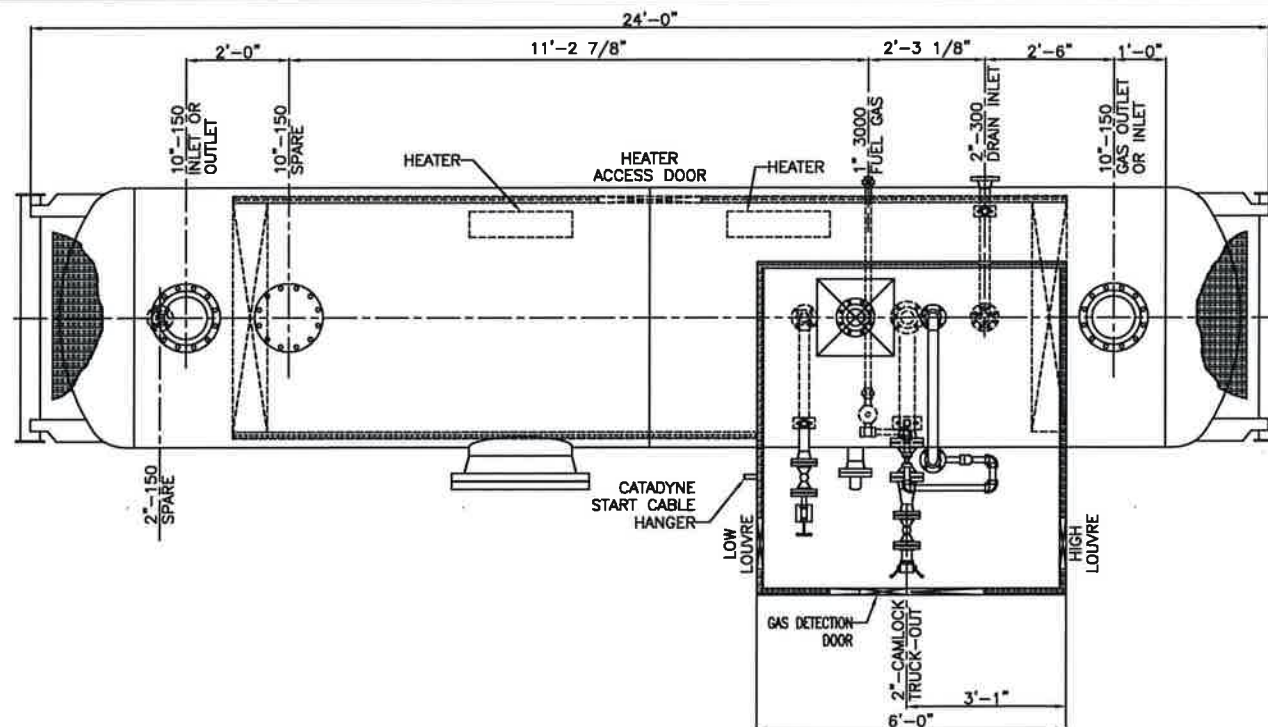
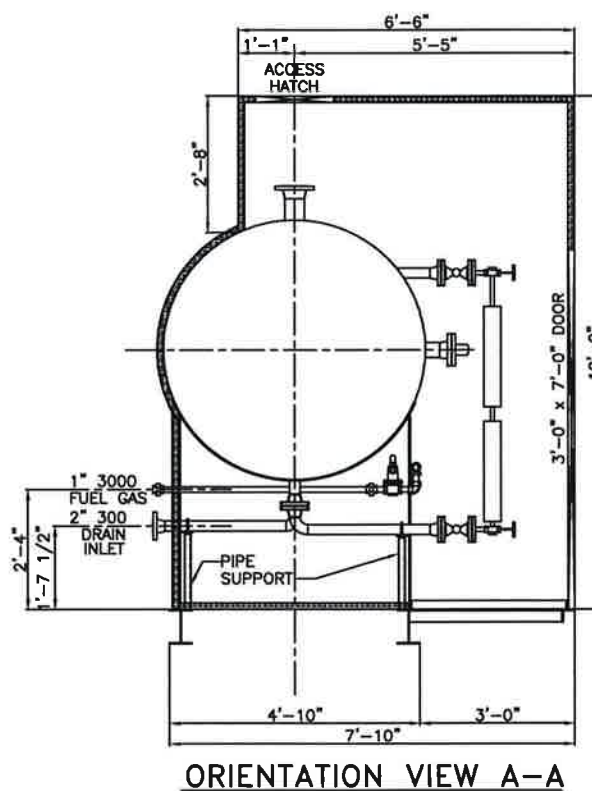


