



R11204283



**CENTRIFUGAL MULTI-STAGE BLOWER**

Data Sheet:

**24590-HLW-MAD-HOP-00038**

MR No.  
**24590-QL-MRA-MACS-00004**  
Plant Item No.  
**24590-HLW-MA-HOP-FAN-00008A/B/C**  
**24590-HLW-MA-HOP-FAN-00010A/B/C**  
Rev. No.  
**5**

1	Project:	RPP-WTP	Bldg./Room #	HLW / H-0429	Manufacturer	*		
2	Project No:	24590	Supporting Calculations	24590-HLW-M4C-HOP-00011	Manufacturer	*		
3	Site:	DOE Hanford	Supporting Drawings	24590-HLW-M6-HOP-00008	Quantity	6		
4	Safety Class	SS	System Description	24590-HLW-M6-HOP-20008	Required			
5	Seismic Category (Note 27)	SC-III		24590-HLW-3YD-HOP-00001	Quality Level	Q		
6	SSC Characteristic	Air Permit						
7	System No.	HOP						
8	Description: HLW Offgas Stack Extraction Blower - Note 14							
9	<b>DESIGN CONDITIONS</b>							
10	Indoor Design Temperature	Minimum	59 °F	Maximum	95 °F	Relative Humidity		
11	Contamination Classification Area	C2/C3		Elevation	740 ft above MSL			
12	Environmental Qualification	(see Attachment 2)		Hanford Standard Atmospheric Pressure	398	inches WC		
13	<b>DESIGN CONDITIONS</b>							
14	Design Blower Capacity (Note 22)	2211	ACFM	Inlet Air Temperature at Design Conditions	294	°F		
15	Design Static Pressure (Note 21)	82	inches WC	Inlet Air Density at Design Conditions	0.0408	lbs/ft <sup>3</sup>		
16	Minimum Blower Efficiency at Design Conditions	60	%	Inlet Air Pressure at Design Conditions	12.1	psia		
17	Blower Efficiency at Design Conditions	*	%	Power at Design Conditions	*	BHP		
18	Blower Speed at Design Conditions (Note 25)	*	RPM	Equipment Design Temperature (Note 18)	*	°F		
19	Max. Discharge Temp. at Design Conditions	*	°F	Critical Speeds (Note 17)	*	RPM		
20	<b>CONSTRUCTION</b>							
21	Blower Manufacturer	*		Blower Model Number	*			
22	AMCA Drive Arrangement	7		AMCA Inlet Box Position	360			
23	AMCA Motor Position	Direct Drive		AMCA Discharge	CW 360			
24	AMCA Rotation (Note 9)	CW		Blower Scroll Type	*			
25	Blower Motor Operating Weight	*	pounds	Assembly Weight (Mtr + Blower + Base)	*	pounds		
26	Overall Skid Dimensions (Note 5)	Width	*	Height	*	Length		
27	Blower Bearing Type	Roller- Grease Lubricated		Blower Bearing Mfg.	*	Bearing Part #		
28	Lubricant Mfg.	*	Part #	Bearing Special Features	(Notes 19 & 20) L10 Life 100 khr			
29	Mechanical Coupling Mfg.	*	Part #					
30	<b>BLOWER WHEEL</b>							
31	Blower Wheel Type (Note 4)	*		Blower Shaft Diameter	*			
32	Design Wheel Diameter	*		Actual Wheel Diameter	*			
33	Design Wheel Width	*		Actual Wheel Width	*			
34	Design Blower RPM	*		Actual Blower RPM	*			
35	Design Brake Horsepower	*		Actual Brake Horsepower	*			
36	<b>BLOWER MATERIALS</b>							
37	Housing (Note 12)	Cast Ductile Iron	Grade	*	Blower Wheel	Stainless Steel	Grade	*
38	Evase	N/A	Grade	N/A	Mounting Frame	Carbon Steel	Grade	*
39	Shaft	Stainless Steel	Grade	*	Inlet Box / Transition Piece	Cast Ductile Iron	Grade	*
40	Inlet Vane	N/A	Grade	N/A	Discharge Damper	N/A	Grade	N/A
41	Inlet Screen	N/A	Grade	N/A	OSHA Compatible Safety Guards	Carbon Steel	Grade	*
42	<b>BLOWER ACCESSORIES</b>							
43	Flanged Inlet	Yes		Flanged Inlet Dimensions	*			
44	Flanged Discharge	Yes		Flanged Discharge Dimensions	*			
45	Flanged Discharge Evase	No		Flanged Evase Dimensions	N/A			
46	Split Housing	No		Split Housing Type	N/A			
47	Inlet Box	No		Inlet Box Type	N/A			
48	Inlet Damper	No		Inlet Damper Type	N/A			
49	Inlet Transition Piece	No		Inlet Transition Piece Flange Dimensions	N/A			
50	Inspection Door (Note 7)	Yes		Inspection Door Size (Note 7)	1" NPT			
51	Drain Connection (Note 7)	Yes		Drain Connection Size (Note 7)	1" NPT			
52	Shaft Seals	Yes		Seal Type	Double Carbon Ring w/ purge			
53	Isolation Base	No		Isolation Base Type	N/A			
54				Isolation Base Manufacturer	N/A			
55				Isolation Springs Mfr and Model No	*			
56	Isolation Springs	Yes		Isolation Springs Minimum Diameter	*			
57				Isolation Springs Deflection	*			
58				Isolation Springs Restraint Features	*			

