ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **654033**Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. TA Nuxall, SNF CVD, R3-86, 372-3739	4. USQ Required? ☐ Yes ☒ No	5. Date 7/26/99
	6. Project Title/No./Work Order No. W-441 Spent Nuclear Fuel Cold Vacuum Drying	7. Bldg./Sys./Fac. No. CVDF	8. Approval Designator SQ
12a. Modification Work ☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. N/A	12c. Modification Work Complete N/A Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECN only) N/A Design Authority/Cog. Engineer Signature & Date
13a. Description of Change Clarification that either Whitey or Swagelok is acceptable for Nameplate marking.			
13b. Design Baseline Document? ☐ Yes ☒ No			
14a. Justification (mark one) Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐			
14b. Justification Details RFI HE-064.			
15. Distribution (include name, MSIN, and no. of copies) See Distribution		RELEASE STAMP JUL 30 1999 DATE: HANFORD STA: RELEASE ID: (15) #4	

654033

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WHITEY GAUGE/ROOT VALVES (VPS)

Carl Van Katwijk
Numatec Hanford, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

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Key Words: Whitey Gauge/Root Valves

Abstract: Whitey Gauge/Root Valves

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Genis Braden
Release Approval

7/30/99

Date

Approved for Public Release

RECORD OF REVISION

(1) Document Number	
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SNF-3884

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(2) Title

WHITEY GAUGE/ROOT VALVES (VPS)

Change Control Record

(3) Revision

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

Authorized for Release

(5) Cog. Engr.

(6) Cog. Mgr.

Date _____

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1

ECN 653776, REVISION TO MEET SEL REV. 6

2

RS

ECN 654033, CLARIFICATION OF MANUFACTURER

CKM 7/16/99 7/27/99

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

Section 1 Part Information									
Item No.: NA	Manufacturer:	Supplier:							
Mfg. Part/Model No.:	Supplier's P/N:								
Part Description:									
End Use Description:									
Section 2a Component Information									
Equipment No.: VPS-V- *059, & *061 (System 7) He-V-*014 (System 13)	Specification No.: W-441-P4, Rev. 2	Manufacturer: Whitey Co./Swagelok	Past P.O. No.: NA						
Procurement and/or Model No.: SS- 6PNBGM8-F8	Equipment Supplier (if different from manufacturer): TBD	Equip. Supplier's Part No.: NA							
Component Description: These valves are ½" ball valves fabricated of 316 stainless steel. Packing is TFE (standard). They are used as isolation valves for pressure instrumentation in the Vacuum Pumping and Helium System.									
Section 2b Commercial Availability of the Item									
<p>1. Is the Item available from a catalogue of a qualified NQA1 supplier? (coordinate with project CGI interface Engineer or BTR)</p> <p>☐ YES (go to #2 below)</p> <p>☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)</p> <p>If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate with project CGI interface Engineer or BTR)</p> <p>☐ YES (go to #2 below, then go to procedure step 6.3.2, proceed to dedicate Item)</p> <p>☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)</p>									
<p>2. List of Candidate qualified suppliers or ISO 9000 suppliers</p> <table border="1"><thead><tr><th>company name & type</th><th>contact name</th><th>phone</th></tr></thead><tbody><tr><td colspan="3">NA</td></tr></tbody></table>				company name & type	contact name	phone	NA		
company name & type	contact name	phone							
NA									
3. Recommended Procurement Strategy(coordinate with project CGI interface Engineer or BTR): NA									
Section 2c CGI Determination									
<p>1. Question #1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities?</p> <p>☐ YES (the Item is not commercial grade)</p> <p>☒ NO (continue)</p>									
<p>2. Question #2: Is the Item used in applications other than nuclear facilities or activities?</p> <p>☐ NO (the item is not commercial grade)</p> <p>☒ YES (continue)</p>									

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3. Question #3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the published product information (eg., manufacturer's catalog)?

