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SEP 16 1999

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ENGINEERING DATA TRANSMITTAL

Page 1 of 3

1. EDT No. 610779

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Information Resource Management	PFP Facility Systems Engineering	N/A
5. Proj./Prog./Dept./Div.:	**6. Design Authority/ Design Agent/Cog Engr.:**	**7. Purchase Order No.:**
101400/B000	W. F. White	N/A
8. Originator Remarks: Initial release of supporting document.		**9. Equip./Component No.:** N/A
		10. System/Bldg./Facility: 99A//PFP
11. Receiver Remarks: **11A. Design Baseline Document?** ☒ Yes ☐ No		**12. Major Assm. Dwg. No.:** N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	HNF-5113	1-5	0	Criticality Alarm System Commercial Grade Item Critical Characteristics	SQ	2	1	

16. KEY

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

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN
2	1	Design Authority WF White 9/2/99 T4-20	3	1	Ind. Rev. MS Busch T4-20 9/7/99
		Design Agent			
		Cog.Eng.			
2	1	Cog. Mgr. GA Glover 9/16/99 T4-20			
2	1	QA D.R. Groth 9/12/99 T4-20			
2	1	Safety DA. Conners T4-20			
		Env.			

18.	19.	20.	21. DOE APPROVAL (if required)
WF White 9/2/99 Signature of EDT Originator / Date	Authorized Representative for Receiving Organization / Date	GA Glover 9/16/99 Design Authority/ Cognizant Manager / Date	Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

UNREVIEWED SAFETY QUESTION (USQ)

Identification Number: EDT-610779	USQ SCREENING	Page ~~1 of 2~~ 2 of 3

Title: PFP Criticality Alarm System Commercial Grade Item Critical Characteristics (HNF-5113, Rev 0)

INSTRUCTIONS: Respond to each question and provide justification for each response. A restatement of the question does not constitute a satisfactory justification or basis. An adequate justification provides sufficient explanation such that an independent reviewer could reach the same conclusion based on the information provided [DOE 5480.21, 10.e.1].

DESCRIPTION
This is a new document to identify the critical characteristics for CGI items purchased for the Criticality Alarm System.

INTRODUCTION
No information in this document affects the configuration of components in the facility or descriptions in the Authorization Basis documents.

AFFECTED SSC
This affects the purchase of items for the criticality alarm system.

AUTHORIZATION BASIS
Of the documents identified as a part of the Authorization Basis in FSP-PFP-5-8, Section 2.23, Appendix A, Revision 18, the following documents apply:
- WHC-SD-CP-SAR-021, *Plutonium Finishing Plant Final Safety Analysis Report*, Revision 1
- HNF-SD-CP-OSR-010, *PFP Operational Safety Requirements (OSR)*, Revision 0-K

CONCLUSION
The change identified is within the bounds of the Authorization Basis. All screening questions have been answered "No" or "N/A" so a USQ Evaluation is not required. No changes to the Authorization Basis are required.

REFERENCES
The following documents were used as references to this screening:
- HNF-SD-CP-SDD-003, *Definition and Means of Maintaining the Criticality Detectors and Alarms Portion of the PFP Safety Envelope*, Revision 7

Questions

1. Does the proposed activity or occurrence represent a change to the facility or procedures as described in the AUTHORIZATION BASIS?

   ☐ N/A ☒ No ☐ Yes/Maybe

   Basis: WHC-SD-CP-SAR-021, PFP Safety Analysis Report, (SAR) Section 5.4.10.1.7, pages 5-125 and 5-126, *CAS*, describes in very general terms the criticality alarm system. SAR Section 8.3.4.1, pages 8-29 to 8-33, *Criticality Alarm System*, discusses the standards, alarm response, system description, basic system operation and general locations in the plant. SAR Section 9.2.3, pages 9-145 to 9-160, *Criticality*, and 9.2.4.2.11, pages 9-182 to 9-200, *Accident Scenarios-Criticality*, discuss criticality accidents, but do not mention nor refer to the criticality alarm system. None of these sections are affected by this new document since the same physical relationship is maintained.

