NAMEPLATE DETAIL

CERTIFIED BY
DACRO INDUSTRIES INC.
EDMONTON, ALBERTA, CANADA

2 ASME

U
W
RT1 HT

M.A.W.P.		DESIGN TEMP.
866 kPag	@	150°C
M.A.E.W.P.		
103 kPa	@	150°C
M.D.M.T.		
-29°C	@	866 kPag

SERIAL NO.	C.R.N.	DATE MFG'D
12-864	2 V8849.2	2 FEBRUARY 26, 2013

TAG NO.	CODE
8-V-851	ASME SEC VIII DIV 1

DESCRIPTION
SOUR GAS INLET SEPARATOR

SHELL MAT'L	HEAD MAT'L	C.A.
SA-516-70N	SA-516-70N	3.2 mm
SHELL THICK	**HEAD THICK**	**SHOP TEST PRESS**
12.7 mm	10.1 mm MIN.	1127 kPag

MEMBER OF A.P.V.M.A. ISO 9001 CERTIFIED

FABRICATION NOTES

1. ALL MATERIALS AND WELDER IDENTIFICATION SHALL BE WITH LOW STRESS STAMPS.
2. ALL FLANGE BOLT HOLES SHALL STRADDLE CENTERLINES.
3. ALL NOZZLE OPENINGS INCLUDING MANWAYS SHALL BE ROUNDED TO A MINIMUM 1/4" RADIUS.
4. SADDLE WEAR PLATE WEEP HOLE SHALL BE EQUIPPED WITH A 1/4" NIPPLE THAT PROTRUDES 1" BEYOND THE INSULATION.
5. NOZZLE REPADS 10" NPS AND SMALLER SHALL HAVE ONE 1/4" WEEP HOLE. NOZZLE REPADS GREATER THAN 10" NPS SHALL HAVE TWO 1/4" WEEP HOLES, 180 DEG. APART. ALL WEEP HOLES SHALL BE EQUIPPED WITH 1/4" NIPPLES THAT PROTRUDE 1" BEYOND THE INSULATION.
6. DIMENSIONAL TOLERANCES SHALL CONFORM TO ASME CODE REQUIREMENTS AND MEG ENERGY STD DRAWING 085354-3010-PV-24.
7. ALL INTERNAL ATTACHMENTS SHALL BE WELDED TO THE VESSEL WITH FULL PENETRATION WELDS.
8. EXCEPT WHERE INTERNAL NOZZLE PROJECTION IS SPECIFIED, ALL NOZZLES SHALL BE GROUND FLUSH WITH THE INTERNAL VESSEL SURFACE.

REV	DESCRIPTION	DATE	ENG. BY
2	REVISED AS BUILT	8-Mar-13	JW
1	REVISED AS NOTED	17-Jul-12	JW
0	ORIGINAL ISSUE	29-Feb-12	JW

APEGA Permit to Practice No. P05458
PROFESSIONAL ENGINEER ALBERTA NEIL E. MARKS
Mar 18, 2013

DESIGN DATA

FABRICATE & DESIGN TO	ASME SECTION VIII, DIV. 1, 2010 ED.		
M.A.W.P.	866 kPag	DESIGN TEMP	150°C
M.A.E.W.P.	103 kPa	DESIGN TEMP	150°C
LIMITED BY	HEADS		
PROCESS CONTENTS	SOUR GAS/HC/PW	LETHAL SERVICE	NO
SOUR SERVICE	YES	HYDROGEN SULFIDE	NO
M.D.M.T.	-29°C @ 866 kPag		
2 U.T. EXEMPT	YES, EXEMPT PER UG-20(f)		
SHOP HYDROSTATIC TEST	1127 kPag @	5°C	MIN. HOLD 60 min.
PRESSURE & TEMPERATURE CHART REQUIRED		YES	
RADIOGRAPHY	CATEGORY 'A'	FULL UW-11(a) TYPE 1	
	CATEGORY 'B'	FULL UW-11(a) TYPE 1	
P.W.H.T.	YES	60 MINUTES @	621°C ± 14°C
EFF'Y SHELL CIRC JOINT	100%		
EFF'Y SHELL LONG JOINT	100%		
EFF'Y HEADS (SMLS)	100%		
SHELL THK.	12.7 mm	CORR. ALLOW.	3.2 mm
HEAD THK.	10.1 mm MIN.	CORR. ALLOW.	3.2 mm

