible, and that the caps are in place. The hydrants are inspected semiannually to ensure a full operational condition and annually to perform a flush/drain verification test to ensure proper functioning. These inspections are performed by the HFD and FSM.

5.2.5.8 Emergency Water Supply. Water for fire protection is supplied by the Hanford Site raw water system. This is water taken from the Columbia River via the 182-B Export Pumping Station, piped to the 282-E Pumphouse and reservoir in the 200 East Area, and pumped to the B Plant Complex. If this supply of raw water is lost, two diesel-driven backup emergency wells are available: Emergency Well Pumps 282-B and 282-BA. Each well and pump is inspected and tested weekly for operation per Operations Tickler W-12, "Check Emergency Well Pumps," and POP BO-140-005, "Test Emergency Water Well Pumps."

5.2.5.9 Fire and Smoke Barriers. Every two years the fire and smoke barriers within a building or facility are inspected to ensure they are capable of providing the necessary control. All barriers are to be clearly identified (signs comprised of red lettering, at least 2 in. high, on a white background).

5.2.5.10 Fire Doors. Fire doors are inspected semiannually to ensure the doors are operating properly per PM procedure 2B15001, "Fire Door Inspection - B Plant/WESF." The appropriate Data Sheets for the procedure are filled out and completed. All noted deficiencies are reported to management.

5.2.5.11 Portable Fire Extinguishers. Extinguishers are inspected monthly to ensure accessibility, physical condition, and fullness by "hefting" and the pressure gage reading. This inspection is performed per Operations Tickler M-08, "Inspect Fire Extinguishers and Hose Lines," in conjunction with POP BO-020-021, "Inspect and Test Fire Protection Water System." The Hanford Site Fire Department functionally tests the extinguishers annually to assure reliability. Fire extinguishers are serviced as required by an outside contractor.

5.2.6 Emergency Alarm Systems Inspection

The emergency alarm systems at the B Plant Complex include the sirens for evacuation, take cover, the fire gong, the crash alarm phone system, and the PAX system. The take cover and evacuation sirens are inspected by Operations per Tickler M-23, "Siren Alarm and B-Plant/WEP Pax System Alarm Test." Each siren is actuated and functionally tested monthly. The PAX system is also involved in this test. At the completion of the test, the tickler check sheet is completed and signed. The testing of the fire gong is the responsibility of the Hanford Fire Department and is tested monthly

(see Appendix B). The crash alarm phone system is functionally tested weekly per Operations Tickler W-19, "Crash Alarm Test." During this test, the dispatcher receives a call from Hanford Patrol over the crash alarm phone system. The dispatcher acknowledges the call and responds with the station number. The tickler check sheet is completed and signed.

6.0 CONTAINER INSPECTION

This section describes the inspections that satisfy the container use and management requirements provided by WAC 173-303 and 40 CFR 265.

6.1 CONTAINER INSPECTION REQUIREMENTS

Requirements for managing and inspecting containers containing dangerous waste are located in WAC 173-303-630, "Use and Management of Containers" and Subpart I of 40 CFR 265, "Use and Management of Containers." The owner or operator must inspect areas where containers are located at least weekly, looking for leaking containers and for deterioration of the containers and the containment system caused by corrosion, deterioration, or other factors. The general inspection requirements of WAC 173-303-320 require the owner or operator to keep an inspection log or summary record of the container inspection for at least five years.

6.2 B PLANT COMPLEX CONTAINER INSPECTIONS

The following describes the inspections regarding containers in the B Plant Complex Cell 4 container storage area.

6.2.1 Cell 4 Container Storage Area

The 221-B Building's Cell 4 is used to store mixed and/or radioactive dry waste that is generated by WESF due to normal operations. The cell is one of the 40 segregated process and nonprocess cells that are part of the 221-B Building. Cell 4 is a nonprocessing cell that is 13 ft (3.96 m) wide, 27 ft 6 in. (8.38 m) long, and 28 ft (8.5 m) deep. All the cells are separated from the canyon by a movable confinement barrier. This barrier is comprised of several 6-ft- (1.8-m-) thick concrete cover blocks per cell that shield the canyon from the high levels of penetrating radiation emitted from the cells. To gain access to a cell, the 221-B, 45-ton-capacity overhead Canyon Crane is used to remove the appropriate cover blocks.

Cell 4 waste is stored in standard 55-gallon drum containers. At WESF a single drum is placed in a transfer cask and transferred to the 221-B Building via a truck and trailer. The truck and the cask enter the building through the 221-B Tunnel. The cask is removed from the trailer by the canyon crane and set on the canyon deck. The drum is removed from the cask and stored on racks located on the Cell 4 floor. The Cell 4 racks are designed to elevate the drums and safely hold 49 drums at the drums' weight limit. The container transfer and storage is performed per POP BO-020-025, "Store Waste Drums In Cell 4."

Cell 4 is a completely enclosed cell with the cover blocks in place. This enclosed cell protects the containers from natural elements and greatly reduces the risk of container corrosion and deterioration. The six cover blocks must be removed to gain access to Cell 4. There are no means for a manned entry into the cell. Cell 4 is designed for remote crane access only.

Due to the limited and difficult access to the cell and the presence of radiation, it is not practical for personnel to enter the cell. Based on this and the above information, physical inspections of the containers cannot be accomplished directly but must be done with video equipment.

