S

ENGINEERING CHANGE NOTICE

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1. ECN 662860

Proj.
ECN

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 ☐ Supersedeure ☐ Cancel/Void ☐		A. Artzer, CVDF, X3-78, 372-2801		☒ Yes ☐ No		9/9/00	
		6. Project Title/No./Work Order No.		7. Bldg./Sys./Fac. No.		8. Approval Designator	
		SNF/W-441, Spent Nuclear Fuel Cold Vacuum Drying		CVDF 142K		S ^N Q	
		9. Document Numbers Changed by this ECN (includes sheet no. and rev.)		10. Related ECN No(s).		11. Related PO No.	
		SNF-3879, Rev. 4		N/A		N/A	
12a. Modification Work		12b. Work Package No.		12c. Modification Work Complete		12d. Restored to Original Condition (Temp. or Standby ECN only)	
☐ Yes (fill out Blk. 12b) ☒ No (NA Blks. 12b, 12c, 12d)		N/A		N/A		N/A	
		Design Authority/Cog. Engineer Signature & Date		Design Authority/Cog. Engineer Signature & Date			
13a. Description of Change				13b. Design Baseline Document? ☐ Yes ☒ No			
HOOD				SC			
Revised Flow Performance Acceptance Criteria from "Nominal 11 scfm with 20 psig supplied Helium to open valve" to "Achieve flow of 9 +/- 3 scfm with 2.25 +/- 0.25 psig supplied Helium to open valve"							
USQ Approval: CVD-00-11677							
14a. Justification (mark one)				14b. Justification Details			
Criteria Change ☐ Design Improvement ☒ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐				Change made to reflect performance tolerance. The design verification method for SC/SS 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)						RELEASE STAMP	
See distribution sheet.							

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Fisher-Helium Purge Flow Control Valve and Relay

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-3879
Revision 5
ECN 662860

Fisher-Helium Purge Flow Control Valve and Relay

Project No: W-441

Division: SNF

C. R. Miska
Fluor Hanford, Inc.

Date Published
September 2000

Prepared for the U.S. Department of Energy
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Fluor Hanford

P.O. Box 1000
Richland, Washington

Janis Braden
Release Approval

9/11/00
Date

Release Stamp

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Commercial Grade Item Upgrade Dedication Form

SNF-3879, Rev. 5

ECN No. N/A

CGI No. CGI-SNF-D-13-P4-004

Page 1 of 7

Title: **Fisher-Helium Purge Flow Control Valve and Relay**

Section 1 Part Information

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

Section 2a Component Information

Equipment No.: He-FV-1*20	Specification No.: SNF-5303 (W-441 P4)	Manufacturer: Fisher Controls	Past P.O. No.: N/A
Procurement and/or Model No.: 1" CP Body; Size 20 System 9000; Type DVC 5040	Equipment Supplier (if different from manufacturer): N/A		Equip. Supplier's Part No.: N/A

Component Description: **Fisher flow control valve for helium purge flow to the MCO.**

Section 2b Commercial Availability of the Item

1. Is the Item available from a catalogue from a qualified NQA1 supplier or ISO 9000 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 w/ project CGI Interface Engineer or BTR): ☐ YES (go to #2 below, dedicate Item) ☒ NO (dedicate Item)
2. List of Candidate qualified suppliers or ISO 9000 suppliers: **N/A**
1. Recommended Procurement Strategy(coordinate with project CGI interface Engineer or BTR): **N/A**

Section 2c CGI Determination

CGI Determination Questions:

- #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)
- #2: Is the Item used in applications other than nuclear facilities or activities?
☐ NO (the item is not commercial grade) ☒ YES (continue)
- #3: Is the Item ordered from manufacturer/supplier on the basis of specifications set forth in the manufacturer's catalog?
☐ NO (the item is not commercial grade) ☒ YES (continue)
- [X] All three criteria have been satisfied. The Item meets the definition of commercial grade.**

