



## MECHANICAL DATA SHEET

## WELDED PLATE AND FRAME HEAT EXCHANGER

 PLANT ITEM No.  
 24590-HLW-ME-HOP-HX-00002  
 24590-HLW-ME-HOP-HX-00004

Project	<b>RPP-WTP</b>	Description	<b>Silver Mordenite Preheater @ 0' Elev. - Room H-A123</b>
Project No.	<b>24590</b>	Corrosion Evaluation	<b>24590-HLW-N1D-HOP-00007</b>
Site	<b>Hanford</b>	P&ID	<b>24590-HLW-M6-HOP-00003, 24590-HLW-M6-HOP-20003</b>
Process Flow Diagram	<b>24590-HLW-M5-V17T-00004</b>	Calculations	<b>24590-HLW-MEC-HOP-00003, 24590-HLW-M4C-HOP-00011, 24590-HLW-MVC-30-00001</b>

## General Data

Quality Level	<b>Q</b>	Manufacturer / Type / Model No.	<b>Tranter / Supermax / SM-54-M-08-HM-422</b>
Seismic Category	<b>SC-III</b>	Flow Type	<b>Single Pass, Countercurrent</b>
Design Level	<b>L-2 (per 24590-WTP-3PS-MV00-T0001)</b>	Heat Exchanger Duty Btu/hr	<b>337,889</b>
Design Code	<b>ASME Sect. VIII Div. 1</b>	Heat Exchanger Area ft <sup>2</sup>	<b>4,961.89</b>
Oversurface (Minimum) %	<b>15</b>	ΔT LMTD °F	<b>46.08</b>
Thermal Efficiency (Minimum) %	<b>70</b>	Design Life yrs	<b>40</b>
Overall Flange in-leakage per nozzle scfm	<b>&lt; 1</b>	Fouling Resistance hr-ft <sup>2</sup> °F / BTU	<b>0.000757</b>
Plate Corrosion Allowance inch	<b>0.00</b>	Shell Corrosion Allowance inch	<b>0.04</b>

Thermal/Hydraulic Data  
(Maximum Conditions)

Fluid Name	Hot Side		Cold Side	
	<b>HLW Catalyst Skid Discharge Offgas</b>		<b>Activated Carbon Adsorbers Offgas</b>	
Fluid Quantities: Total lb/hr	<b>8221</b>	<b>8267</b>	<b>7047</b>	<b>7094</b>
Condensable Vapor lb/hr	<b>855</b>	<b>855</b>	<b>718</b>	<b>718</b>
Liquid lb/hr	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Noncondensable lb/hr	<b>7366</b>	<b>7412</b>	<b>6329</b>	<b>6376</b>
Temperature (In/Out) °F	<b>426</b>	<b>272 (Note 10)</b>	<b>210</b>	<b>392.85 (Note 10)</b>
Density lb/ft <sup>3</sup>	<b>0.036</b>	<b>0.043</b>	<b>0.053</b>	<b>0.041</b>
Viscosity cP	<b>0.0260</b>	<b>0.0225</b>	<b>0.0210</b>	<b>0.0252</b>
Molecular Weight, Vapor/Noncondensable g/mol	<b>18/27.3</b>	<b>18/27.3</b>	<b>18/27.3</b>	<b>18/27.3</b>
Specific Heat Btu/lb-°F	<b>0.270</b>	<b>0.265</b>	<b>0.264</b>	<b>0.268</b>
Thermal Conductivity Btu/hr-ft-°F	<b>0.022</b>	<b>0.019</b>	<b>0.018</b>	<b>0.021</b>
Inlet pressure psia	<b>12.4</b>		<b>13.8</b>	
Velocity (Max Allowable) ft/s	<b>20</b>		<b>20</b>	
Pressure Drop (Max Allowable) in-WG	<b>4</b>		<b>4</b>	

## Mechanical Design Data

Design Pressure (Max/Min) psig	Hot Side		Cold Side	
		<b>5</b>	<b>FV</b>	<b>5</b>
Design Temperature (Max/Min) °F	<b>500</b>	<b>14</b>	<b>500</b>	<b>14</b>
Insulation	<b>Equipment will be covered with 6" thick calcium silicate insulation having a density of 15 lbs/ft<sup>3</sup>. This information is provided for design analysis. However, insulation is not considered part of the SELLERS scope of work.</b>			



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### WELDED PLATE AND FRAME HEAT EXCHANGER

