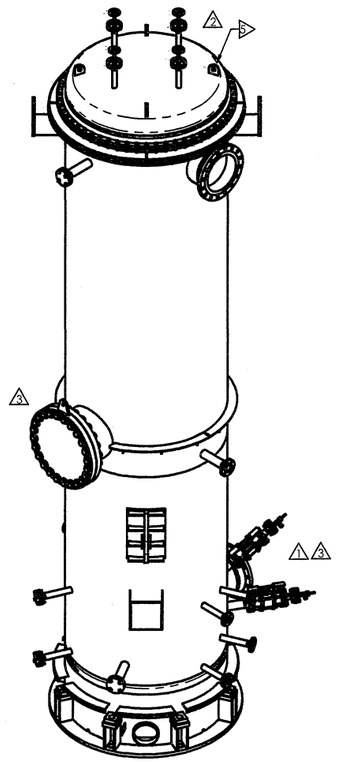
NOTES:

1. ALL ITEMS WILL BE CONSIDERED IMPORTANT TO SAFTEY (I.T.S) UNLESS MARKED AS COMMERCIAL GRADE (C.G.) IN BILL OF MATERIALS.
2. ALL MILL AND FABRICATON MARKS SHALL BE REMOVED, ALL EXPOSED SURFACES SHALL BE FREE OF SHARP EDGES, CRACKS, PITS, OXIDES, AND OTHER SURFACE IRREGULARITES.
3. FOR INSTALLATION, SEE KOCH-GLITSCH DRAWING NUMBERS 989639-D000, 989639-D001, AND 989639-D003.
4. APPROXIMATE ASSEMBLY WEIGHT: 38198 LBS. 3 4
5. A REFERENCE LINE SHALL BE LIGHTLY VIBRO ETCHED ON THE OUTSIDE OF THE VESSEL SHELL AT THE TANGENT LINE OF THE HEADS.



ISOMETRIC VIEW
OFFGAS CAUSTIC SCRUBBER ASSEMBLY

PARTS LIST

ITEM NO.	QTY	REF. DWG.	NAME	MATERIAL/DESCRIPTION	MAT'L SPEC	WEIGHT	C.G.
1	1	C2609-M-200-1	VESSEL WELDMENT	-	-	24725	NA
2	1	C2609-M-110-1	FILTER FRAME ASSEMBLY	-	-	7426	NA
3	1	C2609-M-250-1	TOP HEAD WELDMENT	-	-	1993	
5	1	C2609-M-215-4	N04 SPRAY RING WELDMENT	-	-	76	NA
7	1	C2609-M-260-1	N08 MANWAY COVER WELDMENT	-	-	753	NA
8	4	C2609-M-215-16	N51A, N52A, N53A, & N54A WELDMENT	-	-	18	
9	1		SUPPORT GRID ASSEMBLY	HIGH KOCH-GLITSCH MODEL 802		300	X
10	5		STRUCTURED PACKING	HIGH KOCH-GLITSCH FLEXIPAC 2Y		352	X
11	1		HOLD DOWN GRID ASSEMBLY	HIGH KOCH-GLITSCH MODEL 803		227	X
18	1	-	TOP HEAD GASKET	1/8" THK X 68" ID X 72" OD	THERMICULITE 815	15.6	
19	1		GASKET	24" CL300 RF SPIRAL-WOUND ASME B16.20 WITH GRAPHITE FILLER	TYPE 316 (MAX 0.030% C, DUAL CERT.)	10.9	
20	1		GASKET	3" CL150 RF SPIRAL-WOUND ASME B16.20 WITH GRAPHITE FILLER	TYPE 316 (MAX 0.030% C, DUAL CERT.)	0.3	
21	1	-	GASKET	3" CL150 RF SPIRAL-WOUND ASME B16.20 WITH GRAPHITE FILLER	UNS N10276	0.04	
22	1		GASKET	3" CL150 RF SPIRAL WOUND ASME B16.20 WITH GRAPHITE FILLER	TYPE 316 (MAX 0.030% C, DUAL CERT.)	1.2	
23	8		GASKET	3" CL150 RF SPIRAL WOUND, ASME B16.20 WITH GRAPHITE FILLER	UNS N10276	1.3	
24	2		GASKET	2" CL 150# RF SPIRAL WOUND ASME B16.20 WITH GRAPHITE FILLER	UNS N10276	0.8	
25	4		GASKET	1 1/2" CL300 RF SPIRAL-WOUND ASME B16.20 WITH GRAPHITE FILLER	TYPE 316 (MAX 0.030% C, DUAL CERT.)	0.2	
28	1		BLIND FLANGE	3" 150# RF BLIND FLANGE	ASME SA-182 F 316 (MAX 0.030% C, DUAL CERT.)	11.0	
29	1		BLIND FLANGE	3" 150# RF BLIND FLANGE	ASME SB-564 UNS N10276	12.4	
30	2		BLIND FLANGE	2" 150# RF BLIND FLANGE	ASME SB-564 UNS N10276	6.0	
31	4		FLAT WASHER	FW 1/2"	ASME SA-240 316	0.010	X
32	2		HEX BOLT	1/2"-13 UNC X 2" LG	ASME SA-193 GR B8M	0.2	X
33	2		HEX NUT	1/2"-13 UNC	ASME SA-194 GR 8M	0.04	X
38	8		FLAT WASHER	FW 5/8"	ASME SA-240 316	0.03	X
39	4		HEX BOLT	5/8"-11-UNC X 3" LG	ASME SA-193 GR B8M	0.4	X
40	4		HEX NUT	5/8"-11 UNC	ASME SA-194 GR 8M	0.08	X
41	96		FLAT WASHER	FW 5/8"	ASME SA-240 316	0.026	X
42	32		HEX BOLT	5/8"-11-UNC X 3" LG	ASME SA-193 GR B7	0.4	X
43	16		HEX BOLT	5/8"-11-UNC X 3 1/2" LG	ASME SA-193 GR B7	0.4	X
44	48		HEX NUT	5/8"-11 UNC	ASME SA-194 GR 2H	0.08	X
45	144		FLAT WASHER	FW 3/4"	ASME SA-240 316	0.04	X
46	56		HEX BOLT	3/4"-10 UNC X 4" LG	ASME SA-193 GR B7	0.7	X
47	16		HEX BOLT	3/4"-10 UNC X 3" LG	ASME SA-193 GR B7	0.5	X
48	72		HEX NUT	3/4"-10 UNC	ASME SA-194 GR 2H	0.14	X
49	48		FLAT WASHER	FW 1 1/2"	ASME SA-240 316	0.05	X
50	24		HEX BOLT	1 1/2"-6 UNC X 7 1/2" LG	ASME SA-193 GR B7	5.0	X
51	24		HEX NUT	1 1/2"-6 UNC	ASME SA-194 GR 2H	1.08	X
52	4	C2609-M-280-1	N07 FLOMAX LANCE ASSEMBLY	-	-	38	
53	4		3" FULL PORT BALL VALVE	BNL REF DWG #HBV-F2-30-0045	-	89	

