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2	1	Design Authority RN Anderson	T4-20	8/14/98		2	1	OSR REP Jeff King	8/15/98	TS-51
		Design Agent				2	1	CSR REP	8/15/98	TS-54
2	1	Cog. Eng. RN ANDERSON	T4-20	8/14/98		2	1	RADCON Manager	8/28/98	TS-53
2		Cog. Mgr. GA GLOVER	T4-20	8/31/98		2	1	Operations Manager	8/31/98	TS-15
2	1	QA	8/25/98	1415		2	1	Process Engineering Manager	8/25/98	TS-55
2	1	Safety	8/28/98							
2	1	Env. E. P. Becklund	For J. Brown	8/23/98	TS-54					

18. Signature of EDT Originator <i>RN Anderson</i> 8/31/98		19. Authorized Representative Date for Receiving Organization <i>MD Deloit</i> 8/31/98		20. Design Authority/ Cognizant Manager <i>SK Schen</i> 8/31/98		21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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PLUTONIUM RECLAMATION FACILITY (PRF, BUILDING 236-Z) LAYUP PLAN

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

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Abstract: This document reviews each system inside PRF to determine the operation and maintenance requirements necessary to maintain safe and predictable system performance for facility systems needed to remain operational while minimizing the maintenance and surveillance being performed. Also covered are the actions required to place PRF in a safe layup configuration while minimizing hazards and taking into account the need for reactivation of certain equipment when cleanup work commences in the future.

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Date

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PRF LAYUP PLAN

1. PURPOSE

To establish a plan to secure and layup systems within Building 236-Z (PRF) in order to minimize maintenance and surveillance requirements and future terminal clean out/D&D costs without creating unsafe conditions.

2. SCOPE

The 236-Z Building, commonly known as PRF is essentially a four-story structure, surmounted by a two-story penthouse. Its principal internal feature is a single process equipment cell that is 32 ft wide by 52 ft long. Maintenance shop facilities are located on the service (east) side of the building on the ground floor. The second floor of the service side is used for a maintenance glovebox and ventilation exhaust filters. Building service equipment and electrical switch gear are on the third floor of the service area. The fourth floor contains an operating control room and equipment for chemical preparation, miscellaneous treatment, slag and crucible dissolving and a column room in which vertical sections of two liquid extraction columns penetrating the room from above and below are housed in a glovebox.

None of the chemical processes inside PRF are currently in service. The facility in its present condition contains tens of kilograms of plutonium. However, this plutonium is distributed throughout the facility in numerous gloveboxes, as residual material holdup in process tanks and vessels, and in a large area distribution on the PRF Process Canyon floor. The vast majority of the material is held up in the Process Canyon. There are no active processes, and no planned future processes.

This document reviews each system inside PRF to determine the operation and maintenance requirements necessary to maintain safe and predictable system performance for facility systems needed to remain operational while minimizing the maintenance and surveillance being performed. Also covered are the actions required to place PRF in a safe layup configuration while minimizing hazards and taking into account the need for reactivation of certain equipment when cleanup work commences in the future.

3. THE OPERATION AND MAINTENANCE REQUIREMENTS TO MAINTAIN SAFE AND PREDICTABLE SYSTEM PERFORMANCE.

a. HVAC SYSTEM

Automatic ventilation control in the Plutonium Reclamation Facility (PRF) is designed to function as follows:

Zone 3 pressure control in PRF is provided by a pneumatic control damper located in room 271 of Building 234-5Z. This damper is modulated based on corridor 47 pressure. The corridor 47 sensor, together with a DP transmitter in room 44, senses building to atmosphere pressure changes and controls the supply air to maintain the desired building negative pressure.

Zone 4 pressure control is provided by differential pressure and control instrumentation that measures pressures between zone 3 and zone 4 spaces. This instrument arrangement controls the exhausted air from the canyon in order to maintain the desired glovebox negative pressure.

The ventilation system provides a confinement/containment function and will continue to provide a confinement/containment function throughout the layup of PRF. Therefore, the entire system needs to remain operational.

Maintenance requirements to keep the system operational.

Requirement: Zone 4 recorder charts require changing once per week.

Basis: Zone 4 recorder charts are required to trend system changes and provide an opportunity to correct an unfavorable condition prior to a system disruption. Currently these recorders are designed to use 7 day charts. If the 7 day period is exceeded, information on these charts would be useless.

Requirement: Zone 3 pressure transmitter PX-6-25A requires annual calibration.

Basis: This instrument has not demonstrated the ability to exceed 12-18 months without re-calibration.

Requirement: Zone 4 pressure transmitter, controller, recorder and actuator require annual calibration.

Basis: This instrument has not demonstrated the ability to exceed 12-18 months without re-calibration.

Requirement: Replace rockstopper filter media annually.

Basis: Frequency for replacing rockstopper filter has been determined by average filter loading over several years of operation.

Requirement: Perform in-place leak test annually for both ZSE and ZSR components.

Basis: The basis for this requirement is ASME-N510-1989. This test shall be performed annually for safety class filters in compliance with WHC-SD-CP-OSR-10, LCO 3.2.1.1 and/or 3.2.1.2. Safety Significant filters are tested every 24 months.

Requirement: Annual bypass leakage inspection.

Basis: Required by standard ASME-N510.

Requirement: All gauges will be calibrated within 9 years with one-third being calibrated every 3 years.

Basis: These instruments have normally been calibrated on a 3 year basis. Calibrating at least one-third of the gauges every 3 years allows for extending the calibration period of gauges while still ensuring a large enough sample population of gauges to ensure the validity of calibration of all gauges.

Operational requirements

Requirement: Change E-3 prefilter media bi-weekly.

Basis: Action required to ensure zone balance and prevent rockstoppers from plugging.

Requirement: Check room and glovebox pressures bi-weekly.

Basis: The following conditions must be maintained to permit normal occupancy and operations (maintenance) in rooms with gloveboxes:

- Exhaust HEPA filter differential pressure shall be less than 4 inches wg.
- Glovebox pressure shall be between 0.5 and 2.0 inches wg less than room pressure.

Verifying pressures gives indication of changing conditions which may prohibit normal occupancy and operations.

Requirement: Check HEPA filter DPs bi-weekly.

Basis: To identify any unusual loss of DP or increase of DP greater than 3" wg, which are indicators of changing conditions that may indicate or impact glovebox, building balance, or filter integrity.

Actions to be taken to place PRF in a LAYUP condition:

Action: Daily filter bank status of ZO-060-117 changed to a bi-weekly surveillance.

Basis: The daily filter bank status documents which filter bank is in service. When a filter bank is changed it can be documented in the 321-A Control Room logs to ensure the required filter banks are in service. The filter bank status cannot change without an operator present to perform and document the change.

b. FIRE SYSTEMS

The amount of fire protection for PRF depends upon the value of the building, occupancy of the building, and radiological release potential beyond DOE guidelines. No fire protection features would be needed if the following 3 conditions were met.

- PRF's Maximum Possible Fire Loss (MPFL) was reduced below 1 million dollars
- There was no radiological release potential beyond DOE guidelines.
- There was less than or equal to 10 people in the facility at one time and access to the building is controlled. (The 10 person limit is intended to allow security and other surveillance to take place in a normally unoccupied facility.)

PRF's Maximum Possible Fire Loss - If PRF's MPFL was reduced below 1 million then the fire suppression system inside PRF would not be needed. PRF's current MPFL is 1.8 Million Dollars.

Radiological Release Potential - The radiological release potential beyond DOE guidelines has been evaluated in the FHA and FSAR and the worst case fire has been determined to stay within the PRF building with no release to the outside.

Occupancy – RLID 5480.7 states that fire protection features may only be deactivated after personnel are no longer occupying the facility where occupancy is defined by NFPA 101, Life Safety Code. DOE RL has stated that the definition to use to determine occupancy is in NFPA 101 Section 5-2.1.1.3. This section states that a "building shall be considered to be occupied at any time it is open for general occupancy, open to the public, or at any other time it is occupied by more than 10 persons." Since the removal of the suppression system is only based on PRF's MPFL, the remaining protection features referred to by the RLID 5480.7 - detection, alarm and communication systems- are based upon occupancy and radiological release potential beyond DOE guidelines.

Glovebox Detectors - . The FHA recommends that the glovebox detectors remain in service until all combustibles (including gloves) and ignition sources are removed. Any D&D work with the gloveboxes would require the use of gloves (combustibles) which would necessitate the fire detection system to remain in service during the D&D phase. However, if the conditions are met for deactivation of all fire protective features as stated in RLID 5480.7, then the glovebox detectors may be removed even if D&D resulted in combustibles being in the gloveboxes.

The fire detection system for gloveboxes and the canyon consists of approximately 44 heat detectors located inside wells attached to the gloveboxes and canyon walls. Twenty

percent of these detectors require Preventative Maintenance every year so that within 5 years all have received preventative maintenance. The PM for a glovebox detector requires fire maintenance support along with two electricians, and an RCT. If the RLID 5480.7 deactivation criteria is not met, the following conditions are required to take the detectors out of service:

- * the inactive gloveboxes be separated from any other active glovebox
- * all combustibles (excluding plastic window panels) removed from the glovebox including gloves and the glove ports capped/plugged.
- * all ignition sources to the gloveboxes removed

Advantages to taking the detectors out of service are:

- * Zone 36 and Zone 34 could be deactivated which would reduce the possibility of spurious or trouble alarms for that zone.
- * The PM's for the detectors would no longer have to be done until work in the glovebox commences again to remove the plutonium loading.

The disadvantages to taking the detectors out of service is:

- * Because the detector PM frequency is 5 years, it is not cost effective to deactivate the detectors if cleanup of PRF's plutonium loading requires the reactivation of gloveboxes within 10 years including reactivation of fire protection features. Current projection is that cleanup of PRF may be initiated in 2002-2003. This uncertainty drives keeping the glovebox detection system in service at least until the requirements of RLID 5480.7 are met.

Room Detectors - NFPA 101 section 28-3.4.1 states that a detection, alarm, and communication system doesn't need to be installed "if the total capacity of the building is under 100 persons and fewer than 25 persons are above or below the level of exit discharge." PRF would definitely meet the criteria of being occupied with less than 100 persons which would indicate that the room detection, alarm and communication systems could be deactivated. The fire detection system for PRF rooms (excluding gloveboxes and canyon detectors) consists of approximately 45 heat detectors located in corridors, rooms, and in ventilation ducting. Twenty percent of these detectors require Preventative Maintenance every year so that within 5 years all have received preventative maintenance. When performing Preventative Maintenance, those detectors that are located inside wells requires fire maintenance support along with the support of two electricians, and an RCT. Those detectors located in corridors and rooms require only fire maintenance personnel to perform preventative maintenance. The detectors are exclusively located in 5 zones. Based on occupancy and life safety requirement of Section 28-3.4.1, these zones can be disconnected/placed out of service.

