|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Cylindrical Shell Under Internal Pressure | | | Performed by | |  | | |
| In Accordance with | | ASME B&PV Code, Section VIII Division 1, 2017 | | | | | |
| **Input Data** | | | | **Sketch** | | | |
| Design Pressure, Pd | | MPa | **1** | L  Di  tn | | | |
| Operating Medium Static Head, Ps | | MPa | **0.1** |
| Test Medium Static Head, Pts | | MPa | **0.1** |
| Design Temperature, t | | °C | **300** |
| Min. Design Metal Temp., MDMT | | °C | **-29** |
| Material Form | | **Plate** | |
| Material Name | | **SA-516 70** | |
| Internal Corrosion Allowance, Ci | | mm | **1.5** |
| External Corrosion Allowance, Ce | | mm | **0** |
| Longitudinal Seam Efficiency, El | | / | **0.85** |
| Circumferential Seam Efficiency, Ec | | / | **0.85** |
| Dimension | Inside Diameter, Di | mm | **1000** |
| Cylinder Length, L | mm | **3000** |
| Nominal Thickness, tn | mm | **10** |
| Finished(Minimum) Thickness, tf | mm | **9.7** |
| Pressure Test | | **Hydrostatic** | |
| **Material Properties** | | | | | | | |
| Material Density | | kg/m3 | **7750** | Design Allowable Stress, S | | MPa | **134.92** |
| Ambient Yield Stress, Sy | | MPa | **260** | Ambient Allowable Stress, Sa | | MPa | **137.90** |
| P-No. | | / |  | Group No. | | / |  |
| **Intermediate Parameters** | | | | | | | |
| Calculating Pressure, Pc | | MPa |  | | | | **1.1** |
| Total Corrosion Allowance, C | | mm |  | | | | **1.5** |
| Effective Thickness, te | | mm |  | | | | **8.2** |
| **MDMT** | | | | | | | |
| UCS-66 Chart Curve Designation | | / | UCS-66 | | | | **B** |
| Governing Thickness, tg | | mm |  | | | | **9.7** |
| UG-20(f) Exemption | | / | per UG-20(f) | | | | **YES/NO** |
| UCS-66 (a)(1)(-a)(-5) | | / | per UCS-66 (a)(1)(-a)(-5) | | | | **YES/NO** |
| Min Metal Temp. w/o impact, tbase | | °C |  | | | | **-29** |
| Required Thickness at MDMT, tr,mdmt | | mm |  | | | | **8.021** |
| Joint Variable, E\* | | / |  | | | | **0.85** |
| Thickness Ratio, Rts | | / |  | | | | **0.831** |
| Temp. Reduction, treduce | | °C | from UCS-66.1 | | | | **9** |
| Warmest Computed MDMT, MDMTc | | °C |  | | | | **-38** |
| Impact Test | | / |  | | | | **No** |