ENGINEERING CHANGE NOTICE

Page 1 of 21. ECN **663979**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. A. Artzer, CVDF, X3-78, 372-2785	4. USQ Required? ☒ Yes ☐ No	5. Date 11/10/00
	6. Project Title/No./Work Order No. SNF/W-441, Spent Nuclear Fuel Cold Vacuum Drying	7. Bldg./Sys./Fac. No. CVDF 142K	8. Approval Designator S ^N Q
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) SNF-3876, Rev. 3, SNF-3877, Rev. 4, SNF-3890, Rev. 2 & SNF-3934, Rev. 2	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 Added note that either actuator Model Number is acceptable; revised valve failure position sampling size to 100%; Revised stroke time to be a separate item in Section 4, By Special Test and Section 5. USQ Approval: <u>CVD-00-2311</u>			
13b. Design Baseline Document? ☐ Yes ☒ No <div style="text-align: right;">SC</div>			
14a. Justification (mark one) Criteria Change ☐ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☒ Facilitate Const ☐ Const. Error/Omission ☐ Design Error/Omission ☐	14b. Justification Details The CGI dedication document is being revised to rely on physical verification of valve failure position instead of relying on inspection of part number to verify valve failure position. 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) See distribution sheet.		RELEASE STAMP <div style="border: 1px solid black; padding: 10px; text-align: center;"> DATE: _____ STA: <u>A</u> NOV 13 2000 <div style="display: inline-block; border: 1px solid black; padding: 5px; margin: 5px;"> HANFORD RELEASE </div> ID: <u>2</u> </div>	

ENGINEERING CHANGE NOTICE				Page 2 of 2	1. ECN (use no. from pg. 1) 663979																																		
16. Design Verification Required ☒ Yes ☐ No	17. Cost Impact <table style="width: 100%; border: none;"> <tr> <td colspan="2" style="text-align: center; border-bottom: 1px solid black;">ENGINEERING</td> <td colspan="2" style="text-align: center; border-bottom: 1px solid black;">CONSTRUCTION</td> </tr> <tr> <td style="width: 15%;">Additional</td> <td style="width: 15%;">[N/A]</td> <td style="width: 15%;">\$</td> <td style="width: 15%;">Additional</td> </tr> <tr> <td>Savings</td> <td>[N/A]</td> <td>\$</td> <td>Savings</td> </tr> </table>			ENGINEERING		CONSTRUCTION		Additional	[N/A]	\$	Additional	Savings	[N/A]	\$	Savings	18. Schedule Impact (days) Improvement [N/A] Delay [N/A]																							
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19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.																																							
SDD/DD ☐ Functional Design Criteria ☐ Operating Specification ☐ Criticality Specification ☐ Conceptual Design Report ☐ Equipment Spec. ☐ Const. Spec. ☐ Procurement Spec. ☐ Vendor Information ☐ OM Manual ☐ FSAR/SAR ☐ Safety Equipment List ☐ Radiation Work Permit ☐ Environmental Impact Statement ☐ Environmental Report ☐ Environmental Permit ☐	Seismic/Stress Analysis ☐ Stress/Design Report ☐ Interface Control Drawing ☐ Calibration Procedure ☐ Installation Procedure ☐ Maintenance Procedure ☐ Engineering Procedure ☐ Operating Instruction ☐ Operating Procedure ☐ Operational Safety Requirement ☐ IEFD Drawing ☐ Cell Arrangement Drawing ☐ Essential Material Specification ☐ Fac. Proc. Samp. Schedule ☐ Inspection Plan ☐ Inventory Adjustment Request ☐	Tank Calibration Manual ☐ Health Physics Procedure ☐ Spares Multiple Unit Listing ☐ Test Procedures/Specification ☐ Component Index ☐ ASME Coded Item ☐ Human Factor Consideration ☐ Computer Software ☐ Electric Circuit Schedule ☐ ICRS Procedure ☐ Process Control Manual/Plan ☐ Process Flow Chart ☐ Purchase Requisition ☐ Tickler File ☐ N/A ☒																																					
20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.																																							
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N/A																																							
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[illegible]

