S

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN 662314

Proj.
ECN

2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedeure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. T. Nuxall, CVDF, R3-86, 372-3739		4. USQ Required? ☐ Yes ☒ No	5. Date 9/2/00
	6. Project Title/No./Work Order No. SNF/W-441 Spent Nuclear Fuel Cold Vacuum Drying		7. Bldg./Sys./Fac. No. CVDF 142-K	8. Approval Designator Q
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) See block 13a		10. Related ECN No(s). N/A	11. Related PO No. N/A
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 Hood SNF-3876, Rev. 2, SNF-3877, Rev. 2, SNF-3878, Rev. 1, SNF-3879, Rev. 3, SNF-3880, Rev. 1, SNF-3881, Rev. 2, SNF-3882, Rev. 2, SNF-3883, Rev. 3, SNF-3884, Rev. 2, SNF-3886, Rev. 2 , Rev. 1, SNF-4418, Rev. 1, SNF-3933, Rev. 1, SNF-3936, Rev. 2, SNF-5964, Rev. 0, SNF-5970, Rev. 1 ^{itmc} 9/2/00 SNF-4419, Rev. 1 ^{9/2/00} Updated document numbers and deleted revision numbers. USQ Approval: CX B.1 from AP-NS-4-001-15.				
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 Editorial changes for configuration control. The design verification method for SS/SC components is by independent review in accordance with EN-6-027-01. Documentation of this review is accomplished by the independent review approval signature provided on page 2 of this ECN.				
15. Distribution (include name, MSIN, and no. of copies) See distribution sheet.

ENGINEERING CHANGE NOTICE

Page 2 of 2

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

662314

16. Design Verification Required	17. Cost Impact	NA	18. Schedule Impact (days)
☒ Yes ☒ No	ENGINEERING	CONSTRUCTION	NA
Additional	Additional	Improvement	
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

NA

21. Approvals

[illegible]

[illegible]

Whitey Gauge/Root Valves (VPS)

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford

P.O. Box 1000

Richland, Washington

SNF-3884
Revision 3

ECN 662314

Whitey Gauge/Root Valves (VPS)

Project No: W-441

Document Type: RPT

Division: SNF

C Miska
FH

Date Published
September 2000

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington

Release Approval

9/3/2000
Date

Release Stamp

TRADEMARK DISCLAIMER

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

This report has been reproduced from the best available copy.

Printed in the United States of America

Total Pages:

13

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA** CGI No. **CGI-SNF-D-07-P4-009**

Page 1 of 9

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

Section 1 Part Information

Item No.: NA	Manufacturer: NA	Supplier: NA
Mfg. Part/Model No.: NA	Supplier's P/N: NA	
Part Description: NA		
End Use Description: NA		

Section 2a Component Information

Equipment No.: VPS-V- *059, & *061 (System 7) He-V-*014 (System 13)	Specification No.: SNF-5303 (W-441-P4)	Manufacturer: Whitey Co./Swagelok	Past P.O. No.: NA
Procurement and/or Model No.: SS- 6PNBGM8-F8	Equipment Supplier (if different from manufacturer): NA		Equip. Supplier's Part No.: NA

Component Description: **These valves are 1/2" 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

- Is the Item available from a catalogue of a qualified NQA1 supplier? (coordinate with project CGI interface Engineer or BTR)
 - ☐ YES (go to #2 below)
 - ☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)

If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate with project CGI interface Engineer or BTR)

 - ☐ YES (go to #2 below, then go to procedure step 6.3.2, proceed to dedicate Item)
 - ☒ NO (go to procedure step 6.3.2, proceed to dedicate Item.)
- List of Candidate qualified suppliers or ISO 9000 suppliers

company name & type	contact name	phone
NA		

3. Recommended Procurement Strategy(coordinate with project CGI interface Engineer or BTR): **NA**

Section 2c CGI Determination

- Question #1: Is the Item subject to design or specification requirements that are unique to nuclear facilities or activities?
 - ☐ YES (the Item is not commercial grade)
 - ☒ NO (continue)
- Question #2: Is the Item used in applications other than nuclear facilities or activities?
 - ☐ NO (the item is not commercial grade)
 - ☒ YES (continue)

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA**

CGI No. **CGI-SNF-D-07-P4-009**

Page 2 of 9

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

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.