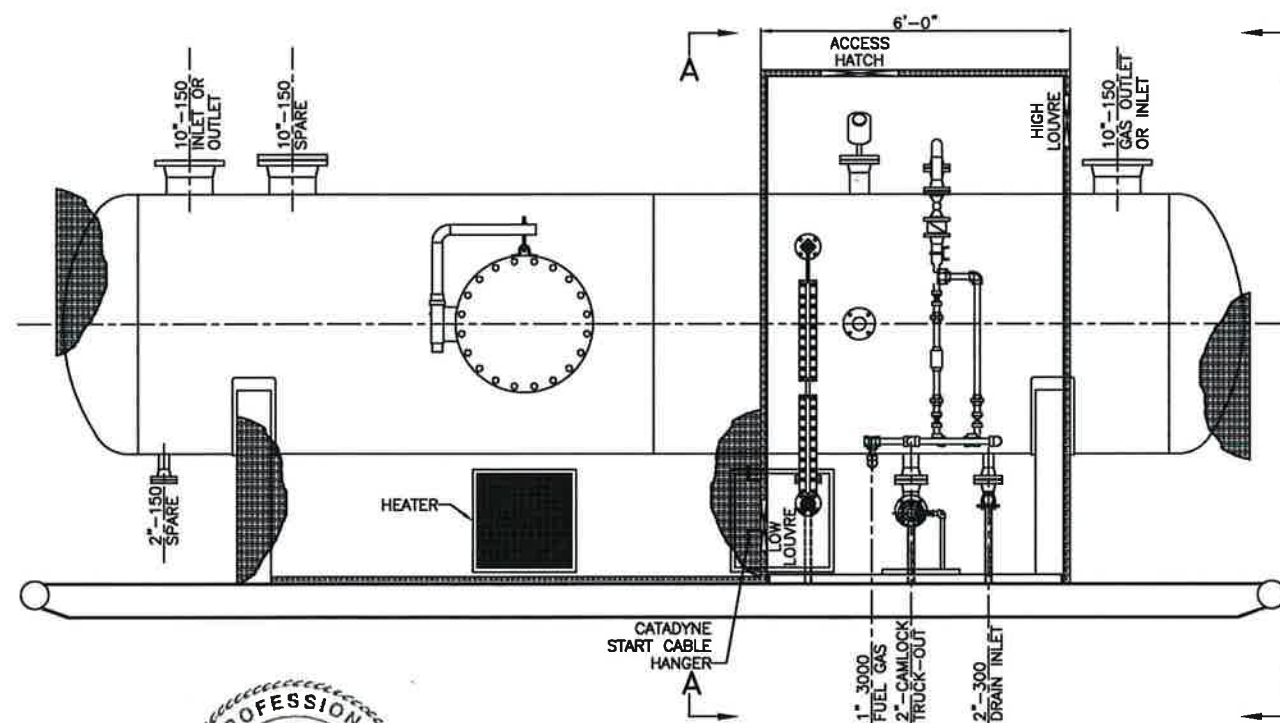
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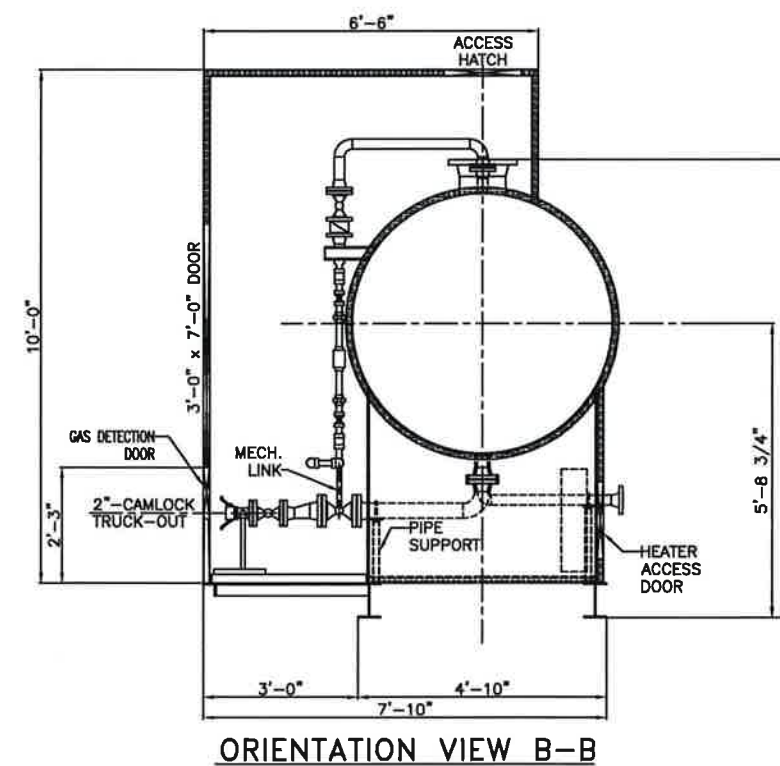
PLAN VIEW



ORIENTATION VIEW A-A



ELEVATION VIEW



ORIENTATION VIEW B-B

BILL OF MATERIALS

ITEM	QTY	REF.	PART No.	DESCRIPTION	MATERIAL	WEIGHT
1	5	INSULATION	—	1 1/2" x 23'-2" LG RIGID URETHANE, TAN STEEL CLADDING ONE SIDE w/ CURFS	—	—
2	2	INSULATION	—	1 1/2" x 10'-0" LG RIGID URETHANE, TAN STEEL CLADDING ONE SIDE	—	—
3	3	INSULATION	—	1 1/2" x 16'-2" LG RIGID URETHANE, CLADDING TAN ONE SIDE & WHITE ONE SIDE	—	—
4	5	INSULATION	—	1 1/2" x 10'-0" LG RIGID URETHANE, CLADDING TAN ONE SIDE & WHITE ONE SIDE	—	—
5	2	INSULATION	—	1 1/2" x 9'-6" LG RIGID URETHANE, CLADDING TAN ONE SIDE & WHITE ONE SIDE	—	—
6	2	INSULATION	1-001529	12" x 12" SLIDING LOUVRE (MOUNTED IN HEATED ENCLOSURE)	ALUM	—
7	1	INSULATION	1-009957	10" x 10" SNIFFER DOOR (MOUNTED IN DOOR)	ALUM	—

INSULATION/ENCLOSURE DETAILS:

1. INSULATION: 1 1/2" THK RIGID URETHANE
ENCLOSURE EXTERIOR: 0.016" THK CLADDING TAN (QC8315)
ENCLOSURE INTERIOR: 0.016" THK CLADDING WHITE (QC8317)
VESSEL EXTERIOR: 0.016" THK CLADDING TAN (QC8315)
2. (1) 3'-0" x 7'-0" INSULATED PANEL MAN-DOOR c/w
—PANIC HARDWARE & LOCK SET
3. (1) 18" x 24" HINGED HEATER ACCESS DOOR
4. (1) 10" x 10" GAS DETECTION (SNIFFER) DOOR
—MOUNTED IN MAN-DOOR
5. (1) 18" x 18" REMOVABLE ROOF ACCESS HATCH (SCREWED DOWN)
6. (2) 12" x 12" LOUVRES c/w SLIDE CLOSURE
7. PACKAGE SHIPPING DIMENSIONS: 8'-6" W x 11'-0" HIGH x 24'-6" LG
8. PACKAGE SHIPPING WEIGHT: 12,000 LBS



REV. NO.	DATE	REVISION	BY	APP'D
A	06/30/11	ISSUED FOR APPROVAL	KMP	
0	07/19/11	ISSUED FOR FABRICATION	KMP	
1	10/04/11	AS BUILT	KMP	

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BOX 6106
5815 37 Street
INNISFAIR, AB
CANADA
403-227-7799
1-888-227-4923
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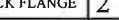
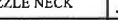
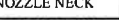
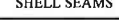
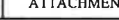
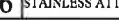
MURPHY OIL COMPANY LTD			
TUPPER EAST FLARE KNOCKOUT PACKAGE - TAG: PK-9000 GENERAL ARRANGEMENT			
DATE: 03/14/11	SALE ORDER: 002474		
SHEET: 1 OF 5	JOB ORDER:	SIZE	
DRAWN BY: TJA	D1861	D	
PURCHASE ORDER: 54116047-S204	DRAWING NO.: D1861-1		
LOCATION: VARIOUS	REV. 1		
PM:			

