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ENGINEERING CHANGE NOTICE

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1. ECN 654034

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	
		9. Document Numbers Changed by this ECN (includes sheet no. and rev.) SNF-3932, Rev. 1		10. Related ECN No(s). N/A		11. Related PD 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 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-030.							
15. Distribution (include name, MSIN, and no. of copies) See Distribution						RELEASE STAMP AUG 02 1999 DATE: STA: #4 HANFORD RELEASE ID: 15	

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

654034

[illegible]

DISTRIBUTION SHEET

[illegible]

WHITEY/SWAGELOK SCHe BALL VALVES- PROVIDE ISOLATION BETWEEN SCHe PURGE LINES C AND D AND THE PROCESS VENT

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

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PURGE LINES C AND D AND THE PROCESS VENT

Abstract: WHITEY/SWAGELOK SCHe BALL VALVES-PROVIDE ISOLATION BETWEEN SCHe
PURGE LINES C AND D AND THE PROCESS VENT

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Date

AUG 02 1999	
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STA:	
#4	15

Approved for Public Release

RECORD OF REVISION

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SNF-3932

Page 1

(2) Title

SNF-3932, WHITEY/SWAGelok SCHe BALL VALVES - PROVIDE ISOLATION BETWEEN SCHe PURGE LINES C AND D AND THE PROCESS VENT

Change Control Record

(3) Revision

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

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1

ECN 653776 REVISION TO MEET SEL REV. 6

2

RS

ECN 654034, CLARIFICATION OF VALVE MANUFACTURER

LEW 7/26/99

CLJ 7/27/99

Commercial Grade Item Upgrade Dedication Form		SNF-3932, Rev. 2
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Title: WHITEY/SWAGelok SCHe BALL VALVES – PROVIDE ISOLATION BETWEEN SCHe PURGE LINES C AND D AND THE PROCESS VENT		

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.: PV-V-*079, -*080	Specification No.: W-441-P5, Rev. 2	Manufacturer: Whitey Co./Swagelok	Past P.O. No.: NA
Procurement and/or Model No.: SS-43VC04- 5452-TR	Equipment Supplier (if different from manufacturer): TBD		Equip. Supplier's Part No.: NA
Component Description: These valves are ¼" ball valves fabricated of 316 stainless steel. Packing is TFE (standard). They provide an isolation function between SCHe Purge Line C, (PV-V-*079), and Purge Line D, (PV-V-*080), and the Process Vent.			
Section 2b Commercial Availability of the Item			
1. 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.)			
2. 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			
1. 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)			

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2. Question #2: Is the Item used in applications other than nuclear facilities or activities?
☐ NO (the item is not commercial grade) ☒ YES (continue)
3. Question #3: Is the Item ordered from manufacturer/supplier on the basis or specifications set forth in the Published product information (e.g., 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. Prevent H ₂ Explosion, by not restricting flow.
2. Provide Seismic 3/1 protection for adjacent SC and SS SSCs.
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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D. Failure Mode(s) and the effects on component or system safety function (see Worksheet 1):		
1. Valve Body Break. Could cause release of helium into the local environment instead of going to the process vent.		
Section 4 Environmental & Natural Phenomena Hazard Design		
Environmental Qualification Required: Yes [] No [X]	If yes: Environmental Qualification Requirements Limiting Environmental Conditions: Required Safety Functions: Qualification Period:	
Environmental Condition A		
Natural Phenomena Hazard (NPH) Design Required: Yes [X] No []	If yes: NPH Design Requirements Performance Category: PC-2 NPH Design Req'ts.: Seismic Condition 3/1. Required Safety Functions: Prevent H₂ explosion, by not restricting flow. Provide Seismic 3/1 protection for adjacent SS and SC SSCs.	
HNF-PRO-97, Rev. 0		
W-441-P5, Rev. 2		
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 B31.3	Safety Analysis Report (SAR): HNF-SD-SNF-SAR-002, Rev. 4A	Drawings: H-1-82165, Rev. 2 HNF-SD-SNF-SEL-002, Rev. 6A
Vendor Manual/Manufacturer/Supplier Information: Whitey Co. Whitey "40" Series Ball Valves, W-1288, July, 1992.		
Other: NA		

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Section 9 Critical Characteristics				
Critical Characteristics Verification Document: Vendor's Manual; 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. / Swgelok (Note 5)	1, IN	X	
Valve-Component Number-Procurement and/or Model Number	SS-43VCO4-5452-TR , (Per Procurement Package W-441-P5, Rev. 2, Section H, Design Data Sheet)	1, IN	X	
"A" Dimension, Length	Nominal 2.12 Inches	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 Integrity	Pressure Test at 165 psig (No Bubbles) Note 3	1, T		X
Valve Seat Leakage	<0.1 SCC/min N2 @ 150 psig	1, T		X
Environmental	Note 1			
Seismic Condition 3/1 Event	Note 2			
4. Notes and Legend:		Acceptance Method:		
1. The ball valve Teflon packing is not subject to degradation from the 60°F and 40% RH or 75°F and 25% RH condition and is suitable for Environmental Condition A application. 2. Seismic 3/1 Event is not a critical characteristic for dedication of the component. 3. Pressure test at 110% of 150 psig system design pressure. 4. Material verification acceptance method may be by either inspection or test. 5. Either Whitey or Swagelok is acceptable.		1. Special Test and Inspection 1, IN for Inspection 1,T for Test 2. Commercial Grade Survey 3. Source Verification 4. Vendor/Item History		

Section 10 Initial Review and Approval	
Approvals: Designated Engineer: <u><i>Con. Williams</i></u> 7-26-99 Design Authority: <u><i>C.R. Jones</i></u> 7/26/99 QA Engineer: <u><i>A. Winkler</i></u> 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 [] 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**

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CHECKLIST 1
ACCEPTANCE METHOD 1
SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1			
Item Description: Whitey/Swagelok Ball Valve		Equip #: PV-V-*079, -*080	
System #: 30		Procurement and/or Model #: SS-43VCR4-5452-TR	
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. "A" Dimension, Length
☒	☒	☐	4. Valve Body Material (Verification may be by either inspection or test)
☐	☒	☐	5. Pressure Boundary Integrity
☐	☒	☐	6. Valve Seat Leakage
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-43VCO4-5452-TR , (Per Procurement Package W-441-P5, Rev. 2, Section H, Design Data Sheet)			
Receipt Inspection Plan / Report #: _____			
References (see Section 8): : <u>Whitey Co. – Whitey "40" Series Ball Valves, W-1288, July, 1992</u>			

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Characteristic: "A" Dimension, Length

Sample Size*: All Items

Acceptance Criteria: Nominal 2.12 Inches

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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 Integrity

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: 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): _____

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

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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/IN	Procedure or RR#	Check- list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Namplate - Manufacturer	Whitey Co. / Swagelok (Either Whitey or Swagelok is acceptable).	X									
Valve-Component Number-Procurement and/or Model Number	SS-43VCO4-5452-TR, (Per Procurement Package W-441-P5, Rev. 2, Section H, Design Data Sheet)	X									
"A" Dimension, Length	Nominal 2.12 Inches	X									
Valve Body Material	Stainless Steel	X									
Pressure Boundary Integrity	Pressure Test at 165 psig (No Bubbles)		X								
Valve Seat Leakage	<0.1 SCC/min N2 @ 150 psig		X								

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