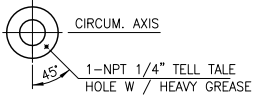


1. FABRICATION

- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE NOTED.
- ALL BOLT HOLES ARE TO STRADDLE NATURAL C.L OF H/EX. UNLESS OTHERWISE NOTED.
- NOZZLE PROJECTIONS ARE FROM CENTER LINE OF H/EX OR NEAREST TANGENT LINE TO GASKET FACE OF FLANGE.
- ALL WELD SHALL BE CONTINUOUS UNLESS OTHERWISE NOTED.
- DIMENSIONS TO BAFFLES OR SUPPORT ARE MEASURED TO THE CENTER OF EACH PLATE.
- BASE LINE (B.L) IS INDICATED THE GASKET CONTACT SURFACE OF SHELL FLANGE.
- GASKET SEATING SURFACE SHALL COMPLY WITH THE FOLLOWING :
 - GIRTH FLANGE : 125 TO 250 MICRO INCH AARH
 - STANDARD NOZZLE FLANGE : 125 TO 250 MICRO INCH AARH
- GASKET SPECIFICATION : GROOVED METAL GASKET WITH GRAPHITE [14]
 - METAL : 304 S.S (13)
 - LAYER : GRAPHITE (10.5 ON BOTH SIDE)
- GASKET SPECIFICATION : SPIRAL WOUND GASKET [14.5]
 - FILLER : GRAPHITE - INNER RING : 304 S.S
 - HOOP : 304 S.S - OUTER RING : C.S
- ALL EXTERNAL REINFORCEMENT PADS SHALL BE PROVIDED WITH 1/4" NPT TELL-TALE HOLE FOR VENTING PURPOSE SHALL BE PACKED WITH SHIPPED HEAVY GREASE AFTER TESTING.

LONGI. AXIS



2. DESIGN NOTE

SEISMIC AND WIND LOAD		
		OPERATING
SEISMIC AT BASE	SHEAR (kN)	31.06
	MOMENT (kN-m)	24.07
WIND AT BASE	SHEAR (kN)	10.54
	MOMENT (kN-m)	8.16

WIND AND SEISMIC	
GROUND SNOW LOAD Ss	2.3 kPa
WIND:	
PREVAILING DIRECTION	SW
MAX. (1/50) WIND SPEED	28 m/s (.51 kPa TABLE C-1 ABC CODE)
SEISMIC (ABC CODE SECTION 4.1.8)	
SITE CLASS	D (ABC TABLE 4.1.8.4.A)
So(0.2)	0.124
So(0.5)	0.08
So(1.0)	0.036
So(2.0)	0.011
PGA	0.036

ALLOWABLE NOZZLE LOADS							
NOZZLE MARK	SIZE	FORCES (kN)			MOMENTS (kN-m)		
		AXIAL (Fz)	CIRCUMFERENTIAL (Fy)	LONGITUDINAL (Fx)	CIRCUMFERENTIAL (My)	TORSIONAL (Mz)	LONGITUDINAL (Mx)
S1A/B	8"	7.21	7.21	7.21	7.16	7.16	7.16
S2A/B	8"	7.21	7.21	7.21	7.16	7.16	7.16
T1A/B	6"	5.11	5.11	5.11	4.20	4.20	4.20
T2A/B	6"	5.11	5.11	5.11	4.20	4.20	4.20

3. MATERIALS

- MATERIAL FOR EXTERNAL SUPPORTS WELD TO SHELL OR HEAD SHALL BE OF THE SAME GRADE AND WELDING COMPONENTS (P NO. AND G NO.) AS SPECIFIED FOR THE SHELL OR HEADS.
- M.D.M.T : -45 °C, HOWEVER THE FOLLOWING REGARDLESS OF THE THICKNESS SHALL BE IMPACT TESTED AT -45 °C
 - LIFTING LUGS
- FOR WELDING OF THE ABOVE COMPONENTS, FOR WITH IMPACT TEST AT -45 °C ARE REQUIRED.
- TABLE OF MATERIALS