Smoke Detectors - Two smoke detectors are used in PRF's stairwells to detect smoke and activate smoke dampers. These detectors need to remain in service until the building is unoccupied as defined in NFPA 101 Section 5-2.1.1.3. (i.e. less than or equal to 10 persons in the facility at a time)

Recommendation: The suppression system for rooms and corridors should remain in service. The detection system for the rooms, corridors, and ventilation ducting should be abandoned in place. The detection system for the gloveboxes should remain in service until a clearer funding allocation for PRF cleanup is determined. IF the activation of gloveboxes to remove plutonium holdup will not occur within the next 10 years then remove the combustibles and remove the glovebox detectors. In the interim, an assessment on what would have to be done to PRF to reduce the MPFL below 1 million dollars should be performed in preparation for removal of all the fire system equipment. The Site Water Purveyor is requiring that a backflow preventer be placed on all fire risers. Since riser #7 does not contain Glycol and since PRF is being placed in a layup status, this fire riser should be one of the last where backflow preventers are installed. The construction costs for riser #7 would be approximately \$20,000. The assessment on devaluing PRF should be done before deciding whether to install a new backflow preventer.

Maintenance Requirements to keep the system operational.

Requirement: 4 month flow test riser #7.

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Annual flow alarm test riser #7(more in depth sprinkler system inspection and includes tamper and excess pressure pump cut-in/cut-out pressure test)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Annual heat detector test (38 glovebox detectors, 50 other detectors, 20% performed each year to ensure zone is functioning properly.)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Annual Functional Test of initiating alarm circuitry.

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Five year riser checkvalve Inspection

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Two year Fire/Smoke Damper/Fire Wall inspection (Procedure # ZSR-21C-001)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: 6 month smoke detector inspection (visual inspection, 2 detectors installed with one in each stairwell)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: 12 month smoke test (canned smoke is used to perform a functional test. Functional test of alarm bells horns also performed.)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: 24 month sensitivity smoke detector check (Two installed with one in each stairwell)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirement: Annual Fire Doors inspection (Procedure # ZSR-21C-001)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirements: Monthly Portable Fire Extinguisher Inspection (Procedure # ZO-170-150)

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC).

Requirements: Quarterly backup light maintenance inspection and Annual building emergency light test. (ZSR-12N-002)

Basis: The Life Safety Code states that special purpose industrial occupancies, where routine human habitation is not the case, are not required to maintain emergency lighting. This is the case with PRF. The existing battery powered "backup" lights in the corridors and stairwells will be maintained on a quarterly basis to ensure personnel safety in the event of a lighting failure. This will allow a reduction in maintenance manhours without sacrificing personnel safety.

Operation Requirements

Requirement: Check pressure gages monthly to ensure indicated pressure is in normal range. Perform weekly and monthly checks to verify position of control valves and PIVs.

Basis: HNF-PRO-351 minimum requirements for fire protection system testing, inspection, and maintenance in government owned facilities under the Project Hanford Management Contract (PHMC). (ZO-060-120)

Requirement: Fire surveillance for impaired fire protection system.

Basis: HNF-PRO-354 fire surveillance requirements is an interim compensatory measure for impaired fire protection systems. The fire surveillance tour frequency, continuously or hourly, is set by the nature of the impairment.

Actions to be taken to place PRF in a LAYUP condition:

Action: Reduce the number of portable fire extinguishers in PRF from 25 to 12 and change the operating procedure to reflect the change. (Procedure # ZO-170-150)

Basis: NFPA 801, Facilities handling Radioactive Material, states that suitable fire extinguishers shall be installed in accordance with NFPA 10, Standard for Portable Fire Extinguishers. NFPA 10 requires fire extinguishers to be placed at certain distances apart and acceptable locations. Reducing the number of fire extinguishers to 12 still allows for meeting the requirements of NFPA 10.

Action: Perform an assessment on what would have to be done to PRF to reduce the MPFL below 1 million dollars.

Basis: If the MPFL for PRF is below 1 million dollars and there are fewer than 10 people in the facility at one time, then the fire protection system would not be required. If the fire protection system can be deactivated, then riser #7 would not be required to have a backflow preventer installed and all other maintenance requirements are not required.

Action: Obtain clearer funding allocation for PRF cleanup. IF the activation of gloveboxes to remove plutonium holdup will not occur within the next 10 years then remove the combustibles and remove the glovebox detectors.

Basis: IF cleanup of PRF's plutonium loading requires the reactivation of gloveboxes within 10 years it is not cost effective to deactivate glovebox detectors.. Current projection is that cleanup of PRF may be initiated in 2002-2003.

Action: Place detection zones 35, 38-41 out of service.

Basis:- NFPA 101 section 28-3.4.1 states that a detection, alarm, and communication system doesn't need to be installed "if the total capacity of the building is under 100 persons and fewer than 25 persons are above or below the level of exit discharge. " PRF would definitely meet the criteria of being occupied with less than 100 persons which would indicate that the room detection, alarm and communication systems could be deactivated.

c. AIR SYSTEMS:

Instrument air use in PRF includes air for determining weight factors for tank levels, ventilation damper control, room temperature control and control air for diaphragm operated control valves. The instrument air is supplied to PRF from 234-5Z which receives its air source from 291-Z. The instrument air enters PRF at 90 psig, goes through a filter and pressure reducing valve where it is lowered to 60 psig. The air pressure is further reduced to the required pressure needed for each individual piece of equipment. Most diaphragm operated valves and all weight factors for tank levels and temperature control thermostats are out of service. Equipment that currently require instrument air are:

- Two Diaphragm operated inlet valves for 17" vacuum HEPA filters.
- Four E-4 ventilation zone controllers (ZC-10E-25A, ZC-10W-25A, ZC-20E-25A, ZC-20W-25A)
- PX 6-25A Corridor 47 pressure transmitter.

Equipment that no longer requires instrument air is identified in Table 1. Each piece of equipment will be isolated from the main instrument air header by disconnecting the line downstream of the isolation valves listed in the Table and capping/plugging both ends. Any isolation valves between the disconnect and the piece of equipment will also be shut to minimize pipe contamination which could occur when the instrument air system for that equipment is in a depressurized state.

The process air system is out of service and blanked off in 291-Z. The dry air system throughout PRF came from the process air system and utilized dryers, filters, and air receivers located in Room 35. This equipment is abandoned and labeled as such.

Maintenance requirements to keep the system operational.

Requirement: Three year inspection of Filter F-12, located where the instrument air comes into PRF.

Basis: Plugging of filter could result in loss of instrument air to PRF and pressurization of the building.

Requirement: Calibrate pressure gauge PI-17 on 3 year basis.

Basis: Gauge indicates potential problems with pressure regulating valve and/or filter clogging. The gauge currently is being calibrated on an annual basis. History of calibrating the gauge indicates that extending the calibration to 3 years would be acceptable. There is no history to accept a longer time period than 3 years in between calibrations.

Operational Requirements:

None

Actions to be taken to place PRF in a LAYUP condition:

Action: Isolate instrument air headers not being used by shutting the isolation valves identified in Table 1, followed by disconnecting and plugging the lines. Label the piping as deactivated. (Modify IZM-055 procedure)

Basis: Isolation and depressurization is a good management practice for any pressurized line that will not be used again.

TABLE 1

TABLE 1 (ISOLATION OF INSTRUMENT AIR FROM UNUSED EQUIPMENT)		
EQUIPMENT	ISOLATION VALVE	DESCRIPTION
TIC-18-25A TIC-22-25A TIC-23-25A	V-3256 located in Corridor 33	Temperature Controller Isolation Valve
Steam/Air Blow Down	V-3230 located in Corridor 33	Air blow down isolation valve
01-DOV-B 02-DOV-B 04-EPC-D (EC-4) ED-DOV-D 14-DOV-D 21-DOV-E EPC-WSI-D EPC-WSI-B EPC-WSI-C EPC-WMI-B EPC-WEI-A 53-EPC-A EPC-WEI-B 127 SPG 16-WFT-AH 16-WFT-AL 126-WF-HI 126-WF-LO ED-DPT-DH ED-DPT-DM(BM)	V-3212, V-3211 Located in Corridor 33.	Pneumatic Operated DOV's. Weight Factor Dip Tubes.

TABLE 1 Continued (ISOLATION OF INSTRUMENT AIR FROM UNUSED EQUIPMENT)		
EQUIPMENT	ISOLATION VALVE	DESCRIPTION
EC-DPT-DH	V-3212, V-3211 Located in Corridor 33.	Pneumatic Operated DOV's Weight Factor Dip Tubes.
EC-DPT-BL		
EC-DPT-DM(BM)		
10-WFT-AH		
10-WFT-AL		
12-WFT-AH		
12-WFT-AL		
15-WFT-AH		
15-WFT-AL		
27-WFT-AH		
27-WFT-AL		
28-WFT-AL		
28-WFT-AH		
25-WFT-AH		
25-WFT-AL		
26-WFT-AH		
26-WFT-AL		
20-WFT-AL		
20-WFT-AH		
23-WFT-AH		
23-WFT-AL		
24-WFT-AH		
24-WFT-AL		
21-DPT-DL		
21-WFT-AH(21SGT-BH)		
21-SGT-BM		
21-WFT-AL(21-DPT-DH)		
52.2-WFT-AH		
52.2-WFT-AL		
127 WFLO		
127 WFHI		
04-EPC-B		
06-EPC-B(ED-EPC-B)		

TABLE 1 Continued (ISOLATION OF INSTRUMENT AIR FROM UNUSED EQUIPMENT)		
EQUIPMENT	ISOLATION VALVE	DESCRIPTION
21-EPC-B 15-EPC-C 32-EPC-H 15-EPC-A 21-EV-A PRV for PT-WEI-B PRV for PT-WS2-B PRV for PT-WS1-B	V-3212, V-3211 Located in Corridor 33.	Pneumatic Operated DOV's.
TK-A-119 TIC-19-25A	V-4011 Located in Room 40	Weight Factor Dip Tube. Temperature Control Isolation
Open Line Room 40	V-4029 Located in Room 40	
TIC-20-25A	V-3438 Located in Corridor 31.	Temperature Control Isolation
Steam/Air Blowdown Centrifuge D	V-3435 Located in Corridor 31.	Air Blow Down Isolation Valve. Air isolation to Centrifuge D
33-EPC-S 30-DOV-A(30-EV-A) 31-EPC-E 36-DOV-C(36-EPC-C) 43-DOV-B(43-EPC-B) 122-EPC-C 70-EPC-C WM1-AH WM1-AL 29-WFT-AL 29-WFT-AH 17-SGT-BM 18-SGT-BM 19-SGT-BM 36-WFT-AH 36-WFT-AL 37-SGT-BM 38-SGT-BM 52.4-WFT-AL 52.4-WFT-AH 42-WFT-AL 42-WFT-AH	V-3419, V-3420 Located in Corridor 31.	Pneumatic Operated DOV's. Weight Factor Dip tubes.