1. QUALITY CONTROL PROGRAM NUMBER: AQP-1317(S)
2. WELDING PROCEDURE REGISTRATION NUMBER: WP1970.2
3. SELECT CHEMISTRY REQUIREMENTS: NIL
4. ULTRASONIC TESTING: NIL
5. HIC TESTED PLATE: NIL
6. MPI: 100% WET FLOURESCENT TESTING OF THE FOLLOWING
-FILLET WELDS ON VESSEL ONLY
7. HARDNESS TEST:
3 POINT TRAVERSE ON (1) LONG SEAM, (1) CIRC SEAM &
(1) NOZZLE FILLET (HAZ/WELD/HAZ)
-HARDNESS VALUES SHALL NOT EXCEED 200BHN AFTER PWHT
8. PIPE & FLANGE IMPACT TESTS EXEMPT AS PER UCS-66(g)
9. PLATE IMPACT TESTS EXEMPT AS PER UCS-66
10. HEAT AFFECTED ZONE EXEMPT AS PER UCS-67(d)(3)
11. PRODUCTION WELD TO BE IMPACT TESTED AS PER UG-84(i) AT A TEMP
NOT WARMER THAN -49°F AND TO EXCEED 15/10 FT-LBS
12. NUTS & BOLTS IMPACT TEST EXEMPT PER FIG. UCS-66(e)
13. PWHT: ACCORDING TO UCS-56
HEAT FROM AMBIENT TO 800°F AT A MODERATE RATE
HEAT FROM 800°F TO 1150°F AT 400°F/Hr MAX.
SOAK AT 1150°F FOR 60 MIN.
COOL TO 800°F AT 500°F/Hr MAX.
FROM 800°F AIR COOL IN FURNACE
14. INTERNAL SANDBLAST: SSPC-SP5 (WHITE)
15. INTERNAL FINISH: DEVOS 253/253HS AS PER MANUFACTURER'S SPECIFICATIONS
16. EXTERNAL SANDBLAST: SSPC-SP6 (COMMERCIAL)
17. EXTERNAL FINISH:
ALL AREAS: ONE (1) COAT CLOVAGUARD 83150 EPOXY PRIMER (6-8mils)
NON INSULATED AREAS: TWO (2) COATS CLOVATHANE 83400 (TAN QC-8315)
18. ALL BOLT HOLES TO STRADDLE CENTERLINE
19. ALL REPADS/WEAR PADS TO HAVE 1/4" NPT WEEP HOLE
20. ALL OUTSIDE PROJECTIONS MEASURED ALONG CENTERLINE OF NOZZLE
21. ALL INSIDE PROJECTIONS MEASURED ALONG SHORTSIDE OF NOZZLE
22. FABRICATION TOLERANCE AS PER BW&M DWG#: TOL2002
23. VESSEL TO BE REGISTERED IN ALBERTA & BRITISH COLUMBIA
24. VESSEL TO BE SUPPLIED WITH U-STAMP
25. VESSEL SERIAL NUMBER: 15940

MARK	QTY	DESCRIPTION	NPS	CLASS	TYPE	PROJECTION		WELD DETAIL	WELD		REPAD		BILL OF MATERIALS ITEM NUMBER
						INSIDE	OUTSIDE		A	B	C	D	
N1	1	INLET/OUTLET	10	150	RFWN	1"	8"	1,2	1/4	—	—	—	12,13,14
N2	1	GKS OUTLET/INLET	10	150	RFWN	1"	8"	1,2	1/4	—	—	—	12,13,14
N3	1	TRUCK—OUT	3	150	RFWN	6"	6"	1,2	1/4	—	—	—	15,16,17,18
N4	1	DRAIN INLET	2	300	RFWN	FLUSH	6"	1,3	1/4	—	—	—	23,24,48,49,50,51
N5	1	21—LT—9011	4	150	RFWN	1"	8"	1,2	1/4	—	—	—	23,24,25,26,27
N6	1	FUEL GAS INLET	2	150	RFWN	1"	6"	1,2	1/4	—	—	—	19,28,29
N7	1	SPARE	10	150	RFWN	1"	8"	1,2	1/4	—	—	—	13,14,30,31,32,33
N8	1	SPARE	2	150	RFWN	FLUSH	6"	1,3	1/4	—	—	—	19,20,21,22,23,24
N9A	1	21—LG—9011	2	150	RFWN	1"	9 1/2"	1,2	1/4	—	—	—	19,34,35
N9B	1	21—LG—9011	2	150	RFWN	1"	6"	1,2	1/4	—	—	—	19,28,35
N10	1	21—LSHH—9001	3	150	RFWN	1"	8"	1,2	1/4	—	—	—	15,23,24,36,37,38
M1	1	MANWAY	24	150	RFWN	0"	8"	1,3	3/8	—	—	—	39,40,41,42,43,44,45

ITEM	QTY	REF.	PART No.	DESCRIPTION	MATERIAL	WEIGHT
1	2	SHELL	1-002421	3/8" THK x 120" W ROLL TO 60" ID (CIRC=15'-10 7/8")	SA-516-70N	4840#
2	2	HEAD	1-001388	3/8" THK [0.313" MIN] x 60" ID 2:1 S.E.	SA-516-70N	1016#
3	2	SADDLE	1-009465	10" x 1/4" THK x 70 3/4" LG, ROLL TO 60 3/4" ID	SA-516-70N	150#
4	4	SADDLE	1-001121	8" x 3/8" THK x 3'-9 1/8" LG	SA-36	105#
5	2	SADDLE	2-001273	3/8" THK x 45 1/8" W x 52 7/8" LG (SEE DETAIL)	SA-36	325#
6	1	NAMEPLATE	2-000219	6" x 8" NAMEPLATE BRACKET	SA-569	2#
7	1	NAMEPLATE	1-001701	6" x 8" ALUMINUM NAMEPLATE	ALUMINUM	1#
9	1	SKID	-	SKID ASSEMBLY (SEE DWG D1861-3 FOR DETAIL)	-	1550#
12	2	N1,N2	2-000276	3/8" THK x 10"-14" INLET DEFLECTOR	SA-516-70N	87#
13	3	N1,N2,N7	1-000995	10" x CLASS 150 RFWN FLG SCH STD	SA-350-LF2 CL1	156#
14	3	N1,N2,N7	1-003441	10" PIPE SCH STD x 5 7/8" LG (BOE,ROE)	SA-333-GR6	60#
15	2	N3,N10	1-000980	3" x CLASS 150 RFWN FLG SCH XH	SA-350-LF2 CL1	10#
16	1	N3	1-003423	3" PIPE SCH XH x 9 3/4" LG (BOE,ROE)	SA-333-GR6	10#
17	1	N3	1-004298	3" STAINLESS REMOVABLE VORTEX BREAKER ASSEMBLY w/ 2-001445 - PIPE MOUNT CLIP	SA-240-304L	12#
18	1	N3	-	TRUCK-OUT PIPING SPOOLS (SEE DWG D1861-5)	-	-
19	4	N6,N8,N9A/B	1-000976	2" x CLASS 150 RFWN FLG SCH 160	SA-350-LF2 CL1	6#
20	1	N8	1-000972	2" x CLASS 150 RF BLIND FLG	SA-350-LF2 CL1	10#
21	1	N8	1-001292	2" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
22	1	N8	1-003420	2" PIPE SCH 160 x 3 7/8" LG (BOE,COE)	SA-333-GR6	5#
23	28	N4,N5,N8,N10	1-002627	5/8" DIA x 3 1/2" LG STUD	SA-193-B7M	-
24	56	N4,N5,N8,N10	1-001868	5/8" DIA NUT	SA-194-2HM	-
25	1	N5	1-000985	4" x CLASS 150 RFWN FLG SCH XH	SA-350-LF2 CL1	15#
26	1	N5	1-001300	4" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
27	1	N5	1-003428	4" PIPE SCH XH x 5'-2 3/8" LG c/w HOLES (BOE,ROE)	SA-333-GR6	78#
28	2	N6,N9B	1-003420	2" PIPE SCH 160 x 4 7/8" LG (BOE,ROE)	SA-333-GR6	6#
29	1	N6	-	FUEL GAS PIPING SPOOLS (SEE DWG D1861-5)	-	-
30	1	N7	1-005282	10" x CLASS 150 RF BLIND FLG	SA-350-LF2 CL1	70#
31	1	N7	1-005283	10" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
32	12	N7	1-002653	7/8" DIA x 4 1/2" LG STUD	SA-193-B7M	-
33	24	N7	1-001874	7/8" DIA NUT	SA-194-2HM	-
34	1	N9A	1-003420	2" PIPE SCH 160 x 9 1/4" LG (BOE,ROE)	SA-333-GR6	3#
35	1	N9	-	LEVEL GAUGE PIPING SPOOLS (SEE DWG D1861-5)	-	-
36	1	N10	1-004892	3" x CLASS 150 RF HUB BLIND, TAPPED TO 2" NPT	SA-350-LF2 CL1	8#
37	1	N10	1-001297	3" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
38	1	N10	1-003423	3" PIPE SCH XH x 4 3/4" LG (BOE,ROE)	SA-333-GR6	5#
39	1	M1	1-001001	24" x CLASS 150 RFWN FLG SCH STD	SA-350-LF2 CL1	260#
40	1	M1	1-001002	24" x CLASS 150 RF BLIND FLG	SA-350-LF2 CL1	411#
41	1	M1	1-001306	24" x CLASS 150 RF "CG" FLEX GASKET	316SS	-
42	1	M1	1-004062	24" x CLASS 150 DAVIT ARM ASSEMBLY	-	-
43	1	M1	1-003449	24" PIPE SCH STD x 4 7/8" LG (BOE,COE)	SA-333-GR6	38#
44	20	M1	1-002694	1 1/4" DIA x 6 3/4" LG STUD	SA-193-B7M	-
45	40	M1	1-001882	1 1/4" DIA NUT	SA-194-2HM	-
46	1	SUPPORT	1-000393	C306# x 1"-0" LG	SA-36	6#
47	1	SUPPORT	N/A	REPAD: 3/8" THK x 3" W x 6" LG (USE MANWAY CUT-OUT)	SA-516-70N	3#
48	1	N4	1-006903	2" x CLASS 300 RFWN FLG SCH 160	SA-350-LF2 CL1	8#
49	2	N4	1-010699	2" x CLASS 300 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
50	1	N4	1-003420	2" PIPE SCH 160 x 3 5/8" LG (BOE,COE)	SA-333-GR6	5#
51	1	N4	1-006405	2" x CLASS 300 BLIND FLG	SA-350-LF2 CL1	8#



