# MECHANICAL DATA SHEET

## SHELL AND TUBE HEAT EXCHANGER

| Plant Item No. |
|---|
| 24590-PTF-MB-CNP-HX-00001 |
| **Data Sheet No.** |
| 24590-PTF-MED-CNP-P0005 |

| | | | |
|---|---|---|---|
| Project: | RPP-WTP | Description: | Cesium Evaporator Concentrate Reboiler |
| Project No: | 24590 | P&ID: | 24590-PTF-M6-CNP-P0008 |
| Site: | Hanford | Process Data Sht: | 24590-PTF-M5D-CNP-00001 |
| Process flow diagram: | 24590-PTF-M5-V17T-P0014 | Manufacturer Name | • |

R10377794

### General Data

| | | | | | |
|---|---|---|---|---|---|
| Quality Level | QL-1 | TEMA (Class/Type) | | B* | * ISSUED BY RPP-WTP PDC |
| Seismic Category | SC-I | Flow Type (Counter current, etc) | | * | |
| Design Code | ASME VIII, Div 1 | Heat Exchanger Duty | Btu/hr | * | |
| Code Stamp | Yes | Heat Exchanger Area | $ft^2$ | * | |
| NB Registration | Yes | ΔT (LMTD/Corrected LMTD) | °F | * | * |

### Thermal/Hydraulic Data

| | Shell Side | | Tube Side | |
|---|---|---|---|---|
| Fluid Name | Steam | | Waste Feed Recirculation | |
| Fluid Quantities: Total lbm/hr | • | | • | |
| Condensable Vapor (In/Out) | * | • | • | * |
| Liquid | * | * | • | * |
| Noncondensable | * | • | * | • |
| Temperature (In/Out) °F | * | * | * | • |
| Specific Gravity | * | • | * | * |
| Viscosity cP | * | * | • | * |
| Molecular Weight, Vapor | * | * | * | • |
| Molecular Weight, Noncondensable | * | • | * | • |
| Specific Heat Btu/lbm-°F | • | * | • | * |
| Thermal Conductivity Btu/hr-ft-°F | * | * | * | • |
| Latent Heat Btu/lbm @ °F | * | | * | |
| Inlet pressure psia | * | | * | |
| Tube side Velocity ft/s | * | | * | |
| Pressure Drop (Actual) psi | * | | 10* | |
| Fouling Resistance (Min) $hr\text{-}ft^2\text{-}°F/Btu$ | * | | * | |

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9-14-04

EXPIRES. 11/9/ 2004

This bound document contains a total of 2 sheets

| REV | DATE | REASON FOR REVISION | PREPARER | CHECKER | REVIEWER | APPROVER |
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| 0 | 9/14/04 | Issued for Permitting Use | | K.R. Sadler Jr. | | |

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|---|---|---|
| | **MECHANICAL DATA SHEET**<br>**SHELL AND TUBE HEAT EXCHANGER** | ***Plant Item No.***<br>***24590-PTF-MB-CNP-HX-00001***<br>***Data Sheet No.***<br>***24590-PTF-MED-CNP-P0005*** |

## Mechanical Data

| | | *Shell Side* | | *Tube Side* | |
|---|---|---|---|---|---|
| Design Pressure (Max/Min) | psig | ***50•*** | ***Full vacuum**** | ***50**** | ***Full vacuum**** |
| Design Temperature (Max/Min) | °F | ***325•*** | ***40**** | ***250•*** | ***40**** |
| Corrosion Allowance | inch | ***0.04*** | | ***0.04*** | |
| Erosion Allowance | inch | * | | * | |
| Shell OD/ID | inch | * | | Overall Dimensions (H x W x L) inch | • |
| Total No. of Tubes | | • | | Tube OD inch | • inch |

## Material Data

| | | | |
|---|---|---|---|
| Shell | ***SA 240 316****** | Shell Cover | ***SB575 (Hastelloy) UNS N06022**** |
| Channel/Bonnet | ***SB575 (Hastelloy) UNS N06022**** | Channel Cover | ***N/A*** |
| Tube | ***SB622 (Hastelloy) UNS N06022**** | Floating Head Cover | ***N/A*** |
| Stationary Tube Sheet | ***SB575 (Hastelloy) UNS N06022**** | Floating Tube Sheet | ***N/A*** |
| Shell Side Gaskets | ***N/A*** | Tube Side Gaskets | ***N/A*** |
| Partition | ***SB575 (Hastelloy) UNS N06022**** | Baffles/Supports | ***SA 240 316****** |
| Insulation | ***Heat Conservation*** | Forgings (Shell side) | ***SA 240 316****** |
| Bolting | ***N/A*** | Forgings (Channel) | ***SB564 (Hastelloy) UNS N06022**** |

## Construction Data *(To be determined by the supplier when not specified by the buyer)*

| | | | | | |
|---|---|---|---|---|---|
| Cross Baffle Type | * | % Baffle Cut (Dia.) | * | Spacing (c/c) inch | * |
| Bypass Seal Arrangement | * | Longitudinal Seal Type | * | Expansion Joint Type | * |
| Inlet Nozzle $\rho V^2$ | * | Bundle Entrance $\rho V^2$ | • | Bundle Exit $\rho V^2$ | • |
| Tube Support Type | * | U-bend Support Type | * | Weight of Bundle lbf | • |
| Operating Weight lbf | * | Full of Water lbf | * | Weight of Shell lbf | • |

## Notes

**** To be determined by Seller***
***** To be verified by Seller***
******Maximum carbon content of 0.030% for all welded components***
***Notes: (1) All welds are continuous to avoid crevices, weld surface finish is descaled as laid.***
***(2) All welded construction on both tube and shell sides***
***(3) Tubes welded to the tubesheets with full strength welds.***