TABLE 1 Continued (ISOLATION OF INSTRUMENT AIR FROM UNUSED EQUIPMENT)		
EQUIPMENT	ISOLATION VALVE	DESCRIPTION
45-WFT-AL 45-WFT-AH 70-WFT-AL 70-WFT-AH 40-SGT-B 121-A-WFC-AH 120-A-WFC-AH 30-WFT-AL 30-WFT-AH 17-WFT-AL 17-WFT-AH(17-SGT-BH) 18-WFT-AL 18-WFT-AH(18-SGT-BH) 19-WFT-AL 19-WFT-AH(19-SGT-BH) 41-WFT-AL 41-WFT-AH 37-WFT-AL 37-WFT-AH(37-SGT-BH) 38-WFT-AL 38-WFT-AH(38-SGT-BH) 40-WFT-AL 40-WFT-AH 46-WFT-AL 46-WFT-AH 49-WFT-AL 49-WFT-AH 50-WFT-AL 50-WFT-AH 39-WFT-AL 39-WFT-AH 121-A-WFC-AL 120-A-WFC-AL 46-LO-SPGR 45-LO-SPGR 128-WFT-H 128-WFT-L 128 SGT	V-3419, V-3420 located in Corridor 31	Pneumatic Operated DOV's. Weight Factor Dip Tubes.

TABLE 1 Continued (ISOLATION OF INSTRUMENT AIR FROM UNUSED EQUIPMENT)		
EQUIPMENT	ISOLATION VALVE	DESCRIPTION
Unknown EP Transducer 32-EPC-E 42-EPC-B 33-EPC-A 33-EPC-D 32-EPC-F 32-EPC-C 32-EPC-D 32-EPC-A 45/46 EPC-D EPC-123-A EPC-122-A EPC-121-A EPC-120-A	V-3419, V-3420 Located in Corridor 31.	Pneumatic Operated DOV's and transducers.
DOV-WEI-A DOV-WSI-A DOV-WS2-A DOV-122-A DOV-123-B	V-4330 Located in Room 43	Pneumatic Operated DOV's.
DOV-58-A(5 th Floor Glovebox) DOV-32(Y)(32-DOV-Y) DOV-32(A)(32A-DOV-B) DOV-33(N)(33-DOV-N) 6 TH Floor Glove Box (32-A-WT-FTW) transmitter and transducer.	V-11 Located in Room 41.	Pneumatic Operated DOV's, transducers, etc.
TIC-21-25A	Unlabeled Valve Room 44	Temperature Control Isolation
TIC-24-25A	Unlabeled Valve Room 41	Temperature Control Isolation

d. STEAM SYSTEM

The steam system provided steam to PRF for building heat through 7 Temperature control valves at 15 psig. It also provided steam for a product concentrator, filtrate evaporator and blowdown of dip tubes at various pressures. Steam has already been capped off to the product concentrator and filtrate evaporator and has not been supplied to PRF for steam heating since 1993. A permanent electric heater in stairwell #1 was installed to protect fire system riser and water lines from possible freezing.

Maintenance requirements to keep the system operational.

None

Operational Requirements:

None

Actions to be taken to place PRF in a LAYUP condition:

Action: Blank off Steam line and condensate in 291-Z which service 236-Z and verify inactive stickers on gauges located throughout the steam system. Label steam lines as deactivated. (Procedures affected: ZO-070-100, ZO-070-102, ZO-102-013, ZO-101-007)

Basis: Steam has not been supplied to PRF since 1993. The walls have shown some sweating causing moisture to come down the walls but steam has not been needed to keep the temperature in the building above freezing. A permanent heater has been installed in stairwell #1 to protect system risers from possible freezing.

e. **CLOSED LOOP COOLING SYSTEM** (See also section on 17" Vacuum system)

The Closed loop cooling system (CLCS) in PRF has 3 primary closed loop cooling loops which provide cooling to the process equipment. The CLCS also includes a secondary loop which removes heat from the primary loops. One primary loop provides cooling to the East and West Gallery Glove Boxes and Glove Boxes 5 and 6 in Room 41. This loop is currently inactive and not in use. The other two primary loops provides sealing/cooling water to two air sample vacuum (ASV) pumps located in Room 35. These loops need to remain in service as long as the vacuum pumps inside PRF are in use. (Reference section l)

Maintenance requirements to keep the system operational:

None (except as called out in section on 17" vacuum)

Operational requirements

Action: Add pressure transmitter inside 234-5Z Room 308 to monitor secondary closed loop cooling pressure.

Basis: Currently a Stationary Operating Engineer (SOE) notes the secondary loop pressure inside PRF on a daily basis and at the 243-ZB pad on a shiftly basis. There is no real time indication of the secondary pressure. If a slow leak were to occur, the first indication of problems would be the shiftly readings or a low pressure alarm at 65 psig. A larger leak would be known only by a low pressure alarm at 65 psig and the fluctuations and alarms associated with loss of flow to the secondary pump or high temperature alarms on primary equipment. A pressure transmitter is needed to provide real time indication of system pressure. (JCS 97-224 adds the transmitter). When pressure is being monitored at the MICON, the current pressure reading being taken inside PRF at PI-SCW2 would not be needed.

Actions to be taken to place PRF in a LAYUP condition:

Action: Drain primary loop which services East and West Gallery gloveboxes and isolate and disconnect secondary loop to heat exchanger HX-101 downstream of isolation valves V-CLC-142 and V-CLC-143. Disconnect power to pump P-101 and P-102. Verify inactive stickers on calibrated equipment associated with primary glovebox loop and label piping as deactivated. (ZO-060-510, ZO-060-505)

Basis: The primary loop for the gloveboxes has never been used and there is no intention on using it. Draining the loop and disconnecting it from active sections of the CLC system is prudent to prevent leaks from occurring due to corrosion of piping.

Action: Inactivate PI-SCW2 (2Z03972) annual calibration and delete from surveillance ZO-060-117.

Basis: Adding a pressure transmitter to indicate secondary loop pressure at the MICON would provide adequate indication for the proper operation of the system without field readings on PI-SCW2.

f. CRITICALITY ALARM SYSTEM (CAS)

The criticality alarm system in PRF is intended to supply continuous monitoring for high-radiation (criticality) events. The CAS in PRF consists of 42 detectors, 2 criticality alarm panels and associated components, criticality alarm horns and backup battery power supply.

Maintenance requirements to keep the system operational.

Requirement: Monthly Battery Surveillance ZSE-99A-006.

Basis: Surveillance requirement 3.1.2.2 of LCO 3.1.2 requires monthly inspections of CAS batteries and battery chargers.

Requirement: Biweekly CAS Operability Check (detector test-ZSE-99A-011).

Basis: ANSI/ANS-8.3-1986 Section 6.3 requires at least monthly testing of detectors. Experience in the facility has indicated that a biweekly test is required to ensure the failure of any two out of three detectors in a month doesn't occur.

Requirement: Quarterly CAP 5 and CAP 6 Horn test ZSE-99A-001.

Basis: ANSI/ANS-8.3-1986 Section 6.4 requires audible signal should be tested at least once every three months.

Requirement: Quarterly CAP 5 and CAP 6 CAS Calibration ZSE-99A-021.

Basis: Surveillance requirement 3.1.2.4 of LCO 3.1.2 requires quarterly verification of CAS logic and relay module operability.

Operational requirements

Requirement: When Central Alarm Station monitoring indicates a failure of one or more CADMs for more than two (2) hours, surveillance of the affected CAP (or CAPs) will be conducted by PFP Operations in two (2) hour intervals, until the Central Alarm Station monitoring system indicates the Criticality Alarm System is back to normal operating condition.

When the Central Alarm Station monitoring has failed, surveillance will be conducted by PFP Operations in one (1) hour intervals, until the Central Alarm Station monitoring system is back to normal operating condition. (DAF is in to change this interval to a 2 hour interval)

Basis: Operational procedure to help ensure the CAS remains operable at all times.

Actions to be taken to place PRF in a LAYUP condition:

Action: Cancel NPO surveillance of CAP panels. (A change to ZO-100-400 and SDD required)

Basis: ANSI/ANS-8.3 Failure warning section states "a visible or audible warning signal shall be provided at some normally occupied location to indicate system malfunction or the loss of primary power. There currently is an alarm to AMS if power is lost to the CAP, if the Battery Charger drops below 24 volts, or if the detector module indicates failure. Since an audible remote signal for the expected trouble conditions is available, the shiftily visible surveillance is not necessary.

Action: Initiate CSER/safety analysis documentation to classify the facility as a Limited Control Facility. The benefits of performing this analysis are as follows:

- Allow removing criticality detectors from service where no actions involving the movement, distribution, or handling of fissile material are permitted. An analysis of this nature may allow the removal or unplugging of the 42 criticality detectors and their associated biweekly checks. The biweekly check requires 16 manhours for instrument technician and 4 manhours for RCTs.
- The building would be able to change from a Limited Control Facility to a Fissionable Material Facility as needed for D&D efforts by plugging in the detectors and detector modules and performing the bi-weekly calibrations. Due to the uncertainty of funding for PRF D&D, this switching back and forth of facility status on an as needed basis allows for a potentially large savings after a break even point of

approximately 2 years while still having the flexibility to move fissile material if needed during D&D.

During the Limited Facility Status, there would not be use of the maintenance glovebox in Room 27 for repair of equipment, dismantling or cleaning of fissile material brought in from 234-SZ, or storing contaminated tools that need to be moved to other locations. The CSER would have to include interaction of fire protection and process water system with existing plutonium holdup. The potential for flooding would have to be analyzed and show that its occurrence would not result in a criticality. The CSER would also have to take into account the possibility of storing drums of fissile material stored in Room 16 if that room is turned into a permanent storage area.

