ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 653460

Proj. ECN 5

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ○ Direct Revision ◉ Change ECN ○ Temporary ○ Standby ○ Supersedure ○ Cancel/Void ○	N.F. Barilo, ESH&QA , L6-57, 372-3191	◉ Yes ○ No	May 7, 1999
	6. Project Title/No./Work Order No. 300 Area Stabilization Project	7. Bldg./Sys./Fac. No. 324	8. Approval Designator SQ
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) HNF-3235, Rev. 0	10. Related ECN No(s). NA	11. Related PO No. NA

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

13a. Description of Change

13b. Design Baseline Document? ◉ Yes ○ No

Revision of document to incorporate comments.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ○ Design Improvement ◉ Environmental ○ Facility Deactivation ○ As-Found ○ Facilitate Const. ○ Const. Error/Omission ○ Design Error/Omission ○	The document is being revised to incorporate substantial internal and external comments.

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

NF Barilo L6-57
TL Erickson L1-08
GO Hayner L1-08
AM Horner L6-57
RE Jordan S3-97
SH Norton L1-02
JM Steffen L1-06
DC West S3-96
MS Wright L1-02

Central Files B1-07
DOE-RL Reading Room H2-53

RELEASE STAMP

15

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 653460

16. Design Verification Required	17. Cost Impact		18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
○ Yes	Additional ○ $ _____	Additional ○ $ _____	Improvement ○ _____
◉ No	Savings ○ $ _____	Savings ○ $ _____	Delay ○ _____

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

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

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

Document Number/Revision	Document Number/Revision	Document Number/Revision
3I-SOP-G-22	NA	NA

21. Approvals

	Signature	Date		Signature	Date
Design Authority	NF Barilo	5-7-99	Design Agent		
Cog. Eng.	NF Barilo	5-7-99	PE		
Cog. Mgr.	TL Erickson	5/7/99	QA		
QA	HE Rew, Jr	5.10.99	Safety		
Safety	JM Steffen	5/7/99	Design		
Environ.			Environ.		
Other	AM Horner	5/7/99	Other		
	DC West	5/10/99			

DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

324 Building Fire Hazards Analysis Implementation Plan

N. F. Barilo
B&W Hanford Company, Richland, WA 99352
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 653460 UC: 2050
Org Code: 19500 Charge Code: 101022/BB20 HN990101
B&R Code: EW04J1070 Total Pages: 18

Key Words: 324 Building, FIre Hazards, Analysis, Implementation Plan

Abstract: BWHC will use this Implementation Plan to bring the 324 Building into compliance with DOE Order 5480.7A and RLID 5480.7.

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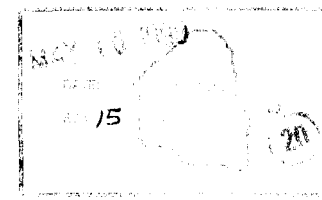

Release Approval Date 5-10-99 Release Stamp

Approved For Public Release

RECORD OF REVISION

(1) Document Number: HNF-3235

(2) Title: 324 Building Fire Hazards Analysis Implementation Plan

Change Control Record

(3) Revision	(4) Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		(5) Cog. Engr.	(6) Cog. Mgr. Date
0	(7) Initial release 9/16/98, EDT-623093		
1 RS	Revision of document to incorporate comments ECN-653460	NF Barilo 5/10/99	TL Erickson 5/10/99

324 Building Fire Hazards Analysis Implementation Plan

May 1999

prepared for:

United States Department of Energy, Richland Operation Office
Richland, Washington

prepared by:

B&W Hanford Company

EXECUTIVE SUMMARY

In March 1998, the 324 Building Fire Hazards Analysis (FHA) (Reference 1) was approved by the U.S. Department of Energy, Richland Operations Office (DOE-RL) for implementation by B&W Hanford Company (BWHC). The purpose of the FHA was to identify gaps in compliance with DOE Order 5480.7A (Reference 2) and Richland Operations Office Implementation Directive (RLID) 5480.7 (Reference 3), especially in regard to loss limitation. The FHA identified compliance gaps in six areas and provided 20 recommendations to bring the 324 Building into compliance with DOE Order 5480.7A. Additionally, one observation was provided. A status is provided for each recommendation in this document.