☐ NO (the Item is not commercial grade)

☒ YES (continue)

☒ All three criteria have been satisfied. The Item meets the definition of commercial grade.

Section 2d Reason for Dedication

The above described Item is being Dedicated for use in the application cited for the following reason(s):

☒ Item is being purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Class application.

☐ Item is being purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Significant application.

☐ Item was purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Class application.

☐ Item was purchased from a non ESL manufacturer supplier as commercial grade to be used in a Safety Significant application.

☐ Other ('like-for-like', similar, substitution, replacement evaluation)

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

1. **Pressure boundary integrity/confinement. Prevents air inleakage into the Vacuum Pumping System during normal operation. Prevent H₂ explosion.**

2. **Maintain pressure boundary before and after seismic event.**

B. Part/Component Functional Mode:

Safety Function #1:

☐ Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function

☒ Passive – Change of state is not required for the component to perform its safety function

Safety Function #2:

☐ Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function.

☒ Passive – Change of state is not required for the component to perform its safety function

Safety Function #3:

☐ Active – Mechanical or Electrical change of state is required to occur for the component to perform its safety function.

☐ Passive – Change of state is not required for the component to perform its safety function

C. Host Component Safety Function (if applicable): **NA**

1.

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):

1. Pressure boundary failure. Would permit air inleakage to the MCO during the vacuum phase and would permit a gaseous release if the system is under pressure.

Section 4 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required:

Yes ☐No ☒**Environmental Condition B**

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes ☒No ☐**HNF-PRO-97, Rev. 0****W-441-P4, Rev. 2**

If yes: NPH Design Requirements

Performance Category: **PC-3**NPH Design Req'ts.: **Seismic Condition B**Required Safety Functions: **Maintain Pressure Boundary/Confinement; Prevent H2 Explosion; Maintain pressure boundary before and after Seismic event.**

Section 5 Component Functional Classification

☒ Safety Class (SC)☐ General Service☐ Safety Significant (SS)If part/component classification is different from host component/system, document basis. **NA**

Section 6 (Reserved)

Section 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards:

ASME B 31.3Safety Analysis Report (SAR): **HNF-****SD-SNF-SAR-002, Rev. 4A**Drawings: **H-1-82161, Rev. 2****HNF-SD-SNF-SEL-002, Rev. 6A**Vendor Manual/Manufacturer/Supplier Information: **Whitey Co. W-1086**Other: **NA**

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

Section 9 Critical Characteristics

Critical Characteristics Verification Document: Vendor Specifications; HNF-SD-SNF-SEL-002, Rev. 6A	Acceptance Criteria/Tolerances	Acceptance Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Nameplate - Manufacturer	Whitey Co./Swagelok (Note 5)	1, IN	X	
Valve-Component Number-Procurement and/or Model Number	SS-6PNBGM8-F8, (Per Procurement Package W-441-P4, Rev. 2, Section H, Design Data Sheet)	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Valve Body Material	Stainless steel (Note 4)	1, IN 1, T	X	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Pressure Boundary	Pressure Test at 165 psig (No Leakage) Note 2	1, T		X
Internal Pressure	150 psig and full vacuum	1, T		X
Valve Seat Leakage	<0.1 scc/min N ₂ @ 150 psig	1, T		X
Environmental	Note 1			
Seismic Condition B	Note 3	1, T		X
4. Notes and Legend:		Acceptance Method:		
1. These valves do not have non-metallic parts that are subject to degradation from the 40°F and 60% RH or 115°F and 22% RH conditions and are suitable for Condition B application.		1. Special Test and Inspection 1, IN for Inspection 1, T for Test		
2. Pressure test at 110% of design accident condition pressure of 150 psig.		2. Commercial Grade Survey		
3. Maintain pressure boundary before and after seismic event. W-441-P4, Rev. 2, Appendix L, page L-8, provides a seismic testing plan for these components at a (TBD) seismic spectra. Equipment that has been shaker-table tested should not be installed in a plant (Ref. IEEE Standard 344-1984, Section 7). Consequently, the seismic test constitutes a destructive test. The industry sampling practice for destructive test is to test only one item.		3. Source Verification		
4. Material verification acceptance method may be by either inspection or test.		4. Vendor/Item History		
5. Either Whitey or Swagelok is acceptable.				