Operating the canyon crane exposes the operating personnel to the elevated levels of radiation that are present in the canyon. For a crane operator to gain access to the crane, the operator must first enter the canyon, walk along the canyon crane cabway, and enter the crane cab. Because of the high levels of radiation present, the frequency of weekly inspections prescribed by 40 CFR 265 and WAC 173-303 is not practical while maintaining ALARA radiation exposure to personnel. Also, the intent of Subtitle C of RCRA and the State Dangerous Waste Regulations is to manage hazardous waste in a way that is protective of human health and the environment.

6.2.2 Cell 4 Inspections

Based on the rationale stated above, the intent of the regulations for container inspection is met by the following.

Containers stored in Cell 4 are inspected when additional waste containers are added to the cell. If routine additions of waste to Cell 4 discontinue, inspections will be completed on an annual basis. This inspection utilizes remotely operated video equipment after the cover blocks are removed. The video equipment can be manipulated to view the containers as requested by the inspector. The containers are inspected to ensure that there are no leaks, excess corrosion, and structural defects, and to ensure the lids are sealed. Observations are also made to ensure there is adequate aisle spacing between the containers. Video captured by the equipment will be viewed as the inspection is performed and may be recorded for future examination. At the completion of the inspection, the Cell 4 Storage Container Inspection Check List is completed by the inspector.

A single heat detector and a water spray system is located in Cell 4. When an alarm is activated by the detector due to a heat source, the upper spray requires a manual activation by an operator to allow a water spray to occur. Upon the activation of the in-cell fire protection system heat detector, an alarm is sent to the Hanford Fire Department, an alarm registers on the FPMCS OIU, and zone alarm lights on the 221-B Fire Alarm Control Panel (FACP) are activated.

The single heat detector and the spray delivery nozzle cannot be physically inspected due to the dangerous high levels of radiation in the process cell. The in-cell fire protection system detectors and instrumentation are tested for proper functioning on an annual basis per Operations Tickler A-08, "Test Cell Fire, 291B Fire Protection System," in conjunction with POP BO-140-002, "Test Cell Fire, 291-B Fire Protection Systems." The remaining components of the fire system are inspected and maintained by the HFD and FSM (see Appendix B).

7.0 TANK SYSTEMS INSPECTION

This section describes the inspections that satisfy the tank system requirements provided by WAC 173-303 and 40 CFR 265.

7.1 TANK SYSTEM INSPECTION REQUIREMENTS

Requirements for managing and inspecting tank systems used to treat or store dangerous waste are located in WAC 173-303-640, "Tank Systems," and Subpart J of 40 CFR 265, "Tank Systems." The owner or operator must develop and follow a schedule and procedure for inspecting overfill controls. The owner or operator must also inspect, at least once every operating day, the above ground portions of each tank system to detect corrosion or leaks, the data gathered from monitoring any leak detection equipment, and the construction materials and the area immediately surrounding the externally accessible portion of the tank system. The inspection of the immediate area includes the secondary containment system to detect corrosion or signs of release of dangerous waste. The inspections must be documented in the operating record of the facility. The inspection log must include the time and date of the inspection, the printed name and handwritten signature of the inspector, and any observations, repairs, or remedial actions taken. The log must be kept at the facility for at least five years from the date of the inspection.

7.2 B PLANT COMPLEX TANK SYSTEM INSPECTIONS

The B Plant Complex tank systems which must comply with the inspection requirements of WAC 173-303 and 40 CFR 265 when they are in active service are the neutralized current acid waste tank treatment system, the low-level waste concentrator, the low-level waste treatment tanks, and the organic waste storage system, which are located in a number of process cells in the 221-B Building.

The NCAW and low-level waste concentrator tank systems are currently inactive systems. Although no waste is being stored or treated, and there is no intention of future treatment or storage of any waste in these tank systems, they have been included to reflect past operations.

- **Neutralized Current Acid Waste Tank Treatment System**

The Neutralized Current Acid Waste Tank Treatment System tanks have been designated as storage and treatment tanks. These tanks include the following: TK 6-2 [5,200 gallon (20,000 liter) capacity] in Cell 6, TK 7-1 [5,100 gallon (19,000 liter) capacity] and TK 7-2 [5,000 gallon (19,000 liter) capacity] in Cell 7, TK 8-1 [5,200 gallon (20,000 liter) capacity] and TK 8-2 [5,200 gallon (20,000 liter) capacity] in Cell 8, TK 13-1 [4,000 gallon (15,000 liter) capacity] in Cell 13, TK 14-2 [3,900 gallon (15,000 liter) capacity] in Cell 14, TK 29-3 [4,100 gallon (16,000 liter) capacity] in Cell 29, and TK 39-2 [1,800 gallon (7,000 liter) capacity] and TK 39-5 [2,000 gallon (8,000 liter) capacity] in Cell 39.

- **The Low-Level Waste Concentrator**

The low-level waste concentrator equipment that has been designated for waste treatment includes the following: the waste concentrator (E-23-3), the deentrainer (D-23-2), the condenser (E-23-4), and receiving tank (TK-23-1). All the equipment is located in Cell 23. The maximum process design capacity for the low-level waste concentrator is 7,300 gallons (27,633 liters) per day.

- **The Low-Level Waste Treatment Tanks**

The low-level waste treatment tanks TK 24-1 [13,900 gallon (53,00 liter) capacity], TK 25-1 [4,900 gallon (19,000 liter) capacity], and TK 25-2 [4,900 gallon (19,000 liter) capacity] have been designated as storage and treatment tanks. Tank TK 24-1 is located in Cell 24, and tanks TK 25-1 and TK 25-2 are located in Cell 25.

