

Hold *

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WELD	QC INSP	DATE	A.I.	DATE
Wrapper Side To Barrel 1				
FIT-UP	BB	1-5-09		
ROOT	BB	1-12-09		
FINAL	BB	1-25-09		
Wrapper Side To Barrel 2				
FIT-UP	BB	1-5-09		
ROOT	BB	1-12-09		
FINAL	BB	1-25-09		
Firebox Crown To Side 1				
FIT-UP	BB	11-28-09		
ROOT	BB	11-28-09		
FINAL	BB	11-28-09		
Firebox Crown To Side 2				
FIT-UP	BB	11-28-09		
ROOT	BB	11-28-09		
FINAL	BB	11-28-09		
Front Tube Sheet				
FIT-UP	BB	7-30-09		
ROOT	BB	7-30-09		
FINAL	BB	7-30-09		
Front Tube Sht. To Drypipe Ring				
FIT-UP	BB	11-4-09		
ROOT	BB	11-4-09		
FINAL	BB	11-4-09		
NOTES				

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<i>Front Tube Sht. Disconnal Stays</i>				
FIT-UP	BB	11-11-09		
ROOT	BB	11- 20 ²⁴ -09		
FINAL	BB	11-24-09		
<i>Dome To Barrel</i>				
FIT-UP	BB	10-28-09		
ROOT	BB	10-28-09		
FINAL	BB	10-28-09		
<i>Dome Reinif. Pad</i>				
FIT-UP	BB	10-28-09		
ROOT	BB	10-28-09		
FINAL	BB	10-28-09		
<i>Dome Flange</i>				
FIT-UP	BB	1-9-09		
ROOT	BB	1-9-09		
FINAL	BB	1-9-09		
<i>Dry Pipe Welds (3)</i>				
FIT-UP	BB	10-25-09		
ROOT	BB	10-25-09		
FINAL	BB	10-25-09		
<i>Firebox Tube Sheet To Firebox</i>				
FIT-UP	BB	7-30-09		
ROOT	BB	7-30-09		
FINAL	BB	7-30-09		
NOTES				

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WELD	QC INSP	DATE	A.I.	DATE
<i>Door J/foot to Firebox</i>				
FIT-UP	BB	4-20-09		
ROOT	BB	5-6-09		
FINAL	BB	5-7-09		
<i>Door Ring to Firebox</i>				
FIT-UP	BB	12-10-09		
ROOT	BB	12-10-09		
FINAL	BB	12-10-09		
<i>Door Ring to Backhead</i>				
FIT-UP	BB	12-10-09		
ROOT	BB	12-10-09		
FINAL	BB	12-10-09		
<i>Backhead Cross Weld</i>				
FIT-UP	BB	1-5-09		
ROOT	BB	1-12-09		
FINAL	BB	1-25-09		
<i>Backhead to Shell</i>				
FIT-UP	BB	1-5-09		
ROOT	BB	1-12-09		
FINAL	BB	1-25-09		
<i>Door Ring Weld</i>				
FIT-UP	BB	12-14-09		
ROOT	BB	12-14-09		
FINAL	BB	12-14-09		
NOTES				

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WELD	QC INSP	DATE	A.I.	DATE
WRAPPER TO THROAT SHEET 2				
FIT-UP	BB	1-5-09		
ROOT	BB	1-12-09		
FINAL	BB	1-25-09		
BACKHEAD TO WRAPPER SIDE 2				
FIT-UP	BB	1-7-09		
ROOT	BB	1-8-09		
FINAL	BB	1-29-09		
GUSSET STAYS BACKHEAD (4)				
FIT-UP	BB	4-20-09		
ROOT	BB	5-19-09		
FINAL	BB	5-19-09		
GUSSET STAYS SHELL (4)				
FIT-UP	BB	4-20-09		
ROOT	BB	5-19-09		
FINAL	BB	5-19-09		
MUDRING TO FIRE BOX				
FIT-UP	BB	11-4-09		
ROOT	BB	12-1-09		
FINAL	BB	12-2-09		
MUDRING TO SHELL				
FIT-UP	BB	1-5-09		
ROOT	BB	2-3-09		
FINAL	BB	2-3-09		
NOTES				

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WELD	QC INSP	DATE	A.I.	DATE
<i>Turret Couplings 6</i>				
FIT-UP	BB	12-26-09		
ROOT	BB	12-20-09		
FINAL	BB	12-20-09		
<i>Turret End Covers</i>				
FIT-UP	BB	12-21-09		
ROOT	BB	12-21-09		
FINAL	BB	12-21-09		
<i>Dome Lid Couplings 1</i>				
FIT-UP	BB	2-10-10		
ROOT	BB	2-10-10		
FINAL	BB	2-10-10		
<i>Front Tube Sheet Stays (6)</i>				
FIT-UP	BB	11-23-09		
ROOT	BB	11-23-09		
FINAL	BB	11-23-09		
<i>Cross Stays (9) (18 welds)</i>				
FIT-UP	BB	11-4-09		
ROOT	BB	11-23-09		
FINAL	BB	11-23-09		
<i>Hold * Horiznt Sheet To Barrel</i>				
FIT-UP	BB	1-5-09		
ROOT	BB	1-14-09		
FINAL	BB	2-2-09		
NOTES				