The actions for recommendations associated with the safety related part of the 324 Building and operation of the cells and support areas were evaluated using the Unreviewed Safety Question (USQ) process.

BWHC will use this Implementation Plan to bring the 324 Building and its operation into compliance with DOE Order 5480.7A and RLID 5480.7.

TABLE OF CONTENTS

LIST OF TABLES

TERMS

BWHC	B&W Hanford Company
D&D	Decontamination and Decommissioning
DOE	U.S.Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
ECN	Engineering Change Notice
ERC	Environmental Restoration Contractor
FHA	Fire Hazards Analysis
FPE	Fire Protection Engineer
FSM	Fire Systems Maintenance
HEPA	High-Efficiency Particulate Air
HFD	Hanford Fire Department
JCS	Job Control System
MPFL	Maximum Possible Fire Loss
NFPA	National Fire Protection Association
PNNL	Pacific Northwest National Laboratory
PRC	Plant Review Committee
REC	Radiochemical Engineering Cells
RFAR	Radio Fire Alarm Signal
RLID	Richland Operations Office Implementation Directive
ROM	Rough Order of Magnitude
SAR	Safety Analysis Report
SMF	Shielded Materials Facility
UL	Underwriter's Laboratories
USQ	Unreviewed Safety Question

324 BUILDING FIRE HAZARDS ANALYSIS IMPLEMENTATION PLAN

1.0 BACKGROUND AND PURPOSE

1.1 INTRODUCTION

This report addresses corrective measures taken to implement the recommendations contained in the 324 Building Fire Hazards Analysis (FHA) (Reference 1). The FHA was performed by Hughes Associates, Inc., in September 1997. The FHA was based on U.S. Department of Energy (DOE) Order 5480.7A, "Fire Protection" (Ref. 2), and Richland Operations Office Implementation Directive (RLID) 5480.7, "Fire Protection" (Ref. 3). This Implementation Plan provides a summary of the FHA recommendations and actions.

1.2 PURPOSE

The FHA was performed to analyze the loss potential of an accident in accordance with the guidelines contained in DOE Order 5480.7A and RLID 5480.7. The order and directive contain guidelines that are required to be reviewed. In addition, the order and directive require compliance with certain national codes and standards, such as the National Fire Protection Association (NFPA). The FHA documents the status of the facility at meeting the guidelines, codes, and standards, and provides recommendations to bring the facility into compliance.

This Implementation Plan addresses BWHC's actions associated with each FHA recommendation/observation to bring the 324 Building into compliance with DOE Order 5480.7A and RLID 5480.7

2.0 SUMMARY/RESULTS

The FHA performed by Hughes Associates, Inc., was a comprehensive review of this facility shortly after it was transferred from operation and control of Pacific Northwest National Laboratory (PNNL) to BWHC.

The FHA for the 324 Building included 20 recommendations and one observation. Fourteen recommendations and the one observation are associated with facility operations. Six of the recommendations are related to the future shut down activities of the facility. This plan outlines BWHC's actions for addressing the FHA recommendations.

3.0 STATUS

The recommendations are shown as they appear in the FHA (Reference 1) followed by the actions planned or completed for each recommendation and their current status.

REC 4-1

During the walkdown, it was observed that the suspended ceiling in Room 115 (presently used for storage) has been removed. Consequently, the pendent sprinklers are located approximately 2 feet below the true ceiling. To ensure the effectiveness of the sprinkler system, the suspended ceiling should be reinstalled or the sprinklers should be relocated to within 12 inches of the true ceiling as required by NFPA 13, Article 4-6.4.1.

A walkdown of the room was performed as the part of July 1998 Fire Protection Assessment and it was verified that the ceiling had not been replaced. Fire System Maintenance will raise the branch lines to accommodate the code exception for allowing sprinklers deflectors to be 22-inches from the ceiling (NFPA 13 4-6.4.1.2). Fire System Maintenance Job Control System (JCS) Work Package 2G-98-9157/M was generated to perform this work. An Engineering Change Notice (ECN) will be prepared to correct drawing H-3-27926 for changing the heads from pendent to upright. The associated JCS package will be planned, scheduled, and worked.