Section 2d Reason for Dedication

The above Commercial Grade (CG) 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 CG to be used in a Safety Class application.
☐	Item is being purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.
☐	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Class application.
☐	Item was purchased from a non-ESL manufacturer supplier as CG to be used in a Safety Significant application.
☐	Other ('like-for-like', similar, substitution, replacement evaluation)

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Title: **Fisher-Helium Purge Flow Control Valve and Relay**

Section 3 Failure Effects Evaluation

A. Part/Component Safety Function:

1. **Provide Pressure Boundary**
2. **Provide 3/1 Protection for Adjacent SC and SS SSCs**
3. **Provides Back Pressure to Maintain He Flow Indication**

B. Part/Component Functional Mode:

Safety Function #1:	☐	Active	☒	Passive
Safety Function #2:	☐	Active	☒	Passive
Safety Function #3:	☐	Active	☒	Passive

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): **N/A**

1.

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

1. **FV Flange Connection/Body Break - Inleakage of Air**
2. **Back Pressure Not Maintained for He Flow Indicator**

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-1**

NPH Design Req'ts.: **3/1 Protection for adjacent SC and SS SSCs**

Required Safety Functions: **Boundary/Back pressure for instruments**

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. **He-FV-1*20 is Safety Class (SC).**

Sections 6 and 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards: **ASME B 31.3**

Safety Analysis Report (SAR): **HNF- 3553, Annex B**

Drawings: **H-1-82161, HNF-SD-SNF-SEL-002**

Vendor Manual/Manufacturer/Supplier Information: **Catalog Cut Sheets – Fisher Controls**

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Title: **Fisher-Helium Purge Flow Control Valve and Relay**

Section 9 Critical Characteristics

Critical Characteristics	Acceptance Criteria/Tolerances	Acc.Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Manufacturer	Fisher Controls	1, IN	X	
Model Number	1" CP Body; Size 20 System 9000; Type DVC 5040, (Per SNF-5303, Section H, Design Data Sheet)	1, IN	X	
Inlet/Outlet Fittings	1" Schedule 40 Pipe, 150# RF Flange	1, IN	X	
Actuator Model Number	System 9000 120	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Body Material	WCC Steel (Note 4)	1, IN	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 Bubbles) Note 3	1, T		X
Flow Performance	Achieve flow of 9 ± 3 SCFM with 2.25 ± 0.25 psig supplied Helium to open valve	1, T		X
Environmental	Note 1	1, T		X
Seismic Condition 3/1 Event	Note 2	1, T		X
3. Notes and Legend: 1. This FV has Teflon Packings. The Teflon is not subject to degradation at 40°F and 60% RH or 115°F and 22% RH and is suitable for Condition B Applications. 2. Seismic 3/1 Event is not a critical characteristic for the dedication of the component. 3. Pressure test at 110% of design accident condition pressure of 150 psig. 4. Material verification acceptance method may be by either inspection or test. Rev. 4: Updated reference documentation. Rev. 5: Revised Flow Performance Acceptance Criteria from "Nominal 11 scfm with 20 psig supplied Helium to open valve" to "Achieve flow of 9 ± 3 SCFM with 2.25 ± 0.25 psig supplied Helium to open valve"		Acceptance Methods: 1. Special Test and Inspection 1, IN for Inspection 1, T for Test 1, A for Analysis 2. Commercial Grade Survey 3. Source Verification 4. Vendor/Item History		

Section 10 Initial Review and Approval

Approvals: Ana per Helium for
 Designated Engineer: Carl Van Katsuyk 9/9/00 QA Engineer: [Signature] 9/11/00
 Design Authority: [Signature] 7/9/2000 Other: For C.R. Miska

09/09/00

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Title: **Fisher-Helium Purge Flow Control Valve and Relay**

WORKSHEET 1

DETERMINATION OF FAILURE MECHANISMS

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

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Title: **Fisher-Helium Purge Flow Control Valve and Relay**