- **Organic Waste Storage System**

The organic waste storage system tanks have been designated as storage tanks. These tanks include the following: TK-26-1 [3,900 gallon (15,000 liter) capacity] in Cell 26, TK-27-2 [2,000 gallon (7,500 liter) capacity], TK-27-3 [3,800 gallon (14,000 liter) capacity], and TK-27-4 [280 gallon (1,000 liter) capacity] in Cell 27, TK-28-3 [3,800 gallon (14,000 liter) capacity] and TK-28-4 [280 gallon (1,000 liter) capacity] in Cell 28, TK-29-4 [130 gallon (500 liter) capacity] in Cell 29, and TK-30-3 [4,100 gallon (16,000 liter) capacity] in Cell 30.

The 221-B Building has an overall canyon length of 810.5 ft (247 m) and is divided into 20 sections. The north portion of each section contains two cells, arranged in a single row running the length of the building. Each tank system is housed within one or more of the process cells. A standard canyon process cell is 17 ft 8 in. (5.4 m) long, 13 ft (3.96 m) wide, and 22 ft (6.7 m) deep, and each cell is separated from the adjacent cell by a 7-ft- (2.1-m-) thick concrete wall.

A liquid collection system is located at the floor of each cell. With the exception of Cell 39, solutions from the canyon deck, cell flushes, and leaks from process systems in the cells are collected by a sump drain and transported to the Cell Drain Header via a 6-in.-dia. vertical pipe. The cell drain header, a 24-in.-dia. vitrified clay pipe encased in concrete, begins at each end of the canyon 33 ft (10.1 m) below the deck and drains into Tank 10-1. In Cell 39, solutions from the canyon deck, cell flushes, and leaks from the process systems are collected by a sump. The liquid is then transferred from the sump to tank TK 39-1 in Cell 39.

The south side of the canyon houses the hot pipe trench. The hot pipe trench, parallel to the process cells from cell 5 through cell 40, provides the isolation and shielding of contaminated piping for inter-cell solution transfer and vessel venting systems. The trench is 8 ft (2.4 m) wide and 10.5 ft (3.2 m) deep, measured from the canyon deck, and 707.82 ft (215.74 m) long. Any solutions that might accumulate in the hot pipe trench would also drain to the cell drain header via 6-in.-dia. vertical pipes.

Cell cover blocks form the movable confinement barrier of the cells and the hot pipe trench. These cover blocks can be removed for cell maintenance and equipment change out by using the 45-ton-capacity overhead crane. During normal operation of the plant, the 6-ft- (1.8-m-) thick concrete cell cover blocks provide passage of ventilation air in the direction of the cells, thus preventing escape of airborne radioactive contamination from the cells to the canyon deck. The cover blocks also serve as shielding barriers from high-intensity radiation emanating from the process equipment in the cells. Due to the limited access and high levels of radiation, there are no provisions for personnel access into the process cells.

Based upon the above information, most of the physical inspection requirements for the tank systems outlined in WAC 173-303-640 cannot be accomplished visually, but must be done remotely with the canyon crane and instrumentation and/or video equipment. Operating the canyon crane exposes the operating personnel to the high levels of radiation that are present in the canyon. For a crane operator to gain access to the crane, the operator must first enter the canyon, walk along the canyon crane cabway, and enter the crane cab. Because of the high levels of radiation present, the daily frequency of direct inspections prescribed by 40 CFR 265 and WAC 173-303 is not practical while maintaining ALARA radiation exposure to personnel. Based on the rationale stated above, the intent of the regulations for the tank system inspections is met by the following.

7.2.1 Monitoring Data From Leak Detection Equipment

Monitoring data from leak detection equipment is obtained per POP BO-040-002, "Perform General Surveillance on A, B, C and D Shifts." The leak detection equipment for each of the B Plant Complex waste tank systems covered by this inspection plan are summarized in Appendix C. This equipment includes weight factor recorders, specific gravity recorders, and/or volume indicators that are maintained and calibrated on a regular basis according to the CBRS program. Monitoring and surveillance of the leak detection equipment is performed only on tanks and tank systems that are considered active or that contain solution. The tanks that are classified as active are identified in POP BO-040-002. Once per shift, data is collected from instrumentation readouts located on the 221-B Building Operating Gallery panel boards and the FPMCS OIU. The data is recorded on the Product and Solution Storage Data Sheets, compared to the normal operating ranges identified on the data sheet, and compared to the readings obtained in the previous 48 hours to identify trends. Following the surveillance tour, the inspecting operator and the shift manager review the data sheets to determine if any off-standard conditions exist.

7.2.2 Overfill/Spill Control Equipment

All the process cells containing the tanks and tank systems that must comply with the inspection requirements of WAC 173-303 and 40 CFR 265 drain to the cell drain header and tank TK-10-1, except for Cell 39. Cell 39 drains to an in-cell sump that is emptied to tank TK-39-1. Overflow/spill control equipment for the tank systems primarily involves the same instrumentation as the leak detection equipment and consists of weight factor recorders, specific

gravity recorders, and/or volume indicators (Note: weight factor is a term equivalent to liquid level). The overflow/spill control equipment (see Appendix C) of the tank systems covered by this inspection plan is monitored per POP BO-040-002 once per shift, and the readings are recorded on the Product and Solution Storage Data Sheets. The equipment is maintained and calibrated on a regular basis according to the CBRS program. The design of the tanks also aids in preventing liquid releases. All connections to the tanks are top connections. There are no bottom flanges for possible leakage below the normal liquid level.