Worcester 1" Solenoid- Actuated Gas-Operated VPS System Ball Valve

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-3934
Revision 3

ECN 663979

Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve

Project No: W-441

Division: SNF

C. R. Miska
Fluor Hanford, Inc.

Date Published
November 2000

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Fluor Hanford
P.O. Box 1000
Richland, Washington

11/13/00
Release Approval Date

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Printed in the United States of America

Total Pages:

14

SNF. 3934, MW 3

Commercial Grade Item Upgrade Dedication Form		SNF-3934, Rev. 3
ECN No. N/A	CGI No. CGI-SNF-D-07-P4-042	Page 1 of 10
Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

Section 1 Part Information			
Item No.: N/A		Manufacturer: N/A	
Mfg. Part/Model No.: N/A		Supplier: N/A	
Part Description: N/A			
End Use Description: N/A			
Section 2a Component Information			
Equipment No.: VPS-GOV/SOV-1*11, 1*17		Specification No.: SNF-5303 (W-441-P4)	Manufacturer: Worcester Controls
Past P.O. No.: N/A			
Procurement and/or Model Number: 1" E 5966RTBW4 with 15I939SWM2120PBC		Equipment Supplier (if different from manufacturer): Olympic Tool & Engineering	Equip. Supplier's Part No.: N/A
Component Description: 1" Gas-operated full-port ball valve incorporates a solenoid and limit switches as integral parts of the actuator. The valve is normally open and fails safe to the closed position. The associated valve position switch is class GS.			
Section 2b Commercial Availability of the Item			
<p>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)?</p> <p style="margin-left: 40px;">☐ YES (go to #2 below)</p> <p style="margin-left: 40px;">☒ NO (go to procedure step 6.3.2, proceed to dedicate Item)</p> <p>If not available from a qualified NQA1 supplier, is it available from an ISO 9000 supplier? (coordinate w/ project CGI Interface Engineer or BTR):</p> <p style="margin-left: 40px;">☐ YES (go to #2 below, procedure step 6.3.2, dedicate Item)</p> <p style="margin-left: 40px;">☒ NO (procedure step 6.3.2, dedicate Item)</p>			
2. List of Candidate qualified suppliers or ISO 9000 suppliers: N/A			
3. 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)	
☒ 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)		

Commercial Grade Item Upgrade Dedication Form		SNF-3934, Rev. 3
ECN No. NA	CGI No. CGI-SNF-D-07-P4-042	Page 2 of 10
Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

Section 3 Failure Effects Evaluation			
A. Part/Component Safety Function:			
1. Prevent H₂ Explosion.			
2. Remain intact and functional during any event that might threaten the valve integrity. Maintain intact pressure boundary/confinement.			
3. Maintain critical function before and after seismic event.			
B. Part/Component Functional Mode:			
Safety Function #1: ☒ Active ☐ Passive		Active - Mechanical or Electrical change of state is required to occur for the component to perform its safety function	
Safety Function #2: ☐ Active ☒ Passive		Passive - Change of state is not required for the component to perform its safety function	
Safety Function #3: ☐ Active ☒ Passive			
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. Electrical fault in the solenoid. Valve fails closed (fail-safe)			
2. Loss of air pressure to the pneumatic actuator. Valve fails closed (fail safe)			
3. Loss of control signal to solenoid. Valve fails closed (fail safe)			
Section 4 Environmental & Natural Phenomena Hazard Design			
Environmental Qualification Required:		If yes: Environmental Qualification Requirements	
Yes ☐		Limiting Environmental Conditions:	
No ☒ Environmental Condition B		Required Safety Functions:	
		Qualification Period:	
Natural Phenomena Hazard (NPH) Design Required:		If yes: NPH Design Requirements	
Yes ☒		Performance Category: PC-3	
No ☐		NPH Design Req'ts.: Seismic Condition A	
HNF-PRO-97		Required Safety Functions: Boundary/Confinement,	
SNF-5303		Isolation, Prevent H₂ Explosion	
Section 5 Component Functional Classification			
☒	Safety Class (SC)	☐	General Service (GS)
☐		☐	Safety Significant (SS)
If part/component classification is different from host component/system, document basis. N/A			
Sections 6 and 7 (Reserved)			
Section 8 References (for Functional Classification)			
National Codes/Standards: ASME B31.3			
Safety Analysis Report (SAR): HNF- 3553, Annex B			
Drawings: H-1-82161, HNF-SD-SNF-SEL-002			
Vendor Manual/Manufacturer/Supplier Information: Worcester PB451-22			