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 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.



## CENTRIFUGAL MULTI-STAGE BLOWER

Data Sheet:

**24590-HLW-MAD-HOP-00038**

MR No.

**24590-QL-MRA-MACS-00004**

Plant Item No.

**24590-HLW-MA-HOP-FAN-00008A/B/C**  
**24590-HLW-MA-HOP-FAN-00010A/B/C**

Rev. No.

5

1	Project:	RPP-WTP	Bldg./Room #	HLW / H-0429	Manufacturer	*
2	Project No:	24590	Supporting Calculations	24590-HLW-M4C-HOP-00011	Manufacturer	*
3	Site:	DOE Hanford			Part No	
4	Safety Class	SS	Supporting Drawings	24590-HLW-M6-HOP-00008	Quantity	6
5	Seismic Category (Note 27)	SC-III		24590-HLW-M6-HOP-20008	Required	
6	SSC Characteristic	Air Permit	System Description	24590-HLW-3YD-HOP-00001	Quality Level	Q
7	System No.	HOP				
8	Description: <b>HLW Offgas Stack Extraction Blower - Note 14</b>					
9	Flexible Connection Inlet (Note 23 & 26)	Yes	Insulation (Note 24)	Yes		
10	Flexible Connection Inlet Type	Braided SSTL flexible hose				
11	Flexible Inlet Connection Material	316L SS				
12	Flexible Connection Manufacturer and Model No	*				
13	Flexible Connection Outlet (Note 23 & 26)	Yes				
14	Flexible Connection Outlet Type	Braided SSTL flexible hose				
15	Flexible Outlet Connection Material	316L SS				
16	Flexible Connection Manufacturer and Model No	*				
17	Inlet Screen	No				
18	Inlet Screen Features	N/A				
19	Blower Pedestal	Yes				
20	Blower Pedestal Description	Common mounting base for blower, motor, and bearings				
21	Insulation Studs	No				
22	Silencer	No				
23	<b>MOTOR AND DRIVE REQUIREMENTS</b>					
24	Driven Equipment / Motor / ASD relationship is as follows:					
25	<u>Blower Tag Number</u>	<u>Motor Tag Number</u>	<u>ASD Tag Number</u>			
26	HOP-FAN-00008A	HOP-MTR-00007A	HOP-ASD-00002A			
27	HOP-FAN-00008B	HOP-MTR-00007B	HOP-ASD-00002B			
28	HOP-FAN-00008C	HOP-MTR-00007C	HOP-ASD-00002C			
29	HOP-FAN-00010A	HOP-MTR-00008A	HOP-ASD-00004A			
30	HOP-FAN-00010B	HOP-MTR-00008B	HOP-ASD-00004B			
31	HOP-FAN-00010C	HOP-MTR-00008C	HOP-ASD-00004C			
32	Variable Speed Drive	Yes	Provided by others			
33	Special Drive Features	1. ASD to operate motor from 30% to 100% of required RPM within a 30 second time frame (max)				
34		2. Provides ASD programming for motor RPM to pass through any critical speed dead bands to avoid excessive vibration				
35	<b>GAS COMPOSITION</b>					
36	<b>Component</b>	<b>kg/hr</b>	<b>wt%</b>			
37	N <sub>2</sub>	2540	6.74E+01			
38	O <sub>2</sub>	778.1	2.06E+01			
39	H <sub>2</sub> O	388.4	1.03E+01			
40	Ar	43.3	1.15E+00			
41	CO <sub>2</sub>	20.7	5.49E-01			
42	NO	2.89E-02	7.66E-04			
43	NH <sub>3</sub>	2.44E-02	6.47E-04			
44	N <sub>2</sub> O	1.25E-02	3.32E-04			
45	SO <sub>2</sub>	6.70E-03	1.78E-04			
46	NO <sub>2</sub>	4.83E-03	1.28E-04			
47	H <sub>2</sub>	3.53E-03	9.36E-05			
48	CO	8.52E-04	2.26E-05			
49	VOC	1.38E-04	3.66E-06			
50	Hg	1.25E-04	3.32E-06			
51	HCl	6.58E-06	1.75E-07			
52	HF	3.99E-06	1.06E-07			
53	I <sub>2</sub>	1.11E-06	2.94E-08			
54	Particulate	4.34E-11	1.15E-12			
55	<b>Total</b>	<b>3770.58</b>	<b>100</b>			
56						
57	Source: 24590-HLW-M4E-HOP-00001 pages 14-16 row 61					
58						
59						



