**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | |  | | | 2 | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight | 626.0 | 32.0 | 0.0 | 32.0 | -50.0 | 531.0 | 19.0 | 531.0 |
| TH-1 | 523.0 | 2931.0 | 734.0 | 3022.0 | -4000.0 | -2245.0 | 11561.0 | 11777.0 |
| TH-2 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| Hot (weight + envelope of expansion cases) | 1149.0 | 2963.0 | 734.0 | 3054.0 | -4050.0 | -1714.0 | 11580.0 | 12308.0 |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) | 1149.0 |  |  | 3054.0 | 4050.0 |  |  | 12308.0 |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |
| Ratio | -- |  |  | -- | -- |  |  | -- |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | | 315 | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | |  | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight | 305.0 | -45.0 | -74.0 | 87.0 | 104.0 | 475.0 | -16.0 | 475.0 |
| TH-1 | -1826.0 | -185.0 | -1221.0 | 1235.0 | -45.0 | 5033.0 | -781.0 | 5093.0 |
| TH-2 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| Hot (weight + envelope of expansion cases) | -1521.0 | -230.0 | -1295.0 | 1322.0 | 59.0 | 5508.0 | -797.0 | 5568.0 |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) | 1521.0 |  |  | 1322.0 | 104.0 |  |  | 5568.0 |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |
| Ratio | -- |  |  | -- | -- |  |  | -- |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | | 16 | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight | 399.0 | 10.0 | 22.0 | 24.0 | -31.0 | 100.0 | -32.0 | 105.0 |
| TH-1 | 668.0 | -2940.0 | 538.0 | 2989.0 | 4157.0 | -1134.0 | -11499.0 | 11555.0 |
| TH-2 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| Hot (weight + envelope of expansion cases) | 1067.0 | -2930.0 | 560.0 | 3013.0 | 4126.0 | -1034.0 | -11531.0 | 11660.0 |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) | 1067.0 |  |  | 3013.0 | 4126.0 |  |  | 11660.0 |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |
| Ratio | -- |  |  | -- | -- |  |  | -- |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| 1-MCT-HS-H322 | |  | | | Discontinuity Point (DCP) → | | | 95 | |
| Attached Piping Data Summary | | | -2792.0 | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| 1-MCT-HS-H321 | | | -2394.0 | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| 1-MCT-HS-H363 | | |
| Load | | FAX | -1884.0 | -1851.0 | FSR | MTOR | MB1 | MB2 | MBR |
| 1-MCT-HS-H181 | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| 43A | Dead Weight | 107.0 | 0.0 | -10.0 | 10.0 | 1.0 | 56.0 | -29.0 | 63.0 |
| TH-1 | -24.0 | -1.0 | 30.0 | 30.0 | 3.0 | -92.0 | 0.0 | 92.0 |
| 1-MCT-HS-H182 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| Hot (weight + envelope of expansion cases) | 83.0 | -1.0 | 20.0 | 40.0 | 4.0 | -36.0 | -29.0 | 155.0 |
|  |  |  |  |  |  |  |  |  |
| 1-MCT-HS-H365 | 107.0 |  |  | 40.0 | 4.0 |  |  | 155.0 |
|  |  | -1412.0 | -1320.0 |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | | 86 | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight | 3.0 | -1895.0 | 3.0 | 1895.0 | -2063.0 | -102.0 | -4836.0 | 4837.0 |
| TH-1 | -117.0 | -64.0 | 230.0 | 239.0 | -73.0 | -4838.0 | -1275.0 | 5003.0 |
| TH-2 | 0 | 0 | 0 | 0.0 | 0 | 0 | 0 | 0.0 |
| Hot (weight + envelope of expansion cases) | -114.0 | -1959.0 | 233.0 | 2134.0 | -2136.0 | -4940.0 | -6111.0 | 9840.0 |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) | 114.0 |  |  | 2134.0 | 2136.0 |  |  | 9840.0 |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | |  | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight |  |  | 0 |  |  |  |  |  |
| TH-1 |  |  |  |  |  |  |  |  |
| TH-2 |  |  |  |  |  |  |  |  |
| Hot (weight + envelope of expansion cases) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | |  | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight |  |  | 0 |  |  |  |  |  |
| TH-1 |  |  |  |  |  |  |  |  |
| TH-2 |  |  |  |  |  |  |  |  |
| Hot (weight + envelope of expansion cases) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | |  | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight |  |  | 0 |  |  |  |  |  |
| TH-1 |  |  |  |  |  |  |  |  |
| TH-2 |  |  |  |  |  |  |  |  |
| Hot (weight + envelope of expansion cases) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 12:** MSR 1C1 nozzle #11 north loading

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Equipment ID → | | MSR 1C1 Nozzle #11 North | | | Allowable Load Reference → | | | Note 1 | |
| Equipment Dwg. | |  | | | Discontinuity Point (DCP) → | | |  | |
| Attached Piping Data Summary | | | Computer Run ID | | | | Nozzle or Penetration Local Coordinate System | | |
| HSG Input | | | |
| NPS & Schedule: 8 / 40 | | | Note 1:  Allowable nozzle loads are not available for this nozzle. During MSR replacement, allowable loads will be established and included in this analysis. | | | | +X: Along nozzle axis, coming out of nozzle  +Y: Toward plant South  +Z: Determined by right-hand-rule | | |
| Pipe Material: Carbon Steel A106-B | | |
| Metal Area (in2): 8.4 | | |
| Section Modulus (in3): 16.81 | | |
| Load | | FAX | FS1 | FS2 | FSR | MTOR | MB1 | MB2 | MBR |
| Local Coordinate ID | | FX | FY | FZ |  | MX | MY | MZ |  |
| LB | LB | LB | LB | FT-LB | FT-LB | FT-LB | FT-LB |
| **NORMAL** | Dead Weight |  |  | 0 |  |  |  |  |  |
| TH-1 |  |  |  |  |  |  |  |  |
| TH-2 |  |  |  |  |  |  |  |  |
| Hot (weight + envelope of expansion cases) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Maximum of the Absolute Value of (DW, Hot) |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Allowable | Note 1 |  |  | Note 1 | Note 1 |  |  | Note 1 |

**Table 22:** Support load information

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Node Pt.** | **Support Mark No. [REF]** | **D**  **I**  **R** | **Maximum Support Loads (lbs)** | **Minimum Support Load (lbs)** | **Structural Capacity (lbs)** | **Spring Working Range (lbs)** | **Comments1** |
|  |  | FX |  |  |  |  | Capacity Check → OK  Spring in Range → YES |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OVER (Note 2) |
| FY |  |  |  | -- |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK |
| FY |  |  |  | -- |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK  Spring in Range → YES |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK  Spring in Range → YES |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK |
| FY |  |  |  | -- |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK  Spring in Range → YES |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | Capacity Check → OK  Spring in Range → YES |
| FY |  |  |  |  |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | (Note 3) |
| FY |  |  | -- | -- |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | (Note 3) |
| FY |  |  | -- | -- |
| FZ |  |  |  |  |
|  |  | FX |  |  |  |  | (Note 3,4) |
| FY |  |  | -- | -- |
| FZ |  |  |  |  |