Basis: DOE Order 420.1, Facility Safety, Section 4.3.3.e.(3), (Formerly found in DOE Order 5480.24, Nuclear Criticality Safety, Section 7.b.(3)). States in part; "In those cases where the mass of fissionable material exceeds the limits established in paragraph 4.2.1 of ANSI/ANS - 8.3, (450 grams of Pu-239) but a criticality accident is determined to be impossible due to the physical form of the fissionable material, or the probability of occurrence is determined to be less than 10^{-6} per year (as documented in a DOE approved SAR), neither a CAS nor a criticality detection system is required."

The PRF facility in its present condition contains tens of kilograms of plutonium. However, this plutonium is distributed throughout the facility in numerous gloveboxes, as residual material holdup in process tanks and vessels, and in a large area distribution on the PRF Process Canyon floor. The vast majority of the material is held up in the Process Canyon. There are no active processes, and no planned future processes. For a facility such as PRF where no actions involving the movement, distribution, or handling of fissile material are permitted, it should be possible to show that the requirements of DOE Order 5480.24 Section 7.b.(3) may be met, i.e., due to the form and distribution of the fissile material and barring ANY processing or handling operations, a criticality accident may be deemed an impossible event.

An analysis of this type was performed for cleanout operations in the 232-Z glovebox. Those operations involved actual handling and movement of non-exempt quantities of fissile material. For the PRF facility, where no processing or handling is permitted, an analysis should reach the conclusion that a criticality accident is impossible.

g. POTABLE AND PROCESS WATER SYSTEMS

Potable water enters PRF at two locations. The first location is a 3" riser located at the NorthEast corner of the building. The water riser services a 3rd floor restroom, then reduces to 2" before going through a parallel set of Reduced pressure backflow preventers in Room 35. Process water from the backflow preventer services the 17" vacuum pumps, room 40 chemical tanks, and room 41 MT gloveboxes. A second backflow preventer in Room 40 protects the process water before it goes to the room 41 MT gloveboxes. Process water also serviced the canyon gloveboxes but all of these lines have been capped off although not drained.

The second potable water location is a 3" line that is reduced to 2" and supplies an East and West corridor riser that contain 9 safety showers and two eye wash stations. The West riser also supplies makeup water to the closed loop cooling evaporative coolers via two parallel backflow preventers and contains a fire line which consists of a fire standpipe on each floor.

All potable water usage located in contamination areas is required to be protected by backflow preventers. This requirement comes from the Cross Connection Control Manual where it states that "Radioactive material processing plants" require mandatory RPBA service protection. In PRF, this would currently affect all of the safety showers, the restroom and existing backflow preventers since they are located inside contamination areas. Even though showers, eye washes, and sinks in a contamination area have a large "air gap" the backflow preventer prevents possible potable water contamination during radioactive airborne events when the water system has been depressurized or a siphoning effect occurs due to large uses of water in another part of the facility such as for fighting a fire.

The layup actions for the potable and process water systems have as their basis the following:

- Installing backflow preventers on all water entering the building is a costly expense for a building being deactivated.
- Depressurizing the lines and draining prevents leaks due to corrosion, freezing, and failure of valves (particularly those located on safety showers) and subsequent spread of contamination.
- Prepare the building for final deactivation
- Assumes the 17" vacuum pumps inside PRF remain operational (See 17" vacuum section of document) or/and a water source is to remain in the building for D&D purposes.

Maintenance requirements to keep the system operational.

Requirement: Annual test of backflow preventers located in Room 35. (These backflow preventers may be relocated into restroom area as discussed in the section of layup action items.)

Basis: Backflow preventers must be tested and inspected on an annual basis as called out in the Cross Connection Control Manual.

Operational requirements

None.

Actions to be taken to place PRF in a layup condition.

Action 1: Cap all safety showers and eye wash stations and use self contained drench hoses and eye washes as support safety equipment in conjunction with PPE during work evolutions where showers have previously been used. (Affected procedure ZO-170-140)

Basis: The self contained drench hose and eye wash container would contain approximately 30 gallons of water or a 10 minute supply at 3 gallons/min. The requirements for safety showers are 30 gallons/min for 15 minutes so these containers would only be support equipment in conjunction with PPE until a person could be transported to a permanent shower or receive additional help. Use of these containers would require the elevator to be in use during evolutions where they are required. Workplans would need to address the route to the nearest shower such as the shower located outside SouthEast of Building 234-5ZA. Capping all safety showers and eye washes and using self contained drench hoses and eye washes was initially determined in 1996 and JCS 96-1218 was the package to work the job. This package was put on hold after the PRF explosion in Room 40.

Action 2: Remove from service the fire standpipe connections on the West riser.

Basis: The fire standpipe connections are a requirement from RLID 5480.7. The order states that nuclear facility confinement structures shall be provided with fire department standpipe connections, to help maintain the integrity of the confinement structure during manual fire fighting efforts. The West riser has 6 standpipe connections and the East riser has 4 standpipe connections. The number and arrangement of standpipe equipment necessary for proper protection is governed by the local conditions such as occupancy, character, and construction of building and accessibility. The standpipes that are in PRF are class 1 hose stations meaning they are 1 1/2" and are to be used by fire brigade personnel. In the early 1980's, all hoses were removed as it was no longer expected that plant personnel would fight the fires. The fire department doesn't maintain the standpipes and the use of them is not part of their plan.

Action 3: Route new makeup water source for the Closed Loop Cooling evaporative coolers from the water main feeding 291-Z.

Basis: When actions 1 and 2 are completed, the only remaining water use on the West riser is makeup water for the evaporative coolers. This makeup water is already protected by a reduced pressure backflow preventer so the current configuration is acceptable. However, as long as the source of water comes from inside PRF, the East and West shower risers will remain pressurized. Pressurized but unused water lines will need to be inspected periodically and be provided freeze protection during the Winter months. Before water can be disconnected to PRF completely, action 3 will need to be performed.

Action 4: Free release the East Stairwell and portions of Corridor 33 and Room 35 so that the backflow preventers are not located in a contamination area. If this is not possible, then free release the East Stairwell and the 3rd floor restroom area to allow a location to place new backflow preventers.

Basis: In order for this action to be effective, the confidence level must be high that the area the backflow preventers are located will not be placed back into a contamination area and that no airborne conditions might exist near the backflow preventers. Because this assurance may be difficult to obtain for room 35, the restroom area may be the best alternative since that area has been free released previously.

Action 5: Replace existing backflow preventers inside Room 35 with 1/2" backflow preventers or install new 1/2" backflow preventers in the Restroom area to accommodate lower flow requirements.

Basis: The existing backflow preventers are 2" and fail testing often due to solid buildup on seats of the backflow preventers. The low use of process water does not allow for good flushing of the backflow preventers. The smaller backflow preventers are now all that is needed and are the only backflow preventers that will fit in the restroom to accommodate locating outside of a contamination area if room 35 could not be down posted.

Action 6: Cap off the process water line feeding Room 40 and Room 41 at a location inside Room 35 and drain all piping taken out of service.

Basis: The only process water needed inside PRF is for makeup water to the 17" vacuum pumps and a connection to obtain water for cleanup purposes. Capping off all other process lines reduces potential for leaking pipes and potential spread of contamination.

Action 7: Remove backflow preventer in Room 40 and cap off line feeding MT gloveboxes.

Basis: Removal of backflow preventer eliminates the annual testing and maintenance on the backflow preventer. By performing Action 6, this water line will be empty and abandoned. Since the line is not being used, the backflow preventer should be removed and capped to prevent spread of contamination.

h. PROCESS EQUIPMENT

None of the radiochemical processes within the 236-Z Building are currently in use. The MT glovebox acid dissolution process could not actually be performed without restoring support equipment that is currently inactive or has been removed. The 236-Z Building houses the PRF process equipment, gloveboxes, and services for MT slag and crucible dissolution, filtrate concentration, feed preparation, plutonium solvent extraction, product concentration, and waste treatment processes. The PRF produced a high-purity plutonium-nitrate solution from a variety of feed sources using continuous countercurrent solvent extraction process equipment located in the process cell. Since none of the chemical processes within the 236-Z Building are in use the layup actions are only to ensure a safe layup configuration, minimize hazards and/or address high visibility regulatory items that can't wait until terminal clean out is performed. Flushes of tanks and lines have occurred as systems have been shutdown but residual moisture and/or chemicals may exist. As these residual chemicals and moisture are found, investigated and identified, a determination will be made as to the hazard and whether clean up of the item should be addressed immediately as a layup action or addressed during terminal clean out of the facility.

Maintenance requirements to keep the system operational:

None

Operational Requirements:

Requirement: Criticality drains shall be operable (unobstructed) in the following gloveboxes: MT-5, MT-6, 4th floor column, 5th floor column, 6th floor column, 1st floor East cell access, 1st floor West cell access, 2nd floor East cell access, 2nd floor West cell access. (ZSE-72-001)

Basis: LCO 3.1.1.2 of WHC-SD-CP-OSR-010 requires that glovebox criticality drains shall be operable.

Actions to be taken to place PRF in a LAYUP condition:

Action: Drain and Flush Tank 110 and associated lines. (To be performed with WorkPlan WP-2Z-98-RA-02)

Basis: High Ecology interest item. Color of liquids indicate deterioration of stainless steel tanks are occurring. Drain and flush should be performed to prevent leaks of highly corrosive chemicals from occurring.

Action: Locate, identify and characterize chemical holdup in piping in Room 19.

Basis: High Ecology interest PRF item. Lines may contain chemicals that may now be considered waste. Waste is required to be removed.

Action: Removal of solid ANN in Tk-A-106.

Basis: High Ecology interest PRF item. Tank contains solid ANN determined to be waste. Waste is required to be removed.

Action: Identify and characterize residual liquids accumulated in pulser hood in Room 43.

Basis: High Ecology interest PRF item. Hood contains residual liquids determined to be waste. Waste is required to be removed.

Action: Identify and characterize source for moisture and liquid intrusion in MT-5.

Basis: High Ecology interest PRF item. MT-5 was identified to contain moisture and liquid intrusion during 28 January 1998 Ecology inspection. All liquid sources to MT-5 need to be identified and evaluated for potential leaks. (Water source from the primary loop of the glovebox closed loop cooling system is one source and its draining is an action item in Section 3e).

Action: Identify and characterize sources for moisture and liquid intrusion in PRF's 1st floor West glovebox.