### CENTRIFUGAL MULTI-STAGE BLOWER

#### Data Sheet:

### 24590-HLW-MAD-HOP-00038

MR No.

**24590-QL-MRA-MACS-00004**

Plant Item No.

**24590-HLW-MA-HOP-FAN-00008A/B/C****24590-HLW-MA-HOP-FAN-00010A/B/C**

Rev. No.

**5**

1	Project:	RPP-WTP	Bldg./Room #	HLW / H-0429	Manufacturer	*
2	Project No:	24590	Supporting Calculations	24590-HLW-M4C-HOP-00011	Manufacturer Part No	*
3	Site:	DOE Hanford	Supporting Drawings	24590-HLW-M6-HOP-00008	Quantity Required	6
4	Safety Class	SS	System Description	24590-HLW-M6-HOP-20008	Quality Level	Q
5	Seismic Category (Note 27)	SC-III				
6	SSC Characteristic	Air Permit				
7	System No.	HOP				

8 Description: **HLW Offgas Stack Extraction Blower - Note 14**

9 **Notes**

- 10 1) \* Denotes data to be provided / verified by vendor.
- 11 2) N/A denotes "Not Applicable".
- 12 3) TBD denotes "To Be Determined".
- 13 4) The impeller shall be anti-surge design developing continuously rising SP from free delivery thru shutoff.
- 14 5) Bounding dimensions not to exceed 70" W x 76" H x 120" L (Blower, Motor and Baseplate).
- 15 6) Deleted
- 16 7) See Specification 24590-WTP-3PS-MACS-T0005 rev. 0, section 3.8.2.
- 17 8) Deleted
- 18 9) Rotation is listed as viewed from drive side.
- 19 10) Deleted
- 20 11) Deleted
- 21 12) Blower housing design pressure shall be -3 psi (-82 in WC).
- 22 13) Deleted
- 23 14) Contents of this document are Dangerous Waste Permit affecting.
- 24 15) Deleted
- 25 16) Deleted
- 26 17) Critical speeds within operating ranges to be blocked in ASD programming
- 27 18) This temperature is required for material selection and corrosion analysis. The value is the average temperature of the inlet temperature in line 14 of page 1 and the Discharge Temperature on Line 19 of page 1.
- 28 19) Provide each blower bearing with RTDs & 2 - directional (X and Y) vibration sensors for remote indication
- 29 20) Radial type roller bearings shall have labyrinth type seal.
- 30 21) The original, more conservative of 82 inches WC was retained rather than the minimum value 70 inches WC in 24590-HLW-M4C-HOP-00011 Rev. 2.
- 31 22) Design blower capacity is the predicted capacity from calculation, 24590-HLW-M4C-HOP-00011 Rev 1 Page A-10 Cell Y61, divided by 2 (two blowers running at capacity)
- 32 23) Connections shall match Buyer's supply pipe: 10 inch diameter, 316L SS, Schedule 40S, w/ 150 lb, RF Flange.
- 33 24) Blowers shall be insulated (except bearing housings) by Buyer and heat traced to maintain casing metal temperature above the acid dewpoint of the process gas.
- 34 25) Shaft speed shall not exceed 3600 rpm unless approved by Buyer. Tip speed of rotating assembly shall not exceed 530 fps unless approved by Buyer.
- 35 26) See Specification 24590-WTP-3PS-MACS-T0005 rev. 0, section 3.8.1.6 for flexible connection requirements.
- 36 27) See Specification 24590-WTP-3PS-MACS-T0005 rev. 0, section 6.3 for seismic testing requirements.