Status: Open. Estimated completion date - June 30, 1999.

REC 4-2

The monthly "front button" test of the radio fire alarm signal (RFAR) box as stipulated by HNF-PRO-351, Project Hanford Policy and Procedure System, system testing/inspecting and maintenance is not being conducted at Building 324 or throughout the site. Implementation of this test procedure, or formal disposition of why implementation is not required is recommended.

This testing is being performed in accordance with Fire System Maintenance (FSM) Procedure FS0003, Revision 0 / Change C. A review of the records for the RFAR front button test was conducted by a qualified Fire Protection Engineer (FPE). The records indicate that this test is being performed as required by HNF-PRO-351, Table 2. This recommendation is completed.

Status: Closed.

REC 5-1

As part of compliance with DOE Order 5480.7A, Section 9.b. (3)(b), administrative controls to restrict the total quantity and type of combustibles that can be in a particular cell or airlock shall be implemented. For B-Cell, the Radiochemical Engineering Cell (REC) airlock, South Cell, East Cell, and the Shielded Materials Facility (SMF) airlock, areas where flashover is not expected to occur, the quantity of any single combustible material should be no greater than the quantities listed in Table 5-26 below:

Table 5-26 - Maximum Quantities of a Single Combustible Material

Cellulose Material (wood, paper, cloth) (kg)	Plastics (kg)
540	100

The cell combustible loading limits identified by the FHA are very restrictive, and in some cases, impossible to implement. Many of the cells are equipped with fixed combustibles (cranes, etc.), which alone exceed the cell limits. In other cases there is no practical way to implement these controls and proceed with cell cleanout. In the previous revision of this implementation plan, the combustibles associated with the cranes were considered isolated from the cell inventory by location, however the technical basis for that decision was not formalized and it is BWHC's intent to address the crane combustibles in the next FHA revision.

As part of the Safety Analysis revision, work has been initiated to reevaluate the assumptions and analyses from which the combustible control limits are based. This effort is necessary to form the proper basis for safety and operation of the cells. Early results indicate that there is a technically justifiable basis for increasing the limits. During the interim, BWHC will implement the revised combustible load limits as they are developed and concurred with by FDH. Revision of the FHA is estimated to be complete by September 30, 1999.

The airlock involves a more complicated control strategy because of the transient nature of many combustibles (introduction of material into any cell requires passing through the airlock, any one or all of 5 different cranes can be in the airlock at any time,). This will be a long term situation throughout REC deactivation. Concurrent with this activity, BWHC is pursuing an evaluation for providing fire detection/suppression in the Airlock as an alternative to combustible loading limitations. This evaluation could provide a more cost effective means for ensuring safe operation in the Airlock.

Status: Open. Estimated Completion Date - September 30, 1999.

REC 5-2

As part of compliance with DOE Order 5480.7A, Section 9.b.(3)(b) for cells where flashover can occur, the maximum quantity of mixed combustible materials shall not exceed the values listed in Table 5-27 below.

Table 5-27 - Maximum Quantities of Combustible Materials

Cell Identification	Cellulose Material (wood, paper, cloth) (kg)	Plastics (kg)
A	59	22
C	35	13
D	43	16

See the action for REC 5-1 above.

REC 5-3

As part of compliance with DOE Order 5480.7A, Section 9.b. (3)(b), in order to preclude a fire in a hot cell from involving mineral oil from a failed hot cell window, quantities of combustible materials shall be limited to 18 lbs (8.4 kg) with 3 ft (0.91 m) from the surface of any hot cell shield window.

Combustible inventories limits (for the cell windows) have been implemented for B-Cell through procedure 3I-SOP-G-22, *Hot Cell Combustible Material Inventory*. This procedure will be expanded to include all REC Cells and the Airlock. These procedure will be updated as work is completed per REC 5-1.