Commercial Grade Item Upgrade Dedication Form		SNF-3934, Rev. 3
ECN No. N/A	CGI No. CGI-SNF-D-07-P4-042	Page 3 of 10
Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

Section 9 Critical Characteristics				
Critical Characteristics	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	Worcester Controls	1, IN	X	
Valve-Component Number-Procurement and/or Model Number	1" E 5966RTBW4 (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)	1, IN	X	
Actuator-Component Number-Procurement and/or Model Number (Includes SOV)	15I939SWM2120PBC (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet) (Either Model Number 15I939SWM2120PBC or 15I39SWM2120PBC is acceptable because valve failure position will be verified for 100% of items as a Critical Characteristic.)	1, IN	X	
Nameplate Data of Actuator (Includes SOV)	Per Vendor Manual. To Include "R6" (Upper Right Corner)	1, IN	X	
2. Physical Critical Characteristics (for reasonable assurance that the Item delivered is the Item specified)				
Valve Body Material	Stainless Steel (Note 4)	1, IN; 1, T	X	
Configuration/Mounting	Integral Actuator/Valve Assembly. Black recessed override button	1, IN	X	
Process Connection	1" Butt Weld	1, IN	X	
3. Performance Critical Characteristics (for reasonable assurance that the Item will perform its intended safety function(s))				
GOV Pressure Boundary	Pressure Test At nominal 165 psig (Zero Leakage) Note 3	1, T		X
Internal Pressure	Withstands nominal 150 psig and 29" Hg Vacuum (Zero Leakage)	1, T		X
GOV Seat Leakage	Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (110%), soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles. Note 5	1, T		X
GOV Fail Safe Position	Valve fails CLOSED on loss of air pressure, control signal, or electrical power to the solenoid. Stroke time less than 2 seconds.	1, T		X
Environmental	Note 1			
Seismic Condition A	Note 2	1, T		X

Commercial Grade Item Upgrade Dedication Form		SNF-3934, Rev. 3
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Title: <u>Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve</u>		

<p>4. Notes and Legend:</p> <ol style="list-style-type: none"> 1. These valves have coro-lube (nickel-acetate), acetal resin, and NEMA Enclosed Solenoids, these materials are not subject to degradation at 40°F and 60% RH or 115°F and 22% RH and are suitable for condition B Application. 2. Maintain critical function before and after seismic event. W-441-P4, Rev. 3, Appendix L, pages L-2 & L-4, provide a seismic testing plan for these components at a (TBD) seismic spectra. Equipment that has been shaker-table tested should not be installed in a plant (Ref. IEEE Standard 344-1984, Section 7). Consequently, the seismic test constitutes a destructive test. The industry sampling practice for destructive test is to test only one item. 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. 5. 15 psig = 15 psig or 25% of 150 psig=37.5 whichever is less (ASME V, Article 10, T-1044 and B31.1-1993, 345.8(a)) <p>Rev. 2: Rev'd all pages – new forms; rev'd Internal Pressure Acc. Criteria to "Withstands nominal 150 psig and 29" Hg Vacuum", GOV Seat Leakage Acc. Criteria – rev'd all, GOV Fail Safe Position rev'd Stroke Time to "Less Than 2 Seconds", Deleted CC: Insulation Resistance, Solenoid Inrush Current, Solenoid Holding Current, and Current Carrying Capability Of Contacts</p> <p>Rev. 3: Added note that either actuator Model Number is acceptable; revised valve failure position sampling size to 100%; Revised stroke time to be a separate item in Section 4, By Special Test and Section 5.</p>	<p>Acceptance Method:</p> <ol style="list-style-type: none"> 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	
<p>Approvals: <u>ana pu telecom for</u></p> <p>Designated Engineer: <u>Carl Van Katwijk 11/10/00</u></p> <p>Design Authority: <u>[Signature] 11/10/00</u></p> <p>QA Engineer: <u>[Signature] 11/10/00</u></p>	