40 **SAFETY SCREENING**

41 Safety Screening/Evaluation Required? If yes per 24590-WTP-GPP-SREG-002, E&NS Signature required below. X Yes      No

42

43

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**CENTRIFUGAL MULTI-STAGE BLOWER**

**Data Sheet:**

**24590-HLW-MAD-HOP-00038**

MR No. <b>24590-QL-MRA-MACS-00004</b>	Rev. No. <b>5</b>
Plant Item No. <b>24590-HLW-MA-HOP-FAN-00008A/B/C</b> <b>24590-HLW-MA-HOP-FAN-00010A/B/C</b>	
<b>HLW / H-0429</b>	<b>Manufacturer *</b>
<b>24590-HLW-M4C-HOP-00011</b>	<b>Manufacturer *</b>
<b>24590-HLW-M6-HOP-00008</b>	<b>Part No</b>
<b>24590-HLW-M6-HOP-20008</b>	<b>Quantity</b>
<b>24590-HLW-3YD-HOP-00001</b>	<b>Required</b>
	<b>Quality Level</b>
	<b>Q</b>

1	Project:	RPP-WTP	Bldg/Room #	HLW / H-0429	Manufacturer *
2	Project No:	24590	Supporting Calculations	24590-HLW-M4C-HOP-00011	Manufacturer *
3	Site:	DOE Hanford			Part No
4	Safety Class	SS	Supporting Drawings	24590-HLW-M6-HOP-00008	Quantity
5	Seismic Category (Note 27)	SC-III		24590-HLW-M6-HOP-20008	Required
6	SSC Characteristic	Air Permit	System Description	24590-HLW-3YD-HOP-00001	Quality Level
7	System No.	HOP			Q

8 Description: **HLW Offgas Stack Extraction Blower - Note 14**

5 Revised to incorporate new specification 24590-WTP-3PS-MACS-T0005, Rev. 0 to remove ASME AG-1 requirements. Other minor clarifications are as noted with revision bars. This data sheet is issued for quote.