7.2.3 Inspection of Above Ground Portions of Tank System For Corrosion or Releases

Plant personnel cannot physically inspect the above-ground portions of the canyon tank systems due to the high radiation emitted by the process cells. Any releases from the active cell tanks will be detected by the surveillance of the weight factor recorders, specific gravity recorders, weight factor alarms, and/or volume indicators (see Appendix C), which occurs once per shift. If required due to leak monitoring instrumentation indications, the crane operator can remove cover blocks to identify the source of a leak and inspect the tank system equipment in that cell using remote instrumentation and/or video equipment.

7.2.4 Inspection of Construction Materials and Area Immediately Surrounding Externally Accessible Portions of the Tank System, Including Secondary Containment

The response to this and the intent of meeting requirements is the same as that outlined in the section 7.2.3, "Above Ground Portions of Tank System For Corrosion or Release."

7.2.5 General Inspection of Security Devices, Emergency and Fire Protection Equipment

The following describes the security, safety, and emergency equipment that is specifically related to the dangerous waste tank systems at the B Plant Complex.

7.2.5.1 Security Devices. The cell cover blocks are considered to be the security devices for the 221-B canyon tank systems. Each cover block weighs several tons and lifting these cover blocks requires the use of the 45-ton-capacity canyon crane. To operate the crane, the crane operator must enter the canyon which is controlled by the dispatcher. Instructions for the operation of the canyon crane and the removal of cell cover blocks are given in POP BO-020-005, "Remove Cell Blocks and Perform Work in Cell." The administrative controls for process-related activities are defined in WHC-CM-5-6, *B Plant Administration*, Section 5.5, Rev. 1, "Crane Job Plan." These administrative controls ensure the development of a work plan with the proper authorizations and ensures that all the log book requirements and other specifications are met.

7.2.5.2 Emergency and Fire Protection Equipment. The emergency and fire protection equipment for the canyon tank systems included in this inspection plan is comprised of the in-cell fire protection system.

Single heat detectors and a water spray system are located in the NCAW tank system process cells 13, 14, and 39, the low-level waste treatment tank system process cells 24 and 25, and the low-level waste concentrator tank system process cell 23. When an alarm is activated by a detector in one of these cells, the upper sprays require manual activation by an operator to allow a water spray to occur. Dual heat detectors and a foam system are located in the organic waste storage tank system process cells 26, 27, 28, 29, and 30. A foam spray is automatically activated to one or more cells through the upper cell sprays upon response to the heat detectors. The foam system can also be activated by manually operated switches on the 221-B Cell Spray Control Panel (CSCP) in the 221-B dispatcher's office. Two heat detectors are also located in the 221-B canyon wind tunnel. When these detectors respond to a heat source, the wind tunnel fog nozzle water spray is activated. Upon the activation of any of the in-cell fire protection system heat detectors, an alarm is sent to the Hanford Fire Department, an alarm registers on the FPMCS OIU, and zone alarm lights on the 221-B Fire Alarm Control Panel are activated.

The single heat detectors, the dual heat detectors, and the spray delivery nozzles cannot be physically inspected due to the high levels of radiation in the process cells. The in-cell fire protection system detectors and instrumentation are tested for proper functioning on an annual basis per Operations Tickler A-08, "Test Cell Fire, 291B Fire Protection System," in conjunction with POP B0-140-002, "Test Cell Fire, 291-B Fire Protection Systems." The remaining components of the fire system are inspected and maintained by the HFD and FSM (see Appendix B).

8.0 CONTAINMENT BUILDING INSPECTIONS

This section describes the inspections that satisfy the containment building requirements provided by 40 CFR 265.

8.1 CONTAINMENT BUILDING INSPECTION REQUIREMENTS

Requirements for managing and inspecting a containment building are located in 40 CFR 265, Subpart DD, "Containment Buildings". The owner or operator must develop and follow an inspection schedule and procedure that ensures maintenance of the structural integrity of the unit and prompt detection of any leaks or releases to the air, ground, or water. The owner or operator must inspect, at least every seven days, monitoring equipment, the containment building, and the area surrounding the containment building to ensure the unit is being properly operated. The inspections must be documented in the operating record of the facility. The inspection log must include the time and date of the inspection, the printed name and handwritten signature of the inspector, and any observations, repairs, or remedial actions taken. The log must be kept at the facility for at least five years from the date of the inspection.

8.2 B PLANT COMPLEX CONTAINMENT BUILDING INSPECTIONS

The 221-B Building is considered the component of the B Plant Complex which must comply with the containment building inspection requirements specified in 40 CFR 265.

Failed jumpers, jumper tools, and miscellaneous equipment and shielding from the 221-B canyon are stored in certain locations on the canyon deck and in canyon process cells. There are no free liquids stored at any of these locations. The waste stored at these locations has no exposure to the outside atmospheric conditions (wind, rain, etc.), is completely solid, and is not subject to moving or shifting. Due to the physical characteristics of waste being stored in the containment building, emissions to the atmosphere are the primary concern pertaining to leaks and/or releases. Radionuclides are the primary air emission concern from the 221-B Canyon. HEPA filtration reduces the concern of emission particulates, asbestos, and/or other visual effluent opacities, and any release of these emissions would be accompanied by a radionuclide source. Therefore, air effluents from the 221-B Canyon are only monitored for radionuclides before release to the atmosphere via the 291-B-1 Stack.

