

Form Approval

Approval Date

3/10/05

Effective Date

3/17/05

Surveillance Form

**Generic Information**

Form Title

Main Steam Safety Valve Testing

Rev. No.

010-02

Reference Procedure

SP 2730B

Applicable TS/TRM

4.7.1.1, 4.0.5

Applicability (TS/TRM)

MODES 1, 2, and 3

Frequency

See Note*

Specific Information

Schedule Start Date

4/9/05

AWO Number

M20405237

Mntc Restoration

☐ Yes☒ No

Performance Modes

Prerequisites Completed (Initials)

am-

Precautions Noted (Initials)

my

Test Authorized By

Date

4-7-05

Partial Surveillance

☐ Yes☒ No

Performed By

Date

4/7/05

Accepted By

Date

4/9/05

Acceptance Criteria Satisfied

☒ Yes☐ No

Approved By (Department Head or Designee)

Date

4/9/05

Surveillance Information

Test Equipment Type	#1 Main Steam Header (East)		#2 Main Steam Header (West)	
	QA Number	Cal Due Date	QA Number	Cal Due Date
Hydroset	QA-02197	2/6/06	QA-02198	2/6/06
Hydroset Pressure Gauge	QA-00066	3/29/06	QA-00068	9/26/05
Steam Header Pressure Gauge	QA-00068	08/29/06	QA-00558	9/28/05
Pyrometer	QA-01219	12/9/05	QA-1220	12/9/05

Comments

CR# 05-03129

*Note: Class 2 Main Steam Safety Valves: All valves shall be tested within each subsequent

5 year period with a minimum of 20% of the valves tested within any 24 months. This 20% shall be

previously untested valves, if they exist (from ASME/ANSI OM-1987, Part 1, Section 1.3.3).

NOTE: Following acceptance by SM, copy FORWARDED to IST Coordinator.



Initial

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Rev. 010-02

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Main Steam Safety Valve Testing

Test Information			
Valve No. 2-MS- <u>243</u>		Valve Serial No.: <u>BN-4974</u>	
Valve inspection (circle result and describe discrepancy if any): <u>(SAT)</u> / UNSAT			
<ul style="list-style-type: none"> • Leakage (check drip pan) • Damaged parts • Abnormal condition 			
Check <input checked="" type="checkbox"/> below method used to verify valve set pressure:			
"As Found"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
"As Left"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
If set pressure verified at off-site test facility, record:		Test Facility: <u>N/A</u>	
		PO number: <u>N/A</u>	
Record Test Results:		"As Found" Set Pressure: <u>1035.6</u> "As Left" Set Pressure (1st): <u>1035.4</u> "As Left" Set Pressure (2nd): <u>1038</u> "As Left" Seat Tightness SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	
MSSV Operational Readiness	<ul style="list-style-type: none"> • 2 "As Left" set pressures within 1% of setpoint • Satisfactory "As Left" seat tightness 	SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	<u>TRI</u> Initials

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

Test Engineer: [Signature] Date: 4/7/05

Management Test Lead: [Signature] Date: 4/7/05

Main Steam Safety Valve Testing

Test Information			
Valve No. 2-MS- <u>244</u>		Valve Serial No.: <u>BN-4970</u>	
Valve inspection (circle result and describe discrepancy if any): SAT / UNSAT			
<ul style="list-style-type: none"> • Leakage (check drip pan) • Damaged parts • Abnormal condition 			
Check <input checked="" type="checkbox"/> below method used to verify valve set pressure:			
"As Found"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
"As Left"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
If set pressure verified at off-site test facility, record:		Test Facility: <u>N/A</u>	
		PO number: <u>N/A</u>	
Record Test Results:		"As Found" Set Pressure: <u>1014</u> "As Left" Set Pressure (1st): <u>1014</u> "As Left" Set Pressure (2nd): <u>1010.8</u> "As Left" Seat Tightness SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	
MSSV Operational Readiness	<ul style="list-style-type: none"> • 2 "As Left" set pressures within 1% of setpoint • Satisfactory "As Left" seat tightness 	SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	<u>TBI</u> Initials