*mro.* *M Summers* *C Meng* *AM* *[Signature]* *R Stevens* *R Stevens* *5/14/10*

4 Reissued for Purchase. Minor change, (Inclusion of pages 5 & 6 which were omitted in rev. 3)

M. O'Neill	M. Summers	C. Meng	D. Lamberd	S. Kretzschmar	R. Stevens	7/22/2009
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3 Reissued for purchase. Minor revisions to format for clarity. Revised the Material Requisition number from 24590-QL-MRA-MACS-00002 to the new 24590-QL-MRA-MACS-00004. Corrected tag numbers and updated revision number. Changed title to Centrifugal Multi-stage Blowers. Removed reference to cancelled calculation 25490-HLW-MAC-HOP-00001. Added field for SSC Characteristic. Added reference to Note 14. Updated design inlet conditions, capacity, and static pressure to align with 24590-HLW-M4C-HOP-00011 Rev.1 & ECCN 24590-HLW-M4E-HOP-00001. Added field for Inlet Pressure at Design Conditions in place of Total Static Pressure (Max) field. Added field for required minimum efficiency at design conditions per CCN 199933. Changed title of field for Maximum Discharge Temperature and deleted Note 16. Changed title of field from Natural Frequencies to Critical Speeds for clarity. Removed normal and minimum design conditions for clarity. Revised AMCA Drive Arrangement from 8 to 7 to align with industry offering. Specified inlet box position to 360. Changed AMCA Discharge from Upblast to CW 360 to align with AMCA 99-2406-83. Relocated Blower Motor Operating Weight and Assembly Weight fields and added field for Overall Skid Dimensions. Specified Roller grease lubricated bearings, added fields for Mfg. and Part # for bearing, lubricant, and coupler. Changed coupler to vendor specified. Revised specified materials for housing, shaft, blower wheel, mounting frame, and inlet box/transition piece to align with industry offering. Material grades to be specified by vendor. Revised inspection door size and drain from vendor specified to 1"NPT per specification, 24590-WTP-3PS-MACS-T0004 Rev. 5. Specified seal type as Double Carbon Ring w/ purge. Added Note 2 to Special Drive Features field. Added Gas Composition. Deleted Notes 10, 13, 16 and revised Notes 17, 18, 19, 20, & 21. Added Notes 22, 23, 24, 25, 26, & 27

Mike O'Neill	Scott E. Anderson	C. Meng	A. Morretta	S. Kretzschmar	R. Stevens	6/11/2009
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2 Re-issued with updated design conditions, reformatted mechanical datasheet for clarity, attached motor and EQ datasheets. This document supercedes 24590-HLW-MUD-HOP-00002.

Mike O'Neill	Scott E. Anderson	C. Meng	C. Knauss	S. Kretzschmar	R. Stevens	3/26/2008
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1 Re-issued for purchase, added Note 12, and updated design conditions.

Y. Nurdogan	G. Dunn	C. Meng	D. Reinemann	J. Rouse	J. Julyk	3/21/2007
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0 Issued for purchase

J. Rewari	N/A	N/A	J. Medina	N/A	E. Isern	8/12/2004
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Rev.	Reason for Revision	System Engineer	Equipment Engineer	E&NS	Checker	Reviewer	Approver	Date
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**ATTACHMENT 1  
24590-HLW-MAD-HOP-00038  
ELECTRICAL DATA SHEET  
LOW VOLTAGE INDUCTION MOTOR**

MR No.  
**24590-QL-MRA-MACS-00004**

Plant Item No.  
**24590-HLW-EM-HOP-MTR-00007A/B/C  
24590-HLW-EM-HOP-MTR-00008A/B/C**

Rev No.  
**5**

Motor Tag No.: 24590-HLW-EM-HOP-MTR-00007A/B/C and 24590-HLW-EM-HOP-MTR-00008A/B/C

Driven Equipment No.: 24590-HLW-MA-HOP-FAN-00008A/B/C and 24590-HLW-MA-HOP-FAN-00010A/B/C

Service: HLW Offgas Stack Extraction Fan

Refer to "Primary Specification": 24590-WTP-3PS-MACS-T0005

LINE NO.	DESCRIPTION	USER SPECIFIED	SUPPLIER FURNISHED	UNITS
28	MANUFACTURER	-	*	-
29	NEMA FRAME	-	*	-
30	MODEL NUMBER	-	*	-
31	SERIAL NUMBER / MANUFACTURER DATE	-	*	-
32				
33	FULL LOAD CURRENT	-	*	A
34	FULL LOAD TORQUE	-	*	ft-lb
35	POWER FACTOR : - @ 50 % LOAD	-	*	%
	- @ 75 % LOAD	-	*	%
	- @ 100 % LOAD	-	*	%
36	EFFICIENCY : - @ 50% LOAD	-	*	%
	- @ 75% LOAD	-	*	%
	- @ 100% LOAD	-	*	%
37	LOCKED ROTOR CURRENT @ 100 % of RATED VOLTAGE	-	*	A
38	LOCKED ROTOR CURRENT @ 80% of RATED VOLTAGE	-	*	A
39	ALLOWABLE STALL TIME @ FULL VOLTAGE	-	*	SEC
40	ALLOWABLE STALL TIME @ 80% of VOLTAGE	-	*	SEC
41	LOSSES @ FULL LOAD	-	*	W
42	ROTOR WK2 @ MOTOR SHAFT SPEED (For > 250 hp only)	-	*	lb-ft <sup>2</sup>
43	STARTING POWER FACTOR (For > 75 hp only)	-	*	-
44	SUB TRANSIENT REACTANCE AND X/R (For > 250 hp only)	-	*	-
45	WEIGHT	-	*	lbs
46	ROTATION (CW, CCW, BI-DIR.) FACING DRIVEN EQUIPMENT	-	*	-
47	MEAN TIME BETWEEN FAILURE (MOTOR 100 HP AND ABOVE)		*	
48	STARTING METHOD (FULL/REDUCED VOLTAGE, ASD APPLICATION)	ASD		-
49				
50	RECOMMENDED BEARING LUBRICANT	-	*	

