APR 05 1999 4 STA# 4

ENGINEERING DATA TRANSMITTAL

1. EDT 626252

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization)	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Spent Nuclear Fuel Project	6. Design Authority/ Design Agent/Cog. Engr.: C. Van Katwijk	7. Purchase Order No.: N/A
8. Originator Remarks: N/A		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: Spent Nuclear Facility
11. Receiver Remarks: 11A. Design Baseline Document? [] Yes [X] No		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: N/A

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	SNF-3878		0	Griswold Tempered Water Flow Regulator Valves Used as Anti-Siphon Valves	PF S,Q 4-5-99	2	1	N/A

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN
2	1	Design Authority J. J. Irwin J. J. Irwin			
2	1	Designated Engineer C. Van Katwijk C. Van Katwijk			
2	1	QA T. D. Hays T. D. Hays 2-18-99			

18.	19.	20.	21. DOE APPROVAL (if required)
C. Van Katwijk C. Van Katwijk 2-9-99 Signature of EDT Originator / Date	T. Choho 2/22/99 Authorized Representative for Receiving Organization / Date	J. J. Irwin J. J. Irwin 2/11/99 Design Authority/ Cognizant Manager / Date	Ctrl. No. [] Approved [] Approved w/comments [] Disapproved w/comments

S

Griswold Tempered Water Flow Regulator Valves Used as Anti-Siphon Valves

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

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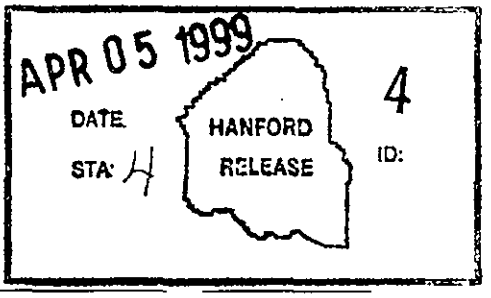
Key Words: Water Flow Regulator Valves

Abstract: Griswold Tempered Water Flow Regulator Valves Used As Anti-Siphon Valves
CGI-SNF-D-47- P4-003



4/1/99

Release Approval Date Release Stamp

Approved for Public Release

Commercial Grade Item Upgrade Dedication Form

ECN No. NA CGI No. CGI-SNF-D-47-P4-003 Title: GRISWOLD TEMPERED WATER FLOW REGULATOR VALVES USED AS ANTI-SIPHON VALVES	Rev. No. 0 Page 1 of 11 SNF 3878

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.: **FCV-1*22; FCV-1*23**	Specification No.: **W-441-P4, Rev 2**	Manufacturer: **Griswold Controls**	Past P.O. No.: **NA**
Manufacturer's Part/ Model No.: **4902F**	Equipment Supplier (if different from manufacturer): **TBD**		Equip. Supplier's Part No.: **NA**

Component Description: **FCV-1*22 and 1*23 are Griswold constant flow regulators used as anti-siphon valves in the tempered water system, they fail closed but valve cartridge orifice allows minimum flow to prevent loss of water from the MCO/CASK annulus.**

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)? J.J.V. 12/21/98 CVK 12/21/98

[ ] YES (go to #2 below)

[X] NO (go to procedure step 5.3.2, proceed to dedicate Item)

2. List of Candidate qualified suppliers ~~or ISO 9000 suppliers~~ J.J.V. 12/21/98

company name & type contact name CVK 12/21/98 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)

[X] NO (continue)

2. Question #2: Is the Item used in applications other than nuclear facilities or activities?

[ ] NO (the item is not commercial grade)

[X] YES (continue)

3. Question #3: Is the Item ordered from manufacturer/supplier on the basis or specifications set forth in the manufacturers catalog?

[ ] NO (the Item is not commercial grade)

[X] YES (continue)

[X] **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):

[X] 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. **The tempered water system's safety function is to prevent overheating the MCO contents and a runaway reaction. The anti-siphon valves contribute to this function by preventing reverse flow siphoning from the MCO annulus.**
2.
3.

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

[X] Passive – Change of state is not required for the component to perform its safety function

C. Host Component Safety Function (if applicable):

1. **NA**
2.
3.

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

1. **Valve Binding - Failure to remain minimally open - Siphon of Annulus Water**
2.
3.
4.
5.

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:

Natural Phenomena Hazard (NPH) Design Required:
Yes [X]
No [ ]

If yes: NPH Design Requirements
Performance Category: **PC-3**
NPH Design Req'ts.: **Seismic Condition A**
Required Safety Functions: **Prevent siphon of MCO/CASK tempered water**

HNF-PRO-97 REV. 0
W-441-P4, Rev. 2, ~~WHC-SD-GN-DGS-9006 30006~~ J.J.K. 12/8/98 CRK 12/24/98

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.