PLANT ITEM No.  
24590-HLW-ME-HOP-HX-00002  
24590-HLW-ME-HOP-HX-00004

#### Material Data

Plate Pack	<b>SA-240 316 Note 13</b>	Nozzles	<b>SA-182 F316 Note 13</b>
End Plates	<b>SA-240 316 Note 13</b>	Removable Shroud	<b>N/A</b>
Top/Bottom Covers	<b>SA-240 316 Note 13</b>	Saddle	<b>SA-240 316 Note 13</b>
Shell	<b>SA-240 316 Note 13</b>	Skid	<b>SA-240 316 Note 13</b>

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

	Hot Side Piping (Nozzle Number)	Cold Side Piping (Nozzle Number)
Inlet (Size/Connection Type)	<b>16" 150 lb RFWN Flange (N01)</b>	<b>14" 150 lb RFWN Flange (N03)</b>
Outlet (Size/Connection Type)	<b>14" 150 lb RFWN Flange (N04)</b>	<b>14" 150 lb RFWN Flange (N02)</b>
Total Number of Plates / Thickness	422 / 0.8mm	
Size (LxWxH)	Note 2	
Weight lb	9500	Operating Weight lb 9500
		Test Weight lb TBD

#### Notes

1. **Not Used**
2. **Bounding dimensions not to exceed: 174" L x 56" W x 72" H.**
3. **Not Used**
4. **Not Used**
5. **Plates shall be all welded assembly, no gasketed joints allowed.**
6. **Not Used**
7. **Not Used**
8. **There shall be no leakage between hot side and cold side.**
9. **Not Used**
10. **Outlet temperatures are based on the Oversurface Area**
11. **Not Used**
12. **Contents of this document are Dangerous Waste Permit affecting.**
13. **Maximum 0.030% Carbon; dual certified.**
14. **Not Used**



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### WELDED PLATE AND FRAME HEAT EXCHANGER

PLANT ITEM No.  
**24590-HLW-ME-HOP-HX-00002**  
**24590-HLW-ME-HOP-HX-00004**

#### Equipment Cyclic Data Sheet

Plant Item Number	24590-HLW-ME-HOP-HX-00002 24590-HLW-ME-HOP-HX-00004
Component Description	Silver Mordenite Preheater for the Melter Offgas Treatment Process System (HOP).

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

Materials of Construction	Type 316 Austenitic Stainless Steel (Maximum 0.030% Carbon; dual certified)
Design Life	<b>40 years</b>
Component Function and Life Cycle Description	Melter Offgas Treatment Process System (HOP)

Load Type	Min	Max	Number of Cycles	Comment
Design Pressure    psig	<b>-5</b>	<b>5</b>	<b>10</b>	
Operating Pressure    psig	<b>-3</b>	<b>3</b>	<b>80</b>	
Operating Temperature    °F	<b>59</b>	<b>401</b>	<b>80</b>	
Contents Specific Gravity	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>gas process</b>
Contents Level    inch	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	
<b>Localized Features</b>				
Nozzles	N/A			
Supports	N/A			

#### Nozzle Loads

Vendor to provide allowable nozzle loads.
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# EQUIPMENT QUALIFICATION DATASHEET (EQD)

24590-HLW-MED-HOP-00031

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Equipment Identification			
Full Component Tag Number or BNI Stock Code Number	24590-HLW-ME-HOP-HX-00002 24590-HLW-ME-HOP-HX-00004	Safety Classification <input type="checkbox"/> SC <input checked="" type="checkbox"/> SS <input type="checkbox"/> APC-PAM	
Equipment Datasheet Number	N/A		
Description	Silver Mordenite Preheater for the Melter Offgas Treatment Process System (HOP). Plate & Frame Type Heat Exchanger. Welded Gasket Construction. Manufactured by Tranter. Model No. SM-54-M-08-HM-422.	Seismic Category <input type="checkbox"/> SC-I <input type="checkbox"/> SC-II <input checked="" type="checkbox"/> SC-III <input type="checkbox"/> SC-IV <input type="checkbox"/> SC-III Seismic Interaction only	
Location (Facility / Building and Room No.)	HLW, Elevation 0'-0", Room H-A123, Column Lines P-5/4		
Safety Function(s)	Ensure confinement of radioactive materials during normal operations and accident conditions. Reference: 24590-WTP-PSAR-ESH-01-002-04, Rev. 04K, Table 4A-2, Page 4A-14		
Equipment Safety Function Type	<input checked="" type="checkbox"/> Passive Mechanical	<input type="checkbox"/> Active Mechanical	<input type="checkbox"/> Electrical
Seismic Safety Function <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Seismic Operability Requirements <input type="checkbox"/> During Seismic Event <input type="checkbox"/> After Seismic Event <input checked="" type="checkbox"/> None		