2 C.R.N.	V8849.2	SERIAL NO.	12-864
CODE SYMBOL REQ'D	YES	VOLUME	24.3 m^3
VESSEL FAB. WEIGHT (EMPTY, BARE)			7,800 kg (EST)
VESSEL SHOP TEST WEIGHT (FLOODED, BARE)			32,700 kg (EST)
VESSEL SHIPPING WEIGHT (INSUL)			8,200 kg (EST)
VESSEL DRESSED WEIGHT (INSUL, L&P)			10,600 kg (EST)
VESSEL OPERATING WEIGHT			35,400 kg (EST)
OPERATING LIQUID SPECIFY GRAVITY	DESIGNED FULL OF LIQUID (SG=1)		

WIND LOADING PARAMETERS:		SEISMIC LOADING PARAMETERS:	
CODE:	NBC CANADA 2005	CODE:	NBC CANADA 2005
Cp =	0.73	SITE CLASS: D	Sa (0.2) = 0.12
q =	0.4 kPa	Ie = 1.3	Sa (0.5) = 0.056
Iw =	1.15	Rd = 2.0	Sa (1.0) = 0.023
EXPOSURE =	A	Ro = 1.5	Sa (2.0) = 0.006

SHEAR AT BASE	41,332 N
GOVERNED BY	SEISMIC

MATERIAL NOTES

GENERAL

ALL MATERIALS SHALL COMPLY WITH ASME BPV CODE, SECTION II, 2010 EDITION.

SHELLS, HEADS, AND NOZZLE NECKS/REPADS

1. MATERIAL TO BE NORMALIZED
2. MATERIAL HARDNESS NOT TO EXCEED 200 BHN
3. MATERIAL SHALL HAVE CARBON EQUIVALENT (CE) = C + (Mn/6) + (Cr + Mo +V)/5 + (Ni + Cu)/15 = 0.44% MAX.

SADDLES AND LIFT LUGS

1. MATERIAL TO BE NORMALIZED
2. MATERIAL HARDNESS NOT TO EXCEED 200 BHN

FLANGES, FORGINGS, PIPE AND FITTINGS

1. ALL FLANGES / FORGINGS TO BE NORMALIZED TO FINE GRAIN PRACTICE
2. ALL FLANGES TO HAVE A 125-250 µin AARH FLANGE FACE FINISH
3. MATERIAL HARDNESS NOT TO EXCEED 200 BHN
4. MATERIAL SHALL HAVE CARBON EQUIVALENT (CE) = C + (Mn/6) + (Cr + Mo +V)/5 + (Ni + Cu)/15 = 0.44% MAX.

GASKETS

1. EXTERNAL GASKETS TO BE 95% GRAPHITE FILLED 316 S.S. SPIRAL WOUND C/W C.S. OUTER RING.

INSPECTION AND TESTING

A. QUALIFICATIONS

1. ALL NON-DESTRUCTIVE EXAMINATIONS SHALL BE CONDUCTED AND INTERPRETED BY PERSONNEL CERTIFIED IN ACCORDANCE WITH ASNT-TC-1A LEVEL II.

B. VISUAL EXAMINATION

1. EXAMINATION AND ACCEPTANCE CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 9) AND ASME VIII RESPECTIVELY.
2. 100% VISUAL EXAMINATION IS REQUIRED FOR ALL WELDING.
3. AS A MINIMUM, VISUAL INSPECTION SHALL CONFIRM:
   - NO SURFACE CRACKING
   - NO SURFACE POROSITY
   - NO WELD CRATERS
   - ACCEPTABLE WELD PROFILE PER CSA W59
   - NO UNDERCUT
   - NO LACK OF FUSION

C. RT INSPECTION

1. EXAMINATION AND INSPECTION CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 2) AND ASME SECTION VIII DIV 1 PARA UW-51(b) RESPECTIVELY.