Basis: High Ecology interest PRF item. PRF's 1st floor West glovebox was identified to contain moisture and liquid intrusion during 28 January 1998 Ecology inspection. All liquid sources to PRF's 1st floor West glovebox need to be identified and evaluated for potential leaks and disposal of liquids.

Action: Drain CCX line from 3rd floor to Tank-30 and Tank-30 pump.

Basis: High Ecology interest item. There may be an unspecified volume of solution containing hydroxylamine nitrate and nitric acid in these lines. This action stems from PRF recovery actions after the Tk-109 explosion. (Workplan WP-2Z-97-RA-09).

Action: Verify that Nitrogen line servicing PRF is isolated and depressurized.

Basis: A gauge on the Nitrogen system indicates that the lines are still pressurized. Isolation and depressurization is a good management practice for any pressurized line that will not be used again.

Action: Cap plug process line 595 running from Building 236-Z to 234-5Z at a location in 2nd West.

Basis: Isolation of potential liquid paths between 236-Z and 234-5Z Room 166 requires this line to be capped/plugged so that criticality safety class system surveillances in 234-5Z Room 166 can be deleted.

Action: Disconnect electrical power from 241-Z annunciator alarms. Specifically Panel B-2 annunciators 8, 11 and 12 associated with the D-9 level and temperature alarm, D-5 agitator de-energizer alarm, and Common alarm for 241-Z. (ZO-180-802)

Basis: Remove identified electrical sources no longer needed.

Action: Inactivate the following procedures:

- ZO-120-018 Operate Process Pumps
- ZO-180-800 Alarm Responses for PRF Alarms
- ZO-180-801 Alarm Responses for PRF Alarm Panel
- 2Z22128 Liquid Level Detection Sump Probes
- Modify ZO-100-400 Perform Nuclear Operations Surveillance
- Modify 2Z-22048 Annual Test and Inspection Liquid Level Alarms 241-Z

Basis: The procedures in their present form are written to use systems that have been inactivated.

i. ELEVATOR & HOISTS

The elevator for PRF is located off the corridors on the East side of the building. It is used for moving heavy items from one floor to the other. It also is used to obtain access to test criticality detectors located in the elevator well. As long as the detectors in the elevator are installed, the elevator must remain available for operation. When maintenance involving moving portable safety showers, or other heavy items such as the moving of filters takes place, the elevator must be available for service. The 1 ½ ton hoists inside the South Canyon Airlock and the ½ ton hoist in Room 60 are not currently used. However, the hoists in the airlock may be needed for D&D of the facility at a later date. At the time they are used, an annual periodic inspection will be required.

Maintenance requirements to keep the system operational:

Requirement: IF personnel will enter the elevator pit then stiff legs are required to be installed (1-ZM-005)

Basis: Plant Management decision to ensure personnel safety.

Requirement: Monthly inspection and maintenance of elevator when in operation. (2Z-23010, Includes hydraulic fluid sample, inspection and lubrication of elevator components, and inspection of electrical switches and motor).

Basis: Washington Administrative Code (WAC) 296-95 requires monthly inspection.

Requirement: Semi-Annual inspection required by the 3rd Party inspector.

Basis: HNF-PRO-489 and ASME A17.1-1990

Operational requirements:

None

Actions to be taken to place PRF in a LAYUP condition:

Action: If criticality detectors are removed from service (see criticality section) and no maintenance is expected such as filter change outs or cleanup requiring a portable safety shower, then the elevator can be placed out of service until such time that it is needed.

Basis: If the elevator is not needed and out of service, then no maintenance is required. When returning it back to service, the semi-annual and monthly inspections will be required.

Action: Inactivate the following procedures:

 ZO-180-100 Operate Canyon Hoist

 2Z-22068 Hoist Maintenance, 236-Z Room 60

Basis: The procedures in their present form are written to use systems that have already been inactivated.

j. **STRUCTURAL (System 21C)**

PRF has at least three redundant confinement systems that protect against an inadvertent release of radionuclides. The primary confinement system consists of the process enclosures and their associated ventilation system, which maintain a negative pressure drop from the room into the process enclosures or gloveboxes. The secondary confinement system consists of the barriers that enclose the areas (rooms) that house the primary confinement system and the system that ventilates those areas. The tertiary confinement system consists of the building structure and its ventilation system. Maintaining the tertiary confinement system requires maintaining the integrity of the building structure.

Maintenance Requirement:

Requirement: Semi-annual roof membrane inspection of PRF. (ZSR-21C-002)

Basis: The PRF facility is a safety class building. An inspection for damage is required after each Winter and in preparation for the next Winter to ensure roof integrity.

Requirement: Periodic roof structure inspection of PRF. (HNF-PRO-091)

Basis: HNF-PRO-091 requires inspections to be performed to verify floor and roof strength when the roof is used as a walking or working surface. These inspections shall be an Engineering Inspection by at least two qualified structural engineers every 5 years or a Good Faith Assessment by at least three qualified people including supervisory and safety personnel every year before performing roof top activities.

Operations Requirements:

None

Actions to place PRF in a layup condition:

None

k AIR MONITORING AND CONTAMINATION DETECTION INSTRUMENTATION

Work place air sampling is required to be performed if an area is classified as occupied and an individual is likely to receive an annual intake of two percent or more of the specific annual limit of intake (ALI).

Work place air monitoring using continuous air monitors (CAMs) is required to be performed in occupied areas where an individual is likely to be exposed to a concentration of airborne radioactivity exceeding one DAC or where there is a need to alert potentially exposed individuals to unexpected increases in airborne radioactivity levels.

Document RCTBD-98-003, "Work Place Air Monitoring", describes 3 occupancy categories:

Category I = Not Occupied (personnel in area for less than 96 min/day, 8 hrs/wk, 104 hrs/quarter, or 416 hrs/calendar year. This is interpreted to be an average of 96 min/day, 8 hrs/wk so that 400 hrs/calendar year, after taking into account 2 weeks of vacation, is not exceeded. An example of this would be if a person worked 30 hours in PRF during one week and still didn't exceed 400 hrs/calendar year, the building could still be classified as Not Occupied. However this assumes that a tracking system would be in place to monitor the amount of time an individual would be inside PRF throughout the year.)

Category II = Infrequently Occupied (occupied for less than 2000 hrs/yr.)

Category III = Continuously Occupied (occupied for 2000 hrs/yr.)

Document RCTBD-98-003 characterizes source term as follows:

- Glovebox, source term disturbed
- Fume Hood, source term disturbed
- Removable surface contamination >880 dpm/100 cm², <=4,44 E4 dpm/100 cm²; minimal activities disturbing source term.
- Glovebox, source term not disturbed
- Fume Hood, source term not disturbed
- Vault items
- No source term (contamination less than 880 dpm/100 cm², no Glovebox, fume hoods) or source term contained to prevent release (sealed sources, or source contained in piping)

Document RCTBD-98-003 places the occupancy classes and source term characterization in an air monitoring decision matrix to provide general guidance on whether CAM,s, or Fixed Head Air Samplers are needed. Table 4 of this same document will provide requirements for each room in PRF as to what air monitoring is needed. This table is not currently completed.

Currently in PRF, there are 36 room fixed heads, 4 sample filters off the E-4 system, and 17 CAMS. The completion of Table 4 in document RCTBD-98-003 for PRF is critical for determining if any reduction in fixed heads or CAMS can be accomplished as PRF is placed in a layup phase. Having that information is necessary for determining if the following operational and maintenance requirements are needed.

Maintenance requirements to keep the system operational.

Requirement: CAM Annual Calibration Surveillance:

Basis: WHC-IP-0718 Part 1, Section 5.2 and HNF-PRO-331 requires annual calibration .

Requirement: Annual Fixed Head Sampler Rotameter calibration. (1-ZM-072)

Basis: HSRCM-1 states that air monitoring equipment shall be routinely calibrated and maintained at a frequency of at least once a year. HNF-PRO-331 states to “calibrate airflow rate meters annually and after modifications, repairs, or indication that the meter is not functioning properly”.

Operational Requirements

Requirement: Daily CAM Operational Checks ZRC-100-003

Basis: Health Physics Procedures Manual, WHC-IP-0718, and HNF-PRO-331 requires the performance of the daily operability checks. These checks include positive airflow indication, presence of a non-zero response to background activity, internal check sources or 60 HZ electronic checks when available, operability of strip chart recorders if used, and verification of the control settings on the CAM.

Requirement: Weekly CAM Performance Testing ZRC-100-002

Basis: WHC-IP-0718 and HNF-PRO-331 contains the requirement for the weekly exchange of CAM sample filters and source check.

Requirement: Weekly air sample head filter change.

Basis: HNF-PRO-331 requires that samples are changed weekly or more frequently if potential airborne radioactivity or debris concentrations are high.

Requirement: Monthly CAM Operational Check

Basis: WHC-IP-0718 Part 1, Section 5.2 and HNF-PRO-331 requires room CAMs to be checked monthly for proper operation of the alarm. At PFP, this is performed on a weekly basis when doing procedure ZRC-100-002.

Actions to place PRF in a layup condition:

Action: Complete Table 4 of RCTBD-98-003 for PRF rooms to identify where fixed head samplers and CAMs are needed. The completion of that table should use the following combination of items for determining the need for air sampling;

- Air sample data
- Radiological survey data
- Source term
- Release potential of the source term
- Containment or confinement of the source term
- RWP constraints
- Occupancy time (as needed to estimate exposure) (Note: The building will need to be entered at least weekly for surveillance and preventative maintenance and possibly more frequently on an occasional basis when doing maintenance evolutions such as changing out filters.)

Basis: Document is required by Procedure HNF-PRO-331. The reduction of any CAMs and fixed head samplers and their associated operational checks is dependent upon the rationale used to update this technical document.

1. 17" VACUUM SYSTEM

The air sampling system provides the motive force for room CAM units and fixed head samplers. Two vacuum pumps are installed in room 35, each rated at 400 ft³/min at 17" Hg and powered by a 25 hp electric motor. The inlet air to each of the vacuum pumps is passed through a testable HEPA filter; the outlet air is discharged to the E-3 exhaust system. The seal water to the vacuum pumps is supplied by the primary closed loop cooling system for each pump. Make-up water for the primary loops is provided by the process water system.

The options associated with the 17" vacuum system are based upon the need for CAMs and/or fixed heads (action for assessment is described under System 96) and the costs associated with modification.

