R10803467

# MECHANICAL SYSTEMS DATA SHEET: VESSEL

**PLANT ITEM No.** *24590-HLW-MV-HOP-ABS-00002*

ISSUED BY RPP-WTP PDC

| | | | |
|---|---|---|---|
| Project: | *RPP-WTP* | P&ID. | *24590-HLW-M6-HOP-00008* |
| Project No: | *24590* | Process Calculation: | *24590--HLW-M4C-HOP-00011* 6 |
| Project Site: | *Hanford* | Vessel Drawing | *24590-HLW-3PS-MBT0-T0001 (Vendor Supplied Dwg's TBD)* |
| Description: | *Melter 1 Silver Mordenite Column* | | |

## Reference Data

| | |
|---|---|
| Charge Vessels (Tag Numbers) | *None* |
| Pulsejet Mixers / Agitators (Tag Numbers) | *None* |
| RFDs/Pumps (Tag Numbers) | *None* |

## Design Data

| | | | | | | |
|---|---|---|---|---|---|---|
| Quality Level | | *QL-2* | Fabrication Specs | *24590-HLW-3PS-MBT0-T0001* | | |
| Seismic Category | | *SC-III* | Design Code | *ASME AG-1/1a & ASME Section VIII, Div. 1* | | |
| Service/Contents | | *Filtered Radioactive Gas* | Code Stamp | *No* | | |
| Design Specific Gravity | | *0.588* | NB Registration | *No* | | |
| Maximum Operating Volume | gal | *N/A* | Weights (lbs) | Empty | Operating | Test |
| Total Volume | gal | *N/A* | Estimated | *14,200* | *35,200* | *35,200* |
| Environmental Qualification | | *None* | Actual * | *39,600* | *55,900* | *55,900* |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Inside Diameter | inch | *N/A* | | | Wind Design | *Not Required* | |
| Length/Height (TL-TL) | inch | *See note 1* | | | Snow Design | *Not Required* | |
| | | Vessel Operating | Vessel Design | Coil/Jacket Design | Seismic Design | *24590-WTP-3PS-FB01-T0001 & 24590-HLW-3PS-MBT0-T0001* | |
| Internal Pressure | psig | *0* | *3* | *N/A* | Seismic Base Moment * | ft*lb | *0* |
| External Pressure | psig | *1.3 (see note 3)* | *3* | *N/A* | Postweld Heat Treat | *Not Required* | |
| Temperature | °F | *330* | *330* | *N/A* | Corrosion Allowance | Inch | *0.04* |
| Min. Design Metal Temp | °F | *59* | | | Hydrostatic Test Pressure * | psig | *See note 2* |
| Max Operating Pressure Drop | in-WG | *10* | | | | | |

## Materials of Construction

| Component | Material | Minimum Thickness / Size | Containment |
|---|---|---|---|
| Top Head | *N/A* | *N/A* | *N/A* |
| Shell | *316L* | *1/4" Plate* | *Primary* |
| Bottom Head | *N/A* | *N/A* | *N/A* |
| Support | *316L* | *1/4" 3 x 3 angle* | *N/A* |
| Jacket/Coils/Half-Pipe Jacket | *N/A* | *N/A* | *N/A* |
| Internals | *316L* | *1/4" Plate* | *N/A* |
| Pipe | *316L* | *SCH 40* | *N/A* |
| Forgings/ Bar stock | *N/A* | *N/A* | *N/A* |
| Gaskets | *Silicone HT* | *N/A* | *N/A* |
| Bolting | *Varies - See DWGs* | *N/A* | *N/A* |

## Miscellaneous Data

| | | | |
|---|---|---|---|
| Orientation | *Horizontal* | Support Type | *20" x 2 7/16" x 1/4" Fabricated Flange 304L* |
| Insulation Function | *Personnel protection and process temperature control* | Insulation Material | *Calcium Silicate w/0.024" thk, 304 SST Jacket* |
| Insulation Thickness (inch) | *6"* | Internal Finish | *N/A* |
| | | External Finish | *N/A* |

## Remarks

* To be determined by the Vendor.