8.2.1 221-B Building and Surrounding Area Inspections

The 221-B Building is a reinforced concrete and steel structure divided into 20 sections with transverse section joints. All expansion joints are keyed and offset to ensure necessary shielding requirements. The overall length of the canyon is 810.5 ft (247 m), and the building is supported on a 6-ft- (1.8-m-) thick concrete slab. The canyon is 77 ft 2 in. (23.5 m) high with partial embedments of 22.5 ft (6.9 m) and 16 ft (4.9 m) on the south and north sides, respectively. The cross-sectional width of 66 ft 2 in. (20.2 m)

is constant to a height of 59.75 ft (18.2 m) and then increases to a maximum of 68 ft 2 in. (20.8 m) at the roof top. The roof slab varies in thickness from 3 ft (0.9 m) at midspan to 4 ft (1.2 m) at the edges where it is supported by the exterior walls.

Inspections of the 221-B Building and outside adjacent facilities are performed twice per shift, approximately every four hours, per POP BO-040-002, "Perform General Surveillance on A, B, C, and D Shifts" as described in section 5.2.2 of this document. This inspection provides information to ensure the facility and its surrounding support buildings are operating properly and that no off-normal conditions are present. Additional inspections of the 221-B Building surrounding area and support buildings are performed per Operations Tickler A-02, "Inspection of Out Buildings Around B Plant/WESF."

8.2.2 Canyon Ventilation System Inspections

The canyon ventilation system utilizes a system of pressure differentials to govern the flow of radioactive aerosols and/or particulates that can escape the structural containment barriers of the canyon. Differential pressures direct airflow from areas of low radiological contamination to areas of higher radiological contamination. Exhaust fans produce a vacuum which draws air from the canyon into the cells. Progressively negative air pressures exist from the ambient air pressure outside the 271-B Building, to the galleries in the 271-B Building, to the 221-B Canyon.

Air is drawn in from the environment by the 10 canyon supply fans, one for each of the 20 sections. During normal operation, flowrate is maintained by the operation of 4 to 5 supply fans. Supply fans 1, 5, 9, 13, or 17 automatically shut off if the canyon-to-operating-gallery pressure approaches 0.25 in. of water, and supply fans 3, 7, 11, 15, or 19 will shut down in the event of canyon-to-gallery differential pressure of 0.175 in. of water. Canyon supply fans are controlled through manual on/off switches on the FPMCS. Air enters the canyon along the crane cabway and flows over the parapet wall and down onto the canyon deck. Air is pulled into the cells through holes in the cover blocks, then it is drawn through an opening into the wind tunnel.

There are two electric exhaust fans that are provided with an inlet and outlet seal damper. These fans also have pneumatic radial throttling or modulating dampers to adjust the exhaust flow. This damper is controlled by the FPMCS in response to the canyon-to-atmosphere differential pressure transmitter in the automatic operation mode. The fan controls are located in the 291-B turbine house with the exception of the damper controls, which can be operated remotely from the FPMCS. A steam turbine fan is the emergency fan maintained on automatic standby. This unit consists of an exhaust fan with a steam turbine drive complete with control equipment.

Ventilation air from the 221-B Canyon is exhausted through the "D" HEPA (high efficiency particulate air) filter cell before being discharged to the atmosphere. The "D" filter cell is equipped with two banks of 85 percent National Bureau of Standards prefilters and three banks of HEPA filters. A sand filter, built in 1948, is the emergency backup filter to the operating HEPA filter. "A", "B", and "C" filters are filter banks that are retired and no longer used in the exhaust ventilation system.

The canyon supply fans are inspected on a monthly basis by the power operator per POP BO-060-002, "Operate Canyon Supply Fans." The operating condition of all the supply fans and the differential pressure (DP) readings for those supply fans that are in operation are checked and recorded on the Canyon Supply Fans Monthly DP Readings data sheet found in the procedure. The data sheet is reviewed and signed by the inspecting personnel and the shift supervisor.

The canyon ventilation system is inspected per POP BO-040-001, "Perform Ventilation System Surveillance." A data sheet is filled out once each shift by inspecting personnel. The liquid levels of the filter cells inlet, intermediate and outlet sumps, and the inlet and outlet seals are checked and recorded. The DP across the operating HEPA filter bank and the exhaust air temperatures are also checked and recorded. The relative humidity of the air stream, the canyon-to-atmosphere differential pressure (inches of water), the operating gallery-to-canyon differential pressure (inches of water), and the total number of active supply fans are also reported on the check sheet. The collected data is reviewed by shift supervision for any deviation from the normal.

An additional monthly inspection of the ventilation system is also performed per Operations Tickler M-13, "Inspection of Vent. System (Canyon, P.G. & Op gal.)." DP readings across three Pipe Gallery exhaust fans, HEPA filters, and prefilters are recorded on the data sheet found in POP BO-060-003, "Start Up and Operate Exhaust Fans, Supply Fans in Galleries". DPs across the Canyon and Operating Gallery supply fans are recorded on the data sheets found in POP BO-040-001 and POP BO-060-003.

8.2.3 Canyon Emissions Monitoring Equipment Inspections

Sampling and monitoring probes are positioned at approximately 50 ft in elevation on the 291-B-1 Stack. These probes have been designed for multinozzle isokenetic sampling. The sampling and monitoring system consists of a primary and backup record sampler containing 47 mm filter paper and a continuous air monitor (CAM). The filter paper from the primary record sampler is changed on a weekly basis (each Friday) and is composited and analyzed weekly for gross alpha and gross beta. Individual isotopes are composited and analyzed on a quarterly basis. The CAM local ratemeter is checked each shift, and the CAM filter is changed weekly. Alarms for CAM malfunction or low sample flowrates are annunciated both locally and in the dispatcher's office. A flow switch will disrupt power to the record sample pump when stack air flow stops and will restore power when flow is detected.