OPTIONS

1. If the assessment determines that no CAMs, room air sampling or E-3 duct air sampling fixed heads are required, then the 17" vacuum system will not be needed during the layup period of PRF. This decision would be based on the source term in PRF being considered to be contained such that a release is not possible or that the occupancy of the building is considered to be non-occupied. Preliminary indications are that CAMs and/or room air sampling fixed heads are still needed during the layup condition as surveillance and maintenance will still be required and they will definitely be needed when deactivation work begins in the facility.
2. If only CAMs are required and fixed heads are not needed during the layup condition, then portable CAMs could be used allowing the 17" vacuum system to be secured. This option would not allow any source term to be disturbed within gloveboxes so would not be a long term option for deactivation. This option would still require the daily CAM operational checks and more portable CAMS may have to be obtained. The cost of turning existing CAMS into portable CAMS is approximately \$2000/each. Currently, the CAMs in the facility are being investigated to determine the value of upgrading to a model that can be read remotely and can discriminate better between Radon and Alpha airborne radioactivity. Depending upon the type of CAM selected, the cost to install portable CAMs could increase significantly. Utilizing portable CAMs would also require an evaluation of the need of in-line sampling on the ducts between the final filter banks and the 291-Z plenum. If in-line sampling is needed then portable vacuum pumps would be the motive force for the in-line sampling and the exhaust air for the vacuum pumps would have to be modified to go back into the ventilation ducting.

3. The third option would be to tie the PRF vacuum system into the 291-Z 17" vacuum system. This option would be the best if the evaluation to make PRF a Limited Control Facility (See section on criticality system) requires all process water to be removed from the building resulting in the room 35 vacuum pumps not being available.

The capacity of a vacuum pump in 291-Z is approximately 850 CFM. Total current usage in 234-5Z is around 500 CFM. An additional 100 CFM from PRF would be routed to 291-Z which is within the capacity of the 291-Z vacuum pumps. In order to utilize this option the following would have to be performed:

- a. Replace required 8802 fixed head regulators with the 8810 model. PRF currently has 23 of the 8802 model fixed heads and 13 of the 8810 model fixed heads. The 8802 model specification sheet states that the 8802 model requires a minimum of 10 psi (20" Hg) to obtain 110 scfh. In PRF, current data shows that at 23-24" Hg, the 8802 model is only obtaining 60-80 scfh. Tying into the 291-Z vacuum system will lower the system pressure in PRF from the current 23-24" to an expected 8-10" Hg due to system pressure losses. Those losses would lower the 8802 model fixed heads to below the 60 scfh requirement. The 8810 model specification sheet states that the 8810 model requires a minimum of 15 psi (30" Hg) to obtain 9scfm. In PRF, current data shows that at 23-24" Hg system vacuum, the 8810 model is obtaining > 3 scfm where 3 scfm is the upper scale of the flow meter. A lower pressure of approximately 8-10" Hg should still result in > 1 scfm on the 8810 model fixed head regulator. Before replacing regulators, a test in PRF should be performed to verify that the 8810 model fixed head can properly work at 8-10" Hg by lowering the vacuum at the vacuum pump inlet to about 8" and recording the maximum flow. The cost of replacing these fixed heads would be based on how many are replaced. The actual fixed head cost is approximately \$250/each and because they are not a direct replacement, some piping modifications need to be performed.
- b. Disconnect the primary HEPA filter upstream sample lines for F-50, F-20W, F-20E, F-10E, F-10W and plug.
- c. Break 2" abandoned breathing air line and 2" abandoned process air line in PRF stairwell #2 at the 3rd floor landing and in 291-Z, Room 501. Blow air through both lines to clean and tie lines together at both locations. Connect PRF side of lines to the vacuum system on the 3rd floor West corridor. Connect the 291-Z side of lines upstream of HEPA filter FB-32.

- d. Change documentation to show new configuration: ECN, FSAR, SDD.
- e. Operate system from 291-Z to verify proper operation.
- f. Disconnect 17" vacuum pumps in Room 35. Isolate secondary closed loop cooling at the supply to the primary heat exchangers in Room 35. Drain the primary loops and the volute on the pumps. Electrically disconnect power to VP #1, VP #2, P-106 and P-108. Place inactive stickers on the following affected preventative maintenance activities and modify the following procedures.

FI-TK105 (2Z-4043)	TI-HX103-1 (2Z-3981)
TI-HX103-2 (2Z-3982)	PE/PT-PCW6 (2Z-4004)
FE/FT-PCW5 (2Z-4006)	FE/FT-PCW6 (2Z-4026)
PI-P-106 (2Z-4038)	TI-HX102-2 (2Z-3980)
PI-P-108 (2Z-4040)	PE/PT-PCW5 (2Z-4003)
PI-PCW5 (2Z-4037)	TE/TT-PCW5 (2Z-4035)
PI-PCW6 (2Z-4039)	TE/TT-PCW6 (2Z-4036)
TI-PCW5 (2Z-4041)	TI-HX102-1 (2Z-3979)
VP-1-72 (2Z-6453)	VP-1-72 (2Z-6454)
2Z-23076 procedure	ZO-060-117 Surveillance
2Z-22090 procedure	ZO-060-610
DPI-17-1-1 (2Z-1430)	DPI-17-1-2 (2Z-1431)
ZO-060-302	PI-17V-1A (2Z-3511)
PI-17V-1B (2Z-3513)	ZPR-001
ZAR-003	

- 4. The fourth option would be to maintain the 17" vacuum system inside PRF and reduce the operating surveillance from daily to weekly to correspond to the weekly changing of HVAC pressure recorder graph paper. Vacuum pump primary loop parameters of temperature, flow, and pressure can be observed at the MICON. By observing the secondary temperature readings for the evaporative coolers at the MICON, combined with observing the primary temperature, flow and pressure readings at the MICON, most problems with the system can be identified. Problems with maintaining the vacuum pressure would be indicated by a low vacuum pressure alarm in Room 321A. Problems with a high bleed flow rate which affect the system would be noted by a loss of vacuum alarm sounding in Room 321A. Problems with a low flow bleed rate would be an increased sediment buildup and corrosion inside the pump. A low flow problem in between weekly surveillance should not significantly increase sediment buildup. The main reason the daily surveillance is currently performed is to listen to and observe the condition of the vacuum pumps and closed loop cooling pumps for abnormal conditions. If operational surveillance were changed from daily

to weekly, it is recommended to install a microphone in room 35 to listen and detect any abnormal conditions with the pumps. If a microphone was installed, the chance of a sudden loss of vacuum or damage to the pump, without first having an opportunity to correct the problem, would be less due to detection of problems through the sense of hearing. This would require routing an audio cable from PRF to the MICON for the sound signal to travel. This is the recommended option for PRF during the layup condition to minimize surveillance and modification cost to the system if changing the building status to a Limited Control Facility doesn't require completely removing the process water system. (See section on criticality system)

5. A fifth option would be to maintain the 17" vacuum system as described in Option 4 without installing a microphone. This option would only require changing the surveillance from a daily to weekly and ensuring that all of the MICON parameters are in specification. This option (run to failure) implies that losing the vacuum system and possible damage to the pump are acceptable and is the normal way of doing business.
6. A sixth option would be to maintain the 17" vacuum system inside PRF with no changes including maintaining the daily surveillance to detect abnormal conditions with the pumps.

Maintenance requirements to keep the system operational. (Assuming Option 4 is used)

Requirement: Annual Functional check of FE/FT-PCW6 and PCW5 (2Z-4026, 2Z-4006)

Basis: Transmitters display flow of PRF vacuum pump primary closed loop cooling loops at the MICON. Low flow initiates an alarm, and shuts down the vacuum pumps after 60 seconds and the seal water pumps if placed in automatic. Failure of instrument could result in a low flow condition for a vacuum pump occurring without detection. The vacuum pump would continue to run. If some flow exists then a high temperature or loss of vacuum alarm may occur that would warn an operator to go check on the equipment. Otherwise the pump would continue to run until a loss of vacuum and possible damage to the pumps.

Requirement: Annual calibration of PE/PT-PCW5 and PCW6 (2Z-4003, 2Z-4004)

Basis: These instruments provide a pressure reading of the vacuum pump primary closed loop cooling loops located inside PRF which can be read at the MICON. Along with temperature and flow, the pressure reading provides indications to help a remote operator determine problems with the system. These instruments also initiate a low pressure alarm for the loops. They have not been calibrated now for 2 years. They should be calibrated

and if still functioning properly extended out to 3 years. Failure of the instruments would result in not noticing a primary loop water leak until a loss of flow was detected.

Requirement: Annual calibration of TE/TT-PCW5 and PCW6 (2Z- 4035, 2Z-4036).

Basis: Provides temperature readout and high temperature alarm for the primary closed loop cooling loops of the PRF vacuum pumps. This parameter is the only indication of an overheating of the primary loops and their associated pumps. Failure of the transmitters could result in a loss of vacuum to PRF. It has been two years since this transmitter has been calibrated. It should be calibrated and if it passes then extended out to a 3 year basis.

Requirement: 3 year calibration of PI-17-1, PS-17-1, and ANA2-8.

Basis: PI-17-1 provides local vacuum pressure indication for the operator while starting the system to verify proper operation. Pressure switch enables an alarm at 10" hg pressure to sound in Room 321A to notify operator of loss of 236-Z vacuum. History indicates that this gauge, pressure switch and annunciator can be moved from its current annual calibration to a 3 year calibration frequency.

Requirement: Annual/Semiannual maintenance on Vacuum Pumps (2Z-6453 and 2Z-6454 using procedure 2Z-23076).

Basis: An inspection of belts, bearings, packing box out-leakage rate are all necessary to prevent possible damage of vacuum pumps and long down-time.

Requirement: Perform in-place leak test bi-annually for VF-1 and VF-2.

Basis: The basis for this requirement is ASME-N510-1989. This test shall be performed annually for safety class filters in compliance with WHC-SD-CP-OSR-10, LCO 3.2.1.1 and/or 3.2.1.2. Non-safety class filters, which include VF-1 and VF-2 are tested every 24 months.

Operational Requirements

Requirement: Weekly surveillance of vacuum system.

Basis: Performed to observe the condition of the vacuum pumps and closed loop cooling pumps for abnormal operation as well as adjust the bleed rate as necessary. This would

be a change from the daily surveillance and be contingent on a microphone in room 35 being installed to listen and detect any abnormal conditions with the pumps.

Requirement: Check HEPA filter DPs, bi-weekly (DPI-17-1-1 and DPI-17-1-2).