1	2	3	4	5	6
WELD NECK FLANGE	NOZZLE NECK	NOZZLE NECK	SHELL SEAMS	ATTACHMENTS	STAINLESS ATTACHMENT
 $\alpha=75^{\circ}(-15^{\circ})$ $b=1/8^{\circ}(-1/16^{\circ})$	EXPOSED WELD EDGES SHALL BE OVERLAPPED AS PER UG-76(a)  $\alpha=40^{\circ}(-15^{\circ})$ $b=1/8^{\circ}(-1/16^{\circ})$ $h=1/16^{\circ}(-1/16^{\circ})$	EXPOSED WELD EDGES SHALL BE OVERLAPPED AS PER UG-76(a)  $\alpha=40^{\circ}(-15^{\circ})$ $b=1/8^{\circ}(-1/16^{\circ})$ $h=1/16^{\circ}(-1/16^{\circ})$	 WITHOUT BACKING $\alpha=60^{\circ}(-15^{\circ})$ $b=1/8^{\circ}(-1/16^{\circ})$ $h=3/32^{\circ}$	 VESSEL WALL ATTACHMENT $1/4"$	 $1/4"$ VESSEL WALL

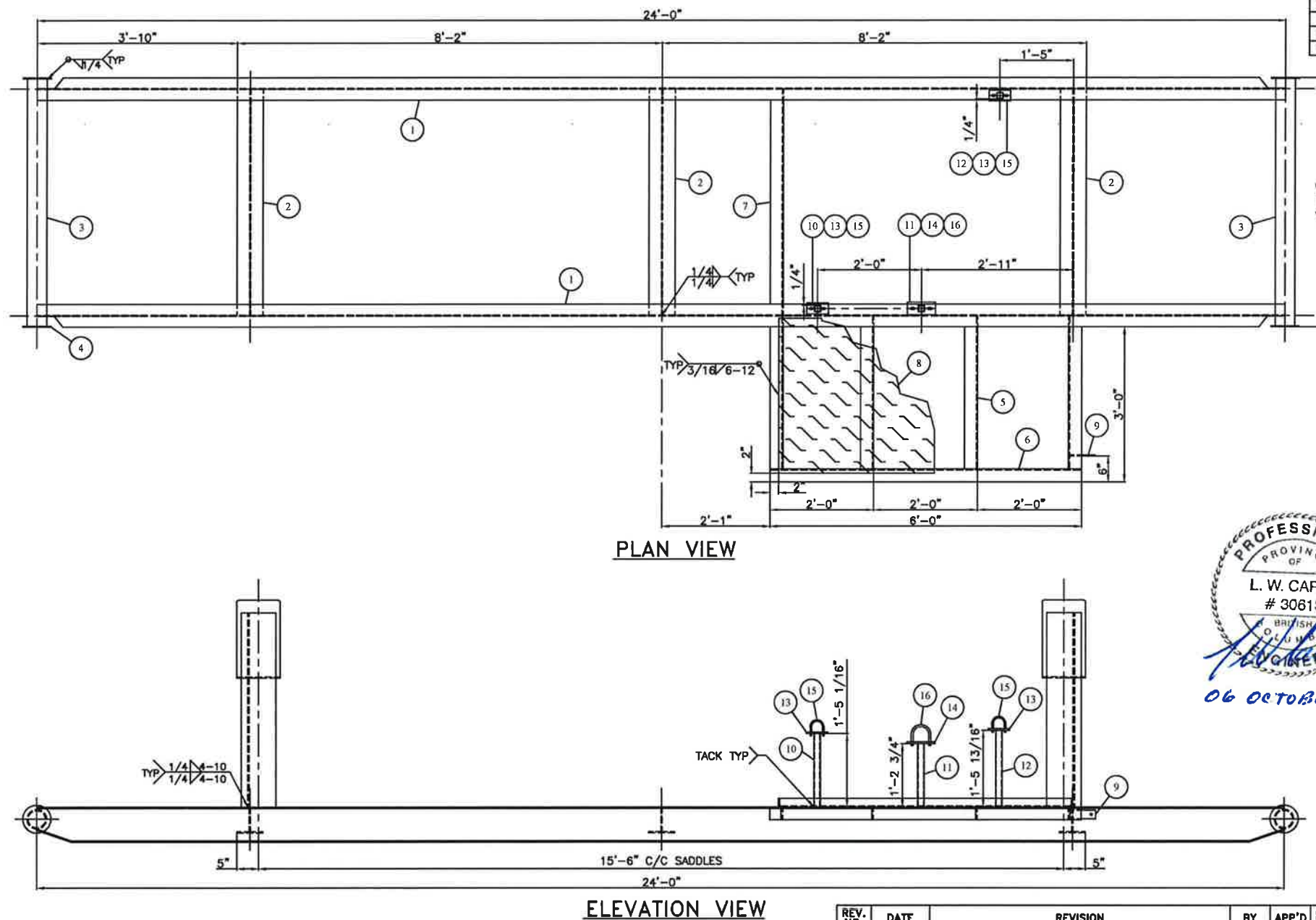
REV. NO.	DATE	REVISION	BY	APP'D
A	06/30/11	ISSUED FOR APPROVAL	KMP	
D	07/19/11	ISSUED FOR FABRICATION	KMP	
1	10/04/11	AS BUILT	KMP	