The SMF cells will be reevaluated prior to any significant deactivation activities (within SMF). This path is utilized due to the low risk of fire initiation within proximity of the windows and high resource demands for performing this activity.

Status: Open. Estimated Completion Date for reanalysis and FHA revision - September 30, 1999.

REC 5-4

In order to prevent a flammable/combustible liquid fire in the truck lock area for exposing and potentially causing structural column failure and resulting in a breach of confinement, the three exposed steel columns shall be coated or protected in accordance with the requirements for a 2-hour fire-rated assembly. Implementation of this recommendation ensures that LCO 2.1, Exhaust System High-Efficiency Particulate Air (HEPA) Filtration, is maintained during the fire condition and serves to satisfy DOE 5480.7A, Section 9.b.(12).

Initially it did not appear that providing this protection was supported from a cost-benefit standpoint. However, the implementation of this recommendation is currently under reevaluation, as there is a new project, the Liquid Waste Handling System, considering use of the truck lock

(modifications include process piping and possibly an extension of the building). Column protection will be reevaluated based on this project and the potential loss associated with newly introduced materials.

Status: Open. Reevaluation of this recommendation will be performed in conjunction with the project. Estimated reevaluation completion date - September 30, 1999.

REC 5-5

(1) Consistent with HNF-PRO-359, Section 2.3, ensure only that only noncombustible insulating materials are placed in direct contact with heat generating sources.

(2) In accordance with HNF-PRO-359, Section 2.3, ensure that combustible waste is collected only in metal containers provided with lids.

(3) Perform documented monthly housekeeping inspections as required by HNF-PRO-368, Project Hanford Policy and Procedure System for Laboratories.

The facility follows HNF-IP-1264, *324/327 Facilities Stabilization Projects Administrative Manual*. Specifically, Section 1.4, *Fire Protection*, requires the facility comply with the requirements of HNF-PRO-359, thus ensuring the first two items of this recommendation are complied with.

Documented monthly housekeeping inspections are conducted in this facility in accordance with SI-300 Area-015, *Housekeeping Program*. The standing instruction requires a monthly housekeeping inspection for all areas of the facility, and requires senior management participation. This standing instruction meets the intent of the HNF-PRO-368. The recommendation is considered closed.

Status: Closed.

REC 5-6

Eliminate the practice of storing bagged low level combustible waste materials on the floor or in open plastic material containers in Radiological Support Area, Room 147. In accordance with HNF-PRO-359, Section 2.3, ensure that low level waste materials awaiting compaction are only collected and stored in metal containers provided with lids.

The room is used for compaction of solid low-level waste. Per the recommendation, a metal container with a lid will be provided for the storage of material awaiting compaction. The procedure (#3I-SOP-REC-F-13, *Radioactive Waste Compactor Operations*) will also be changed to ensure that material is stored in the container, not on the floor.

Status: Open - Estimated completion date - August 31, 1999.

REC 5-7

RLID 5480.7, Section 8.2.c, stipulates that the level of fire protection for nuclear facility final exhaust/confinement HEPA filter shall be determined using the Filter Plenum Fire Protection Criteria contained in the DOE Fire Protection Resource Manual. The DOE Filter Plenum Fire Protection Standard, Section 8.2, stipulates fire screens must be located upstream of the final filter plenum in order to stop burning embers from reaching the final exhaust filters. Based on consultation with cognizant building personnel, the Zone I and Zone II HEPA filters are not provided with fire screens. Since burning embers could result in a HEPA filter fire, installation of fire screens is required.

The cost to provide fire screens is high due to the locations, contamination levels, etc. PNNL Engineering Request No. 4082 was started in 1992 and PNNL Project D-326 was subsequently initiated in 1993 to address the addition of fire screens in the ducts. Project D-326 was never funded, so formal cost estimates were not prepared. A rough order of magnitude estimate for providing the fire screens is $240,000. If the screens are installed, the project design will need to accommodate for lint buildup, cleaning of screens, reduced airflows, and higher differential pressures.