Basis: To identify any unusual loss of DP or increase of DP greater than 3" wg, which are indicators of changing conditions that may impact filter integrity.

Actions to place PRF in a layup status:

Action: Change calibration of annual temperature gauges to indication only for TI-HX102-1 (2Z-3979), TI-HX102-2 (2Z-3980), TI-HX103-1 (2Z-3981), TI-HX103-2 (2Z-3982), PI-PCW5 (2Z-4037), PI-PCW6 (2Z-4039), TI-PCW5 (2Z-4041), PI-P-106 (2Z-4038), PI-P-108 (2Z-4040),

Basis: The failure of these gauges would make troubleshooting heat transfer problems across a heat exchanger more difficult. However, if a heat exchanger problem was suspected by rising primary water temperature, the gauges could be recalled and calibrated when needed. Remote indications of vacuum inlet water pressure, and temperature can be read at the MICON and would be calibrated instruments available to help in troubleshooting the system.

Action: Change calibration of annual temperature gauges to indication only for PI-17V-1B (2Z-3513) and PI-17V-1A (2Z-3511).

Basis: These gauges are used for observing vacuum pressure when starting the system. They can still be used as indication only gauges but there is no need for them to be calibrated. Ten to fifteen feet away is PI-17-1 which will remain a calibrated gauge.

Action: Inactivate ANK-44 alarm PM (2Z-3510).

Basis: The PRF control room is no longer manned. This low vacuum alarm also sounds in Room 321A of 234-5Z which is manned. There is no need to PM the alarm in the unmanned space.

Action: Place indication only sticker on flow indicator FI-TK105.

Basis: This rotameter is important to ensuring the system is clean and flushed of sediments. However, the only calibration that can be performed on it while in the system is to verify that the ball responds when turning the control knob. This is done by the operator on at least a weekly basis when performing surveillance ZO-060-117.

Action: Install microphone in Room 35 which can be heard at the MICON.

Basis: If operational surveillance were changed from daily to weekly, it would be prudent to install a microphone in room 35 to listen and detect any abnormal conditions with the pumps. This would require routing an audio cable from PRF to the MICON for the sound signal to travel.

Action: Change calibration frequency of PS-17-1 (2Z-3506) and ANA2-8 (2Z-3507) from annual to 3 years.

Basis: History indicates that this pressure switch and annunciator doesn't readily go out of calibration and can be moved from their current annual calibration to a 3 year calibration frequency.

m. 26" VACUUM SYSTEM

The 26" vacuum system in 234-5Z provides a motive force for movement of liquids from tank to tank in the PRF process gloveboxes. Tank 50 provides a high liquid level detection and alarm interlock system to isolate the tank from the 26" vacuum header and vent the tank to the process vent system if the tank WF exceeds 63 percent.

Maintenance requirements to keep the system operational.

None.

Operational requirements.

None.

Actions to place PRF in a layup status:

Action: Isolate 26" vacuum system to PRF inside 234-5Z in Room 262 at valve V-2093-23B. Operation of this valve should be performed in a glovebag to ensure integrity. After isolation, the 26" vacuum system should be started up and verify no vacuum at gauge PI-2006-23B in PRF. Once verification is made, valve V-2093-23B should have a system lay up tag placed on it leaving the valve in the closed position. If valve V-2093-23B leaks by then a blind flange will need to be placed in the 2nd floor west gallery glovebox or at valve V-2093-23B in 234-5Z.

Basis: 26" vacuum system needs to be isolated from the tanks of PRF but placed in a condition where it can be made available at a later date for D&D if needed. The isolation valve in 234-5Z has not been operated for a long period of time. Its integrity is not known. It is located above the 8 foot level in Room 262 and would not be a valve normally operated. Due to its location if the valve is in good condition, then an administrative lay-up tag (FSP-PFP-5-8 Section 3.16 draft explains the lay-up tag program) is all that is needed. However, if the valve doesn't hold, then a blind flange in either Room 262 (preferred) at the valve location or inside PRF 2nd West gallery glovebox would be the next cost effective solution.

n. ELECTRICAL SYSTEMS

Electrical power that services PRF comes from SWGR BUS 600 through breaker F8X608 and from EP-A5 (located in Room 260 of 234-5Z). SWGR BUS 600 feeds MCC-1 which in turn feeds MCC-2, MCC-3, MCC-4, and MCC-5. MCC-1 also feeds Lighting Panel C, G, B, D, A, F, and other individual pieces of equipment. EP-A5 provides power to Panel EM which feeds Panel E, N, M, I, V, CV, ACR, and EB.

The electrical system for layup of PRF has the following objectives:

- Disconnect damaged circuits feeding Room 40 at either power source or first junction box outside room 40.
- Remove energy controls on all other electrical circuits where energy controls are not needed and install “lay up tags” for breakers which do not need to be energized during the lay up condition of PRF. (FSP-PFP-5-8 Section 3.16 is being modified to allow the use of lay up tags).
- Maintain minimum lighting to perform surveillance and maintenance.
- Maintain receptacle power for portable CAMs, and other maintenance equipment.
- Remove unnecessary battery powered lights.

Maintenance Requirements to keep the system operational

Requirement: Annual Relamping of PRF lights.

Basis: Lighting is needed for the maintenance and surveillance of the facility. Relamping will be required to maintain general lighting levels.

Requirements: Quarterly backup light maintenance inspection and Annual building emergency light test. (ZSR-12N-002)

Basis: The Life Safety Code states that special purpose industrial occupancies, where routine human habitation is not the case, are not required to maintain emergency lighting. This is the case with PRF. The existing battery powered “backup” lights in the corridors and stairwells will be maintained on a quarterly basis to ensure personnel safety in the event of a lighting failure. This will allow a reduction in maintenance manhours without sacrificing personnel safety.

Operational Requirements:

Equipment to remain in service requiring power.

Elevator-	MCC-1 B3
Lighting Panel C	
Process Cell Lighting	MCC-1 C5
Primary CLC circ pump P-106	MCC-5 2C
Primary CLC circ pump P-108	MCC-5 2D
Lighting Panel G	
Lighting and Recp.	MCC-1 C6
Lighting Panel A	MCC-1 D1
LTG and recp	Breakers 1 through 16, 18, 19, 22
Lighting Panel B	
LTG and recp	MCC-1 D1
Lighting Panel D	MCC-1 D2
Lighting and Recp	Breakers 1 through 10, 13,14
CLC MICON alarms	Breaker 16
Lighting Panel F	MCC-1 D2
Lighting and Recp	Breakers 1, 3 through 13, 15, 18
MICON alarms	Breaker 17
17" Air Sample Vacuum Pump #1	MCC-1 D6
17" Air Sample Vacuum Pump #2	MCC-1 D7
Panel ACR- Crit Equipment	Breakers 1,3,5,8
Panel EB- CAM recpt	Breaker 2
Panel E- LTG and Recp	Breaker 1-9, 12 (All)
Fire Equipment	Breaker 11, 13,15,17
Panel CV-LTG and Recp	Breaker 1 through 10, 12 (All)
Panel N- Vent Inst Power	Breaker 4

Actions to place PRF in a layup condition:

Action: Disconnect damaged circuits feeding Room 40 at either power source or first junction box outside room 40. After all disconnecting work is complete, re-energize all loads originally L&T after the explosion. Check for energized wires in Rm 40 that were supposed to have been disconnected. Verify no feeder breakers trip and no grounds (as applicable) on 600 bus.

Disconnect power to Agitators for tanks 101, 102, 103, 104, 108, 109, 112, 113, and 116. Disconnect wires at MCC/Power panel and remove damaged conduit and wiring from Rm 40. Tie load end of wires back in wire gutter in Corridor 47 and label.

Disconnect instrumentation power (mostly level instruments) for North tanks due to damage to CN 1056. Disconnect power to instrumentation by lifting leads in Instrument Panel B in the Control Room. Remove damaged conduit and wiring and tie wires back into existing junction boxes in Rm 40.

Disconnect unidentified damaged conduits above North row of tanks. After researching old drawings and ECNs, these circuits are believed to have powered previously removed Magnetic Flow Meters and Metering Pumps in Room 40. Remove damaged conduit and wiring in Room 40 (two runs of conduit and associated wiring along North row of tanks).

Disconnect CCL4 alarm from pnl SD, brkr #1.

After all disconnecting work is complete, re-energize all loads originally L&T after the explosion. Check for energized wires in Room 40 that were supposed to have been disconnected. Verify no feeder breakers trip and no grounds (as applicable) on 600 buss.

Move the Closed Loop Monitor Annunciator power feed from panel SD, breaker #8 to panel F, breaker #17. This will allow the complete de-energization of MCC #4.

Remove all Caution tags hung in response to 600 bus ground located in PRF. One by one, close each of the breakers and check for grounds. If ground is located, then tag that particular piece of equipment out and return everything else to service.

Basis: PRF recovery actions to restore electrical power to Room 40 while ensuring circuits are in a safe condition.

Action: Turn off any circuits in PRF or feeding PRF not required to be energized during the layup of the facility. Lay up tags to be installed per FSP-PFP-5-8 Section 3.16 (Currently in a draft mode) to identify the following circuits as being in a lay up condition:

Rm 44. Heating coil	MCC-1 A1
Control Room Heating Coil	MCC-1 A2
Control Room A/C	MCC-1 A3
MCC #2	MCC-1 C1
Water Heater	MCC-1 B4
Power Saw in shop	MCC-1 B6
MCC #3	MCC-1 C2
MCC #4	MCC 1 C3
Lighting Panel C	
Tank 107/110 agitators	Breakers 17,19
Cell Crane	MCC 1 D3
Panel V (Valve Control pwr)	Panelboard EM Breaker 5
Tank Level and Chem prep power	Panelboard F, Breakers 2, 14
Recp, pump, valve control, alarm	Panelboard A, Breakers 17, 20, 21/23.
Gamma Scanner Rm 19	Panelboard A, Breaker 24.
Instrument air dryer	Panelboard D, Breaker 18
S&G Control Panel Rm 44	Panelboard D, Breaker 12
Healtraps	Panelboard D, Breaker 11
CLC Pump P-102	MCC-5 Breaker 1D
CLC Pump P-101	MCC -5 Breaker 1E
Magnetic Flow Meter	Panelboard N Breaker 1-3, 5
Motors, and Control Power	Panelboard SD- All
Various	Panelboard 3-1 All
Various	Panelboard 4-1 All
Various	Panelboard 5-1 All
Various	Panelboard EM, Breaker 4 (Panelboard I Power)
Magnetic Flow Meter & inst pwr	Panelboard EM, Breaker 3 (Panelboard M power)
HNO3 pump/annunciators	Panelboard SV-1 Breaker 4
ANN pump/annunciators	Panelboard SV-1 breaker 2

Basis: Equipment not being used should be deenergized. System layup tags provide a operator aid to notify individuals of the condition or status of equipment/ breakers.