DESIGN & FABRICATE TO: 2010 ED. ASME BOILER & PRESSURE VESSEL	
CODE SEC VIII, DIV 1	
DESIGN PRESSURE & TEMPERATURE: 50 PSI @ 200°F	
MINIMUM DESIGN METAL TEMP: -49°F @ 50 PSI	
IMPACT TESTS: SEE NOTES 8.9, 10.11 & 12	
RADIOGRAPHY: 100% AS PER UW-11(a)	
POST WELD HEAT TREATMENT: YES AS PER UCS-56	
HYDROSTATIC TEST PRESSURE: 75 PSIG, PREHEAT: 50°F	
CORROSION ALLOWANCE: 1/8" MAWP: 50 PSI @ 200°F	
HEAD THK. MIN.: 0.3130"	VOLUME: 432 ft ³ , 12.2 m ³
WEIGHT EMPTY: 8,450 lbs	WEIGHT FULL: 33,900 lbs

TUPPER EAST FLARE KNOCKOUT PACKAGE - TAG: PK-9000 80" ID x 20'-0" S/S FLARE KNOCKOUT DRUM			
DATE: 03/14/11		SALE ORDER: 002474	
SHEET: 2 OF 5		JOB ORDER:	SIZE
DRAWN BY: TJA		D1861	
PURCHASE ORDER: 54116047-S204		REV.	
LOCATION: VARIOUS		DRAWING NO.:	D
CRN DWG: BWM-295-09 R1	PM:	D1861-2 1	
CRN NUMBER: V0608.21			

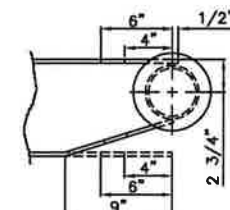
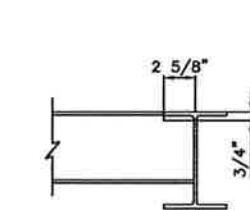
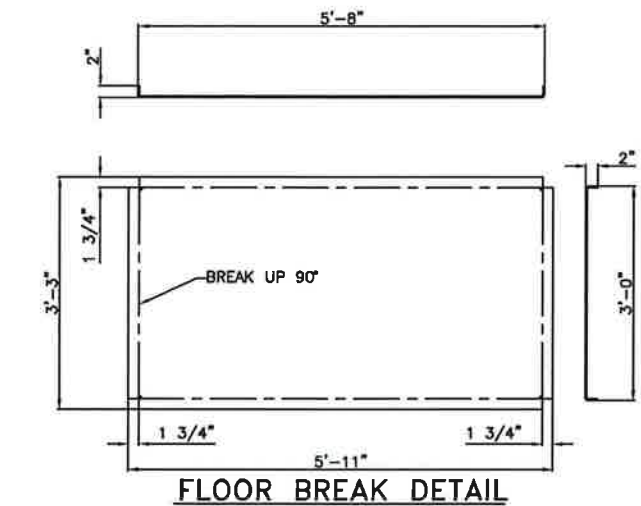
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BILL OF MATERIALS									
ITEM	QTY	REF.	PART No.	DESCRIPTION		MATERIAL	WEIGHT		
1	2	RUNNER	1-003664	W8@18# x 24'-0" LG (ROUGH CUT TO 24'-1")		SA-36	865#		
2	3	CROSSMEM	1-003659	W6@15# x 4'-4 1/2" LG (CBE - SEE BEAM COPE DETAIL)		SA-36	195#		
3	2	PULLBAR	1-004812	4" PIPE SCH XH x 4'-9 1/2" LG		SA-53B	144#		
4	4	PULLCAP	2-000026	1/4" THK x 6 1/2" OD (TEMPLATE #12)		SA-36	5#		
5	4	SUPPORT	1-000033	3" x 3/8" ANGLE x 2'-11 1/2" LG (CBE - SEE BEAM COPE DETAIL)		SA-36	62#		
6	1	SUPPORT	1-000033	3" x 3/8" ANGLE x 6'-0" LG		SA-36	38#		
7	1	SUPPORT	1-000033	3" x 3/8" ANGLE x 4'-4 1/2" LG		SA-36	28#		
8	1	FLOOR	2-001444	3/16" THK CHECKERPLATE x 3'-3" W x 5'-11" LG (SEE BREAK DETAIL)		SA-36	155#		
9	1	GROUND LUG	2-000228	2" x 1/4" THK x 6" LG GROUND LUG (TEMPLATE #16)		SA-36	1#		
10	1	PIPE SUPPORT	1-002503	1 1/2" x 1/8" HSS x 1-5 5/16" LG		SA-36	3#		
11	1	PIPE SUPPORT	1-002503	1 1/2" x 1/8" HSS x 1-2 3/4" LG		SA-36	3#		
12	1	PIPE SUPPORT	1-002503	1 1/2" x 1/8" HSS x 1-5 13/16" LG		SA-36	3#		
13	2	PIPE SUPPORT	2-001178	3/8" THK 5" x 2 1/2" SUPPORT w/SLOTS		SA-36	4#		
14	1	PIPE SUPPORT	2-000943	3/8" THK 6 1/2" x 3" SUPPORT w/SLOTS		SA-36	2#		
15	2	PIPE SUPPORT	1-000261	U-BOLT 2"		-	-		
16	1	PIPE SUPPORT	1-000263	U-BOLT 3"		-	-		

GENERAL NOTES

1. WELD PROCEDURE: GM-1/MC-1
2. SANDBLAST: SSPC-SP6 (COMMERCIAL)
3. PRIME: ONE (1) COAT CLOVAGUARD 83150 EPOXY PRIMER (6-8mils)
4. PAINT: TWO (2) COATS CLOVATHANE 83400 (BLACK)
5. INSULATION: 1 1/2" THK SPRAY FOAM U/S OF CHECKER-PLATE
6. APPROXIMATE WEIGHT: 1,550 LBS



REV. NO.	DATE	REVISION	BY	APP'D
A	06/30/11	ISSUED FOR APPROVAL	KMP	
0	07/19/11	ISSUED FOR FABRICATION	KMP	
1	10/04/11	AS BUILT	KMP	