Section 10 Initial Review and Approval

Approvals:

Designated Engineer: *[Signature]* 7/26/99Design Authority: *[Signature]* 7/26/99QA Engineer: *[Signature]* 7/27/99

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WORKSHEET 1 DETERMINATION OF FAILURE MECHANISMS/MODES SECTION 1

Typical Failure Mechanisms	Definition	Applicable to Component under Evaluation	
Fracture	Separation of a solid accompanied by little or no macroscopic plastic deformation.	Yes []	No [X]; If Yes, indicate failure Mode _____
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.	Yes []	No [X]; If Yes, indicate failure Mode _____
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.	Yes []	No [X]; If Yes, indicate failure Mode _____
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.	Yes []	No [X]; If Yes, indicate failure Mode _____
Short Circuit	An abnormal connection by which an electrical current is connected to ground, or to some conducting body, resulting in excessive current flow.	Yes []	No [X]; If Yes, indicate failure Mode _____
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.	Yes []	No [X]; If Yes, indicate failure Mode _____
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.	Yes []	No [X]; If Yes, indicate failure Mode _____
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.	Yes []	No [X]; If Yes, indicate failure Mode _____
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.	Yes []	No [X]; If Yes, indicate failure Mode _____
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.	Yes []	No [X]; If Yes, indicate failure Mode _____
Mechanical Creep	From prolonged exposure to high temperature and stress, the object will show a slow change in its physical (shape and dimension) and mechanical characteristics.	Yes []	No [X]; If Yes, indicate failure Mode _____
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.	Yes []	No [X]; If Yes, indicate failure Mode _____
Section 2 Additional Failure Modes Applicable to the Component Under Evaluation			
1. Valve Body Break			

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

CHECKLIST 1

ACCEPTANCE METHOD 1

SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1

Item Description: **Whitey Gauge Root Valves**Equip #: **VPS-V-*059, & *061,**System #: **7 (VPS-V-*059, & *061)****HE-V-*014 (System 13)****13 (HE-V-*014)**Procurement and/or Model #: **SS-6PNBGM8-F8**

Manufacturer (Address/Phone):

Supplier (Address/Phone):

Whitey Co.**318 Bishop Road****Highland Heights, OH 44143**

P.O. #

SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.

Insp	Test	Post-Test	
☒	☐	☐	1. Nameplate - Manufacturer
☒	☐	☐	2. Valve-Component Number-Procurement and/or Model Number
☒	☒	☐	3. Valve Body Material (Verification may be by either inspection or testing)
☐	☒	☐	4. Pressure Boundary
☐	☒	☐	5. Internal Pressure
☐	☒	☐	6. Valve Seat Leakage
☐	☒	☐	7. Seismic Condition B

SECTION 3 BY INSPECTION

* See Attachment H of Desk Instruction for Sampling Size

Characteristic: **Nameplate - Manufacturer**Sample Size*: **All Items**Acceptance Criteria: **Whitey Co./Swagelok (Either Whitey or Swagelok is acceptable)**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Valve-Component Number-Procurement and/or Model Number**Sample Size*: **All Items**Acceptance Criteria: **SS-6PNBGM8-F8, (Per Procurement Package W-441-P4, Rev. 2, Section H, Design Data Sheet)**

Receipt Inspection Plan / Report #: _____

References (see Section 8): **Whitey Co. Manual Sheet W-1086, July 1991**

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

Characteristic: **Valve Body Material**

Sample Size*: **Normal Sampling Size**

Acceptance Criteria: **Stainless Steel**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

SECTION 4 BY SPECIAL TEST

* See Attachment H of Desk Instruction for Sampling Size

Test To Be Performed by:

