ENGINEERING CHANGE NOTICE

Page 1 of 21. 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 ^{hmc} _{9/1/00} SNF-4419, Rev. 1 ^{9/12/00} 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.

[illegible]

DISTRIBUTION SHEET

To Distribution	From SNF-CVD	Page 1 of 1
Project Title/Work Order		Date 9/2/00
W-441, P4 CGI Packages <i>Editorial updates.</i>		EDT No.
		ECN No. 662314

[illegible]

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 4

ECN 662314

Fisher-Helium Purge Flow Control Valve And Relay

Project No: W-441

Document Type: RPT

Division: SNF

C Miska
FH

Date Published
September 2000

Prepared for the U.S. Department of Energy
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Fluor Hanford
P.O. Box 1000
Richland, Washington

Release Approval

9/3/2000
Date

Release Stamp

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Commercial Grade Item Upgrade Dedication Form

SNF-3879, Rev. 4

ECN No. **NA**CGI No. **CGI-SNF-D-13-P4-004**

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

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.:

He-FV-1*20

Specification No.:

**SNF-5303
(W-441 P4)**

Manufacturer:

Fisher ControlsPast P.O. No.: **NA**Procurement and/or Model
Number: **1" CP Body;
Size 20 System 9000;
Type DVC 5040**Equipment Supplier (if different from manufacturer): **NA**Equip. Supplier's Part No.:
NAComponent 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 of a qualified NQA1 supplier? (coordinate with project CGI interface Engineer or BTR)

☐ YES (go to #2 below)☒ NO (go to procedure step 5.3.2, 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 5.3.2, proceed to dedicate Item)☒ NO (go to procedure step 5.3.2, 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)

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.

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

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. **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 – 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.

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**

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

Section 4 Environmental & Natural Phenomena Hazard Design

Environmental Qualification Required:

Yes []

No [X]

Environmental Condition B

If yes: Environmental Qualification Requirements

Limiting Environmental Conditions:

Required Safety Functions:

Qualification Period:

Natural Phenomena Hazard (NPH) Design Required:

Yes [X]

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

[X] 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).

Section 6 (Reserved)

Section 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards:

He-FV-1*20 - ASME B 31.3

Safety Analysis Report (SAR):

HNF-3553, Annex BDrawings: **H-1-82161****HNF-SD-SNF-SEL-002**Vendor Manual/Manufacturer/Supplier Information: **Fisher Controls**Other: **NA**

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

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	Fisher Controls	1, IN	X	
Component Number-Procurement and/or 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 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 Bubbles) Note 3	1, T		X
Flow Performance	Nominal 11 scfm with 20 psig supplied Helium to open valve	1, T		X
Environmental	Note 1			
Seismic Condition 3/1 Event	Note 2	—		
4. 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.		Acceptance Method: 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: <i>Carl Vandenberg 9/2/00</i> Design Authority: <i>[Signature] 9/2/00</i> QA Engineer: <i>Frank M. Chapin 9/2/00</i>				

09/02/00

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

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. **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		Supplier (Address/Phone):	
P.O. #			
SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.			
Insp	Test	Post-Test	
[X]	[]	[]	1. Nameplate - Manufacturer
[X]	[]	[]	2. Component Number - Procurement and/or Model Number
[X]	[]	[]	3. Inlet/Outlet Fittings
[X]	[]	[]	4. Actuator Model Number
[X]	[X]	[]	5. Body Material (Verification may be by either inspection or test)
[]	[X]	[]	6. Pressure Boundary
[]	[X]	[]	7. Flow Performance
SECTION 3 BY INSPECTION			
* See Attachment G of Desk Instruction for Sampling Size			
Characteristic: Nameplate - Manufacturer			
Sample Size*: All Items			
Acceptance Criteria: Fisher Controls			
Receipt Inspection Plan / Report #: _____			
References (see Section 8): _____			
Characteristic: Component Number-Procurement and/or Model Number			
Sample Size*: All Items			
Acceptance Criteria: 1" CP Body; Size 20 System 9000; Type DVC 5040, (Per SNF-5303, Section H, Design Data Sheet)			
Receipt Inspection Plan / Report #: _____			
References (see Section 8): _____			

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY**

Characteristic: **Inlet/Outlet Fittings**

Sample Size*: **All Items**

Acceptance Criteria: **1" Schedule 40 Pipe, 150# Flange**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Actuator Model Number**

Sample Size*: **All Items**

Acceptance Criteria: **System 9000 120**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

Characteristic: **Body Material**

Sample Size*: **Normal Sampling Size**

Acceptance Criteria: **WCC Steel**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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Title: **FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY****SECTION 4 BY SPECIAL TEST**

* See Attachment G 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: **Flow Performance**Acceptance Criteria: **Nominal 11 scfm with 20 psig supplied Helium to open valve**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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Title: FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY

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
Nameplate - Manufacturer	Fisher Controls	X									
Component Number- Procurement and/or Model Number	1" CP Body; Size 20 System 9000; Type DVC 5040, (Per SNF- 5303, Section H, Design Data Sheet)	X									
Inlet/Outlet Fittings	1" Schedule 40 Pipe, 150# Flange	X									
Actuator Model Number	System 9000 120	X									
Body Material	WCC Steel	X									
Pressure Boundary	Pressure Test at 165 psig (No Bubbles)		X								
Flow Performance	Nominal 11 scfm with 20 psig supplied Helium to open valve		X								

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Title: <u>FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY</u>	

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 _____

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Title: FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY

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:	