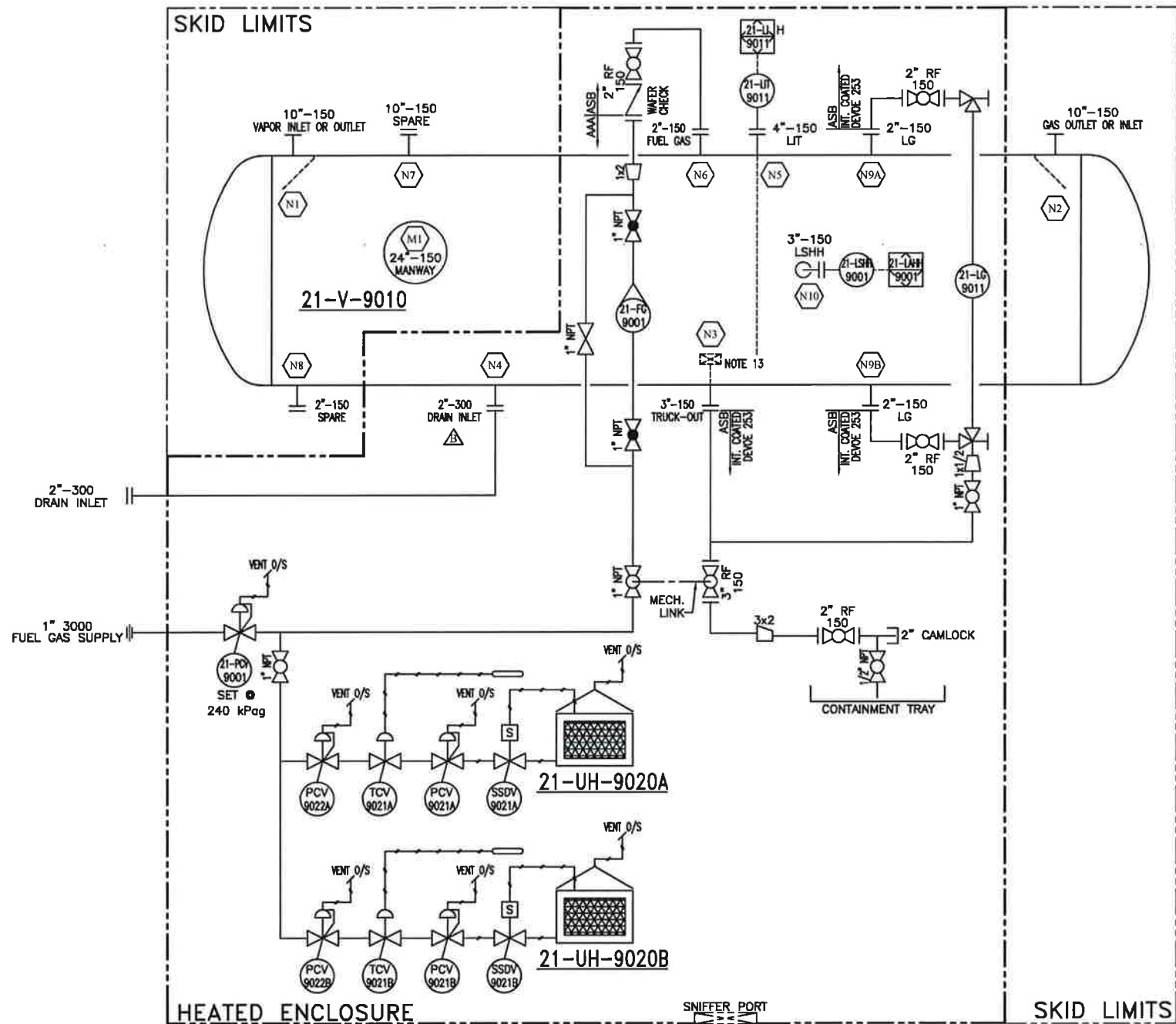
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BOX 6106
5815 37 Street
INNISFAIR, AB
CANADA
403-227-7799
1-888-227-4923
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MURPHY OIL COMPANY LTD
TUPPER EAST FLARE KNOCKOUT PACKAGE - TAG: PK-9000
SKID DETAILS

DATE: 03/13/11
SHEET: 3 OF 5
DRAWN BY: TJA
PURCHASE ORDER: 54116047-S204
LOCATION: VARIOUS
PM:

SALE ORDER: 002474
JOB ORDER:
D1861
DRAWING NO.:
D1861-3
REV. 1



21-V-9010
FLARE KNOCKOUT DRUM
60" ID x 20'-0" S/S
50 PSIG @ 200°F
C.A.: 1/8"
SERIAL #: 15940
CRN: V0608.21
BUILT: 2011

21-UH-9020A/B
CATADYNE MK-24x24
DUTY: 20,000 BTU/HR
12 VOLT, NATURAL GAS
c/w VENT HOOD

REV. NO.	DATE	REVISION	BY	APP'D
A	06/30/11	ISSUED FOR APPROVAL	KMP	
0	07/19/11	ISSUED FOR FABRICATION	KMP	
1	10/04/11	AS BUILT	KMP	

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INNISFAIR, AB
CANADA
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Welding & Manufacturing Ltd.

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MURPHY OIL COMPANY LTD
TUPPER EAST FLARE KNOCKOUT PACKAGE - TAG: PK-9000
P&ID

DATE: 03/14/11
SHEET: 4 OF 5
DRAWN BY: TJA
PURCHASE ORDER: 54116047-S204
LOCATION: VARIOUS
PM:

SALE ORDER: 002474
JOB ORDER:
D1861
D1861-4
REV. 1

INSTRUMENTATION

TAG	QTY	PART No.	DESCRIPTION
21-UH-9020	2	1-004210	24" x 24" CATADYNE HEATER, 12 VOLT NATURAL GAS c/w VENT HOOD & 12 VOLT STARTING CABLES
21-LG-9011	2	1-006162	3/4" NPT PENBERTHY 2TM7 LEVEL GAUGE (NACE)
21-FG-9001	1	1-009778	1" FNPT, METAL TUBE ROTAMETER GMTS263G (593 to 5927 SCFH)
21-PCV-9001	1	1-007477	1" NPT FISHER 627 REGULATOR, DUCTILE IRON BODY, 1/4" ORIFICE, SET @ 240 kPag
21-LSHH-9001	1	1-003649	2" NPT SOR 1510C ELECTRIC LEVEL SWITCH (NACE) - SHIPPED LOOSE
21-LT-9011	1	1-009779	ROSEMOUNT 5300 LEVEL TRANSMITTER MODEL 5301HA1S1E4AE00500CAE6M1C1 - SHIPPED LOOSE