☐ Purchaser

☐ Supplier/Manufacturer**

☐ Other

Number of Items to be Tested:

Test/Inspection Location:

Characteristic for Test: **Pressure Boundary**

Acceptance Criteria: **Pressure Test at 165 psig (No Bubbles)**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

Test Plan and Report #: _____ References (see Section 8): _____

Characteristic for Test: **Internal Pressure**

Acceptance Criteria: **150 psig and Full Vacuum**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

Test Plan and Report #: _____ References (see Section 8): _____

Characteristic for Test: **Valve Seat Leakage**

Acceptance Criteria: **< 0.1 scc/min N₂ @ 150 Psig**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

Test Plan and Report #: _____ References (see Section 8): _____

Characteristic for Test: **Seismic Condition B**

Acceptance Criteria: **Maintain Pressure Boundary Before and After Seismic Event**

Sample Size*: **Destructively Test Only One Item**

Actual Test Value:

Test Plan and Report #: _____ References (see Section 8): _____

**If Supplier/Manufacturer or Other, Refer to CGI Checklist-2 for Support Information

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Title: WHITEY GAUGE/ROOT VALVES (VPS)

Section 5 Test / Inspection Summary (Acceptance Method 1)

1. SUMMARY OF VERIFIED CRITICAL CHARACTERISTICS , THEIR VERIFICATION METHODS, AND RESULTS

ITEM DESCRIPTION:

Critical Characteristics				Verification Results							
Critical Characteristics	Acceptance Criteria Tolerances	ID	Function	Method T/N	Procedure or RR#	Check-list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Nameplate - Manufacturer	Whitey Co./Swagelok (Either Whitey or Swagelok is acceptable)	X									
Valve-Component Number-Procurement and/or Model Number	SS-PNBGM8-F8, (Per Procurement Package W-441-P4, Rev. 2, Section H, Design Data Sheet)	X									
Valve Body Material	Stainless Steel	X									
Pressure Boundary	Pressure Test at 165 psig (No Bubbles)		X								
Internal Pressure	150 psig and full vacuum		X								
Valve seat leakage	<0.1 scc/min N ₂ @ 150 psig		X								
Seismic Condition B	Maintain Pressure Boundary Before and After Seismic Event.		X								

2. DISPOSITION OF UNVERIFIED OR FAILED CRITICAL CHARACTERISTICS

Critical Characteristic	Disposition

3. SIGNATURE INDICATES ALL CRITICAL CHARACTERISTICS VERIFIED SATISFACTORY OR ACCEPTABLY DISPOSITIONED AND COMMERCIAL GRADE DEDICATION IS SATISFACTORY AND COMPLETE.

Testing Agency Approval: _____ Date _____				BUYER VERIFICATION			
Testing Agency QA Engineer: _____ Date _____				Design Authority: _____ Date _____			
				QA Engineer: _____ Date _____			

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Title: **WHITEY GAUGE/ROOT VALVES (VPS)**

Section 6 Contacts/Phone Numbers

Name	Phone
Design Authority	()
QA	()
QC	()
Cog - Engineer	()
CGI Engineer	()
Procurement Engineer	()
Other	()

Section 7 Supporting Documentation for this Checklist

Initial Procurement Documents	For Critical Characteristics
☐ Drawings:	
☐ Manuals (specify type & number):	
☐ Design Calculations	
☐ Installation Instructions	
☐ Operation Instructions	
☐ Calibration Instructions	
☐ Manufacturer's Recommended Spare Parts List	
☐ Other:	
Procurement Documents	
☐ Certificate of Conformance/Compliance	
☐ Seismic Qualification Certificate	
☐ Environmental Qualification Certificate	
☐ Test Report (s):	
☐ Inspection Report (s):	
☐ CMTRs for ASME Pressure Retaining Materials	
☐ Valve Seat Leakage Report	
☐ Weld Records	
☐ Material Traceability Record	
☐ Other:	

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