Action: Modify procedure ZSR-12N-001 to remove monthly and annual emergency egress lighting checks for PRF.

Basis: The Life Safety Code states that special purpose industrial occupancies, where routine human habitation is not the case, are not required to maintain emergency lighting. This is the case with PRF. The existing battery powered “backup” lights in the corridors and stairwells will be maintained on a quarterly basis to ensure personnel safety in the event of a lighting failure. This will allow a reduction in maintenance manhours without sacrificing personnel safety.

4. RESPONSIBILITIES AND ACTIONS

(NOTE: ITEMS 4.3, 4.11, and 4.32 are critical to complete to determine the need for several action items. The most important action item is item 4.11 since a new CSER establishing a Limited Control Facility may require the fire system and process water system to be isolated. Isolation of process water would affect decisions involving use of the vacuum pumps. Isolation of fire system water would increase the importance of completing item 4.3 to determine the extent that the fire system will be deactivated.

ACTION/RECOMMENDATION	MECHANISM (/PREREQUISITES)	RESPONSIBILITY
4.1 Change daily filter bank status of ZO-060-117 to a bi-weekly surveillance. (Ref section 3a)	DAF	System 25 COG
4.2 Determine a clearer funding allocation for PRF cleanup. IF the activation of gloveboxes to remove plutonium holdup will not occur within the next 10 years then remove the glovebox combustibles, remove gloves and pie plate, and remove the glovebox fire detectors. (Ref section 3b)		Operation's Management
4.3 Conduct an assessment on what would have to be done to PRF to reduce the MPFL below 1 million dollars to allow removal of all the fire system equipment. (Ref section 3b)	Letter to DOE	System 21D COG
4.4 Reduce the number of portable fire extinguishers in PRF from 25 to 12 and change the operating procedure to reflect the change. (Procedure # ZO-170-150) (Ref section 3b)	JCS 97-1453	System 26 COG
4.5 Place fire system detection zones 35, 38-41 out of service. (Ref section 3b)	ECN JCS 98-1264	System 26 COG
4.6 Isolate instrument air headers not being used by shutting the Isolation valves identified in Table 1, followed by Disconnecting and plugging the lines. Label the piping as Deactivated. (Ref section 3c)	ECN JCS 98-1248	System 23J COG
4.7 Blank off Steam line in 291-Z which service 236-Z and verify deactivated stickers on gauges located throughout the steam system. Label steam lines as deactivated. (Ref section 3d)	ECN JCS 96-2085	System 22 COG
4.8 Drain primary loop which services East and West Gallery gloveboxes and isolate and disconnect secondary loop to heat exchanger HX-101 downstream of isolation valves V-CLC-142 and V-CLC-143. Disconnect power to pump P-101 and P-102. Verify inactive stickers on calibrated equipment associated with primary glovebox loop and label piping as deactivated. (Ref section 3e)	ECN JCS 98-1249	System 23F COG

ACTION/RECOMMENDATION	MECHANISM /PREREQUISITES	RESPONSIBILITY
4.9 Inactivate PI-SCW2 (2Z3972) annual calibration and delete from surveillance ZO-060-117 (Ref section 3e)	PM/s DAF	System 23F COG
4.10 Cancel NPO surveillance of CAP panels. (A change to ZO-100-400 and SDD would be required)(Ref section 3f)	ECN DAF	System 99 COG
4.11 Initiate CSER/safety analysis documentation to allow removing detectors from service where no actions involving the movement, distribution, or handling of fissile material are permitted. If new CSER allows, then remove/deactivate detectors .(Ref section 3f)		Criticality Safety Representative
4.12 Cap all safety showers and eye wash stations and use self Contained drench hoses and eye washes as support safety equipment in conjunction with PPE during evolutions where showers have previously been used. (Ref section 3g)	JCS 96-1218	Operations Management OK needed to proceed
4.13 Remove from service the fire standpipe connections on the West riser. (Ref section 3g)	Prereq: 4.3 4.11	System 26 COG
4.14 Route new makeup water source for the Closed Loop Cooling Evaporative coolers from the water main feeding 291-Z. (Ref section 3g)	Project	System 23E COG
4.15 Free release the East Stairwell and portions of Corridor 33 and Room 35 so that the backflow preventers are not located in a contamination area. If this is not possible, then free release the East Stairwell and the 3 rd floor restroom area to allow a location to place new backflow preventers. (Ref section 3g)	Prereq: 4.11	RADCON Management
4.16 Replace existing backflow preventers inside Room 35 with 1/2" backflow preventers or install new 1/2" backflow preventers in the Restroom area to accommodate lower flow requirements. (Ref section 3g)	ECN JCS 98-1250 Prereq: 4.15	System 23E COG
4.17 Cap off the process water lines feeding Room 40 and Room 41 at a location inside Room 35 and drain water lines. Ref section 3g)	ECN JCS 98-1251	System 23C COG

ACTION/RECOMMENDATION	MECHANISM /PREREQUI-SITES	RESPONSIBILITY
4.18 Remove backflow preventer in Room 40 and cap off line Feeding MT gloveboxes. (Ref section 3g)	ECN JCS-98-781	System 23C COG Process ENG
4.19 Drain and Flush Tank 110 and associated lines. (To be performed with WorkPlan WP-2Z-98-RA-02) (Ref section 3h)	Workplan	Process ENG
4.20 Locate, identify and characterize chemical holdup in piping in Room 19. (Ref section 3h)	Workplan or JCS package	Process ENG
4.21 Removal of solid ANN in Tk-A-106 (Ref section 3h)	Workplan or JCS package	Process ENG
4.22 Identify and characterize residual liquids accumulated in pulser hood in Room 43. (Ref section 3h)	Workplan or JCS package	Process ENG
4.23 Identify and characterize source for moisture and liquid intrusion in MT-5 (Ref section 3h)	Workplan or JCS package	Process ENG
4.24 Identify and characterize sources for moisture and liquid intrusion in PRF's 1 st floor West glovebox. (Ref section 3h)	Workplan or JCS package	Process ENG
4.25 Drain CCX line from 3 rd floor to Tank-30 and Tank-30 pump. (Ref section 3h)	Workplan	Process ENG
4.26 Verify that Nitrogen line servicing PRF is isolated and depressurized. (Ref section 3h)	JCS 98-1252	System 82 COG
4.27 Cap plug process line 595 running from Building 236-Z to 234-5Z at a location in 2 nd West. (Ref section 3h)	JCS 96-2437 ECN 632245	Process ENG
4.28 Disconnect electrical power from 241-Z for weight factor indications and annunciator alarms. Specifically Panel B-2 annunciators 8, 11 and 12 associated with the D-9 level and temperature alarm, D-5 agitator de-energizer alarm, and Common alarm for 241-Z. (Ref section 3h)	JCS 98-1255	Process ENG

ACTION/RECOMMENDATION	MECHANISM /PREREQUI-SITES	RESPONSIBILITY
4.29 Inactivate or modify the following procedures: ZO-120-018 Operate Graco, Wilden, or POGO pump ZO-180-800 Alarm Responses for PRF Alarms ZO-180-801 Alarm Responses for PRF Alarm Pane 2Z22128 Liquid Level Detection Sump Probes Modify ZO-100-400 Perform Nuclear Operations Surveillance Modify 2Z-22048 Annual Test and Inspection Liquid Level Alarms 241-Z (Ref section 3h)	DAFs	Process ENG
4.30 If criticality detectors are removed from service and no maintenance is expected such as filter change outs or cleanup requiring 30 gal self contained drench hoses, then the elevator can be placed out of service until such time that it is needed. (Ref section 3l)	Prereq: 4.11	Operations Management
4.31 Inactivate the following procedures: ZO-180-100 Operate Canyon Hoist 2Z-22068 Hoist Maintenance, 236-Z Room 60 (Ref section 3l)	DAFs	System 41 COG
4.32 Complete Table 4 of RCTBD-98-003 for PRF rooms to identify where fixed head samplers and CAMs are needed. (Ref section 3k)		RADCON Mangement
4.33 Place indication only sticker on flow indicator FI-TK105. (Ref section 3k)	PM/s Change	System 23A COG

ACTION/RECOMMENDATION	MECHANISM /PREREQUISITES	RESPONSIBILITY
4.34 Change calibration of annual temperature gauges to indication only for TI-HX102-1 (2Z-3979), TI-HX102-2 (2Z-3980), TI-HX103-1 (2Z-3981), TI-HX103-2 (2Z-3982), PI-PCW5 (2Z-4037), PI-PCW6 (2Z-4039), TI-PCW5 (2Z-4041), PI-P-106 (2Z-4038), PI-P-108 (2Z-4040) (Ref section 3l)	PM/S Change	System 23A COG
4.35 Change calibration of annual temperature gauges to indication only for PI-17V-1B (2Z-3513) and PI-17V-1A (2Z-3511). (Ref section 3l)	PM/S change	System 23A COG
4.36 Inactivate ANK-44 alarm PM (2Z-3510). (Ref section 3l)	PM/S change	System 23A COG
4.37 Install microphone in Room 35 which can be heard at the MICON.(Ref section 3l)	Prereq: 4.11, 4.27 JCS 98-1254	System 23A COG
4.38 Change calibration frequency of PS-17-1 (2Z-3506) and ANA2-8 (2Z-3507) from annual to 3 years. (Ref section 3l)	PM/S Change	System 23A COG
4.39 Isolate 26" vacuum system to PRF (Ref section 3m)	JCS-98-1253	System 23B COG
4.40 Disconnect damaged circuits feeding Room 40 at either power source or first junction box outside room 40. After all disconnecting work is complete, re-energize all loads originally L&T after the explosion. Check for energized wires in Rm 40 that were supposed to have been disconnected. Verify no feeder brkrs trip and no grounds (as applicable) on 600 bus. (Ref section 3n)	JCS 98-517	System 12 COG
4.41 Turn off and install "lay up tags" on any circuits in PRF or feeding PRF not required for layup status. (Ref section 3n)	JCS 98-517	System 12 COG
4.42 Modify procedure ZSR-12N-001 to remove monthly and annual emergency egress lighting checks for PRF. (Ref section 3n)	DAF	System 12 COG