The FHA derived limited benefits from installation of fire screen in the ducts. The 324 Building Safety Analysis Report (SAR) does not take credit for the fire screens in its accident scenario. As the capital cost of installing fire screens appears to outweigh the benefits derived, an exemption request will be transmitted to DOE-RL.

Status: Open. An exemption request will be submitted by September 30, 1999.

REC 7-1

Completion of the corrective action for each of the deficiencies cited below to comply with the applicable NFPA 101 requirement is required.

Stair #6

- **Room #20, the elevator machine room, opens directly into the exit stair at basement level. The room contains a reservoir for combustible hydraulic fluid. This configuration is prohibited by NFPA 101, Article 5-1.3. Of particular concern is the potential for a fire involving the fluid to spread to the stair, filling it with it products of combustion and making the stair untenable. To limit this potential, construction of a dike within the room designed to contain a fluid spill within the confines of the room is recommended.**

- **The door serving Room #21, basement level does not latch as required by NFPA 101, Article 5-2.1.7.1. Repair/replacement of the existing hardware is required.**

- **The pair of double doors serving Room #18 are not equipped with automatic closures as required by NFPA 101, Article 5-2.1.8. Installation/replacement of automatic closures is required.**

Work Package 31-98-064 (installation of the curb in Room 20) is currently in planning. A work package will also be completed for the door serving Room #21. A walkdown of the doors into Room 18 was completed on March 31, 1999. The doors to Room 18 have been repaired.

Status. Bullet #3 is closed. The estimated completion date for the first two items is August 31, 1999.

Stair #2

- **The basement level of stair #2 contains two dry-type transformers. This configuration is prohibited by NFPA 101, Articles 5-1.2 and 5-1.3.1. Of particular concern is the potential for the equipment to overheat, generate products of combustion and make the stair untenable. Removal of this equipment is required. Alternatively, separate this equipment from the stair by 2-hour fire-rated construction.**

The basement level of Stair 2 contains two dry-type transformers as noted in the FHA. Additionally, a third transformer is located on the third floor. The concern can be corrected in one of two ways. The first option is to relocate the transformers, wiring, and related equipment to another location. This has an estimated cost of $400,000 to complete. The other option is to enclose the transformers in a two-hour fire-rated enclosure. For the basement level transformers, this has an estimated cost of $25,000 for the enclosure and about $50,000 to provide a new cooling source for the transformers. However, the transformer on the third floor must be relocated due to the limited available space. The relocation cost is estimated to be about $50,000. This corrective action will be accomplished via a capitally funded project that will identify the best option.

Status: Open. Funding request documents will be submitted by September 30, 1999.

- **The first floor stair #2 door adjoining corridor 11 is not fire-rated, non-latching and contains a plastic viewing panel. Replacement of the non-rated door with a 1½ fire-rated assembly is required. Recommendation has been completed.**

- **The third floor stair #2 door serving equipment Room 317 is fire-rated but has had the hardware removed. Reinstallation of latching hardware is required. Recommendation has been completed.**

A walkdown of the first floor door was completed on March 31, 1999. The door has been replaced. The third floor door has inappropriate hardware and unsealed penetrations, and will be replaced by August 31, 1999.

Status: Bullet #1 is complete. The third floor door will be replaced by August 31, 1999.

Stair #8

- **The third floor landing of stair #8 contains a hand and foot monitor no longer in service. This is prohibited by NFPA 101, Article 5-1.3.4. Removal of the hand and foot monitor is required.**

Work Package 3I-97-00842 has been planned for the removal of the hand and foot counter. Upon completion of this work, this item will be closed.

Status: Open. Estimated completion date - August 31, 1999.

REC 10-1

To comply with DOE Order 5480.7A, Section 9.b.(4)(b), ensure that the Zone I and Zone II exhaust ventilation systems are not capable of producing a ΔP across the HEPA filters $\geq$ 2.5 kPa (10 inches of water or more).

The report, "Completion of USQ Evaluation Closure of 324-BWHC-97-005, 324 Building Zone 1," documented the completion of Work Package 3I-97-00823. This work package modified belts/sheaves to lower the fan static pressure from 17 inches of water to less than 10 inches of water. This action closes out this recommendation.