$$S_{A10613} = S = 17100 @ 450 \text{ mm}$$

$$A_1 = 6.521$$

$$A_2 = .171$$

$$A_3 = .641$$

$$A_5 = 9$$

$$A_{\text{total}} = 16.333$$

Donor Reinforcement

$$A = (d + 2t_n) t_R F$$

$$A = (19.25 + 2 \times .375) \cdot 295 \times .5$$

$$A = 20 \times .295 \times .5$$

$$A = 2.95$$

Required reinforcement ✓

$$A_1 = (d - 2t_n) (t - F t_R)$$

$$A_1 = (19.25 - 2 \times .375) (.5 - .5 \times .295)$$

$$A_1 = (18.5) (.3525)$$

$$* A_1 = 6.521$$

$$A_1 = 2t (t - F t_R)$$

$$A_1 = 2 \times .5 (.3525)$$

$$A_1 = 2 \times .5 \times .3525$$

$$A_1 = .3525$$

$$A_2 = 2 (t_n - t_{Rn}) (2.5 t_{R1})$$

$$A_2 = 2 (.375 - .295) (2.5 \times .5 \times .855)$$

$$A_2 = .16 \times 1.069$$

$$A_2 = .171$$

$$f_{R1} = \frac{S_n}{S_v} = \frac{17100}{20000} = .855$$

516⁷⁰ = S = 20,000 @ 1130⁶F

Barrel t P₂₇

$$t = \frac{PD}{2SE + 2yP} + C$$

$$t = \frac{170 \times 40.25}{2 \times 2000 \times 14 + 2 \times 4 \times 170} + .125$$

$$t = \frac{6842.500}{40000 + 136} + .125$$

$$t = \frac{6842.5}{40136} + .125$$

$$t = .170 + .125$$

$$t = .295$$

Top # 001 (2008)

DeW 7-1-08

2007 ED 2007 AD

ENTIRE PACKET

$$G = 2.0$$

$$b = .250$$

$$m = 4.75$$

$$h = 2.0$$

Dome Cover

$$t = d \sqrt{\frac{cP}{S}}$$

$$t = 20 \sqrt{\frac{.3 \times 170}{17500}}$$

$$t = 20 \sqrt{.0029}$$

$$t = 20 \times .054$$

$$t = 1.080$$

$$W = .785 G^2 P + (2b \times 3.14 G m P)$$

$$W = .785 \times 20^2 \times 170 + (2 \times .25 \times 3.14 \times 20 \times 4.75 \times 170)$$

$$W = 53880 + 25355.5$$

$$W = 78735.5$$

$$t = d \sqrt{\frac{cP}{S} + \frac{1.78 W h}{S d^3}}$$

$$t = 20 \sqrt{\frac{.3 \times 170}{17500} + \frac{1.78 \times 78735.5 \times 2}{17500 \times 20^3}}$$

$$t = 20 \sqrt{.0029 + \frac{280298.38}{140000000}}$$

$$t = 20 \sqrt{.0029 + .002}$$

$$t = 20 \times .07$$

$$t = 1.4" = \underline{\text{Required}}$$

Actual = 20" Class 150 weldneck Blind Flange
is 1.69" thick

SA106 B = S = 17,100 @ 450°F

Dome t PG 27

$$t = \frac{PD}{2SE + 2yP} + C$$

$$t = \frac{170 \times 20}{2 \times 17100 + 2 \times .4 \times 170} + .250$$

$$t = \frac{340}{34336} + .250$$

$$t = \frac{(.009902)}{.010} + .250$$

$$t = .260'' \text{ required}$$

Actual thickness is .375" which exceeds
the required thickness of .260

Dome is satisfactory

Dome Reinforcement

$$A_2 = 2(t_n - t_{RN}) (2.5 \times t_n + t_e) f_{RI}$$

$$A_2 = 2(.375 - .295) (2.5 \times .375 + .5) .855$$

$$A_2 = (.16) (1.438) (.855)$$

$$A_2 = .197$$

$$A_3 = 2 t_n f_{RI} h$$

$$A_3 = 2 \times .375 \times .855 \times 1$$

$$A_3 = .641$$

$$A_5 = (D_P - d - 2t_n) t_e f_{R3}$$

$$\frac{f_{R3}}{f_{R1}} = \frac{S_P}{S_r} = \frac{20000}{20000}$$

$$A_5 = (38 - 19.25 - (2 \times .375)) \times .5 \times 1$$

$$A_5 = (18) (.5)$$

$$A_5 = 9$$

Total available compensation (not including weld areas) = 16.333

Total required compensation (A) is 2.95

Available compensation exceeds required compensation. Therefore applied compensation is satisfactory.