

ENGINEERING CHANGE NOTICE

Page 1 of 2

1. ECN **662315**

Proj.
ECN

| | | | | |
|---|--|---|-----------------------------|--|
| 2. ECN Category (mark one) Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary Standby <input type="checkbox"/> Supersedure <input type="checkbox"/> Cancel/Void <input type="checkbox"/> | 3. Originator's Name, Organization, MSIN, and Telephone No. T. Nuxall, CVDF, R3-86, 372-3739 | 4. USQ Required? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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 <input type="checkbox"/> Yes (fill out Blk. 12b) <input checked="" type="checkbox"/> 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 13b. Design Baseline Document? Yes No

SCHe **SC**

SNF-3893, Rev. 1, SNF-3895, Rev. 2, SNF-3920, Rev. 2, SNF-3921, Rev. 4, SNF-3922, Rev. 1, SNF-3924, Rev. 1, SNF-3925, Rev. 1, SNF-3927, Rev. 3, SNF-3928, Rev. 2, SNF-3929, Rev. 5, SNF-3931, Rev. 2, SNF-3932, Rev. 3, SNF-4627, Rev. 2

Updated document numbers and deleted revision numbers.

USQ Approval: CX B.1 from AP-NS-4-001-15.

14a. Justification (mark one)

| | | | |
|--|--|--|--|
| Criteria Change <input type="checkbox"/> | Design Improvement <input checked="" type="checkbox"/> | Environmental <input type="checkbox"/> | Facility Deactivation <input type="checkbox"/> |
| As-Found <input type="checkbox"/> | Facilitate Const <input type="checkbox"/> | Const. Error/Omission <input type="checkbox"/> | Design Error/Omission <input type="checkbox"/> |

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.

RELEASE STAMP

SEP 3 2 2000
 (W/CB 9/3/00)

DATE: _____ STA: _____ # 19

MANFORD
 RELEASE

ID: (15)

Krohne Flow Indicator And High Flow Alarm - Local Indicator And High Flow Alarm of Helium Flow From the SCHe Purge Lines C & D To The Process Vent

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

Krohne Flow Indicator And High Flow Alarm - Local Indicator And High Flow Alarm of Helium Flow From the SCHe Purge Lines C & D To The Process Vent

Project No: W-441

Document Type: RPT

Division: SNF

C Miska
FH

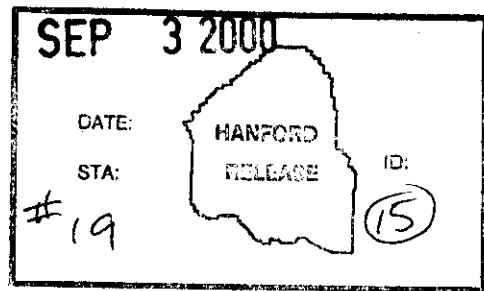
Date Published
September 2000

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



Chris Braden
Release Approval

9/3/00
Date

Release Stamp

SUF-3922
REV 2

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Total Pages: 15

Commercial Grade Item Upgrade Dedication Form

SNF-3922, Rev. 2

ECN No. **NA** CGI No. **CGI-SNF-D-13-P5-025**
 Title: **KROHNE FLOW INDICATOR AND HIGH FLOW ALARM – LOCAL INDICATION AND HIGH FLOW ALARM OF HELIUM FLOW FROM THE SCHe PURGE LINES C & D TO THE PROCESS VENT**

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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.: PV-FI/FSH-5*52, -5*72 | Specification No.: SNF-5304 (W-441-P5) | Manufacturer: Krohne | Past P.O. No.: NA |
| Procurement and/or Model No.: DK 37/MR K200 W/120 VAC Relay W/O Needle Valve | Equipment Supplier (if different from manufacturer): TBD | Equip. Supplier's Part No.: NA | |
| Component Description: Flow Indicators/alarms FI/FSH-5*52 and -5*72 are located in the process vent lines connected to the 2 psig SCHe purge lines C and D. They monitor the flow from the 2 psig SCHe purge going to the process vent. The switch/alarm is non-safety class GS. | | | |

Section 2b Qualified Vendor/Supplier Survey

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 and 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 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.