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

Test Engineer:

Wm C. Bell

Date: 4/7/08

Management Test Lead:

W. O. W.

Date: 4/7/08

Main Steam Safety Valve Testing

②

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

[Handwritten signature]

Date: 3/7/05

7/70 will

Date: 4/7/05 -

Main Steam Safety Valve Testing

Test Information			
Valve No. 2-MS- <u>250</u>		Valve Serial No.: <u>BN-4971</u>	
Valve inspection (circle result and describe discrepancy if any): <u>SAT</u> UNSAT			
<ul style="list-style-type: none"> • Leakage (check drip pan) • Damaged parts • Abnormal condition 			
Check <input checked="" type="checkbox"/> below method used to verify valve set pressure:			
"As Found"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
"As Left"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
If set pressure verified at off-site test facility, record:		Test Facility: <u>N/A</u>	
		PO number: <u>N/A</u>	
Record Test Results:		"As Found" Set Pressure: <u>1039.8</u>	
		"As Left" Set Pressure (1st): <u>1023.0</u>	
		"As Left" Set Pressure (2nd): <u>1024.4</u>	
		"As Left" Seat Tightness SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	
MSSV Operational Readiness	<ul style="list-style-type: none"> • 2 "As Left" set pressures within 1% of setpoint • Satisfactory "As Left" seat tightness 	SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	<u>293</u> Initials

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

Test Engineer:

Date: 4/7/05

Management Test Lead:

Date: 4/2/05

Main Steam Safety Valve Testing

Test Information			
Valve No. 2-MS- <u>248</u>		Valve Serial No.: <u>BN-4975</u>	
Valve inspection (circle result and describe discrepancy if any) <u>SAT</u> / UNSAT			
<ul style="list-style-type: none"> Leakage (check drip pan) Damaged parts Abnormal condition 			
Check <input checked="" type="checkbox"/> below method used to verify valve set pressure:			
"As Found"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
"As Left"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
If set pressure verified at off-site test facility, record:		Test Facility: <u>N/A</u>	
		PO number: <u>N/A</u>	
Record Test Results:		"As Found" Set Pressure: <u>1013.0</u>	
		"As Left" Set Pressure (1st): <u>1029.1</u>	
		"As Left" Set Pressure (2nd): <u>1028.4</u>	
		"As Left" Seat Tightness SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	
MSSV Operational Readiness	<ul style="list-style-type: none"> 2 "As Left" set pressures within 1% of setpoint Satisfactory "As Left" seat tightness 	SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	<u>ESB</u> Initials

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

Test Engineer:

Eric D. Bookmiller

Date: 4/7/05

Management Test Lead:

H₂O will

Date: 4/7/05

Main Steam Safety Valve Testing

Test Information			
Valve No. 2-MS- <u>241</u>		Valve Serial No.: <u>BN-4968</u>	
Valve inspection (circle result and describe discrepancy if any) <u>(SAT)</u> / UNSAT • Leakage (check drip pan) • Damaged parts • Abnormal condition			
Check <input checked="" type="checkbox"/> below method used to verify valve set pressure:			
"As Found"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
"As Left"	<input checked="" type="checkbox"/>	In-line test (hydraulic assist lift test)	
	<input type="checkbox"/>	Off-site test facility	
If set pressure verified at off-site test facility, record:		Test Facility: <u>N/A</u> PO number: <u>N/A</u>	
Record Test Results:		"As Found" Set Pressure: <u>1044.8</u> * "As Left" Set Pressure (1st): <u>1010.1</u> "As Left" Set Pressure (2nd): <u>1008.1</u> "As Left" Seat Tightness SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	
MSSV Operational Readiness	• 2 "As Left" set pressures within 1% of setpoint • Satisfactory "As Left" seat tightness	SAT <input checked="" type="checkbox"/> UNSAT <input type="checkbox"/>	<u>JRI</u> Initials

Test was conducted in accordance with SP 2730B, "Main Steam Safety Valve Testing (IPTE)" and test results are accurate.

