



# MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.  
24590-PTF-MV-HLP-VSL-00027A

Project:	<b>RPP-WTP</b>	P&ID:	<b>24590-PTF-M6-HLP-P0001</b>
Project No:	<b>24590</b>	Process Calculation:	<b>24590-PTF-MVC-HLP-00002</b>
Project Site:	<b>Hanford</b>	Vessel Drawing:	<b>24590-PTF-MV-HLP-P0006</b>
Description:	<b>HLW Lag Storage Vessel</b>		

ISSUED BY  
RPP-WTP PDC  
*[Signature]*  
DATE  
**12/22/03**

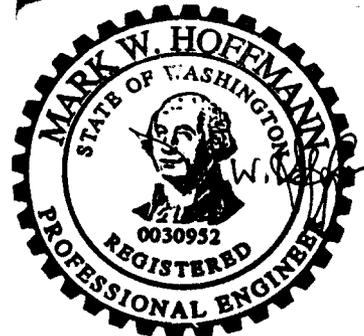
R10182254

Reference Data	
Charge Vessels (Tag Numbers)	<b>DELETED</b>
Pulsejet Mixers / Agitators (Tag Numbers)	<b>HLP-PJM-00060, HLP-PJM-00061, HLP-PJM-00062, HLP-PJM-00063, HLP-PJM-00064, HLP-PJM-00065, HLP-PJM-00066, HLP-PJM-00067</b>
RFDs/Pumps (Tag Numbers)	<b>DELETED</b>

Design Data						
Quality Level	<b>See Vessel Drawing</b>		Fabrication Specs	<b>24590-WTP-3PS-MV00-TP001</b>		
Seismic Category	<b>SC-I</b>		Design Code	<b>ASME VIII Div 1</b>		
Service/Contents	<b>Radioactive Slurry</b>		Code Stamp	<b>Yes</b>		
Design Specific Gravity	<b>1.27</b>		NB Registration	<b>Yes</b>		
Maximum Operating Volume	gal	<b>112,900</b>	Weights (lbs)	Empty	Operating	Test
Total Volume	gal	<b>127,260</b>	Estimated	<b>227,050</b>	<b>1,458,400</b>	<b>1,291,900</b>
			Actual *			

Inside Diameter	inch	<b>300</b>			Wind Design	<b>Not Required</b>
Length/Height (TL-TL)	inch	<b>354</b>			Snow Design	<b>Not Required</b>
		Vessel Operating	Vessel Design	Coil/Jacket Design	Seismic Design	<b>24590-WTP-3PS-SS90-T0001</b>
Internal Pressure	psig	<b>0</b>	<b>15</b>	<b>35</b>	Seismic Base Moment *	ft*lb
External Pressure	psig	<b>0.217</b>	<b>8 (Note 2)</b>	<b>15</b>	Postweld Heat Treat	<b>Not Required</b>
Temperature	°F	<b>212</b> <sup>1</sup>	<b>237</b> <sup>1</sup>	<b>237</b> <sup>1</sup>	Corrosion Allowance	Inch <b>0.04 (Note 3)</b>
Min. Design Metal Temp.	°F	<b>40</b>			Hydrostatic Test Pressure *	psig

Please note that source, special nuclear and byproduct materials, as defined in the Atomic Energy Act of 1954 (AEA), are regulated at the U.S. 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.



**EXPIRES 12/10/04**

This Bound Document Contains a total of 4 pages

REV	DATE	REASON FOR REVISION	PREPARER	CHECKER	REVIEWER	APPROVER
1	12/22/03	Issued for Permitting Use	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
0	10/3/03	Issued for Permitting Use	Jessica Jackson	Rob Simmons	Cliff Slater	Mark Hoffmann

12/22/03

Processed/Date Entry  
 Copied/QA  
 Scanned  
 Filed



# MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.  
24590-PTF-MV-HLP-VSL-00027A

## Materials of Construction

Component	Material	Minimum Thickness / Size	Containment
Top Head	SA 240 316 (Note 7)	See Drawing	Auxiliary
Shell	SA 240 316 (Note 7)	See Drawing	Primary
Bottom Head	SA 240 316 (Note 7)	See Drawing	Primary
Support	SA 240 304 (Note 7)	See Drawing	NIA
Jacket/Coils/Half-Pipe Jacket	SA 240 316 (Note 7)	See Drawing	NIA
Internals	SA 240 316 (Note 7)	See Drawing	Thermowells Primary
Pipe	SA 312 TP316 Smls (Note 7)	See Drawing	See Note 1
Forgings/ Bar stock	SA 182 F316 (Note 7)	See Drawing	As Note 1 for Nozzle Necks
Wash Ring Pipe	SA 312 TP316 Smls (Note 7)	See Drawing	NIA
Bolting/ Gaskets	NIA	NIA	NIA

## Miscellaneous Data

Orientation	Vertical	Support Type	Skirt
Insulation Function	Not Applicable	Insulation Material	Not Applicable
Insulation Thickness (inch)	Not Applicable	Weld Surface Finish	De-scaled as Laid (Note 6)

## Remarks

\* To be determined by the Seller.