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA**

CGI No. **CGI-SNF-D-07-P4-009**

Page 3 of 9

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

SNF-5303

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 31.3

Safety Analysis Report (SAR):

HNF-SD-SNF-SAR-002

Drawings: **H-1-82161**

HNF-SD-SNF-SEL-002

Vendor Manual/Manufacturer/Supplier Information: **Whitey Co. W-1086**

Other: **NA**

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA**CGI No. **CGI-SNF-D-07-P4-009**

Page 4 of 9

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

Section 9 Critical Characteristics

Critical Characteristics Verification Document: Vendor Specifications; HNF-SD-SNF-SEL-002	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 SNF-5303, 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 N₂ @ 150 psig	1, T		X
Environmental	Note 1			
Seismic Condition B	Note 3	1, T		X

4. Notes and Legend:

- 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.
- Pressure test at 110% of design accident condition pressure of 150 psig.
- Maintain pressure boundary before and after seismic event. SNF-5303, Appendix L, page L-8, provides a seismic testing plan for these components at a SNF-4896 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.
- Material verification acceptance method may be by either inspection or test.
- Either Whitey or Swagelok is acceptable.

Rev. 3: Updated reference document.

Acceptance Method:

- Special Test and Inspection
1, IN for Inspection
1, T for Test
- Commercial Grade Survey
- Source Verification
- Vendor/Item History

Section 10 Initial Review and Approval

Approvals:

Designated Engineer:

Design Authority:

QA Engineer:

9/2/00
Carl Van Katwijk 9/2/00
9/2/00
Mark M. Chapin 9/2/00

09/02/00

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA**

CGI No. **CGI-SNF-D-07-P4-009**

Page 5 of 9

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

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 [] Mode _____	No [X]; If Yes, indicate failure
Corrosion	The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Erosion	Destruction of materials by the abrasive action of moving fluids, usually accelerated by the presence of solid particles carried with the fluid.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Open Circuit	An electrical circuit that is unintentionally broken so that there is no complete path for current flow.	Yes [] Mode _____	No [X]; If Yes, indicate failure
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 [] Mode _____	No [X]; If Yes, indicate failure
Blockage	Clogging of a filtering medium resulting in the inability to perform its purification function or blockage of flow.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Seizure	Binding of a normally moving item through excessive pressure, temperature, friction, jamming.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Unacceptable Vibration	Mechanical oscillations produced are beyond the defined permissible limits due to unbalancing, poor support, or rotation at critical speeds.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Loss of Properties	A loss of mechanical and physical properties of a material due to exposure to high temperatures, radiation exposure.	Yes [] Mode _____	No [X]; If Yes, indicate failure
Excess Strain	Under the action of excessive external forces the material of the part has been deformed or distorted.	Yes [] Mode _____	No [X]; If Yes, indicate failure
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 [] Mode _____	No [X]; If Yes, indicate failure
Ductile Fracture	Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation.	Yes [] Mode _____	No [X]; If Yes, indicate failure

Section 2 Additional Failure Modes Applicable to the Component Under Evaluation

1. **Valve Body Break**

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA** CGI No. **CGI-SNF-D-07-P4-009**

Page 6 of 9

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

CHECKLIST 1
ACCEPTANCE METHOD 1
SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1

Item Description: Whitey Gauge Root Valves System #: 7 (VPS-V-*059, & *061) 13 (HE-V-*014)	Equip #: VPS-V-*059, & *061, HE-V-*014 (System 13) Procurement and/or Model #: SS-6PNBGM8-F8
Manufacturer (Address/Phone): Whitey Co. 318 Bishop Road Highland Heights, OH 44143 P.O. #	Supplier (Address/Phone):

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 SNF-5303, Section H, Design Data Sheet)**

Receipt Inspection Plan / Report #: _____

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

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA** CGI No. **CGI-SNF-D-07-P4-009**

Page 7 of 9

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

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

Page 8 of 9

ECN No. NA CGI No. CGLSNF-D-07-P4-009

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 SNF-5303, 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 N2 @ 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.

BUYER VERIFICATION

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

09/02/00

Commercial Grade Item Upgrade Dedication Form

SNF-3884, Rev. 3

ECN No. **NA**

CGI No. **CGI-SNF-D-07-P4-009**

Page 9 of 9

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:	