Test Engineer:

Wam Belen

Date: 4/7/05

Management Test Lead:

W.D. Will

Date: 4/7/05

* As found set pressure outside 3% acceptance criteria
see CR-05-03129

Main Steam Safety Valve Testing

Acceptance Criteria

"As Found" – On first lift, valve opens at design lift setting (-3% , to less than $+3\%$)

"As Left" – On last two consecutive lifts, valve opens at design lift setting ($\pm 1\%$) (first lift may be included as one of the two consecutive lifts if first lift is within $\pm 1\%$) [✚Ref. 6.4]

Valve Set Pressure Acceptance Criteria

Valve ID#	"As Found" (psig)	Valve ID#	"As Left" (psig)
2-MS-239	1004 to 1066	2-MS-239	1025 to 1045
2-MS-240	999 to 1061	2-MS-240	1020 to 1040
2-MS-241	980 to 1041	2-MS-241	1001 to 1020
2-MS-242	961 to 1020	2-MS-242	981 to 1000
2-MS-243	1004 to 1066	2-MS-243	1025 to 1045
2-MS-244	990 to 1051	2-MS-244	1010 to 1030
2-MS-245	970 to 1030	2-MS-245	991 to 1010
2-MS-246	956 to 1015	2-MS-246	976 to 995
2-MS-247	956 to 1015	2-MS-247	976 to 995
2-MS-248	1004 to 1066	2-MS-248	1025 to 1045
2-MS-249	970 to 1030	2-MS-249	991 to 1010
2-MS-250	999 to 1061	2-MS-250	1020 to 1040
2-MS-251	990 to 1051	2-MS-251	1010 to 1030
2-MS-252	980 to 1041	2-MS-252	1001 to 1020
2-MS-253	1004 to 1066	2-MS-253	1025 to 1045
2-MS-254	961 to 1020	2-MS-254	981 to 1000

Lift settings are from Tech. Spec. Table 4.7-1, Amend. #195, and have been converted in this table from psia to psig to prevent transposition errors during testing. The following methodology of calculation was utilized:

Minimum criteria "As Found" = TS Setpoint $\times 0.97 - 14.7$

Maximum criteria "As Found" = TS Setpoint $\times 1.03 - 14.7$

Minimum criteria "As Left" = TS Setpoint $\times 0.99 - 14.7$

Maximum criteria "As Left" = TS Setpoint $\times 1.01 - 14.7$

All criteria is conservatively rounded toward the setpoint to the nearest whole number.

"As-Left Seat Tightness"

All Valves	No audible leakage
	No PPC alarm for flow switch of valve under test

(Sheet 1 of 1)

Valve ID# 2-MS- 240

Hydroset QA No. (4762191)

Hydroset Serial No. (45-547)

- 849.1 psig Steam Header Pressure (Step 4.2.1)

$$= \frac{190.9}{0.312} \text{ Hydroset Influence (Step 4.2.3.b.)} \div 0.312 = \frac{579.8}{\text{Expected Hydroset Pressure (Step 4.2.3.c.)}}$$

- 583 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)

$$= \underline{-3} \text{ psig Hydroset Correction (Step 4.2.3.e.)} \times 0.312 = (+/-) \frac{\underline{-.936}}{\text{Hydroset Influence Correction}} \quad (\text{Step 4.2.3.f.})$$

x (-)0.43 psig/ft

-3.9 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

Level of Use
Continuous



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Attachment 8
Test Data Sheet Using Dresser Model 1566 Hydroset
(Sheet 1 of 1)

AIVO#: 42-04-05137

Valve ID# 2-MS- 240

(Blank copies of Attachment 8 may be reproduced as necessary)