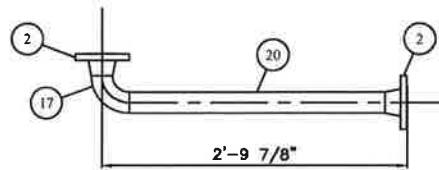
PIPING

ITEM	QTY	PART No.	DESCRIPTION	MATERIAL
1	1	1-003993	2" x CLASS 150 RF RP MERIDIAN BALL VALVE FB2-R20R01N (IMPREGLOX 222 INTERNAL COATING)	A216-WCB
			A216 WCB BODY, 316SS BALL & STEM, R-PITFE SEAT, GRAPHITE PACKING, API 607 REV 4 (NACE)	
2	1	1-003992	3" x CLASS 150 RF RP MERIDIAN BALL VALVE FB2-R30R01N (IMPREGLOX 222 INTERNAL COATING)	A216-WCB
			A216 WCB BODY, 316SS BALL & STEM, R-PITFE SEAT, GRAPHITE PACKING, API 607 REV 4 (NACE)	
3	1	1-003616	2" x CLASS 150 RF RP MERIDIAN BALL VALVE FB2-R20R01N	A216-WCB
			A216 WCB BODY, 316SS BALL & STEM, R-PITFE SEAT, GRAPHITE PACKING, API 607 REV 4 (NACE)	
4	3	1-009767	1" NPT x CLASS 2000 MERIDIAN BALL VALVE M12B	SA-105-N
			A105 BODY, 304SS CF8, R-PITFE SEAT, PITFE SEAL (NACE)	
5	1	1-009768	1/2" NPT x CLASS 2000 MERIDIAN BALL VALVE M12B	SA-105-N
			A105 BODY, 304SS CF8, R-PITFE SEAT, PITFE SEAL (NACE)	
6	1	1-009769	2" x CLASS 150/300 RF DURABLA WLC-9003X WAFER CHECK VALVE	-
			CS BODY, 316SS TRIM & SEAT/STEM, INCONEL X-750 SPRING	
7	1	1-005164	3/4" NPT PENBERTHY 330J GAUGE VALVES (NACE)	-
8	2	1-005865	1" NPT x CLASS 800 MERIDIAN GLOBE VALVE J8TYCA	SA-105-N
			A105 BODY/BOLTED BONNET, 13Cr/HF TRIM 8, GRAPHITE PACKING, 13CR STEM	
9	1	1-009771	1" NPT x CLASS 800 MERIDIAN GATE VALVE G8NAB-DZ	SA-105-N
			A105 BODY/BOLTED BONNET, 13Cr/STELLITE 6 TRIM, GRAFOIL PACKING	
10	2	1-011598	2" x CLASS 150 RF RP MERIDIAN BALL VALVE FB2-F20R01N (IMPREGLOX 222 INTERNAL COATING)	A216-WCB
			A216 WCB BODY, 316SS BALL & STEM, R-PITFE SEAT, GRAPHITE PACKING, API 607 REV 4 (NACE)	

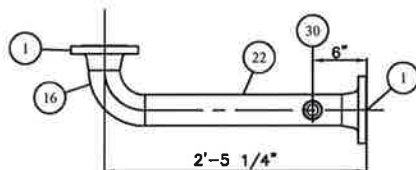
GENERAL NOTES:

1. PIPING DESIGNED & FABRICATED TO ASME B31.3, LATEST EDITION
-AS PER EQUINOX PIPING CLASSIFICATION AAA & ASB
2. TUBING MATERIAL: 316SS WELDED c/w 316SS SWAGelok FITTINGS
3. PIPE MATERIAL: SA-105-B
4. FLANGE MATERIAL: SA-105-N
5. BOLTING MATERIAL: SA-193-B7M/SA-194-2HM
6. ALL THREADED FITTINGS SHALL BE CLASS 3000
7. ALL AAA THREADING PIPING TO BE SCH 40
8. ALL ASB THREADING PIPING TO BE SCH 160
9. ALL INSTRUMENTS SHALL BE IDENTIFIED WITH STAINLESS STEEL TAGS
ALL INSTRUMENTS TAGS PREFIXED WITH "21"
10. FUNCTION TEST SHALL BE PERFORMED ON ALL INSTRUMENTS
11. DRAIN ALL WATER FROM ALL INSTRUMENTS
12. ALL ELECTRICAL TO BE COMPLETED BY OTHERS
13. VESSEL TO BE INTERNALLY COATED WITH DEVOE 253
14. 6" INTERNAL PROJECTION FOR SEDIMENT BUILD-UP
15. FUEL GAS CONNECTION SHALL BE IDENTIFIED WITH STICKER ON OUTSIDE OF PACKAGE
16. CATADYNE CONNECTION LABELS TO READ "SEALS NEED TO BE POURED"
17. CATADYNE CABLE ENDS TO BE HEAVY DUTY BOOSTER CABLES
18. 21-LT-9011 & 21-LSHH-9001 TO BE SHIPPED LOOSE
19. ALL DIAPHRAGM REGULATORS (5 PCVS) TO BE VENTED OUTSIDE CABINET

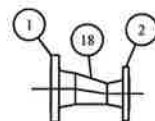
PROFESSIONAL
PROVINCE OF
L. W. CAREY
30613
C. BRITISH
ENGINEER
REV1
06 OCTOBER 2011



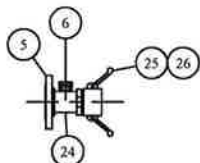
PIPE SPOOL 1A
GRIND ROOTS FLUSH (INT. COATED)



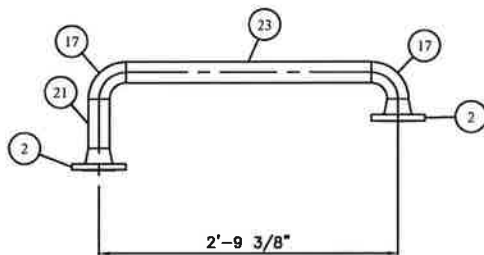
PIPE SPOOL 2A
GRIND ROOTS FLUSH (INT. COATED)



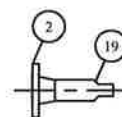
PIPE SPOOL 2B
GRIND ROOTS FLUSH (INT. COATED)



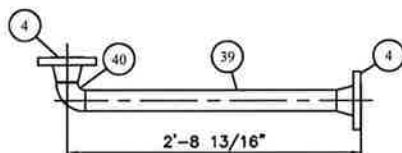
PIPE SPOOL 3A



PIPE SPOOL 4A



PIPE SPOOL 5A



PIPE SPOOL 6A
GRIND ROOTS FLUSH (INT. COATED)