Equipment Environmental Qualification (EEQ)				
(Parameter values stated in this section do not include process conditions or operation induced conditions)				
Classification of Environment <input checked="" type="checkbox"/> Mild <input type="checkbox"/> Harsh		Qualified Life (years) <input checked="" type="checkbox"/> 40 <input type="checkbox"/> Other		
Parameter Type/Units	Parameter Value	Parameter Duration (number)	Duration Units	WTP Source Document Number
<b>Normal Ambients</b>				
High Temperature (°F)	83	Note a	Years	24590-HLW-U0D-W16T-00001
Low Temperature (°F)	59	Note b	N/A	24590-HLW-U0D-W16T-00001
High Relative Humidity (%RH)	100	Note c	N/A	24590-HLW-U0D-W16T-00001
Low Relative Humidity (%RH)	10	Note c	N/A	24590-HLW-U0D-W16T-00001
High Pressure (in.-w.g.)	0	Note d	N/A	24590-HLW-U0D-W16T-00001
Low Pressure (in.-w.g.)	0.4 vacuum	Note d	N/A	24590-HLW-U0D-W16T-00001
Radiation Dose Rate (mRad/hr)	10	Note e	Years (Note e)	24590-HLW-U0D-W16T-00001
Plant/Process Induced Vibration	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Additional Normal Ambient Information:	N/A			



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## Equipment Environmental Qualification (EEQ) *(continued)*

Parameter Type/Units	Parameter Value	Parameter Duration (number)	Duration Units	WTP Source Document Number
<b>Abnormal Ambients</b>				
High Temperature (°F)	137	Note a	hours / year	24590-HLW-U0D-W16T-00001
Low Temperature (°F)	40	Note b	N/A	24590-HLW-U0D-W16T-00001
High Relative Humidity (%RH)	100	Note c	N/A	24590-HLW-U0D-W16T-00001
Low Relative Humidity (%RH)	5	Note c	N/A	24590-HLW-U0D-W16T-00001
High Pressure (in.-w.g)	4	Note d	N/A	24590-HLW-U0D-W16T-00001
Low Pressure (in.-w.g)	6.7 vacuum	Note d	N/A	24590-HLW-U0D-W16T-00001
Radiation Dose Rate (mR/hr)	10	Note e	Years (Note e)	24590-HLW-U0D-W16T-00001
Exposure to Wet Sprinkler System	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	g	hours	24590-HLW-U0D-W16T-00001
Additional Abnormal Ambient Information	N/A			
<b>Design Basis Events (DBE) Ambients</b>				
High Temperature (°F)	139	1000	hours	24590-HLW-U0D-W16T-00001
Low Temperature (°F)	40	Note b	N/A	24590-HLW-U0D-W16T-00001
High Relative Humidity (%RH)	100	1000	hours	24590-HLW-U0D-W16T-00001
Low Relative Humidity (%RH)	5	1000	hours	24590-HLW-U0D-W16T-00001
High Pressure (in.-w.g)	4	1000	hours	24590-HLW-U0D-W16T-00001
Low Pressure (in.-w.g)	6.7 vacuum	1000	hours	24590-HLW-U0D-W16T-00001
Radiation Dose Rate (mR/hr)	10.0	0	hours	24590-HLW-U0D-W16T-00001
Submergence	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Note j	N/A	hours	24590-HLW-U0D-W16T-00001
Chemical/Spray Exposure	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	12.5	hours	24590-HLW-U0D-W16T-00001
Additional DBE Information	N/A			

<b>DBE Chemical Exposure Details</b>	
DBE Chemical Types / Concentrations	Ammonia Nitric Acid Fume



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Electrical Interfaces Supporting the Safety Function	
Power Supply Voltage (VAC, VDC)	N/A
Power Supply Frequency (Hz)	N/A
Power Connection Method	N/A
I/O Signals to/from Equipment	N/A
I/O Connection Method	N/A

Mechanical Interfaces	
Mounting Configuration (orientation)	Horizontal Equipment
Mounting Method (bolts, welds, etc.)	Post Installed Concrete Anchors. Sized by SELLER. Provided by BUYER.
Auxiliary Devices	N/A

Equipment Seismic Qualification (ESQ)				
Parameter	Title	Reference/Document Number	Version / Revision	Remarks
WTP Seismic Design Specification	Engineering Specification for Seismic Qualification Criteria for Pressure Vessel	24590-WTP-3PS-MV00-T0002	2	N/A
Specified Seismic Load Parameters	Engineering Specification for Structural Design Loads for Seismic Category III & IV Equipment	24590-WTP-3PS-FB01-T0001	4	N/A