D. MT INSPECTION

1. EXAMINATION AND INSPECTION CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 7) AND ASME SECTION VIII DIV 1 APPENDIX 6 RESPECTIVELY.
2. MAGNETIC PROD SHALL NOT BE USED

E. UT INSPECTION

1. EXAMINATION AND INSPECTION CRITERIA SHALL BE IN ACCORDANCE WITH ASME SECTION V (ARTICLE 5) AND ASME SECTION VIII DIV 1 APPENDIX 12 RESPECTIVELY.

F. PRODUCTION HARDNESS TESTING

1. TRANSVERSE WELD HARDENSS TESTING OF PRODUCTION WELDS SHALL BE CARRIED OUT USING A TELEBRINELLER HARDNESS TESTER IN ACCORDANCE WITH ASTM E 10.
2. PRODUCTION WELD HARDNESS SHALL BE TESTED AT THE FOLLOWING FREQUENCY:
   - TWO (2) TESTS PER SHELL LONG SEAM WELD
   - ONE (1) TEST PER SHELL CIRC SEAM WELD
   - ONE (1) TEST PER MANWAY M1/M2/M3 LONG SEAM WELD
   - ONE (1) TEST PER NOZZLE TO SHELL WELD
3. ONE TEST SET SHALL CONSIST OF THREE (3) HARDNESS TESTS INCLUDING ONE TEST ON THE HAZ, ONE TEST ON THE BASE METAL AND ONE TEST ON THE CENTER OF THE WELD DEPOSIT.
4. WELD HARDNESS VALUES SHALL NOT EXCEED 200 BHN.

HYDROTEST

1. HYDROTEST WATER SHALL BE POTABLE WITH LESS THAN 50 PPM CHLORIDE CONTENT.
2. REPADS TO BE PNEUMATICALLY SOAP TESTED AT 175 kPag PRIOR TO HYDROTEST.
3. HYDROTEST PRESSURE SHALL BE MAINTAINED FOR A MINIMUM OF 60 MINUTES C/W CHART.
4. VENT HOLES ON REINFORCING PADS SHALL NOT BE PLUGGED DURING THE FINAL HYDROSTATIC TEST OF THE VESSEL.
6. PRIOR TO HYDROTEST THE INSIDE AND OUTSIDE OF THE VESSEL SHALL BE THOROUGHLY CLEANED AND FREE OF SLAG, DIRT, GRIT, WELD SPLATTER ETC.
5. UPON COMPLETION OF HYDROTEST, VESSEL SHALL BE COMPLETELY DRAINED OF ALL WATER, AIR DRIED, AND CLEANED.

MARKING AND PREPARATION FOR SHIPMENT

1. THREE (3) GASKETS SHALL BE PROVIDED FOR EACH BLINDED CONNECTION AND MANWAY. ONE (1) GASKET SHALL BE USED FOR HYDRO TEST AND REMAIN IN PLACE FOR SHIPMENT. THE REMAINING TWO (2) NEW AND UNUSED GASKET TO BE PACKAGED, LABELED AS 'SPARE' WITH THE PO & ITEM NUMBER AND SHIPPED LOOSE.
2. 10% SPARE BOLTS / STUDS / NUTS SHALL BE PROVIDED FOR BLINDED CONNECTIONS. SPARE BOLTS/NUTS TO BE PACKAGED, LABELED AS 'SPARE' AND SHIPPED LOOSE.
3. ALL NOZZLES WHICH ARE SUPPLIED WITH BLIND FLANGES SHALL HAVE THESE INSTALLED WITH THEIR SERVICE GASKETS AND SECURED WITH THEIR FULL SERVICE BOLTING.
4. ALL NOZZLES WHICH ARE NOT SUPPLIED WITH STANDARD BLIND FLANGES SHALL BE PROTECTED WITH FULL DIAMETER 12.7 mm THICK WOODEN COVERS FASTENED IN PLACE WITH A MINIMUM OF 4 BOLTS. (NOTE: TEMPORARY SHIPPING BOLTS NEED NOT MATCH DIAMETER REQUIREMENTS OF SERVICE BOLTS).
5. INSTALL 1/4" NPT NIPPLES IN ALL REPAD AND SADDLE WEAR PLATE WEEP HOLES. THE NIPPLES SHALL PROTRUDE 25 mm (1") MIN BEYOND THE INSULATION.
6. VESSEL SHALL BE STENCILED ON OPPOSITE SIDES IN 50 mm HIGH BLOCK LETTERS IN CONTRASTING COLOR TO THE VESSEL WITH THE PURCHASE ORDER NUMBER AND THE VESSEL EQUIPMENT TAG NUMBER.
7. C OF G SHALL BE MARKED BY PAINTING A CONTINUOUS 50 mm WIDE CIRCUMFERENTIAL STRIPE. THE LETTERS **"C - G"** AND SHIPPING WEIGHT IN TONS SHALL BE PAINTED AT 2 LOCATIONS DIAMETRICALLY OPPOSITE AND ADJACENT TO THE STRIPE.
8. VESSEL SHALL BE PAINTED ON BOTH SIDES WITH LETTERING AT LEAST 50 mm (2") HIGH, "POSTWELD HEAT TREATED, DO NOT WELD, HAMMER, DEFORM OR STRIKE ARCS".