   WHC-SD-CP-OSR-010, *Operational Safety Requirements for the Plutonium Finishing Plant*, (OSR) Section 3.1.2, pages 3.1-6 to 3.1-11, *Criticality Detectors and Alarms*, provides the actions to be taken in the event of the system or a component being declared inoperable. Page 3.1-12 of this section also includes the surveillance requirements for the proper operation of the system. The OSR Section B 3.1.2, pages A 3.1-6 to A 3.1-16, provides a discussion of the bases of the requirements of Section 3.1.2. Page A 3.1-15 discusses the surveillances and their bases. The discussion is general in nature and is not affected by this document.

UNREVIEWED SAFETY QUESTION (USQ)

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2. Does the proposed activity or occurrence represent conditions that have not been analyzed in the AUTHORIZATION BASIS?

☐ N/A ☒ No ☐ Yes/Maybe

Basis: The criticality alarm system does not prevent nor initiate a criticality; its role is to minimize plant personnel exposure to the radiation from a criticality event. The document does not represent an unanalyzed condition since failure of any portion of the system in no way poses a danger to off-site personnel.

3. Does the proposed activity represent a test or experiment NOT described in the Authorization Basis that may affect the safe operation of the facility?

☒ N/A ☐ No ☐ Yes/Maybe

Basis: This USQ is not evaluating a test or experiment and so this question is not applicable.

4. Does the proposed activity or occurrence represent a change to the Technical Safety Requirements or a reduction in the margin of safety defined in the Technical Safety Requirements?

☐ N/A ☒ No ☐ Yes

Basis: This new document will not require a new TSR nor will it require the modification of an existing TSR.

USQE #1 W.F. White (Print Name)

W.F. White Signature Date: 9/2/99

USQE #2 M.S. Busch (Print Name)

Signature Date: 9/7/99

If there is a YES/MAYBE response to questions 1, 2, 3, or 4, then a USQ Evaluation must be completed.

The following guidance should be considered when completing this screening. This guidance should not be considered all-inclusive; additional factors may need to be considered depending on the nature of the proposed change.

Does the proposed change:

1) Modify, add, or delete a safety class function of a structure, system or component stated in the authorization basis?
2) Alter the design of a structure, system or component as described in the authorization basis?
3) Modify, add, or delete the description of operation, operating environment, or analyses of any system or component described in the authorization basis?
4) Modify, add, delete or conflict with any of the design bases stated in the authorization basis?
5) Conflict with the principle or general design criteria stated in the authorization basis?
6) Modify, add, or delete any plant design features described in the authorization basis?
7) Modify, add, or delete a flow diagram or facility drawing provided in the authorization basis?
8) Create the potential for new system or component interactions (e.g., seismic, electrical breaker coordination)?

S

PFP CRITICALITY ALARM SYSTEM COMMERCIAL GRADE ITEM CRITICAL CHARACTERISTICS

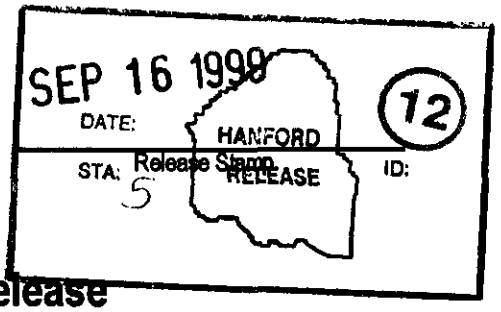
W. F. White
B&W Hanford Company, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 610779 UC: 506
Org Code: 15510 Charge Code: 101400
B&R Code: EW7002000 Total Pages: 5

Key Words: PFP, Criticality Alarm System, CGI, Critical Characteristics

Abstract: This documents defines the critical characteristics of Commercial Grade Items procured for use in PFP's Criticality Alarm System.

Release Approval 9/16/99 Date



Approved for Public Release

1.0 PURPOSE

This document specifies the critical characteristics for Commercial Grade Items (CGI) procured for PFP's criticality alarm system as required by HNF-PRO-268 and HNF-PRO-1819. These are the minimum specifications that the equipment must meet in order to properly perform its safety function. There may be several manufacturers or models that meet the critical characteristics for any one item.