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|---|---|---|
| BECHTEL | **MECHANICAL SYSTEMS DATA SHEET: VESSEL** | **PLANT ITEM No.**<br>***24590-HLW-MV-HOP-ABS-00002*** |

## Equipment Cyclic Data Sheet

| | |
|---|---|
| Component Plant Item Number: | ***24590-HLW-MV-HOP-ABS-00002*** |
| Component Description | ***Silver Mordenite Column containment housing*** |

***The information below is provisional and envelopes operational duty for fatigue assessment. It is not to be used as operational data.***

| | |
|---|---|
| Materials of Construction | ***316L*** |
| Design Life | ***40 yr*** |
| Component Function and Life Cycle Description | ***Removal of Iodine-129 and other halogens*** |

| **Load Type** | | Min | Max | Number of Cycles | Comment |
|---|---|---|---|---|---|
| Design Pressure (-ve/+ve) | psig | ***-3*** | ***+3*** | ***1*** | ***Based on 3 yr melter life*** |
| Operating Pressure (-ve/+ve) | psig | ***-1.3*** | ***+1.5*** | ***13*** | ***Based on 3 yr melter life*** |
| Operating Temperature | °F | ***59*** | ***330*** | ***13*** | ***Based on 3 yr melter life*** |
| Contents Specific Gravity | | ***0.588*** | ***0.588*** | ***N/A*** | |
| Contents Level | inch | ***N/A*** | ***N/A*** | ***N/A*** | ***Gas service, flow through operation*** |
| **Localized Features** | | | | | |
| Nozzles | | ***Sampling & Testing Connections*** | | ***3/4" - 150 lb WNF x3*** | |
| Air Inlet | | ***Flange*** | | | |
| Delivery | | ***Flange*** | | | |
| Supports | | ****TBD*** | | | |

### Notes

1. *Maximum outside dimensions: 19'-9 1/4" L (w/o insulation) x 15'-3 1/4" W (w/insulation) x 7'-0" H (bottom of column to top of column grating). Dimensions are ±1/2".*
2. *Pneumatic Test of Housing Pressure Boundary per ASME Section VIII, Div 1. All other testing per ASME AG-1/1a & N509*
3. *Normal operating pressure will be 1.3 psig External. The other pressures shown are design, off-normal conditions.*
4. *The information contained in revision 2 data sheet supercedes the information contained in SDDR 24590-WTP-SDDR-PROC-03-0003.*
5. *Contents of this document are Dangerous Waste Permit affecting.* 6

**Safety Screening required?: Yes _X_ No ___ (If yes per 24590-WTP-GPP-SREG-002, E&NS signature required below)**

### Approval

| Rev | Description | System Eng. | Equip. Eng. | Checked | Reviewed/ E&NS | Approved | Date |
|---|---|---|---|---|---|---|---|
| 0 | Issued for Purchase | Anthony Cutrona | N/A | David Evans | N/A/N/A | Suzanne Kirk | 8/14/02 |
| 1 | Updated Process datasheet number, revised Vessel Drawing reference (added equipment spec no , & Vendor dwg's are TBD), corrected seismic category from II to III, revised seismic specification number, and added 1a supplement to design code ASME AG-1 | Anthony Cutrona | N/A | David Evans | N/A/N/A | Mark Hoffman | 11/14/02 |
| 2 | Secondary offgas rearrangement: Revised operating and design pressure, and operating temperature per 24590-HLW-M6C-HOP-00011 R/C. Added max operating pressure drop. Added note 4 Revised Approval block. | Anthony Cutrona | David Pease | Pat Harrigan | Donna Yarbrough/ N/A | Marla Wright | 10/3/03 |

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| BECHTEL | **MECHANICAL SYSTEMS DATA SHEET: VESSEL** | **PLANT ITEM No.** ***24590-HLW-MV-HOP-ABS-00002*** |

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|---|---|---|---|---|---|---|---|
| 3 | Updated actual weights, materials of construction, and insulation thickness based on Vendor submittal. Revised norm/max/design temperature per 24590-WTP-SDDR-PROC-03-0411 | Anthony Cutrona | David Pease | Pat Harrigan | Donna Yarbrough/ N/A | Marla Wright | 12/16/03 |
| 4 | Revised to comply with CODE 1 vendor submittal 24590-QL-POA-MBT0-00001-11-02, in accordance with CAR: 24590-WTP-CAR-QA-05-120. Incorporated DCN 24590-HLW-MKN-HOP-00007 | Jim Rouse | David Pease | Anthony Cutrona | Chris Morley/ N/A | John Julyk | 11/27/05 |
| 5 | Revised note 1: Changed width from 15'-3 1/8" to 15'-3 1/4", added tolerance Added E&NS to Approval section. | Jim Rouse | Anthony Cutrona | Satish Jain | Grant Goolsby/ Chris Meng | John Julyk | 11/22/06 |
| 6 | Revised Process Data Sheet reference to Process Calculation, the data sheet was cancelled. Added Note 5. | Tom Galioto | Anthony Cutrona | Suren Thakkar | Grant Goolsby/ Chris Meng | John Juyk | 7/12/07 |

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