APPENDIX A

B PLANT COMPLEX OPERATION TICKLERS FOR GENERAL FACILITY INSPECTIONS,
INSPECTIONS OF FIRE PROTECTION SYSTEMS, AND EMERGENCY EQUIPMENT INSPECTIONS

<u>TICKLER NUMBER</u>	<u>TITLE</u>	<u>FREQUENCY</u>
A-02	Inspection of Out Buildings Around B Plant/WESF	Annually
A-08	Test Cell Fire, 291B Fire Protection System (In conjunction with POP BO-140-002)	Annually
M-01	Check All S.C.B.A. Fresh Air Packs	Monthly
M-04	Fire Extinguisher Inspection - WESF	Monthly
M-07	Inspect Outside Area Lights and Stairwell Doors	Monthly
M-08	Inspect Fire Extinguishers & Hose Lines (In conjunction with POP BO-020-021)	Monthly
M-19	Check Acid Suit Lockers - B Plant	Monthly
M-21	Primary and Secondary Valve Check (In conjunction with POP BO-020-021)	Monthly
M-23	Siren Alarm and B Plnt/WEP Pax System Alarm Test	Monthly
M-25	Inspection of Scott Air Paks - WESF	Monthly
M-27	Check Acid Suit Lockers - WESF	Monthly
M-28	Fire Protection Valve Inspection - WESF	Monthly
M-47	Monthly Inspection of Portable Eye Wash Stations	Monthly
S-07	Change Out Port. Eye Wash Saline Sol. in Elec. Gallery	6 months
W-03	Safety Shower and Eye Wash Check - WESF	Weekly
W-04	Check of Safety Showers and Eye Washes	Weekly
W-12	Check Emergency Well Pumps (In conjunction with POP BO-140-005)	Weekly
W-19	Crash Alarm Test	Weekly

APPENDIX B

**HANFORD FIRE DEPARTMENT AND FIRE SYSTEM MAINTENANCE
INSPECTION/MAINTENANCE SCHEDULE FOR THE B PLANT COMPLEX**

<u>EQUIPMENT</u>	<u>ACTIVITY</u>	<u>FREQUENCY</u>
CONTROL PANELS		
Panel lamps, light emitting diodes	Verify that all illuminating devices have the capability to light and to provide the correct indications.	Annually
Circuit Interface Verification	Initiate an alarm condition for each initiation circuit or zone. Verify that the signal is transmitted to the computer-aided dispatch system.	4 months
Audible and Visible Trouble Signal	Verify operation of panel trouble signals and ring-back feature for systems that use a trouble silencing switch which requires resetting.	Annually
Zone Disconnect Switches	When control unit (panel) has zone disconnect or isolating switches, verify that each switch performs the intended function and that a trouble signal is received when a zone is disconnected.	Annually
INPUT DEVICES		
Smoke Detector	Inspect detectors to ensure they are in good condition and that there is nothing to impair proper operation.	6 months
Smoke Detector	Functional Test - Ensure each smoke detector is operative and produces the intended response.	Annually
Smoke Detector	Sensitivity Test	2 years
Flame, Fire, Gas Detectors	Inspect all detectors to ensure they are in good condition and there is nothing to impair proper operation. Perform a test using the equipment manufacturer recommended technique.	6 months

<u>EQUIPMENT</u>	<u>ACTIVITY</u>	<u>FREQUENCY</u>
Water Flow Alarm (Flow or Pressure Switch)	Flow water through the inspector's test valve(s). Monitor the response to ensure that a fire alarm signal is generated at the facility fire alarm control panel within 90 seconds.	4 months
Extinguishing Systems Alarm Initiation Switch (Foam & Limited Water Systems)	Use the manufacturer's recommended technique to test the system, as approved by the area fire protection engineer. Send the extinguishing system into a fire alarm condition. Monitor the signal to provide assurance that it will transmit to the Hanford Fire Department.	6 months
Manual Stations (Pull Boxes)	Actuate each manual station to verify that the station transmits an alarm signal to the facility fire alarm control panel.	Annually
Supervisory Signal Initiating Devices	These tests will verify that the alarm set point occurs only at the intended level and is within the limits specified under the appropriate category.	Annually
Post Indicator Valve (PIV)	Verify a valve closure signal is received within two full turns or one-fifth of the valve travel from the fully open position.	Annually
<hr/> FIRE PROTECTION EMERGENCY POWER <hr/>		
Lead Acid Battery	Visually inspect electrolyte level. Clean and inspect the battery connections.	Weekly
	Measure open-circuit battery voltage. Measure specific gravity.	6 months
	Measure battery voltage under full-load conditions with battery charger disconnected and direct current bells ringing. Clean and coat battery connections. Check operation of battery charger.	Annually
	Replace battery when recharged battery voltage or specific gravity falls below manufacturer's recommendation.	As Required