NOTES:

- (1) DELETED
- (2) Motor should be applied within its rating based on service factor of 1.0.
- (3) Data Sheet Line no. from 35 to 47 are applicable for motor 100 HP and above.
- (4) The fan and motor are subjected to the same environmental conditions.
- (5) See specification 24590-WTP-3PS-MACS-T0005 Attachment B, for requirements.



# EQUIPMENT QUALIFICATION DATASHEET (EQD)

24590-HLW-MAD-HOP-00038  
Rev.: 5

Attachment 2, Page 7 of 10

Equipment Identification			
Component Tag Number	24590-HLW-MA-HOP-FAN-00008A/B/C 24590-HLW-MA-HOP-FAN-00010A/B/C 24590-HLW-EM-HOP-MTR-00007A/B/C 24590-HLW-EM-HOP-MTR-00008A/B/C	Safety Classification	<input type="checkbox"/> SC <input checked="" type="checkbox"/> SS <input type="checkbox"/> APC <input type="checkbox"/> SDC <input type="checkbox"/> SDS <input type="checkbox"/> RRC
Manufacturer / Supplier	Note 4		
Requisition Number	24590-QL-MRA-MACS-00004		
Model	Note 4		
Description (Include descriptive text [e.g., location, elevation])	HLW Offgas Stack Extraction Fans.	Seismic Category	<input type="checkbox"/> SC-I <input type="checkbox"/> SC-II <input checked="" type="checkbox"/> SC-III <input type="checkbox"/> SC-IV
Safety Function(s)	Provides negative pressure on HLW secondary off-gas system. In conjunction with Booster Extraction Fans, provides motive force for off-gas flow through all off-gas equipment up to and including discharge at stack.		
Seismic Safety Function	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Room Number(s):	H-0429
Maintenance Accessible	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Method of Maintenance Access:	<input type="checkbox"/> Remote <input checked="" type="checkbox"/> Hands On <input type="checkbox"/> None
Seismic Operability Requirements:	<input checked="" type="checkbox"/> During Seismic Event <input checked="" type="checkbox"/> After Seismic Event		
ITS Equipment Type:	<input type="checkbox"/> Passive Mechanical <input checked="" type="checkbox"/> Active Mechanical <input checked="" type="checkbox"/> Electrical		

Equipment Environmental Qualification (EEQ)					
Environment	<input checked="" type="checkbox"/> Mild <input type="checkbox"/> Harsh	Hi Rad Service	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Design Life (yrs)	<input checked="" type="checkbox"/> 40 <input type="checkbox"/> Other _
Contamination Class:	C2/C3			with required maintenance	
Radiation Class:	R2				
Parameter Type/Units	Parameter Value	Time Duration (number)	Time Units	WTP Document Number (BUYER)	Submittal Number (SELLER)
<b>Normal</b>					
Normal High Temperature (°F)	95	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal Low Temperature (°F)	59	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal High Relative Humidity (%RH)	100	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal Low Relative Humidity (%RH)	10	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal High Pressure (in.-w.g.)	0	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal Low Pressure (in.-w.g.)	-0.4	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Normal Radiation Dose Rate (mR/hr)	0.5	40	yr	24590-HLW-U0D-W16T-00001	Note 4
Vibration Magnitude (g)	N/A	40	yr	N/A	Note 4
Vibration Frequency (Hz)	N/A	40	yr	N/A	Note 4