SDR CODE A08, A09, A23, F14

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PO	085354A	P 3205	02
EQUIP. NO.		Unique No.	Submission
V.P.		0001	2

WELD INSPECTION MATRIX

Weld Type (ref Fig UW-3)	RT	UT	MT	LPI	CA	HARDNESS
Weld Bevel Prep Cat 'A','B','C', 'D'			100%			
Backgouged Root Pass Cat 'A','B','C','D'						
Cat A (Shell)	100% (1,2)		100% (1,2,8,9)			YES (2,14)
Cat A (Nozzle)	100% (1,2)		100% (1,2,8,9)			YES (2,14)
Cat B (Shell / Head)	100% (1,2)		100% (1,2,8,9)			YES (2,14)
Cat B (Nozzle)	100% (1,2)		100% (1,2,8,9)			YES (2,14)
Cat C (Nozzle)	100% (1,2)		100% (1,2,8,9)			YES (2,14)
Cat D		100% (1,2)	100% (1,2,8,9)			YES (2,14)
Nozzle Flange Face / Bore Overlay						
Internal Attachements			100% (1,2)			
External Attachments			100% (1,2)			
Ext/Int Arc Strike Surfaces and Areas of Temp Attach.						
Lift Lug Welds			100% (1,2)			
Weld Overlay Restoration Surfaces						

Codes

1. PRIOR TO PWHT
2. AFTER PWHT
3. PRIOR TO HYDRO TEST
4. AFTER HYDRO TEST
5. PRIOR TO WELD OVERLAY
6. AFTER WELD OVERLAY
7. NOZZLES 10" AND LARGER
8. EXTERNAL WELD SURFACES
9. INTERNAL WELD SURFACES
10. REPAD WELDS
11. WELD OVERLAY
12. BASE METAL
13. PEEL BACK AREAS
14. SEE NOTES FOR FREQUENCY OF TESTING

WorleyParsons resources & energy
REVIEW STAMP
PROJECT NO. 085354A
1. REVIEWED & ACCEPTED. MANUFACTURE MAY PROCEED.
2. REVIEWED & ACCEPTED AS MARKED. REVISE & RE-SUBMIT. MANUFACTURE MAY PROCEED.
3. REVISE AS MARKED AND RE-SUBMIT. MANUFACTURE SHALL NOT PROCEED.
4. REVIEW NOT REQUIRED. FOR INFORMATION ONLY. MANUFACTURE MAY PROCEED.
Acceptance in any of these categories in no way relieves the Contractor/Supplier of its responsibility for the due and proper performance of the Works in accordance with the Contract/Purchase Order.
NAME
SIGNED
DATE 01/15/2013

SURFACE PREPARATION & PAINTING

COMPONENT	BLAST	PRIMER	D.F.T. microns	FINISH	D.F.T. microns
SADDLE	SP-10	P06	100-125	P13	50-75
UN-INSULATED PARTS	SP-10	P06	100-125	P13	50-75
INSULATED PARTS	N/A	N/A	N/A	N/A	N/A
INTERNAL COATING	SP-5	SEE BELOW	SEE BELOW	—	—

