# HYDROTEST PRESSURE CALCULATIONS

**Project:** URSA Resources Group- Monument Ridge to Tompkins Well Pad
**Date:** 8/24/2016 (anticipated test date)
**Description:** Water Line- 10" SDR HDPE 4710, Pressure Rating 255@ 73F
TEST CASE IS BASED ON AMBIENT AIR TEMP <80°F

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**Pipe Length:**

## Specified Minimum Yeild Strength Calculation

| | OD (inch) | Wall (inch) | PE Resin | Manf Max | Description |
|---|---|---|---|---|---|
| Segment 1 | 10.75 | 1.563 | PE -4710 | 255 | Line pipe - ID 7.624" |
| Segment 2 | | | | | |
| Segment 3 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Segment 1 | Location Class | Cl-1 | DF = | 1 | See Reference Sheet 1, test temperature <80F |
| Segment 2 | Location Class | | DF = | | |
| Segment 3 | Location Class | | DF = | | |

## Maximum Leak Test Pressure

**P(t)=** 2 x HDS x F(t) x H(t)

SYSTEM NUMBERS

where:

| | |
|---|---|
| P(t) = Leak Test pressure (psig) | |
| T= Leak Test Time, hrs | 4-8 HOURS |
| HDS= PE Material hydrostatic design stress for water at 73F; Table 3 | 1000 |
| F(T)= PE Material temperature reduction | 1 |
| H(t)= Leak Test duration factor for leak test time; Table 2 | 1.5 |
| DR= Pipe Dimension Ratio | 9 |

Ref: Tables from PPI, Tables 2&3

**P(t)=** 375 psig

## Elevation Impact Calculation

**Test Point:** Planned to be located at Tompkins Well Pad

| | Elevations | Description of location |
|---|---|---|
| Maximum Elevation (feet) = | 5720 | Monument Ridge |
| Minimum Elevation (feet) = | 5500 | Tompkins |
| Test Location Elevation (feet) = | 5500 | Tompkins |
| Elevation Difference (feet)= | 220 | |

Δ P = ΔH/2.31

| | | |
|---|---|---|
| Maximum Elevation ΔP = | -95 | psig |
| Minimum Elevation ΔP = | 0 | psig |

## Test Data Applied

| | | | |
|---|---|---|---|
| **Maximum Pressure Developed =** | 370 | psig | @ Tompkins Well Pad |
| **Minimum Pressure Developed =** | 275 | psig | @Monument Ridge |
| **Maximum MAOP for Pipe (based on test pressure) =** | 183 | psig | =Minimum Test Pressure Achieved / 1.5 (Test Modifier by B31.8 Thermoplastic Pipe -ASME B31.38- 842.4.2) |
| **Operations Planned MAWP** | | psig | < 183 psig as achieved by Hydro test. |
| **Target Test Pressure =** | 370 | psig | Planned test pressure at the test location- Guage and Chart |
| **Maximum Test Pressure =** | 375 | psig | Test is planned not to exceed this number |
| **Minimum Test Pressure =** | 370 | psig | Test is planned to be maintained above this number |

## Comments