2.0 BACKGROUND

PFP's Criticality Alarm System includes the nine (9) criticality alarm system panels and their associated hardware. This includes all parts up to the first breaker in the electrical distribution system. Specific system boundaries and justifications are contained in HNF-SD-CP-SDD-003, "Definition and Means of Maintaining the Criticality Detectors and Alarms Portion of the PFP Safety Envelope." The procurement requirements associated with the system necessitates procurement of some system equipment as Commercial Grade Items in accordance with HNF-PRO-268, "Control of Purchased Items and Services."

3.0 SCOPE

The following list of critical characteristics details the minimum specifications for the standard industry equipment used in the system. The critical characteristics are verified through a combination of receipt inspections and installation testing.

The following characteristics assume the new part is either the same manufacturer and part number or a replacement part specified by the vendor. Further information for the listed equipment is available from the appropriate Vendor Information (VI) files.

4.0 CRITICAL CHARACTERISTIC LISTING

1. Criticality Alarm Horns

Critical Characteristics

- Power – 24 VDC
- Separate power and signal connections
- Less than 115 dB (referenced to 20 μN/m2) A-weighted sound level at full power
- Directional horn speaker
- Greater than 10 watts at maximum signal

2. Criticality Alarm Horn Amplifier

Critical Characteristics

- Provide between 75 dB and 115 dB one (1) foot from in front of the horn of the speaker.

3. Criticality Alarm Horn Connector Card

Critical Characteristics

- Provide between 75 dB and 115 dB one (1) foot from in front of the horn of the speaker.

4. Criticality Alarm ASG Amplifier

Critical Characteristics

- Near at least one CAH powered by that amplifier, the horn provides between 75 dB and 115 dB one (1) foot from in front of the horn of the speaker.

5. Criticality Alarm Flashers

Critical Characteristics

- Power – 24 VDC
- UL or CSR listed for intended use
- Produces a flashing blue light when power applied
- Approximately one amp draw during operation

6. Resistors (generic item)

Critical Characteristics:

- Specified resistance
- Power rating
- Tolerance

7. Fuse Holders (generic item)

Critical Characteristics:

- Holds specified sized fuse
- Specified connections

8. Fuses (generic item)

Critical Characteristics:

- Specified size (e.g., 3AG)
- Specified amperage rating (e.g., 10 amp, slow blow)
- Specified voltage rating (e.g., 250 VAC)

9. Transistors/Diodes (generic items)

Critical Characteristics:

- Transistor or diode designation

10. Relays (generic item)

Critical Characteristics:
- Base or socket configuration as specified.
- Contact rating as specified.
- Coil voltage as specified.
- 80% Pickup voltage.

11. Criticality Battery Unit

Critical Characteristics
- Calcium lead-acid battery
- 3 cells in jar
- 100 AH capacity

12. Criticality Battery Charger

Critical Characteristics
- Output - 24 VDC, 40 amp
- Output is filtered to reduce ripple on the DC
- Dry contacts for Loss of AC and Loss of DC (<24 VDC) open on alarm.

13. CAP Z-7 UPS Replacement Batteries

Critical Characteristics
- Designed for American Power Conversion Matrix 5000
- Extended Run battery (XR series)

14. CAP Z-7 UPS Complete Replacement

Critical Characteristics
- Input power – 240 VAC
- Rack mount (19 inch rack)
- Maximum vertical size (all components in rack) – 42 inches
- Power output – 120 VAC, 1500 Volt-amps
- Minimum time at rated load – 8 hours
- Trouble signals for – loss of AC input, loss of battery backup, loss of AC output

15. Wire (generic item)

Critical Characteristics:
- Specified wire size
- Insulation
- Number of conductors

3.0 REFERENCES

A. HNF-PRO-268, "Control of Purchased Items and Services," Rev. 3.

B. HNF-PRO-1819, "PHMC Engineering Requirements," Rev. 3.

C. HNF-IP-1115, "Nuclear Criticality Alarm Manual for the Plutonium Finishing Plant"

D. HNF-SD-CP-SDD-003, "Definition and Means of Maintaining the Criticality Detectors and Alarms Portion of the PFP Safety Envelope"