<u>EQUIPMENT</u>	<u>ACTIVITY</u>	<u>FREQUENCY</u>
<hr/> OUTPUT DEVICES <hr/>		
Alarm Indicating Appliances:		
Supervised Devices		Annually
Unsupervised Devices		Bimonthly
	Actuate an initiating device to put the system into alarm. Monitor the sound level produced by each audible device to ensure that it is clearly audible over the ambient background noise level. Monitor each visual alarm to ensure that it can be seen clearly with normal ambient light levels.	
Annunciators	Send one device into the alarm condition for each annunciator window. Verify that the alarm is received at the local annunciator.	Annually
Auxiliary Function Circuits	Functional test of all automatic initiation circuits to verify proper operation (e.g., door closer, HVAC shutdown, damper closure).	Annually
Audible (Bell/Gong) Test	Monitor the sound level to ensure that the alarm is clearly audible over the ambient background noise level in all areas of the facility.	Monthly
<hr/> SPRINKLER SYSTEMS <hr/>		
Riser Flow Tests	Conduct a main drain water flow test to verify that the system is in a fully operable condition.	4 months
Gages	Check gages to ensure that indicated pressure is in the normal range.	Monthly
	Check all gages with an inspector's gage, or replace them with a new accurate gage of the type, style, and range required for the intended duty.	5 years
Piping	Examine the internal condition of piping at 10 year intervals.	10 years
Water Spray Fixed Systems	Clean and inspect strainer. Visually inspect nozzles for obstructions.	Annually

<u>EQUIPMENT</u>	<u>ACTIVITY</u>	<u>FREQUENCY</u>
Deluge and Preaction Systems	Trip test the system with the control valve opened enough to cause the valve to latch in the open position. Test both the manual trip mechanism and automatic trip mechanism, where applicable.	Annually
Low-Expansion	Visually inspect systems in accordance with manufacturer's specifications.	6 Months
Hose and Hose Stations	Inspect to ensure that hoses (including gaskets) are removed, inspected, and reracked using a different fold pattern.	Annually
	Remove and service-test hose stored on racks and reels and in hose houses at intervals not exceeding 5 years after purchase date and every 3 years afterwards.	5 years (initial) 3 years (subsequent)
Fire Department Connections	Inspect and verify Fire Department connections are accessible and free from obstructions.	4 months
Fire Hydrants	Inspect the fire hydrant to ensure that it is in a fully operational condition. Lubricate and adjust, etc., as necessary.	6 months
	Inspect to verify that hydrants are visible, readily accessible, and that their caps are in place.	4 months
	Perform a flush/drain verification test to ensure proper functioning and drainage capability.	Annually
Fire Main Hydrant Flow Tests	Using National Fire Protection Association (NFPA) 291, perform fire hydrant flow tests on representative sections of fire mains and loops to verify system flow capabilities.	Annually

BARRIERS AND DOORS

Fire Doors	Examine hardware and replace any parts found to be inoperative. Inspect doors for dry rot. Inspect chains or cables used on suspended doors for excessive wear and stretching.	6 months
	Check chains or cables on biparting counter-balanced doors, and make adjustments to ensure proper latching and to keep the doors in proper	

EQUIPMENT

ACTIVITY

FREQUENCY

relation to the opening. Keep guides and bearings well-lubricated to facilitate operation. Keep self-closing devices in proper working condition at all times. Test doors normally held in the open position and equipped with automatic closing devices to ensure proper operation. Test all doors for proper operation and full closure.

APPENDIX C

LEAK DETECTION INSTRUMENTATION SUMMARY FOR B PLANT
COMPLEX STORAGE AND TREATMENT TANK SYSTEMS

<u>Neutralized Current Acid Waste Tank Treatment System</u>			
<u>TANK/ COMPONENT</u>	<u>INSTRUMENT DESCRIPTION</u>	<u>INSTRUMENT IDENTIFIER</u>	<u>INSTRUMENT READOUT LOC.</u>
TK 6-2	Weight Factor Recorder	WFR 6-2-1	OG Panel 6-B
	Specific Gravity Recorder	SGR 6-2-1	OG Panel 6-B
	Weight Factor Alarm	WT. Factor Alarm	OG Panel 6-B
TK 7-1	Weight Factor Recorder	WFR 7-1-1	OG Panel 7-B
	Specific Gravity Recorder	SGR 7-1-1	OG Panel 7-B
	Weight Factor Alarm	WT-Factor-High/ WT-Factor-Low	OG Panel 7-B
TK 7-2	Weight Factor Recorder	WFR 7-2-1	OG Panel 7-D
	Specific Gravity Recorder	SGR 7-2-1	OG Panel 7-D
	Weight Factor Alarm	High-WT-Factor/ Low-WT-Factor	OG Panel 7-D
TK 8-1	Weight Factor Recorder	WFR 8-1-1	OG Panel 8-C
	Specific Gravity Recorder	SGR 8-1-1	OG Panel 8-C
	Weight Factor Alarm	WT-Factor-High/ WT-Factor-Low	OG Panel 8-C
TK 8-2	Weight Factor Recorder	WFR 8-2-1	OG Panel 8-B
	Specific Gravity Recorder	SGR 8-2-1	OG Panel 8-B
	Weight Factor Alarm	WT-Factor-High/ WT-Factor-Low	OG Panel 8-B
TK 13-1	Weight Factor Recorder	WFR 13-1-1	OG Panel 14-B
	Specific Gravity Recorder	SGR 13-1-1	OG Panel 14-B
	Weight Factor Alarm	Tank 13-1 Weight Factor Alarm	OG Panel 14-B
TK 14-2	Weight Factor Recorder	WFR 14-2-1	OG Panel 13-D
	Specific Gravity Recorder	SGR 14-2-1	OG Panel 13-D
	Weight Factor Alarm	TK-14-2 Weight Factor Alarm	OG Panel 13-D
TK 29-3	Weight Factor Recorder	WFR 29-3-1	OG Panel 27-C
	Specific Gravity Recorder	SGR 29-3-1	OG Panel 27-C
	High Weight Factor Alarm	WFA-29-3-1	OG Panel 27-C
	Low Weight Factor Alarm	WFA-29-3-2	OG Panel 27-C