Status: Closed.

REC 10-2

As part of compliance with DOE Order 5480.7A, Section 9.b.(3)(b), and as required by Section 8.i.(7), submit an equivalency request to DOE-RL requesting exclusion of sprinkler or other automatic fire protection from the hot cell areas. The equivalency request is considered justified based on the analysis contained in the FHA and the implementation of recommendations 5-1, 5-2, 5-3, and 10-1 above.

An exemption request, rather than an equivalency request, will be prepared by BWHC and transmitted to DOE-RL. This exemption will be justified based on the 324 Building FHA recommendation above.

Status: Open. An exemption request will be submitted by September 30, 1999.

REC 10-3

It is concluded that there are two potentially significant discrepancies between the SAR's "Major Fire" scenario and the FHA's MPFL:

(1) The ground release postulated by the SAR vs. the stack release postulated by the FHA; and

(2) The assumption and conditions necessary for each event to occur. The SAR defines the frequency of the Major Fire as "extremely unlikely." Although, the FHA does not assign frequency, it concludes that a fire involving a relatively small quantity of combustibles (8.4 kg) in a hot cell and located in close proximity to a hot cell shield window can lead to consequences consistent with the "Major Fire" postulated by the SAR and comparable with the MPFL event. Further, this scenario is not dependent on the primary assumptions cited by the SAR for placing the "Major Fire" in the "extremely unlikely" category. Since fires in hot cells are expected, it appears that the frequency of this FHA fire scenario could be greater than "extremely unlikely" and have consequences consistent with the "Major Fire."

Consistent with the guidance given in WHC-SD-GN-FHA-30001, Integration of Fire Hazards Analysis and Safety Analysis Report Requirements, these discrepancies warrant further evaluation to determine the potential impact to the building's authorization basis.

The fire event is consistently modeled for both scenarios in the SAR and FHA, but the radiological release was analyzed differently to assess the bounding condition for each document. The ground release scenario described in the SAR is more conservative in terms of dose consequences than a stack release and, as such, is the bounding analyzed accident in the SAR. A stack release disperses material more and therefore increases cleanup cost and is the bounding release for the FHA. However, accidents in the SAR were reviewed as a result of the FHA and it was determined that the assumptions of the localized fire in the SAR were in question. A USQ evaluation concluded that a potential for the fans to fail the plugged HEPA filters by breach existed. A USQ was declared. The fan speed was reduced to eliminate the potential for the fans to breach the filters. This placed the facility within the assumptions of the SAR. USQ evaluation "324 Building Zone 1 Fan Modification," 324-BWHC-97-017, concluded that the facility was again operating in accordance with SAR assumptions. This evaluation will be incorporated into the SAR in the annual update.

The major fire probability of the SAR was brought into question. A USQ screening indicated that, based on a lack of information, a USQ could not be dismissed. A probabilistic analysis was performed ("324 Building B Cell Fire Analysis," HNF-1637, Rev. 0) to evaluate the probability of a major fire in B Cell. USQ evaluation "324 Major Fire Probability Resolution for B Cell," 324-BWHC-97-017, was performed. On November 26, 1997, the Plant Review Committee (PRC) concurred with the USQ evaluation and concluded that a USQ did not exist. The probabilistic analysis was extrapolated from and extended to cover the other hot cells in the USQ evaluation, "324 Major Fire Probability REC and SMF Hot Cells," 324-BWHC-98-055. The PRC

reviewed the USQ evaluation and concluded on June 22, 1998, that a USQ did not exist for other hot cells. The definition of Best Protected Class of Fire Protection was revised in the fire protection program. The results of the above evaluations were incorporated into the SAR during the annual update.

Status: Closed.

