Diversified Technology Services

2045 Preisker Lane Suite A - Santa Maria, CA 93454 - (805) 928-6392

Piping ID : **Client-Oil-1** Date: **06/12/03**

Client: DTS Client Location: Somewhere USA

Pressure Calculation Form for 30 CFR 250 (DOI) Piping

t-min Formula:

$$t = \frac{PD}{2(SFET)}$$

Statistics:

Material of Construction: ASTM A-53

Welding Process: Seamless

Nominal Diameter: 16.00

Specified Minimum Yield Strength (S): 60,000

Outside Diameter: 16.000

Longitudinal Joint Factor (Tbl. 841.1B ANSI B31.8) (E): 1.00

Variables:

Nominal Thickness of Material (t) : 0.375

Specified Design Pressure: 1400

Design Temperature: 150

Pick if this area is part of the "Riser" or "Submerged" Piping: Riser

Corrosion Allow. (c): 0.0625

Temperature Derating Factor (T) 1.000

Construction Design Facter used in Calculation (F): 0.60

Mill Tolerance Percentage (MT): 12.5%

Calculation for MAOP

$$P = \frac{2(S)(t-c)}{D} \times (F)(E)(T)$$

$$P = \frac{2 * 18750}{16.000} \times 0.60 \times 1 \times 1.00$$

$$P = \frac{37500}{16.000} \times 0.6$$

P = 1406.25 psi

Calculation for Structural t-min.

$t_s = t - MT - c$

$t_s = (0.375 - 12.5\%) - 0.063$

$t_s = 0.328 - 0.063$

$t_s = 0.266$

Calculation for Pressure t-min.

Calculated by Design psi or MAOP

(Design psi)

$$t = \frac{PD}{2(SFET)}$$

$$t = \frac{1400.0 \times 16.000}{2 * 60000 \times 0.60 \times 1.00 \times 1.00}$$

$$t = \frac{22400.000}{2 * 36000}$$

$$t = \frac{22400.000}{72000.000}$$

t = 0.311

Maximum Allowable Operating Pressure Based on Nominal Thickness from above.

P = 1406.25 psi

MAOP = 1406.25 psi

Structural t-min Requirements:

t_s = N/A Inches

Pressure t-min Requirements:

t-min = 0.311 Inches

API-570 Inspector: API Certified Inspector

API 570 Certification Number: 18

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Summary of Evaluation:

The evaluations made in this document are results of calculations performed

in accordance with 30 CFR and ASME B-31.8.

Based on the criteria of this piping system, the following results were calculated:

A.) The Maximum Allowable Operating Pressure: **1406.25** psi

Calculated using a nominal thickness of: **0.375** in.

B.) The specified Design Pressure for this piping system is: **1400.00** psi

C.) The calculated minimum thickness for this piping is currently **0.311** in. for pressure based on the **(Design psi)** of **1400.0** .

D.) The structural minimum thickness was also calculated for this piping using the following conservative method.

(Nominal Thickness - Mill Tolerance - Corrosion Allowance)

The result of this calculation was: **N/A** in.

Note: If the result of this calculation returns a lower value than the Pressure t-min this field will not validate. To review the results of this calculation see the formula for Structural t-min section on Page 1.

Statistical Narrative:

This piping was constructed of **ASTM A-53** material, and has a specified minimum yield stength of **60,000** psi. The welding process used for this segment is **Seamless** . In this Configuration a Logitudinal Joint Factor of **1.00** was used (ASME B-31.8). This piping was built of **16.00** in NPS piping with an outside diameter of **16.000** in. and is a **Riser** section of this system with a nominal thickness of **0.375** in. and a specified corrosion allowance of **0.0625** in.. Per the requirements of 30CFR a design factor of **0.60** was used for this segment of piping. The design tempurature used for this system was **150** ^{o}F, which has a temp. derating factor of **1.000** (ASME B-31.8). For Structural design calculations a mill tollerance of **12.5%** was used.

06/12/03

API Certified Inspector Date

API 570 # 18