5

ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **652289**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, R3-47, 372-3739		4. USQ Required? ☐ Yes ☒ No	5. Date 7/2/99
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 Correction to Material for Valve Body.		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 Correction to Material for Valve Body.				
15. Distribution (include name, MSIN, and no. of copies) C. Miska R3-86 1 C. Van Katwijk R3-47 1 CVD Library (K. Boes) R3-86 1 T. Hays R3-86 1 J. Brehm R3-26 1 AVS-P. Morrell G1-50 1 AI-M. Evarts N1-29 1			RELEASE STAMP DATE: STA: <i>A</i> HANFORD RELEASE JUL 02 1999 ID: <i>2</i>	

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A-7900-013-1

A-7900-013-3 (05/96) GEF096

FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY

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

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Release Approval

7/2/99
Date

Approved for Public Release

RECORD OF REVISION

(1) Document Number	
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(2) Title

FISHER-HELIUM PURGE FLOW CONTROL VALVE AND RELAY

Change Control Record

(3) Revision

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

Authorized for Release

(5) Cog. Engr.

(6) Cog. Mgr.

Date _____

2 RS

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7/2/90

Commercial Grade Item Upgrade Dedication Form

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

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.: He-FV-1*20	Specification No.: W-441 P4, Rev. 2	Manufacturer: Fisher Controls	Past 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.: NA

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 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 of 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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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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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, Rev. 0**W-441 P4, Rev. 2**

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-SD-SNF-SAR-002, Rev. 4ADrawings: **H-1-82161, Rev. 2****HNF-SD-SNF-SEL-002, Rev. 6A**Vendor Manual/Manufacturer/Supplier Information: **Fisher Controls**

Other:

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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	Fisher Controls	1, IN	X	
Component Number-Procurement and/or Model Number	1" CP Body; Size 20 System 9000; Type DVC 5040, (Per Procurement Package W-441-P4, Rev. 2, 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 Coefficient, Cv	Nominal 0.175	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.		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: for CVR [Signature] 7/2/99Design Authority: CR [Signature] 7/2/99QA Engineer: T.D. [Signature] 7/2/99

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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

- Flange Connection/Valve Body Break**

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CHECKLIST 1

ACCEPTANCE METHOD 1

SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1

Item Description: **Fisher-Helium Purge Flow Control Valve**System #: **13**Equip #: **He-FV-1*20**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	
☒	☐	☐	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 Coefficient, CV

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 Procurement Package W-441-P4, Rev. 2, Section H, Design Data Sheet)**

Receipt Inspection Plan / Report #: _____

References (see Section 8): _____

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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 Coefficient, CV**Acceptance Criteria: **Nominal 0.175**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 Procurement Package W-441-P4, Rev. 2, 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 Coefficient, CV	Nominal 0.175		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: **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:	