Hydroset Correction calculation based on Header Pressure of (<u>849</u>) psig using Hydroset QA No. (<u>02190</u>)										
Test Data							Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.		
Test No. & Time	Hydroset Pressure (psig)	Hydroset Influence	Hydroset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes		
							Initial	Initial	CW or CCW	No. of Flats
1. <u>0754</u>	<u>579</u>	<u>-190.6</u>	<u>-.94</u>	<u>-3.9</u>	<u>854</u>	<u>1029.8</u>	<u>W</u>			
2. <u>1004</u>	<u>551.8</u>	<u>172.1</u>	<u>-.94</u>	<u>-3.9</u>	<u>854</u>	<u>1021.3</u>	<u>W</u>			
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

1. Set Pressure = The sum of the highlighted columns.
2. Hydroset Influence = Hydroset Pressure (PSIG) x 0.312
4. Hydroset Correction must be calculated from Correction Chart supplied with Hydroset Calibration Documentation. This calculation should be completed prior to performance of test. Hydroset Correction should be expressed as a (+) or (-) value in graduations of Hydroset Influence.
5. Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
Continuous



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20" differential between test gauge and hydroset

Attachment 7

Hydroset Correction Calculation

(Sheet 1 of 1)

AWO#: m204-05237

Valve ID# 2-MS- 241

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset QA No. (02198)

Hydroset Serial No. (45-547)

1010 psig MSSV Set Pressure (Step 4.2.3.a.)
 - 854 psig Steam Header Pressure (Step 4.2.1)
 = 156 Hydroset Influence (Step 4.2.3.b.) \div 0.312 = 500
 Expected Hydroset Pressure (Step 4.2.3.c.)

500 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
 - 503 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
 = -3 psig Hydroset Correction (Step 4.2.3.e.) \times 0.312 = (+/-) -0.94
 Hydroset Influence Correction (Step 4.2.3.f.)

2.08 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)
 \times (-)0.43 psig/ft
 = -3.9 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

Comments:

Level of Use
Continuous



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Attachment 8

Test Data Sheet Using Dresser Model 1566 Hydroset

(Sheet 1 of 1)

AWO#: M204 05237Valve ID# 2-MS- 241

(Blank copies of Attachment 8 may be reproduced as necessary)

02198 TRFHydroset Correction calculation based on Header Pressure of (854) psig using Hydroset QA No. (HS-847)

Test Data							Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.		
Test No. & Time	Hydroset Pressure (psig)	Hydroset Influence	Hydroset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes		
							Initial	Initial	CW or CCW	No. of Flats
1. 1027	627	185.6	-1.94	-3.9	854	1044.8	68			
2. 1040	516	160.88	-1.94	-3.9	854	1010.6	67			
3. 1045	509.6	159	-1.94	-3.9	854	1008.1	67			
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

1. Set Pressure = The sum of the highlighted columns.
2. Hydroset Influence = Hydroset Pressure (PSIG) x 0.312
4. Hydroset Correction must be calculated from Correction Chart supplied with Hydroset Calibration Documentation. This calculation should be completed prior to performance of test. Hydroset Correction should be expressed as a (+) or (-) value in graduations of Hydroset Influence.
5. Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
Continuous


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hydroset level differential 20"

Attachment 7

Hydroset Correction Calculation

(Sheet 1 of 1)

AWO#: M204-05237

Valve ID# 2-MS- 243

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset QA No. (2198)

Hydroset Serial No. HS-547)

1035 psig MSSV Set Pressure (Step 4.2.3.a.)
 - 854 psig Steam Header Pressure (Step 4.2.1)
 = 181 Hydroset Influence (Step 4.2.3.b.) \div 0.312 = 580.1
 Expected Hydroset Pressure (Step 4.2.3.c.)

580 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
 - 583 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
 = -3 psig Hydroset Correction (Step 4.2.3.e.) \times 0.312 = (+/-) -0.94
 Hydroset Influence Correction (Step 4.2.3.f.)