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– Prevents helium leakage from the 2 psig SCHe System.**

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 Mechanisms(s) and the effects on component or system safety function (see worksheet 1): 1. Fracture of the indicator body or of the piping connection - helium leakage from the 2 psig SCHe System. | | |
| Section 4 Environmental & Natural Phenomena Hazard Design | | |
| Environmental Qualification Required: Yes [] No [X] Environmental Condition A | If yes: Environmental Qualification Requirements Limiting Environmental Conditions: Required Safety Functions: Qualification Period: | |
| Natural Phenomena Hazard (NPH) Design Required: Yes [] No [X] HNF-PRO-97 SNF-5304 | If yes: NPH Design Requirements Performance Category: PC-2 NPH Design Req'ts.: None Required Safety Functions: Pressure Boundary Integrity. | |
| Section 5 Component Functional Classification | | |
| [] Safety Class (SC) [] General Service [X] Safety Significant (SS) If part/component classification is different from host component/system, document basis. The flow indicator is pressure boundary Safety Significant (SS). The switch/alarm electronic output signal is General Service (GS). | | |
| Section 6 [reserved] | | |
| Section 7 [reserved] | | |
| Section 8 References (for Functional Classification) | | |
| National Codes/Standards: IEEE 344, ISA-S5.1, -S5.4, -S18.1, -S20 | Safety Analysis Report (SAR): HNF-SD-SNF-SAR-002 | Drawings: H-1-82165 HNF-SD-SNF-SEL-002 CVDF-SSD-003 |
| Vendor Manuals/Manufacturer/Supplier Information: Krohne Product Survey - Variable Area Flowmeters | | |
| Other: NA | | |

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| Section 9 Critical Characteristics | | | | |
|--|---|---|----------|----------|
| Critical Characteristics | Acceptance Criteria/Tolerances | Acceptance Method | ID | Function |
| Verification Document: Vendor Specifications, HNF-SD-SNF-SEL-002 | | | | |
| 1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified) | | | | |
| Component Number-Procurement and/or Model Number | DK 37/MR K200 W/120 VAC Relay W/O Needle Valve, (Per SNF-5304, Section G, Design Data Sheet) | 1,IN | X | |
| Nameplate - Manufacturer | Krohne | 1,IN | X | |
| Process Connection | 1/4 Inch FNPT (Horizontal Connections) | 1,IN | X | |
| Indicator Range | 0.34 - 3.4 SCFM | 1,IN | X | |
| 2. Physical Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified) | | | | |
| Material, Body | Stainless Steel (Note 3) | 1, IN 1,T | X | |
| Material, Process Connection | Stainless Steel (Note 3) | 1, IN 1,T | X | |
| 3. Performance Critical Characteristics (necessary & sufficient for reasonable assurance that the Item will perform its intended safety function(s)) | | | | |
| Pressure Boundary Integrity | No Leakage at Test Pressure of 165 psig (No Bubbles) Note 2 | 1,T | | X |
| Environmental | Note 1 | | | |
| Seismic Condition | None | | | |
| 4. Notes and Legend: | | Acceptance Method: | | |
| 1. The flow indicator is not subject to degradation at ambient conditions of 60°F and 40% RH or 75°F and 25% RH and is suitable for Environmental Condition A application. 2. Pressure test at 110% of system design pressure of 150 psig. Exposure to test pressure may seriously degrade the readout function. This test is considered to be a destructive test. 3. Material verification acceptance method may be by either inspection or test. Rev. 2: Updated reference documentation. | | 1. Special Test and Inspection 1,IN for Inspection 1,T for Test 2. Commercial Grade Survey 3. Source Verification 4. Vendor/Item History | | |

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Section 10 Initial Reviews and Approvals

Approvals: Sup for Telecom for 2/2/00
Designated Engineer: CARL VAN KATWITIK
Design Authority: Sup for Telecom for 7/2/00
FURT MISEA
QA Engineer: Hank M. Chapin 9/1/00

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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 <input checked="" type="checkbox"/> No <input type="checkbox"/> ; If Yes, indicate failure Mode. <u>Failure of Transmitter Body or the Process Connection</u> |
| Corrosion | The gradual deterioration of a material due to chemical or electrochemical reactions, such as oxidation, between the material and its environment. | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; If Yes, indicate failure Mode. _____ |
| Seizure | Binding of a normally moving item through excessive pressure, temperature, friction, jamming. | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; 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 <input type="checkbox"/> No <input checked="" type="checkbox"/> ; If Yes, indicate failure Mode. _____ |
| Ductile Fracture | Fracture characterized by tearing of metal accompanied by appreciable gross plastic deformation. | Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> ; If Yes, indicate failure Mode. _____ |
| SECTION 2 Additional Failure Modes Applicable to the Component Under Evaluation | | |
| 1. <u>Process Connection/Body Break</u> | | |
| 2. _____ | | |

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**CHECKLIST 1
 ACCEPTANCE METHOD 1
 SPECIAL TEST/INSPECTION VERIFICATION**

SECTION 1

| | |
|--|--|
| Item Description: Krohne Local Flow Indicator/Alarm – 2 PSIG SCHe System to Process Vent System #: 13 | Equip #: PV-FI/FSH-5*52, -5*72 Procurement and/or Model #: DK 37/MR K200 W/120 VAC Relay W/O Needle Valve |
| Manufacturer (Address/Phone): Krohne P.O. # | Supplier (Address/Phone): |

SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.

| Insp | Test | Post-Test | |
|-------|-------|-----------|--|
| [X] | [] | [] | 1. Component Number-Procurement and/or Model Number |
| [X] | [] | [] | 2. Nameplate - Manufacturer |
| [X] | [] | [] | 3. Process Connection |
| [X] | [] | [] | 4. Indicator Range |
| [X] | [X] | [] | 5. Material, Body (Verification may be by either inspection or test) |
| [X] | [X] | [] | 6. Material, Process Connection (Verification may be by either inspection or test) |
| [] | [X] | [] | 7. Pressure Boundary Integrity |

SECTION 3 BY INSPECTION

* See Attachment G of Desk Instruction for Sampling Size

Characteristic: **Component Number-Procurement and/or Model Number**
 Sample Size*: **All Items**
 Acceptance Criteria: **DK 37/MR K200 W/120 VAC Relay W/O Needle Valve**
 Receipt Inspection Plan / Report #: _____
 References (see Section 7): **Krohne Product Survey - Variable Area Flowmeters**

Characteristic: **Nameplate - Manufacturer**
 Sample Size*: **All Items**
 Acceptance Criteria: **Krohne**
 Receipt Inspection Plan / Report #: _____
 References (see Section 7): _____

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Characteristic: **Process Connection**

Sample Size*: **All Items**

Acceptance Criteria: **1/4 Inch FNPT (Horizontal Connections)**

Receipt Inspection Plan / Report #: _____

References (see Section 7): _____

Characteristic: **Indicator Range**

Sample Size*: **All Items**

Acceptance Criteria: **0.34 - 3.4 SCFM**

Receipt Inspection Plan / Report #: _____

References (see Section 7): _____

Characteristic: **Material, Body**

Sample Size*: **Normal Sampling Size**

Acceptance Criteria: **Stainless Steel**

Receipt Inspection Plan / Report #: _____

References (see Section 7): _____

Characteristic: **Material, Process Connection**

Sample Size*: **Normal Sampling Size**

Acceptance Criteria: **Stainless Steel**

Receipt Inspection Plan / Report #: _____

References (see Section 7): _____

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 Integrity**

Acceptance Criteria: **No Leakage at Test Pressure of 165 psig (No Bubbles)**

Sample Size*: **Destructively Test Only One Item**

Actual Test Value:

Test Plan and Report #: _____ References (see Section 7): _____

**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# | Checklist ID | Number Tested | Number Failed | Verifying Organization | Printed Name Signature | Date |
| Component Number- Procurement and/or Model Number | DK 37/MR K200 W/120 VAC Relay W/O Needle Valve, (Per SNF-5304, Section G, Design Data Sheet | X | | | | | | | | | |
| Nameplate - Manufacturer | Krohne | X | | | | | | | | | |
| Process Connection | 1/4 Inch FNPT (Horizontal Connections) | X | | | | | | | | | |
| Indicator Range | 0.34 - 3.4 SCFM | X | | | | | | | | | |
| Material, Body | Stainless Steel | | X | | | | | | | | |
| Material, Process Connection | Stainless Steel | | X | | | | | | | | |
| Pressure Boundary Integrity | No Leakage at Test Pressure of 165 psig (No Bubbles) | | 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.

BUYER VERIFICATION

| | | | |
|-----------------------------------|------------|-------------------------|------------|
| Testing Agency Approval: _____ | Date _____ | Design Authority: _____ | Date _____ |
| Testing Agency QA Engineer: _____ | 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 |
|--|------------------------------|
| <input type="checkbox"/> Drawings: | |
| <input type="checkbox"/> Manuals (specify type & number): | |
| <input type="checkbox"/> Design Calculations | |
| <input type="checkbox"/> Installation Instructions | |
| <input type="checkbox"/> Operation Instructions | |
| <input type="checkbox"/> Calibration Instructions | |
| <input type="checkbox"/> Manufacturer's Recommended Spare Parts List | |
| <input type="checkbox"/> Other: | |
| Procurement Documents | |
| <input type="checkbox"/> Certificate of Conformance/Compliance | |
| <input type="checkbox"/> Seismic Qualification Certificate | |
| <input type="checkbox"/> Environmental Qualification Certificate | |
| <input type="checkbox"/> Test Report (s): | |
| <input type="checkbox"/> Inspection Report (s): | |
| <input type="checkbox"/> CMTRs for ASME Pressure Retaining Materials | |
| <input type="checkbox"/> Valve Seat Leakage Report | |
| <input type="checkbox"/> Weld Records | |
| <input type="checkbox"/> Material Traceability Record | |
| <input type="checkbox"/> Other: | |