Section 6 (Reserved)

Section 7 (Reserved)

Section 8 References (for Functional Classification)

National Codes/Standards:	Safety Analysis Report (SAR): **HNF-SD-SNF-SAR-002, Rev. 4A**	Drawings: **H-1-82161, Rev. 2** **HNF-SD-SNF-SEL-002, Rev. 4**
ASME B 31.1 **B16 SERIES**		

Vendor Manual/Manufacturer/Supplier Information: **Griswold F-2723A**

Other: **NA**

Section 9 Critical Characteristics				
Critical Characteristics Verification Document: **Vendor Specifications; HNF-SD-SNF-SEL-002, Rev. 4**	Acceptance Criteria/Tolerances	Acceptance Method	ID	Function
1. Item Identification Critical Characteristics (necessary for reasonable assurance that the Item delivered is the Item specified)				
Manufacturer	**Griswold Controls**	**1, IN**	**X**	
Valve Model Number	**4902F**	**1, IN**	**X**	
Nameplate Data	**Per vendor's manual**	**1, IN**	**X**	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Valve body and plug material	**Stainless steel**	**1, T**	**X**	
End Connection	**3/4" FNTP**	**1, IN**	**X**	
Dimensions	**Nominal length 4" and 1.5 lbs. weight**	**1, IN**	**X**	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
Valve Reverse Flow	**Apply 30 psid reverse flow (Ensure Nominal orifice flow)**	**1, T**		**X**
Flow Rate	**Maintain nominal 1 gpm output over input range of 4 to 30 psid.**	**1, T**		**X**
Environmental	**Note 1**			
Seismic Condition A	**Note 2**	**1, T**		**X**

4. Notes and Legend:

1. **These valves contain a non-metallic Viton O-ring, and this material is not subject to degradation at 40°F and 60% RH or 115°F and 22% RH and are suitable for Environmental Condition B.**
2. **Maintain critical function during and after Seismic event. W-441-P4, Rev. 2, Appendix L, pages (TBD), provide a seismic testing plan for these components at a (TBD) seismic spectra.**

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: 12/21/98
Design Authority: 12/21/98
QA Engineer: 12-21-98

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 [X] No [ ]; If Yes, indicate failure Mode **Valve Binding - Failure to remain open**
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

1.
2.
3.
4.
5.

CHECKLIST 1
ACCEPTANCE METHOD 1
SPECIAL TEST/INSPECTION VERIFICATION

SECTION 1

Item Description: **Griswold Flow Regular Valves** System #: **47**	Equip #: **FOV-1*22 & 1*23** Model #: **4902 F**
Manufacturer (Address/Phone): **Griswold Controls** **2803 Barranca Road** **PO Box 19612** **Irvine, CA 92714** **(714) 559-6000** P.O. #	Supplier (Address/Phone): **KJ Barnett** **(425) 881-1128**

SECTION 2 CRITICAL CHARACTERISTICS TO BE VERIFIED BY METHOD 1.

Insp	Test	Post-Test	
[X]	[ ]	[ ]	1. Manufacturer
[X]	[ ]	[ ]	2. Valve Model Number
[X]	[ ]	[ ]	3. Nameplate Data
[ ]	[X]	[ ]	4. Valve body and plug material
[X]	[ ]	[ ]	5. End Connection
[X]	[ ]	[ ]	6. Dimensions
[ ]	[X]	[ ]	7. Valve Reverse Flow
[ ]	[X]	[ ]	8. Flow Rate
[ ]	[X]	[ ]	9. Seismic Condition A

SECTION 3 BY INSPECTION

* See Attachment G of Desk Instruction for Sampling Size

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

Characteristic: **Valve Model Number**
Sample Size*: **All Items**
Acceptance Criteria: **4902F**
Receipt Inspection Plan / Report #: _____
References (see Section 7): _____

Characteristic: **Nameplate Data**

Sample Size*: **All Items**

Acceptance Criteria: **Per vendor's manual**

Receipt Inspection Plan / Report #: _____

References (see Section 7): **Vendor's Sheet F-2723A**

Characteristic: **End Connection**

Sample Size*: **All Items**

Acceptance Criteria: **3/4" FNTP**

Receipt Inspection Plan / Report #: _____

References (see Section 7): _____

Characteristic: **Dimensions**

Sample Size*: **All Items**

Acceptance Criteria: **Nominal length 4" and 1.5 lbs. weight**

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:	Number of Items to be Tested:
[ ] Purchaser	Test/Inspection Location:
[ ] Supplier/Manufacturer**	
[ ] Other	

Characteristic for Test: **Valve body and plug material**

Acceptance Criteria: **Stainless steel**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

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

Characteristic for Test: **Valve Reverse Flow**

Acceptance Criteria: **Apply 30 psid reverse flow (Ensure Nominal orifice flow)**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

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

Characteristic for Test: **Flow Rate**

Acceptance Criteria: **Maintain nominal 1 gpm output over input range of 4 to 30 psid.**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

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

Characteristic for Test: **Seismic Condition A**

Acceptance Criteria: **Maintain critical function during and after Seismic event.**

Sample Size*: **Normal Sampling Size**

Actual Test Value:

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

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

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
Manufacturer	Griswold Controls	X									
Valve Model Number	4902F	X									
Nameplate Data	Per vendor's manual	X									
Valve body and plug material	Stainless steel	X									
End Connection	3/4" FNTP	X									
Dimensions	Nominal length 4" and 1.5 lbs. weight	X									
Valve Reverse Flow	Apply 30 psid reverse flow (Ensure Nominal orifice flow)		X								
Flow Rate	Maintain nominal 1 gpm output over input range of 4 to 30 psid.		X								
Environmental	NA		X								
Seismic Condition A	Maintain critical function		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.

	BUYER VERIFICATION
Testing Agency Approval:_____ Date_____	Design Authority:_____ Date_____
Testing Agency QA Engineer:_____ Date_____	QA Engineer:_____ Date_____

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:**	