9.08 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)
 \times (-)0.43 psig/ft
 = -3.9 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

Comments: 7/- 3% 1004 1066 5% 795.9

480.7 679

Level of Use
Continuous



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Attachment 8

Test Data Sheet Using Dresser Model 1566 Hydroset

(Sheet 1 of 1)

AWO#: m20405237Valve ID# 2-MS- 243

(Blank copies of Attachment 8 may be reproduced as necessary)

Hydroset Correction calculation based on Header Pressure of (854) psig using Hydroset QA No. (2198)

Test Data							Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.		
Test No. & Time	Hydroset Pressure (psig)	Hydroset Influence	Hydroset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes		
							Initial	Initial	CW or CCW	No. of Flats
1. <u>1145</u>	<u>603.7</u>	<u>188.4</u>	<u>-94</u>	<u>8 -3.9</u>	<u>852</u>	<u>1035.6</u>	<u>TRI</u>			
2. <u>1152</u>	<u>472.8</u>	<u>147.5</u>	<u>-94</u>	<u>-3.9</u>	<u>853</u>	<u>995.7</u>	<u>TRI</u>			
3. <u>1158</u>	<u>511.2</u>	<u>159.5</u>	<u>-94</u>	<u>-3.9</u>	<u>853 ps</u>	<u>1007.6</u>	<u>TRI</u>	<u>CW</u>	<u>2</u>	
<u>1220</u>	<u>559.7</u>	<u>174.6</u>	<u>-94</u>	<u>-3.9</u>	<u>854</u>	<u>1023.8</u>	<u>W3</u>	<u>W3</u>	<u>CW</u>	<u>1</u>
<u>1232</u>	<u>596.99</u>	<u>186.3</u>	<u>-94</u>	<u>-3.9</u>	<u>854</u>	<u>1035.4</u>	<u>W3</u>			
6. <u>1240</u>	<u>611.63</u>	<u>190.8</u>	<u>-94</u>	<u>-3.9</u>	<u>852</u>	<u>1038</u>	<u>W3</u>			
7.										
8.										
9.										
10.										
11.										

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

1. Set Pressure = The sum of the highlighted columns.
2. Hydroset Influence = Hydroset Pressure (PSIG) x 0.312
4. Hydroset Correction must be calculated from Correction Chart supplied with Hydroset Calibration Documentation. This calculation should be completed prior to performance of test. Hydroset Correction should be expressed as a (+) or (-) value in graduations of Hydroset Influence.
5. Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
ContinuousSP 2730B
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105
105.

Attachment 7

Hydroset Correction Calculation

(Sheet 1 of 1)

AWO#: M20405237

Valve ID# 2-MS- 244

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset QA No. (2198)

Hydroset Serial No. (547)

1020 psig MSSV Set Pressure (Step 4.2.3.a.)
 - 854 psig Steam Header Pressure (Step 4.2.1)
 = 166 Hydroset Influence (Step 4.2.3.b.) $\div 0.312 =$ 532.05
 Expected Hydroset Pressure (Step 4.2.3.c.)

530 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
 - 533 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
 = -3 psig Hydroset Correction (Step 4.2.3.e.) $\times 0.312 = (+/-)$ -0.94
 Hydroset Influence Correction (Step 4.2.3.f.)

9.08 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)
 x (-)0.43 psig/ft
 = -3.9 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

Comments: ✓ 990-1057 5% 695
435.9 630.1

Level of Use
Continuous



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Attachment 8

Test Data Sheet Using Dresser Model 1566 Hydroset

AWO#: M204 05237

(Sheet 1 of 1)

Valve ID# 2-MS- 244

(Blank copies of Attachment 8 may be reproduced as necessary)

Hydroset Correction calculation based on Header Pressure of (854) psig using Hydroset QA No. (02198)

Test Data						Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.	
Test No. & Time	Hydroset Pressure (psig)	Hydroset Influence	Hydroset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes	
							Initial	Initial	No. of Flats
1. <u>1111</u>	<u>528.2</u>	<u>164.8</u>	<u>284</u>	<u>-3.9</u>	<u>854</u>	<u>1013.104</u>	<u>68</u>		
2. <u>1119</u>	<u>518.2</u>	<u>161.7</u>	<u>284</u>	<u>-3.7</u>	<u>854</u>	<u>1010.8</u>	<u>68</u>		
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