NOTES:
1. SURFACE PREPARATION AND PAINT BY DACRO SUBCONTRACTOR
2. PAINT SPEC: MEG ENERGY SPECIFICATION 085354-3010-PC-50

UN-INSULATED SURFACES SYSTEM A1 PER TABLE 3 (INCLUDING SADDLES, NOZZLES & APPURTENANCES)
SURFACE PREP: SSPC-SP10 NEAR-WHITE BLAST (ANCHOR PROFILE 38-62 MICRONS)
PRIMER: EPOXY (COATING # P06 PER TABLE 2)
FINISH: ALIPHATIC URETHANE (COATING # P13 PER TABLE 2)
COLOUR: LIGHT GREY

INTERNAL COATING SYSTEM E2 PER TABLE 3
SURFACE PREP: SSPC-SP5 WHITE METAL BLAST (ANCHOR PROFILE 38-62 MICRONS)
PRIME: DEVCHEM 253, TWO COAT SYSTEM, (125-150 MICRONS) EACH COAT (COATING # P07 PER TABLE 2)

3. ALL NOZZLES WILL REQUIRE INTERNAL COATING ON THE FLANGE FACE. THE INTERNAL COATING SHALL EXTEND UP TO THE ID OF THE GASKET SEALING SURFACE
4. NOZZLE BLINDS SHALL HAVE INTERNAL COATING. INTERNAL COATING SHALL EXTEND UP TO THE ID OF THE GASKET SEALING SURFACE

INSULATION

COMPONENT	INSULATION TYPE	THK.	CLAD TYP	THK.
HEAD	MINERAL FIBER	50 mm	ALUMINUM	0.5 mm
SHELL	MINERAL FIBER	50 mm	ALUMINUM	0.5 mm

NOTES:
1. INSULATION BY DACRO SUBCONTRACTOR, SUPPORTS BY DACRO.
2. INSULATION SPEC: MEG ENERGY SPECIFICATION 085354-3010-IN-00
3. REPAD AND SADDLE WEAR PLATE WEEP HOLES SHALL BE EQUIPPED WITH 1/4" NIPPLES THAT PROTRUDE 25 mm (1") BEYOND THE INSULATION.
4. ALUMINUM JACKETING SHALL BE STUCCO EMBOSSED CLADDING.
2 5. PORTION OF VESSEL O/S BUILDING SHALL BE INSULATED. INSULATION SHALL BE INSTALLED ON BOTH FACES OF THE STIFFENING RING AND SHALL EXTEND 300 mm INSIDE BUILDING.
2 6. REMOVABLE COVER IS REQUIRED ON MANWAY M1.

HEAT TRACING

COMPONENT	TYPE	SCOPE
2 HEADS	N/A	N/A
2 SHELL	EHT	PORTION OF VESSEL O/S BUILDING ONLY (UP TO STIFFENING RING); UP TO HEIGHT OF 2158 mm

NOTES:
1. ELECTRIC HEAT TRACING BY DACRO SUBCONTRACTOR
2. EHT SPEC: MEG ENERGY SPECIFICATION 085354-6010-6118-02
3. EHT SHALL BE DESIGNED FOR A HOLDING TEMPERATURE OF 10°C.
4. EHT SHALL BE APPROVED FOR INSTALLATION IN CLASS 1, ZONE 2 (T2C)
5. CABLE TYPE - MI
6. VOLTAGE - 120 V / 208 V
2 7. APPROVED MANUFACTURERS - TYCO & THERMON

FIREPROOFING

COMPONENT	FIREPROOFING TYPE	THK.		
SADDLE	NONE			

FIREPROOFING NOT REQUIRED.

CERTIFIED AS-BUILT

CUSTOMER NAME: WORLEY PARSONS	END USER: MEG ENERGY
PURCHASE ORDER NO.: 085354A-P-3205-02	LOCATION: CHRISTINA LAKE, AB
DACRO INDUSTRIES INC. 9325 - 51 AVENUE EDMONTON, ALBERTA	TAG NO.: 8-V-851 SOUR GAS INLET SEPARATOR

DESIGN DATA AND FABRICATION NOTES

ENGINEERED BY	DOCUMENT NO.	REV.
J. WAY	12-864-DN-1	2
DATE: 29-Feb-12	SHEET: 1 OF 1	