REC 11-1

> **The Hanford Fire Department has prepared a pre-fire plan. The pre-fire plan was last updated December 1995. It is scheduled for revision and update in 1998. Per the Hanford Site Fire Department Needs Assessment [Westinghouse Hanford Company, 1996], updating of pre-fire plans for in-use facilities having a replacement cost value equal to or greater than $50 million is required annually. The current replacement costs of the Building 324 is estimated at $48,065,140 and total content replacement costs at $2,946,797, for a combined value of in excess of $50 million. Also, given the potential for a fire with significant fire loss, annual revision and update of the pre-fire plan is recommended.**

The 324 Building Pre-Fire Plan was completed in December 1998. The next review/update will be performed in 2001. This item is complete.

Status: Closed.

FIRE PROTECTION FEATURES RELATIVE TO DECOMMISSION AND DEMOLITION ACTIVITIES

REC 18-1

> **For mixed use conditions, the building fire alarm system must be maintained as long as the conditions cited by NFPA 101, Article 5-2.1.1.3 apply. At some point, during the decommission and demolition activity process, should the building fire alarm system must be maintained as long as the conditions cited by NFPA 101, Article 28-3.4.1 apply.**

Recommendations 18-1 through 18-6 are applicable to the facility during the future decontamination and decommissioning (D&D) activities. These recommendations will be applicable when the building is turned over from Facility Transition Operations to the Hanford Site's Environmental Restoration Contractor (ERC). Therefore, these recommendations will not be addressed at this time.

Status: No action required at this time. These issues will be addressed as part of the facility D&D plan.

REC 18-2

To comply with DOE Order 5480.7A, Section 9.b.(3)(b), and consistent with RLID 5480.7, Section 8.3a, the fire protection water supply to the building fire protection systems as well as the hydrants must be maintained as long as the fire loss potential exceeds $1 million.

See REC 18-1.

REC 18-3

The REC and SMF cells and airlocks are protected with manual deluge fire suppression and in the case of the SMF South cell, a dry chemical fire extinguisher manifold to enable the manual discharge of a fire extinguisher from the gallery side. The FHA indicates that a relatively small fire could cause damage to a hot cell shield window and result in a mineral oil fire which clogs the HEPA filters. Under worst case conditions, an uncontrolled release of radiological materials is postulated. Consistent with RLID 5480.7 criteria, these manual suppression systems must be maintained until the radiological materials within the REC and SMF cells and airlocks are removed.

See REC 18-1.

REC 18-4

A reduction in the number of extinguishers that are maintained may be appropriate at some point during D&D. This reduction should be reviewed and approved by the cognizant fire protection engineer.

See REC 18-1.

REC 18-5

Consistent with the criteria for occupancy cited in NFPA 101, Article 5-2.1.1.3, and RLID 5480.7, Section 8.3.c, maintain fire rated stair enclosures until building occupancy is limited to no more than 10 people.

See REC 18-1.

REC 18-6

The fire rated partitions separating the office addition and the high bay addition from the original Building 324 reduce the potential monetary loss due to fire but are not required for life safety. Consistent with RLID 5480.7, Section 8.3.b, to limit the fire risk associated with radiological material release, maintaining these fire rated partitions until the radiological materials are removed is recommended.

See REC 18-1.

OBSERVATIONS

Observations address issues which are not mandatory to comply with mandatory fire protection criteria, but are considered to be consistent with the requirements for the best protected class of industrial risks cited by DOE Order 5480.7A, Section 9.

Exposure Fire Potential

Observation 17-1

> **The only exposure identified within 6 m (20 ft) of the building is a trailer located approximately 10 feet from the north side of the Building 324 office addition. Removal/ relocation of the trailer away from Building 324 (at least 20 feet) is recommended.**

The trailer has been removed. The recommended action for this observation is complete.

Status: Closed.

4.0 REFERENCES

1. Hughes Associates, Inc., "324 Building Fire Hazards Analysis," HNF-SD-HT-FHA-002, Rev. 0, dated September 1997.

2. U.S. Department of Energy (DOE) Order 5480.7A, "Fire Protection."

3. Richland Operations Office Implementation Directive (RLID) 5480.7, "Fire Protection."

4. National Fire Protection Association (NFPA) 13, "Installation of Sprinkler Systems."

5. NFPA 101, "Life Safety Code."