- Set Pressure = The sum of the highlighted columns.
- Hydroset Influence = Hydroset Pressure (PSIG) x 0.312
- Hydroset Correction must be calculated from Correction Chart supplied with Hydroset Calibration Documentation. This calculation should be completed prior to performance of test. Hydroset Correction should be expressed as a (+) or (-) value in graduations of Hydroset Influence.
- Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
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107
108
①

(Sheet 1 of 1)

Valve ID# 2-MS- 248

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset Serial No. (4-236-2)

$$\begin{aligned}
 & \underline{1035} \text{ psig MSSV Set Pressure (Step 4.2.3.a.)} \\
 - & \underline{859} \text{ psig Steam Header Pressure (Step 4.2.1)} \\
 = & \underline{176} \text{ Hydroset Influence (Step 4.2.3.b.)} \div 0.312 = \underline{\underline{564.1}} \\
 & \text{Expected Hydroset Pressure (Step 4.2.3.c.)}
 \end{aligned}$$

565 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
- 570 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
= -5 psig Hydroset Correction (Step 4.2.3.e.) x 0.312 = (+/-) -1.6
Hydroset Influence Correction (Step 4.2.3.f.)

10.9 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)

x (-)0.43 psig/ft

= -4.7 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

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Attachment 8
Test Data Sheet Using Dresser Model 1566 Hydroset

(Sheet 1 of 1)

AWO#: 112-04-05237

Valve ID# 2-MS- 248

(Blank copies of Attachment 8 may be reproduced as necessary)

Hydroset Correction calculation based on Header Pressure of (859) psig using Hydroset QA No. (ME 02197)

Test Data							Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.		
Test No. & Time	Hydroset Pressure (psig)	Hydroset Influence Correction	Hydroset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes		
							Initial	Initial	CW or CCW	No. of Flats
1. <u>1126</u>	<u>510.6</u>	<u>159.3</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1013.0</u>	<u>803</u>			
2. <u>1132</u>	<u>525.3</u>	<u>163.9</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1017.6</u>		<u>803</u>	<u>CW</u>	<u>2.5</u>
3. <u>1155</u>	<u>546.3</u>	<u>170.4</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1024.1</u>		<u>802</u>	<u>CW</u>	<u>1</u>
<u>1208</u>	<u>562.3</u>	<u>175.4</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1029.1</u>	<u>802</u>			
5. <u>1216</u>	<u>560.7</u>	<u>174.9</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1028.4</u>	<u>802</u>			
6.										
7.										
8.										
9.										
10.										
11.										

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

1. Set Pressure = The sum of the highlighted columns.
2. Hydroset Influence = Hydroset Pressure (PSIG) x 0.312
4. Hydroset Correction must be calculated from Correction Chart supplied with Hydroset Calibration Documentation. This calculation should be completed prior to performance of test. Hydroset Correction should be expressed as a (+) or (-) value in graduations of Hydroset Influence.
5. Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
Continuous



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Attachment 7

Hydroset Correction Calculation

(Sheet 1 of 1)

AWO#: M2-04-05237

Valve ID# 2-MS-250

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset QA No. (MR-02197)

Hydroset Serial No. (Y-23C-2)

1030 psig MSSV Set Pressure (Step 4.2.3.a.)
 - 859 psig Steam Header Pressure (Step 4.2.1)
 = 171 Hydroset Influence (Step 4.2.3.b.) \div 0.312 = 548.0
 Expected Hydroset Pressure (Step 4.2.3.c.)

550 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
 - 555 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
 = 5 psig Hydroset Correction (Step 4.2.3.e.) \times 0.312 = (+/-) -1.6
 Hydroset Influence Correction (Step 4.2.3.f.)