NOZZLE	SIZE (IN.)	WALL/SCH	FACING	FLANGE RATING	SERVICE / REMARKS
N01	18	5/8	RF-WN	150#	OFFGAS INLET
N02	18	5/8	RF-WN	150#	OFFGAS OUTLET
N03	8	1/2	RF-WN	150#	CAUSTIC SOLUTION RETURN TO COLLECTION TANK / SCRUBBER DRAIN (CONDENSATE DISCHARGE)
N04	3	1/2	RF-WN	150#	CAUSTIC SOLUTION SUPPLY (CONDENSATE RECIRCULATION)
N06	2	.344	RF-WN	150#	PACKING BOTTOM WASH
N07A	3	1/2	RF-WN	150#	REPLACEABLE QUENCHING OFFGAS SPRAY NOZZLE
N07B	3	1/2	RF-WN	150#	REPLACEABLE QUENCHING OFFGAS SPRAY NOZZLE
N07C	3	1/2	RF-WN	150#	REPLACEABLE QUENCHING OFFGAS SPRAY NOZZLE
N07D	3	1/2	RF-WN	150#	REPLACEABLE QUENCHING OFFGAS SPRAY NOZZLE
N08	24	1/2	RF-WN	300#	MANWAY
N10	2	.344	RF-WN	150#	PRESSURE DIFFERENTIAL TRANSMITTER ACROSS PACKING & DEMISTER
N11	2	.344	RF-WN	150#	PRESSURE DIFFERENTIAL TRANSMITTER ACROSS PACKING & DEMISTER
N12	2	.344	RF-WN	150#	OFFGAS OUTLET CONDENSATE RETURN TO SCRUBBER
N13	2	.344	RF-WN	150#	SPARE (FUTURE) LEVEL TRANSMITTER WITH BLIND FLANGE, GASKETS, AND BOLTS
N14	2	.344	RF-WN	150#	LEVEL TRANSMITTER
N15	2	.344	RF-WN	150#	SPARE (FUTURE) LEVEL TRANSMITTER WITH BLIND FLANGE, GASKETS, AND BOLTS
N16	2	.344	RF-WN	150#	LEVEL TRANSMITTER
N17	2	.344	RF-WN	150#	PRESSURE DIFFERENTIAL TRANSMITTER FOR PACKING
N18	2	.344	RF-WN	150#	PRESSURE DIFFERENTIAL TRANSMITTER FOR PACKING
N19	3	1/2	RF-WN	150#	SPARE WITH BLIND FLANGE, GASKETS AND BOLTS
N20	3	1/2	RF-WN	150#	SPARE WITH BLIND FLANGE, GASKETS AND BOLTS
N51	1 1/2	.281	RF-WN	300#	DEMISTER WASH NOZZLE AT VESSEL INTERFACE
N52	1 1/2	.281	RF-WN	300#	DEMISTER WASH NOZZLE AT VESSEL INTERFACE
N53	1 1/2	.281	RF-WN	300#	DEMISTER WASH NOZZLE AT VESSEL INTERFACE
N54	1 1/2	.281	RF-WN	300#	DEMISTER WASH NOZZLE AT VESSEL INTERFACE
N51A	3/4	.218	RF-WN	300#	DEMISTER WASH NOZZLE SPRAY LANCES AT PROCESS SERVICE WATER INTERFACE
N52A	3/4	.218	RF-WN	300#	DEMISTER WASH NOZZLE SPRAY LANCES AT PROCESS SERVICE WATER INTERFACE
N53A	3/4	.218	RF-WN	300#	DEMISTER WASH NOZZLE SPRAY LANCES AT PROCESS SERVICE WATER INTERFACE
N54A	3/4	.218	RF-WN	300#	DEMISTER WASH NOZZLE SPRAY LANCES AT PROCESS SERVICE WATER INTERFACE