LINE DESIGNATION CHART

LINE	PIPING SPEC	PROCESS	DESIGN PRESS. (kPa)	DESIGN TEMP. (°C)	TEST PRESS. (kPa)	MATERIAL & GRADE	DIAMETER & SCHEDULE	FLANGE RATING	RT (%)	TEST MEDIUM	CORROSION ALLOWANCE	PWHT REQ'D
1A	ASB	LEVEL GAUGE	1379	-29/93	2948	SA-106-B SA-105-N SA-234-WPB	2" SCH XH	150	100%	WATER	1/8"	NO
2A,2B	ASB	TRUCK-OUT	1379	-29/93	2948	SA-106-B SA-105-N SA-234-WPB	3" SCH XH 2" SCH XH	150	100%	WATER	1/8"	NO
3A	N/A	TRUCK-OUT	ATMOSPHERIC	-29/93	N/A	SA-312-304/L SA-182-304/L	2" SCH XH 1/2" SCH 160	150	NIL	N/A	N/A	NO
4A	ASB	FUEL GAS INLET	1379	-29/93	2948	SA-106-B SA-105-N SA-234-WPB	2" SCH XH	150	100%	WATER	1/8"	NO
5A	AAA	FUEL GAS INLET	1379	-29/93	2948	SA-106-B SA-105-N SA-234-WPB	2" SCH XH 1" SCH XH	150	100%	WATER	1/16"	NO
6A	ASB	DRAIN INLET	1379	-29/93	2948	SA-106-B SA-105-N SA-234-WPB	2" SCH XH	300	100%	WATER	1/8"	NO

BILL OF MATERIALS

ITEM	QTY	REF.	PART No.	DESCRIPTION	MATERIAL	WEIGHT
1	3	-	1-000898	3" x CLASS 150 RFWN FLG SCH XH	SA-105-N	30#
2	6	-	1-000877	2" x CLASS 150 RFWN FLG SCH XH	SA-105-N	36#
3	2	-	1-003964	2" x CLASS 150 RF BLIND FLG, 3/4" NPT TAP	SA-105-N	10#
4	2	-	1-006404	2" x CLASS 300 RFWN FLG SCH XH	SA-350-LF2	9#
5	1	-	1-005931	2" x CLASS 150 RFTO FLG	SA-182-304/L	5#
6	1	-	1-009721	1/2" x 2" x CLASS 3000 TOL	SA-182-304/L	1#
7	5	-	1-000744	1" NPT x 90° x CLASS 3000 ELBOW	SA-105-N	1#
8	1	-	1-000733	1/2" NPT x 90° x CLASS 3000 ELBOW	SA-105-N	1#
9	3	-	1-003005	1" NPT x CLASS 3000 TEE	SA-105-N	1#
10	4	-	1-003483	1" NPT x CLASS 3000 UNION	SA-105-N	1#
12	3	-	1-001297	3" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
13	12	-	1-001292	2" x CLASS 150 RF "CG" GRAPHOIL FLEX GASKET	316SS	-
14	52	-	1-002627	5/8" DIA x 3 1/2" LG STUD	SA-193-B7M	-
15	112	-	1-001868	5/8" DIA NUT	SA-194-2HM	-
16	1	-	1-000689	3" x 90° LR ELBOW SCH XH	SA-234-WPB	9#
17	3	-	1-000676	2" x 90° LR ELBOW SCH XH	SA-234-WPB	9#
18	1	-	1-008310	3" x 2" BW ECC RED SCH XH	SA-234-WPB	4#
19	1	-	1-005709	2" x 1" SWAGE NIPPLE SCH XH (BLE,TSE)	SA-234-WPB	4#
20	1	-	1-003358	2" PIPE SCH XH x 2'-4 1/8" LG (BBE)	SA-106-B	12#
21	1	-	1-003358	2" PIPE SCH XH x 5 1/4" LG (BBE)	SA-106-B	3#
22	1	-	1-003364	3" PIPE SCH XH x 1'-9 3/4" LG (BBE)	SA-106-B	19#
23	1	-	1-003358	2" PIPE SCH XH x 2'-3 1/8" LG (BBE)	SA-106-B	11#
24	1	-	1-009722	2" x 4" LG NIPPLE SCH XH	SA-312-304/L	2#
25	1	-	1-000310	2" MALE x FNPT CAMLOCK	ALUMINUM	3#
26	1	-	1-000303	2" CAMLOCK CAP	ALUMINUM	3#
27	1	-	1-004231	12 GAUGE X 12" x 18" x 3" HIGH CONTAINMENT TRAY	A-569	20#
28	1	-	1-004230	MECHANICAL LINK ASSEMBLY	-	-
29	4	-	1-005764	5/8" DIA x 6 1/4" LG STUD	SA-193-B7M	-
30	1	-	1-009773	1" x 3" x CLASS 3000 TOL	SA-182-304/L	1#
33	2	-	1-001738	1/2" x 1 1/2" LG NIPPLE SCH 160	SA-106-B	2#
34	11	-	1-001777	1" x 3" LG NIPPLE SCH XH	SA-106-B	2#
35	3	-	1-001788	1" x 6" LG NIPPLE SCH XH	SA-106-B	2#
36	1	-	1-003341	1/2" PIPE SCH 160 x 1'-3" LG (TBE)	SA-106-B	2#
37	AR	-	1-003347	1" PIPE SCH XH (CUT TO SUIT)	SA-106-B	-
38	AR	-	1-003348	1" PIPE SCH 160 (CUT TO SUIT)	SA-106-B	-
39	1	-	1-003358	2" PIPE SCH XH x 2'-4 1/16" LG (BBE)	SA-106-B	78#
40	1	-	1-000677	2" x 90° SR ELBOW SCH XH	SA-234-WPB	12#

GENERAL NOTES

- BUILT AS PER ASME B31.3 2010 EDITION & EQUINOX PIPING SPEC'S AAA & ASB
- DESIGN SPECIFICATIONS:
 - SEE LINE DESIGNATION CHARTS
- IMPACT TESTS EXEMPT AS PER FIG.323.2.2A
- WELD PROCEDURES:
 - ROOT: BWM-1 (GMAW)
 - FILL & CAP: BWM-1 (SMAW)
- INTERNAL FINISH: PIPE SPOOLS 1A, 2A & 2B ONLY
DEVOLVE 253 AS PER MANUFACTURER'S SPECIFICATIONS
- EXTERNAL SANDBLAST: SSPC-SP6 (COMMERCIAL)
- EXTERNAL FINISH:
 - ONE (1) COAT CLOVAGUARD 83150 EPOXY PRIMER (6-8mils)
 - TWO (2) COATS CLOVATHANE 83400 (TAN QC-8315)
- ALL BOLT HOLES TO STRADDLE CENTERLINE
- FABRICATION TOLERANCES AS PER BILTON DWG#: TOL2002



REV. NO.	DATE	REVISION	BY	APP'D
A	06/30/11	ISSUED FOR APPROVAL	KMP	
0	07/19/11	ISSUED FOR FABRICATION	KMP	
1	10/04/11	AS BUILT	KMP	

BILTON
Welding & Manufacturing Ltd.
BOX 6106
5815 37 Street
INNISFAIR, AB
CANADA
403-227-7799
1-888-227-4923
FAX 227-7796

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MURPHY OIL COMPANY LTD
TUPPER EAST FLARE KNOCKOUT PACKAGE - TAG: PK-9000
PIPE SPOOLS

DATE: 03/14/11
SHEET: 5 OF 5
DRAWN BY: TJA
PURCHASE ORDER: 54116047-S204
LOCATION: VARIOUS
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SALE ORDER: 002474
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D1861-5
REV. 1