10.9 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)
 \times (-)0.43 psig/ft
 = -4.7 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

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Attachment 8

Test Data Sheet Using Dresser Model 1566 Hydrosset

(Sheet 1 of 1)

AWO#: M2-04-05237Valve ID# 2-MS- 250

(Blank copies of Attachment 8 may be reproduced as necessary)

Hydrosset Correction calculation based on Header Pressure of (859) psig using Hydrosset QA No. (ME-02197)

Test Data							Valve Adjustments After Test			
Step 4.5.15.d.1)	Step 4.5.15.d.3)	Step 4.5.16.c.2)	Step 4.2.3.g.	Step 4.3.9.c.	Step 4.5.15.d.3)	Step 4.5.16.d.	Step 4.5.19.b.	Step 4.5.20.a.		
Test No. & Time	Hydrosset Pressure (psig)	Hydrosset Influence	Hydrosset Influence Correction	Main Steam Header Pressure Correction	Steam Header Pressure (psig)	Valve Set Pressure (psig)	No	Yes		
							Initial	Initial	CW or CCW	No. of Flats
1. <u>1008</u>	<u>593.4</u>	<u>185.1</u>	<u>-1.6</u>	<u>-4.7</u>	<u>861</u>	<u>1039.8</u>	<u>JB</u>			
2. <u>1018</u>	<u>510.2</u>	<u>159.2</u>	<u>-1.6</u>	<u>-4.7</u>	<u>861</u>	<u>1013.9</u>	<u>JB</u>			
3. <u>1025</u>	<u>488.2</u>	<u>152.3</u>	<u>-1.6</u>	<u>-4.7</u>	<u>861</u>	<u>1007.0</u>		<u>JB</u>	<u>CW</u>	<u>3</u>
<u>1101</u>	<u>541.3</u>	<u>168.9</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1023.0</u>	<u>JB</u>			
5. <u>1109</u>	<u>547.0</u>	<u>170.7</u>	<u>-1.6</u>	<u>-4.7</u>	<u>860</u>	<u>1024.4</u>	<u>JB</u>			
6.										
7.										
8.										
9.										
10.										
11.										

"As Left" Leak Tightness ☒ SAT ☐ UNSAT

Notes:

1. Set Pressure = The sum of the highlighted columns.
2. Hydrosset Influence = Hydrosset Pressure (PSIG) x 0.312
4. Hydrosset Correction must be calculated from Correction Chart supplied with Hydrosset Calibration Documentation. This calculation should be completed prior to performance of test. Hydrosset Correction should be expressed as a (+) or (-) value in graduations of Hydrosset Influence.
5. Test valve minimum amount of times required to meet test objective, subsequent test data lines should be lined through.

Level of Use
Continuous



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Attachment 7

Hydroset Correction Calculation

(Sheet 1 of 1)

AWO#: M2-04-05237

Valve ID# 2-MS- 254

(Blank copies of Attachment 7, Sheet 1 may be reproduced as necessary)

Hydroset QA No. (M2 02197)

Hydroset Serial No. (4236-2)

990 psig MSSV Set Pressure (Step 4.2.3.a.)
 - 860 psig Steam Header Pressure (Step 4.2.1)
 = 130 Hydroset Influence (Step 4.2.3.b.) \div 0.312 = 416.7
 Expected Hydroset Pressure (Step 4.2.3.c.)

415 psig Required Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.1)
 - 420 psig Applied Pump Pressure from Hydroset Correction Chart (Step 4.2.3.d.2)
 = -5 psig Hydroset Correction (Step 4.2.3.e.) \times 0.312 = (+/-) -1.6
 Hydroset Influence Correction (Step 4.2.3.f.)

10.9 ft Elevation difference from steam header pressure instrument centerline to highest point in sensing line (Step 4.3.9.a.)
 \times (-)0.43 psig/ft
 = -4.7 Main Steam Header Pressure Elevation Correction (Step 4.3.9.b.)

Comments:

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