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Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

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.	X	Structural Failure or Seizure of Valve/Disc
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. Loss of Air Pressure			

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Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

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

SECTION 1			
Item Description: VPS Solenoid/Air Operated 1" Ball Valves		Equip #: VPS/SOV-1*11, 1*17	
System #: 07		Procurement and/ or Model #: 1" E 5966RTBW4 with 15I939SWM2120PBC	
Manufacturer (Address/Phone): Worcester Controls P.O. Box 538 33 Lock Dr. Marborough, MA 01752 (508) 481-4800		Supplier (Address/Phone): Olympic Tool & Engineering W. 21 Sanderson Way Shelton, WA 98584 (360)426-5231	
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. Actuator-Component Number-Procurement and/or Model Number (Includes SOV)
X			4. Nameplate Data of Actuator (Includes SOV)
X	X		5. Body Material (Verification may be by either inspection or test)
X			6. Configuration/Mounting
X			7. Process Connection
	X		8. GOV Pressure Boundary
	X		9. Internal Pressure
	X		10. GOV Seat Leakage
	X		11. GOV Fail Safe Position
	X		12. GOV Stroke Time to Fail Safe Position
	X		13. Seismic Condition A
SECTION 3 BY INSPECTION * See Appendix D, Table D-1, of Administrative Procedure EN-5-035-01 for Sampling Size; References (See Section 7)			
Characteristic: Nameplate - Manufacturer		Sample Size*: 100%	
Acceptance Criteria: Worcester Controls		Receipt Inspection Plan / Report #:	
Characteristic: Valve Component Number-Procurement and/or Model Number		Sample Size*: 100%	
Acceptance Criteria: 1" E 5966RTBW4 (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)		Receipt Inspection Plan / Report #:	
Characteristic: Actuator-Component Number-Procurement and/or Model No. (Includes SOV)		Sample Size*: 100%	
Acceptance Criteria: 15I939SWM2120PBC (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet) (Either Model Number 15I939SWM2120PBC or 15I39SWM2120PBC is acceptable because valve failure position will be verified for 100% of items as a Critical Characteristic.)		Receipt Inspection Plan / Report #:	

Commercial Grade Item Upgrade Dedication Form		SNF-3934, Rev. 3
ECN No. N/A	CGI No. CGI-SNF-D-07-P4-042	Page 7 of 10
Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

Characteristic Nameplate Data of Actuator (Includes SOV)	Sample Size*: 100%
Acceptance Criteria: Per Vendor Manual. To Include "R6" (Upper Right Corner).	
Receipt Inspection Plan / Report #:	
Characteristic: Process Connection	Sample Size*: 100%
Acceptance Criteria: 1" Butt Weld	Receipt Inspection Plan / Report #:
Characteristic: Configuration/Mounting	Sample Size*: 100%
Acceptance Criteria: Integral Actuator/Valve Assembly. Black recessed override button.	
Receipt Inspection Plan / Report #:	
Characteristic: Valve Body Material	Sample Size*: 100%
Acceptance Criteria: Stainless Steel	Receipt Inspection Plan / Report #:
Section 4 By Special Test * See Appendix D, Table D-1, of Administrative Procedure EN-6-035-01 for Sampling Size, References (See Section 7)	
Characteristic for Test: GOV Pressure Boundary	Samp Size*: ☒ Normal ☐ Reduced ☐ Tightened
Acceptance Criteria: Pressure Test at nominal 165 psig for >10 minutes; Reduce pressure to 100%, perform snoop test (No Leakage-No Bubbles)	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Internal Pressure	Samp Size*: ☐ Normal ☐ Reduced ☐ Tightened
Acceptance Criteria: Withstands nominal 150 psig and 29" Hg Vacuum	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: GOV Seat Leakage	Samp Size*: ☐ Normal ☐ Reduced ☐ Tightened
Acceptance Criteria: Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (110%), soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: GOV Fail Safe Position	Samp Size*: 100%
Acceptance Criteria: Valve fails CLOSED on loss of air pressure, control signal, or electrical power to the solenoid.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: GOV Stroke Time to Fail Safe Position	Samp Size*: ☐ Normal ☐ Reduced ☐ Tightened
Acceptance Criteria: Stroke time less than 2 seconds.	
Actual Test Value:	Test Plan and Report #:
Characteristic for Test: Seismic Condition A	Samp Size*: Destructively Test Only One Item
Acceptance Criteria: Maintain Critical Function Before and After Seismic Event	
Actual Test Value:	Test Plan and Report #:

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

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Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve

Section 5: Test / Inspection Summary (Acceptance Method 1)

1. SUMMARY OF VERIFIED CRITICAL CHARACTERISTICS, THEIR VERIFICATION METHODS, AND RESULTS

ITEM DESCRIPTION: Gas Operated Full Port Ball Valves

Critical Characteristics				Verification Results							
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/I/N	Procedure or RR#	Check- list ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
Manufacturer	Worcester Controls	X		1, IN							
Valve Component No.- Proc. and/or Model No.	1" E 5969RTBW4 (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheet)	X		1, IN							
Actuator P/N-Comp. No.-Proc. and/or Model No. (Includes SOV)	15939SWM2120PBC (Per Procurement Package W-441-P4, Rev. 3, Section H, Design Data Sheets) (Either Model Number 15939SWM2120PBC or 15939SWM2120PBC is acceptable because valve failure position will be verified for 100% of items as a Critical Characteristic.)	X		1, IN							
Nameplate Data of Actuator (Includes SOV)	Per Vendor Manual. to Include "R6" (Upper Right Corner).	X		1, IN							
Body Material	Stainless Steel	X		1, IN							
Configuration/ Mounting	Integral Actuator/Valve Assembly. Black recessed override button.	X		1, IN							
Process Connection	1" Butt Weld	X		1, IN							

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Title: <u>Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve</u>		

ITEM DESCRIPTION: Gas Operated Full Port Ball Valves - Continued											
Critical Characteristics					Verification Results						
Critical Characteristics	Acceptance Criteria/Tolerances	ID	Function	Method T/N	Procedure or RR#	Check-List ID	Number Tested	Number Failed	Verifying Organization	Printed Name Signature	Date
GOV Pressure Boundary	Pressure Test At nominal 165 psig (Zero Leakage)		X	1, T							
Internal Pressure	Withstands nominal 150 psig and 29" Hg Vacuum (Zero Leakage)		X	1, T							
GOV Seat Leakage	Pressurize the upstream side of the valve seat to 165 psig (110%) and reduce to 150 psig (110%), soaking for 10 min. at 150 psig, then check for obvious leaks. Apply bubble leak solution on the valve seat to find leaks. Proceed to lower the pressure to 15 psig for the Sensitive Leak Test. Apply solution to valve seat area after minimum 15 minutes soak time at nominal 15 psig. Acc. Criteria: No Leakage-No Bubbles.		X	1, T							
GOV Fail Safe Position	Valve fails CLOSED on loss of air pressure, control signal, or electrical power to the solenoid.		X	1, T							
GOV Stroke Time to Fail Safe Position	Stroke time less than 2 seconds.		X	1, T							
Seismic Condition A	Maintain Critical Function Before and After Seismic Event.		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: _____ Date _____						
Testing Agency QA Engineer: _____					QA Engineer: _____ Date _____						

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Title: Worcester 1" Solenoid-Actuated Gas-Operated VPS System Ball Valve		

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: Vendor Specifications: Worcester PB451-22	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:	