NOTE: OG = 221-B Building Operating Gallery

<u>TANK/ COMPONENT</u>	<u>INSTRUMENT DESCRIPTION</u>	<u>INSTRUMENT IDENTIFIER</u>	<u>INSTRUMENT READOUT LOC.</u>
TK 39-2	Sump Weight Factor Detector	Cell-39-Sump Hi-WF	OG Panel 39-C
	Weight Factor Recorder	WFR 39-2-1	OG Panel 39-A
	Specific Gravity Recorder	SGR 39-2-1	OG Panel 39-A
	High Weight Factor Alarm	TK-39-2 Hi-W.F.	OG Panel 39-C
	Low Weight Factor Alarm	TK-39-2 Lo-W.F.	
TK 39-5	Weight Factor Recorder	WFR 39-5-1	OG Panel 39-C
	Specific Gravity Recorder	SGR 39-5-1	OG Panel 39-C
	High Weight Factor Alarm	TK-39-5 Hi-W.F.	OG Panel 39-C
	Low Weight Factor Alarm	TK-39-5 Lo-W.F.	OG Panel 39-C

Low-Level Waste Concentrator

<u>TANK/ COMPONENT</u>	<u>INSTRUMENT DESCRIPTION</u>	<u>INSTRUMENT IDENTIFIER</u>	<u>INSTRUMENT READOUT LOC.</u>
TK-3-1	Volume Indicator	VI-2311	FPMCS Screen 4-D
	High Volume Indicator	VAH-2311	FPMCS Screen 4-D
D-23-2	Flow Indicator	FI-2321	FPMCS Screen 4-F
	Flow Indicator	FI-2322	FPMCS Screen 4-F
E-23-3	Volume Indicator	VI-2331	FPMCS Screen 4-G
E-23-4	Coil Pressure Indicator	PI-2341	FPMCS Screen 4-U

Low-Level Waste Treatment Tanks

<u>TANK/ COMPONENT</u>	<u>INSTRUMENT DESCRIPTION</u>	<u>INSTRUMENT IDENTIFIER</u>	<u>INSTRUMENT READOUT LOC.</u>
TK 24-1	Volume Indicator	VI-2411	FPMCS Screen 4-V
	Cell 24 Leak Detector Alarm	LDA-2401	FPMCS Screen 4-J
TK 25-1	Volume Indicator	VI-2511	FPMCS Screen 4-W
	Cell 25 Leak Detector Alarm	LDA-2501	FPMCS Screen 4-K
TK 25-2	Volume Indicator	VI-2521	FPMCS Screen 4-L

NOTE: OG = 221-B Building Operating Gallery

Organic Waste Storage System

<u>TANK/ COMPONENT</u>	<u>INSTRUMENT DESCRIPTION</u>	<u>INSTRUMENT IDENTIFIER</u>	<u>INSTRUMENT READOUT LOC.</u>
TK 26-1	Weight Factor Recorder	WFR 26-1-1	OG Panel 30-A
	Specific Gravity Recorder	SGR 26-1-1	OG Panel 30-A
	Weight Factor Alarm	WFA-26-1-1	OG Panel 30-A
TK 27-2	Weight Factor Recorder	WFR 27-2-1	OG Panel 29-C
	Specific Gravity Recorder	SGR 27-2-1	OG Panel 29-C
	Weight Factor Alarm - High	WFA-27-2-1	OG Panel 29-C
	Weight Factor Alarm - Low	WFA-27-2-2	OG Panel 29-C
TK-27-3	Weight Factor Recorder	WFR 27-3-1	OG Panel 29-D
	Specific Gravity Recorder	SGR 27-3-1	OG Panel 29-D
	Weight Factor Alarm - High	WFA-27-3-1	OG Panel 29-D
	Weight Factor Alarm - Low	WFA-27-3-2	OG Panel 29-D
TK 27-4	Weight Factor Recorder	WFR 27-4-1	OG Panel 29-C
	Specific Gravity Recorder	SGR 27-4-1	OG Panel 29-C
	Weight Factor Alarm - High	WFA-27-4-1	OG Panel 29-C
	Weight Factor Alarm - Low	WFA-27-4-2	OG Panel 29-C
TK 28-3	Weight Factor Recorder	WFR 28-3-1	OG Panel 28-C
	Specific Gravity Recorder	SGR 28-3-1	OG Panel 28-C
	Weight Factor Alarm - High	WFA-28-3-1	OG Panel 28-C
	Weight Factor Alarm - Low	WFA-28-3-2	OG Panel 28-C
TK 28-4	Weight Factor Recorder	WFR 28-4-1	OG Panel 28-A
	Specific Gravity Recorder	SGR 28-4-1	OG Panel 28-A
	Weight Factor Alarm - High	WFA-28-4-1	OG Panel 28-A
	Weight Factor Alarm - Low	WFA-28-4-2	OG Panel 28-A
TK 29-4	Weight Factor Recorder	WFR 29-4-1	OG Panel 27-C
	Specific Gravity Recorder	SGR 29-4-1	OG Panel 27-C
	Weight Factor Alarm - High	WFA-29-4-1	OG Panel 27-C
	Weight Factor Alarm - Low	WFA-29-4-2	OG Panel 27-C
TK 30-3	Weight Factor Recorder	WFR 30-3-1	OG Panel 27-B
	Specific Gravity Recorder	SGR 30-3-1	OG Panel 27-B
	Weight Factor Alarm - High	WFA-30-3-1	OG Panel 27-B
	Weight Factor Alarm - Low	WFA-30-3-2	OG Panel 27-B

NOTE: OG = 221-B Building Operating Gallery