Checklist 1 – Acceptance Method 1 – Special Test/Inspection Verification

SECTION 1			
Item Description: Fisher-Helium Purge Flow Control Valve		Equip #: He-FV-1*20	
System #: 13		Procurement and/or Model #: 1" CP Body; Size 20 System 9000; Type DVC 5040	
Manufacturer (Address/Phone): Fisher Controls International, Inc. P.O. Box Marshalltown, Iowa 50158-0190 USA Ph: (515)754-3011; Fax: (515)754-2830 E-Mail: fc-valve@frmail.frco.com		Supplier (Address/Phone):	
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
☒			1. Nameplate - Manufacturer
☒			2. Component Number - Procurement and/or Model Number
☒			3. Inlet/Outlet Fittings
☒			4. Actuator Model Number
☒	☒		5. Body Material (Verification may be by either inspection or test)
	☒		6. Pressure Boundary
	☒		7. Flow Performance
SECTION 3 BY INSPECTION * See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)			
Characteristic: Nameplate - Manufacturer			Sample Size*: 100%
Acceptance Criteria: Fisher Controls			Receipt Inspection Plan / Report #:
Characteristic: Model Number			Sample Size*: 100%
Acceptance Criteria: 1" CP Body; Size 20 System 9000; Type DVC 5040, (Per SNF-5303, Section H, Design Data Sheet)			Receipt Inspection Plan / Report #:
Characteristic: Inlet/Outlet Fittings			Sample Size*: 100%
Acceptance Criteria: 1" Schedule 40 Pipe, 150# Flange			Receipt Inspection Plan / Report #:
Characteristic: Actuator Model Number			Sample Size*: 100%
Acceptance Criteria: System 9000 120			Receipt Inspection Plan / Report #:
Characteristic: Body Material			Sample Size*: 100%
Acceptance Criteria: WCC Steel			Receipt Inspection Plan / Report #:
Section 4 By Special Test * See Attachment H, Table H-1 of Desk Instruction for Sampling Size; References (See Section 7)			
Characteristic for Test: Pressure Boundary			Samp Size*: [X]Normal
Acceptance Criteria: Pressure Test at 165 psig (No Bubbles)			[]Reduced
Actual Test Value:			[]Tightened
Test Plan and Report #:			
Characteristic for Test Flow Performance			Samp Size*: [X]Normal
Acceptance Criteria: Achieve flow of 9 ± 3 SCFM with 2.25 ± 0.25 psig supplied Helium to open valve			[]Reduced
Actual Test Value:			[]Tightened
Test Plan and Report #:			

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

09/09/00

Commercial Grade Item Upgrade Dedication Form

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Title: <u>Fisher-Helium Purge Flow Control Valve and Relay</u>		Page 6 of 7

Section 5 Test / Inspection Summary (Acceptance Method 1)											
1. Summary Of Verified Critical Characteristics , Their Verification Methods, and Results											
ITEM DESCRIPTION: Flow Control Valve and Relay											
Critical Characteristics						Verification Results					
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/N	Procedure or R/#	Check-list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Fisher Controls	X		1, IN							
Model Number	1" CP Body; Size 20 System 9000; Type DVC 5040, (Per SNF-5303, Section H, Design Data Sheet)	X		1, IN							
Inlet/Outlet Fittings	1" Schedule 40 Pipe, 150# RF Flange	X		1, IN							
Actuator Model Number	System 9000 120	X		1, IN							
Body Material	WCC Steel	X		1, IN							
Pressure Boundary	Pressure Test at 165 psig (No Bubbles)		X	1, T							
Flow Performance	Achieve flow of 9 ± 3 SCFM with 2.25 ± 0.25 psig supplied Helium to open valve		X	1, T							
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: _____						Design Authority: _____					
Testing Agency QA Engineer: _____						QA Engineer: _____					
Date: _____						Date: _____					

Commercial Grade Item Upgrade Dedication Form

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ECN No. **N/A**CGI No. **CGI-SNF-D-13-P4-004**

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Title: **Fisher-Helium Purge Flow Control Valve and Relay****Section 6: Contacts / Phone Numbers**

Title	Name	Phone
Design Authority		
QA		
QC		
Cog - Engineer		
CGI Engineer	Larry Price	372-8770
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: Catalog Cut Sheets – Fisher Controls	All
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:	