Equipment Qualification Notes and Additional Information
<p>a) For thermal aging, the high normal temperature shall be assumed to subsist for 40 years less the duration of the high abnormal temperature. For any lesser qualified life, the normal and abnormal condition durations shall be assigned proportionally. The abnormal temperature is stated to subsist for a certain number of hours per year. It shall be taken to subsist for this number of hours for each year of the qualified life.</p> <p>b) The ability to provide the safety function at the low normal temperature, the low abnormal temperature or the low DBE temperature (whichever be the lowest) shall be established by test, analysis, or operating experience. The thermal aging at these respective low temperatures will be conservatively covered by the thermal aging per item a) above. Therefore, no duration is assigned for the low temperatures.</p> <p>c) The ability to provide the safety function at the extremes of the normal and abnormal humidity conditions, taking into consideration the high and the low normal and high and low abnormal, shall be established by test, analysis, or operating experience. No duration is assigned for the normal and abnormal humidity conditions.</p> <p>d) If the performance of the safety function of the equipment is affected by ambient pressure, the ability to provide the safety function at the extremes of the normal and abnormal pressure conditions, taking into consideration the high and the low normal and the high and low abnormal pressures, shall be established by test, analysis, or operating experience. No duration is assigned to the normal and abnormal pressure conditions.</p> <p>e) (1) If the abnormal radiation dose rate is the same as the normal radiation dose rate, the normal radiation dose rate shall be assumed to subsist for 40 years, or any lesser qualified life, and the duration of the abnormal radiation dose rate is "0."            (2) If the abnormal radiation dose rate is higher than the normal radiation dose rate, the abnormal radiation dose rate shall be assumed to subsist for 40 years, or any lesser qualified life, and the duration of the normal radiation dose rate is "0."</p> <p>f) The DBE conditions shall be taken to subsist for the stated number of hours following the qualified life of the equipment.</p> <p>g) Spray due to fire sprinkler actuation shall be taken to occur once over the entire qualified life duration for a period of 2 hours, even if the qualified life is a period less than 40 years. If spray qualification is provided for DBE conditions (whether for water or chemical spray), then separate qualification for the fire sprinkler spray need not be provided.</p> <p>h) The values stated in this EQD are the ambients and do not include the thermodynamic and radiation conditions imposed by the process fluids, self-heating, etc. The data pertaining to process fluid and service induced parameters are to be taken into account where significant, such as in thermal aging analyses. These data can be obtained from the equipment data sheets or the Equipment Specification.</p> <p>i) Equipment that is to be installed in inaccessible locations must be qualified to a 40-year life without the need for maintenance or replacement.</p> <p>j) Support elevation is 6.5 inches above the floor height. Flood height is 1.58 feet above the floor.</p>



# EQUIPMENT QUALIFICATION DATASHEET (EQD)

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### DOE Radioactive Materials Disclaimer:

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the US Department of Energy (DOE) facilities exclusively by DOE acting pursuant to its AEA authority. DOE asserts, that pursuant to the AEA, it has sole and exclusive responsibility and authority to regulate source, special nuclear, and byproduct materials at DOE-owned nuclear facilities. Information contained herein on radionuclides is provided for process description purposes only.

### Approval

Rev	Description	System Engineer	Vessel Engineer	Checked	MET	E&NS	Approved	Date
0	Issued for Procurement. This document supersedes document number 24590-HLW-MED-HOP-00032, Rev. B.	 M. O'Neill	 J. Brumfield	 M. Seed	 D. Adler	 C. Meng	 J. Julyk	3/11/10

J58  
03/10/2010

HLW

REFERENCES for Data Sheet: 24590-PTF-MED-HOP-00031, REV. 0

(For BNI Use only)