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.

DESIGN DATA

1. DESIGN PER ASME CODE SECT VIII DIV 1 2004 ED/2006 ADD, W/ STAMP: YES
2. SERIAL NO.: TBD NATIONAL BD NO.: TBD
3. DESIGN PRESS INT.: 15 PSIG @ 486 °F
4. DESIGN PRESS EXT.: 9.5 PSIG @ 486 °F
5. MIN DESIGN METAL TEMP: -20 °F @ 15 PSI
6. OPERATING PRESS INT.: 0 PSIG @ 412 °F
7. OPERATING PRESS EXT.: 5.6 PSIG @ 412 °F
8. M.A.W.P. CORR: 15 PSIG @ 486 °F LTD BY: DESIGN PRESSURE
9. M.A.W.P. NEW: 15 PSIG @ 486 °F LTD BY: DESIGN PRESSURE
10. MAX EXT PRESS: 10 PSI @ 486 °F LTD BY: DESIGN PRESSURE
11. CORR. ALLOW. SHELL, HDS & CONNS.: 0.04"
12. CORR. ALLOW. FIXED INTRNLS: - RMVBL INTRNLS: N/A
13. ALLOWABLE STRESS: HEADS: TOP: 18,182 PSI BOTTOM: 26,956 PSI SHELL: TOP: 18,182 PSI BOTTOM: 26,956 PSI NOZZLES: UPPER: 18,182 PSI LOWER: 26,956 PSI
14. HYDROSTATIC TEST PRESS: 19.5 PSIG
15. RADIOGRAPHY: 100% FOR PRIMARY CONFINEMENT WELDS JT EFF: 100%
16. POST WELD HEAT TREAT: (NO) - °F - HRS - MIN
17. IMPACT TESTING REQUIREMENT: UNS N10276 MATERIALS NOT REQUIRED PER ASME VIII DIV 1 UNF-65. UNS S31600 EXEMPT PER ASME VIII DIV 1 UHA-51

D1.D8	4	JFT	KK	JA	SE	RCH		6/3/2015	REVISED PER DCN #15-046
ALL	3	JFT	KK	JA	SE	RCH		3/12/2015	REVISED PER DCN #14-059, 15-010, & 15-018
ALL	2	JFT	NS	JC	DH	RCH		7/3/2014	REVISED PER DCN #14-010, 14-028, 14-038
ALL	1	JFT	DM	JC	JM	RCH		1/6/2014	REVISED PER DCN #13-0108
	0	BDC						11/4/2013	ISSUED FOR FABRICATION
ZONE	REV.	BY	P.M.	QA	PRO	ENG	OTHER	DATE	REVISION

REVISIONS

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES

	DECIMALS			FRACTIONS	
	.X	.XX	.XXX	2"<THK.	>2" THK.
0-6"	±.1	±.05	±.010	±1/8"	±3/16"
>6"-24"	±.1	±.05	±.010	±3/16"	±1/4"
>24"-60"	±.1	±.05	±.016	±1/4"	±3/8"
>60"+	±.1	±.05	±.031	±3/8"	±1/2"

ANGLES: ± 2.5°

THIRD ANGLE PROJECTION

APPROVALS		DATE
P.M.	Linda Harper	11/5/13
Q.A.	Brandon Lee	11/5/13
PROD.	Cody May	11/5/13
ENG.	Robert Henry	11/5/13
OTHER		
DRAWN BY:	DS	-
CHECKED BY:	BDC	9/2/15

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BECTHEL NATIONAL, INC, RICHLAND, WASHINGTON
RIVER PROTECTION PROJECT WASTE TREATMENT PLANT

LAW MELTER OFFGAS CAUSTIC SCRUBBER
24590-LAW-MK-LVP-SCB-00001
BECHTEL JOB NO. 24590
PTI SHOP NO. C2609-NQA1
VESSEL ASSEMBLY

P.O.#: 24590-QL-POA-MKAS-00003

SIZE	CAGE CODE		REV
D	1SWX1	C2609-M-100-1	4
SCALE: N.T.S.			TOTAL SHEETS: 4

FILE NAME: D:\Projects\turner\HX2609\C2609-M-100 LAST SAVED: Wednesday, June 10, 2015 9:34:38 AM DATE PRINTED: Wednesday, June 10, 2015

ORIGINAL JUN 1 2 2015