## EQUIPMENT QUALIFICATION DATASHEET (EQD)

24590-HLW-MAD-HOP-00038  
Rev.: 5

Attachment 2, Page 8 of 10

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

Parameter Type/Units	Parameter Value	Time Duration (number)	Time units	WTP Document Number (BUYER)	Submittal Number (SELLER)
<b>Additional Normal Information:</b>					
<b>Abnormal</b>					
Abnormal High Temperature (°F)	95	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal Low Temperature (°F)	59	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal High Relative Humidity (%RH)	95	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal Low Relative Humidity (%RH)	10	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal High Pressure (in.-w.g.)	4	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal Low Pressure (in.-w.g.)	-6.7	8	hr	24590-HLW-U0D-W16T-00001	Note 4
Abnormal Radiation Dose Rate (mR/hr)	0.5	0	hr	24590-HLW-U0D-W16T-00001	Note 4
Wet Sprinkler System Present	YES	2	hr	24590-HLW-U0D-W16T-00001	Note 4
<b>Additional Abnormal Information</b>					
<b>Design Basis Events (DBE)</b>					
DBE High Temperature (°F)	95	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE Low Temperature (°F)	59	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE High Relative Humidity (%RH)	95	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE Low Relative Humidity (%RH)	10	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE High Pressure (in.-w.g.)	4	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE Low Pressure (in.-w.g.)	-6.7	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
DBE Radiation Dose Rate (mR/hr)	0.5	0	hr	24590-HLW-U0D-W16T-00001	Note 4
Flood Height (ft)	1.58	1000	hr	24590-HLW-U0D-W16T-00001	Note 4
Submergence (ft)	N/A**	N/A**	N/A	24590-HLW-U0D-W16T-00001	Note 4
Chemical/Spray Exposure	Yes	12.5	hr	24590-HLW-U0D-W16T-00001	Note 4
Additional DBE Information	Spray exposure is composed of water from fire suppression system. **Equipment is not expected to operate submerged or after a DBE flood event.				



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DBE Chemical Exposure Details	
DBE Chemical Types/Concentrations	NONE

Interfaces (Electrical)	
Power Supply Voltage (VAC, VDC)	460 VAC
Power Supply Frequency (Hz)	60
Power Connection Method	Note 3
I/O Signals to/from Equipment	Note 3
I/O Connection Method	Note 3

Interfaces (Mechanical)	
Mounting Configuration (orientation)	Note 3
Mounting Method (bolts, welds, etc.)	Isolation springs / base to be welded to existing embeds or anchored into concrete depending on the Seller's anchorage configuration.
Auxiliary Devices	None

Equipment Seismic Qualification (ESQ)				
Parameter	Title	Reference/Document Number	Version / Revision	Remarks
WTP Seismic Design Specification (BUYER)	ENGINEERING SPECIFICATION FOR STRUCTURAL DESIGN LOADS FOR SEISMIC CATEGORY III & IV EQUIPMENT AND TANKS	24590-WTP-3PS-FB01-T0001	3	N/A
Specified Seismic Load (BUYER)	ENGINEERING SPECIFICATION FOR STRUCTURAL DESIGN LOADS FOR SEISMIC CATEGORY III & IV EQUIPMENT AND TANKS	24590-WTP-3PS-FB01-T0001	3	N/A
Design Seismic Load (SELLER)	N/A	N/A	N/A	To be provided by the Seller via the G-321-E submittal process. (Note 2)
Qualification Method (SELLER)	N/A	N/A	N/A	To be provided by the Seller via the G-321-E submittal process. (Note 2)
Qualification Report Number (SELLER)	N/A	N/A	N/A	To be provided by the Seller via the G-321-E submittal process. (Note 2)
Submittal Number (BUYER)	TBD	TBD	TBD	N/A



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### Notes and Additional Information

Note 1: Where pressure is given in inches of water column (in-w.c.) in the source document, it is generally assumed that this is in reference to atmospheric pressure and is therefore equivalent to inches of water gage (in-w.g.).

Note 2: Supplier (Seller) shall perform Equipment Seismic and Environmental Qualification in accordance with the listed parameters and the applicable specification requirements.

Note 3: To be provided by Seller.

Note 4: Data to be provided by Seller through the submittal process as required on the G-321-E form.

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 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.