Data	Document #	Rev	Document Title
Quality Level	24590-HLW-M6-HOP-00003	2	<i>P&amp;ID - HLW Melter Offgas System Melter 1 Secondary Offgass Treatment Sheet 1 of 3</i>
	24590-HLW-M6-HOP-20003	2	<i>P&amp;ID - HLW Melter Offgas System Melter 2 Secondary Offgas Treatment Sheet 1 of 3</i>
Seismic Category	24590-HLW-M6-HOP-00003	2	<i>P&amp;ID - HLW Melter Offgas System Melter 1 Secondary Offgass Treatment Sheet 1 of 3</i>
	24590-HLW-M6-HOP-20003	2	<i>P&amp;ID - HLW Melter Offgas System Melter 2 Secondary Offgas Treatment Sheet 1 of 3</i>
Heat Exchanger Duty	Vendor Supplied	N/A	N/A
LMTD	Vendor Supplied	N/A	N/A
Total, hot side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Condensable Vapor, hot side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Liquid, hot side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Noncondensable, hot side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Temperature, hot side (F)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Density, hot side (lb/cuft)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Viscosity, hot side (cP)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Molecular Weight, vapor, hot side	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Molecular Weight, noncondensable, hot side	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Specific Heat, hot side (Btu/lb-F)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Thermal Conductivity, hot side (Btu/hr-ft-F)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Inlet Pressure, hot side (psia)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Velocity, hot side (ft/s)	24590-WTP-3PS-MEP0-T0001	0	Engineering Specification for Plate and Frame Heat Exchangers, Section 3.1.7
Pressure Drop allowed, hot side (in-wg)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Oversurface %	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Thermal Efficiency %	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Total, cold side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Condensable Vapor, cold side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Liquid, cold side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>
Noncondensable, cold side (lb/hr)	24590-HLW-M4E-HOP-00001	N/A	<i>Incorporate Operating Efficiency for Fan Exhausters, pg. 13/58</i>

REFERENCES for Data Sheet: 24590-HLW-MED-HOP-00031, REV. 0

Temperature, cold side (F)	24590-HLW-M4C-HOP-00011 Temp Cold Out Vendor Supplied	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Density, cold side (lb/cuft)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Viscosity, cold side (cP)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Molecular Weight, vapor, cold side	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Molecular Weight, noncondensable, cold side	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Specific Heat, cold side (Btu/lb-F)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Thermal Conductivity, cold side (Btu/hr-ft-F)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Inlet Pressure, cold side (psia)	24590-HLW-M4C-HOP-00011	1	HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Velocity, cold side (ft/s)	24590-WTP-3PS-MEP0-T0001	0	Engineering Specification for Plate and Frame Heat Exchangers, Section 3.1.7
Pressure Drop allowed, cold side (in-wg)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Design Pressure, hot side (psig)	24590-HLW-MVC-30-00001	B	<i>HLW Vessel Cyclic Datasheet Inputs, pg. 13 (Note: Vendor provided P=FV in their quote)</i>
Design Temperature, hot side (F)	24590-WTP-DB-ENG-01-001 24590-HLW-M4C-HOP-00011	1O 1	<i>Basis of Design, Section 12 - Ventilation Basis of Design, pg. 12-19, Table 12-1</i> HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Corrosion Allowance (Plate) Corrosion Allowance (Shell)	24590-HLW-N1D-HOP-00007 E-Mail from MET	0 N/A	<i>HOP-HX-00002 &amp; HOP-HX-00004 (HLW) - Silver Mordenite Preheater, pg. 1</i> <i>Original CE done for conventional Plate and Frame HX. Bid is for Welded pack inside shell. Therefore MET has indicated a corrosion allowance for the shell via E-mail.</i>
Erosion Allowance, hot side (in)	24590-HLW-N1D-HOP-00007	0	<i>HOP-HX-00002 &amp; HOP-HX-00004 (HLW) - Silver Mordenite Preheater, pg. 1</i>
Insulation	24590-WTP-3PS-NN00-T0001	2	<i>Engineering Specification for Thermal Insulation for Mechanical Systems</i>
Design Pressure, cold side (psig)	24590-HLW-MVC-30-00001	B	<i>HLW Vessel Cyclic Datasheet Inputs, pg. 13 (Note: Vendor provided P=FV in their quote)</i>
Design Temperature, cold side (F)	24590-WTP-DB-ENG-01-001 24590-HLW-M4C-HOP-00011 Vendor provided lower value	1O 0	<i>Basis of Design, Section 12 - Ventilation Basis of Design, pg. 12-19, Table 12-1</i> HLW Melter Offgass System Design Basis Flowsheets, pg. A-2 & A-3
Erosion Allowance, cold side (in)	24590-HLW-N1D-HOP-00007	0	<i>HOP-HX-00002 &amp; HOP-HX-00004 (HLW) - Silver Mordenite Preheater, pg. 1</i>
Design Flowrate, hot side (scfm)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Fouling Resistance (hr-sqft-F/Btu)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Overall Flange inleakage (scfm)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Design Flowrate, cold side (scfm)	24590-HLW-MEC-HOP-00003	1	<i>HLW Silver Mordenite Preheater Process Conditions and Design Requirements, pg. 2 &amp; 8</i>
Cyclic Data	24590-HLW-MVC-30-00001	B	<i>HLW Vessel Cyclic Datasheet Inputs, Sheets A-5 &amp; A-6</i>