**Note 1: Nozzle necks below the high operating liquid level are Primary, others Auxiliary. See 24590-WTP-3PS-MV00-TP001 and vessel drawing for NDT.**

**Note 2: External design pressure under the jacket shall be rated for the jacket design pressure plus 1 psig internal vacuum in the vessel to account for ventilation fan pressures.**

**Note 3: Corrosion allowance for jacket shall be 0.04 inch.**

**Note 4: Vessel volumes are approximate and do not account for manufacturing tolerances, nozzles, and displacement of internals.**

**Note 5: Contents of this document are Dangerous Waste Permit affecting.**

**Note 6: Grind smooth shell welds at shell-jacket welds.**

**Note 7: Maximum carbon content of 0.030% for all welded components.**

**Note 8: The vessel design external pressure is estimated only and shall be confirmed by the Seller's calculations.**



# MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.  
24590-PTF-MV-HLP-VSL-00027A

## Equipment Cyclic Data Sheet

Plant Item Number	24590-PTF-MV-HLP-VSL-00027A
Component Description	Parent Vessel

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

Materials of Construction	SA 240 316 with maximum carbon of 0.030 %
Design Life	40 years
Component Function and Life Cycle Description	This vessel is filled over a period of approximately 35 days. The vessel is also drained over an additional period of 35 days. Contents transferred as a batch to HLP-VSL-00028 ( i.e., could be drained in one day). The vessel is drained and the internals are washed yearly. The temperature is maintained normally at or below 212°F.



Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	-8	15	10	Nominal assumption for testing
Operating Pressure	psig	-0.217	0	N/A	Maximum pressure only achieved if ventilation is lost.
Operating Temperature	°F	50	212	N/A	Uniform material temperature range, not between two points. Temperature cycling is not required by design.
Contents Specific Gravity		1.00	1.27	880	Nominal assumption. Coincident with contents level cycles
Contents Level	inch	Empty	389	880	Contents level measured from center of bottom head
<b>Localized Features</b>					
Nozzles	Within 9°F of operating temperature range.		As above		

### Notes

- **Cycle increase:** The Seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.



# MECHANICAL DATA SHEET: VESSEL

PLANT ITEM No.  
24590-PTF-MV-HLP-VSL-00027A

## Equipment Cyclic Data Sheet

Component Plant Item Number	HLP-PJM-00060, HLP-PJM-00061, HLP-PJM-00062, HLP-PJM-00063, HLP-PJM-00064, HLP-PJM-00065, HLP-PJM-00066, HLP-PJM-00067
Component Description	Pulse Jet Mixers

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

Materials of Construction	SA 240 316 with maximum carbon of 0.030 %
Design Life	40 Years
Component Function and Life Cycle Description	These pulse jet mixers (PJMs) are cyclically loaded using vacuum to fully fill the PJM with process liquid and compressed air to fully empty the PJM. The PJMs are contained within a parent vessel with varying liquid level. They shall be designed to cycle between the maximum design pressure and the minimum design pressure plus the external static head imposed by the parent vessel. The PJM supports shall be designed to cycle between fully buoyant (PJM empty and parent vessel full) and fully loaded (PJM full and parent vessel empty) in addition to thrust. <span style="float: right;">△1</span>

Load Type		Min	Max	Number of Cycles	Comment
Design Pressure	psig	FV	80	10	Nominal assumption
Operating Pressure	psig	FV	72.5	$7.9 \times 10^5$	Pressure cycles to be at 212° F and non-coincident with temperature cycles <span style="float: right;">△1</span>
Operating Temperature	°F	50	212 <span style="float: right;">△1</span>	N/A	Parent Vessel will be operated normally at a temperature of 212°F. <span style="float: right;">△1</span>
Contents Specific Gravity		1.19	1.27	880 <span style="float: right;">△1</span>	Nominal assumption <span style="float: right;">△1</span>
Contents Level	inch	Empty	Flooded	$7.9 \times 10^5$	
<b>Localized Features</b>					
Supports	As above		As above with contents level changing coincident with pressure cycles.		

### Notes

- Cycle increase: The Seller must increase the numbers of operational cycles given above by 10% to account for commissioning duty unless otherwise noted.