COMPONENTS	MATERIAL	EXEMPTION (ASME SEC. VIII, DIV.1)	IMPACT TEST (TEMP.(C) ENERGY VALUE(J))	PRODUCTION IMPACT TEST	JOINT NO.	WPS NO.	REMARK
SHELL & HEAD	SA516-70(N)	UCS-66M CURVE D		N/A			
SHELL FLANGE	SA765-II(N)	UCS-66 (g)		N/A			NOTE 1,5
CHANNEL	SA516-70(N)	UCS-66M CURVE D		N/A			
CHANNEL FLANGE	SA765-II(N)	UCS-66 (g)		N/A			NOTE 1,5
CHANNEL COVER	SA765-II(N)	UCS-66 (g)		N/A			NOTE 1,5
FLOATING FLANGE	-						
FLOATING HEAD	-						
BACKING DEVICE	-						
TUBESHEET	SA765-II(N)	UCS-66 (g)		N/A	TUBE TO		NOTE 1,5
TUBE	SA179	UCS-66(g)		N/A	TUBESHEET		NOTE 5
BAFFLE OR SUPPORT	SA516-70(N)	N/A					
IMPINGEMENT BAFFLE	SA516-70(N)	N/A					
TIE ROD/2NUT	SA36(KILLED)	N/A			INTERNAL ATTACHMENT		
BAFFLE SPACER	-						
PASS PARTITION PLATE	SA516-70(N)		-45 20(AVG.)/14(MIN)	N/A			
SETTING B/N (H.D.G.)	SA325/SA563-A	N/A					
SUP'T SADDLE	SA516-70(N)	UCS-66M CURVE D		N/A	EXTERNAL ATTACHMENT		
EARTH BOSS	SA105(N)	N/A					
NAME PLATE	SA240-304	N/A					
FLANGE	SA350-LF2 CL.1(N)	UCS-66 (g)		N/A			NOTE 1,5
BOSS	SA350-LF2 CL.1(N)	UCS-66 (g)		N/A			NOTE 1,5
FITTING	SA420-WPL6	UCS-66 (g)		N/A			NOTE 5
FLANGE	SA350-LF2 CL.1(N)	UCS-66 (g)		N/A			NOTE 1,5
PIPE	SA333-6	UCS-66 (g)		N/A			NOTE 5
BOSS	-						
FITTING	SA420-WPL6	UCS-66 (g)					NOTE 5
STUD BOLT/NUT							
-SHELL COVER	-						
-STATIONARY	SA320-L7M/SA194-7M		-73 27(AVG.)/20(MIN)	N/A			NOTE 4
-CHANNEL COVER	SA320-L7/SA194-7		-101 27(AVG.)/20(MIN)	N/A			NOTE 4
-FLOATING HEAD	-						
GASKET							
-SHELL COVER	-						
-STATIONARY	(SEE NOTE 1.8)	N/A					
-CHANNEL COVER	(SEE NOTE 1.8)	N/A					
-FLOATING HEAD	-						
SHELL GASKET	(SEE NOTE 1.9)	N/A					
NOZZLE BOLT/NUT	SA320-L7M/SA194-7M		-73 27(AVG.)/20(MIN)	N/A			
CHANNEL GASKET	(SEE NOTE 1.9)	N/A					
NOZZLE BOLT/NUT	SA320-L7/SA194-7		-101 27(AVG.)/20(MIN)	N/A			

NOTE :

- 100% UT SCAN IN STRICT ACCORDANCE WITH SA-388.
- STUDS, NUTS AND GASKETS : MANUFACTURER'S CERTIFICATION OF COMPLIANCE REQUIRED WITH THE REFERENCED ASME OR ASTM SPECIFICATION. THE DOCUMENT SHALL BE IDENTIFIED WITH THE PO NUMBER AND ITEM CODE NUMBER AND SHALL BE SIGNED BY THE MANUFACTURER'S AUTHORIZED AGENT.
- ALL PRESSURE RETAINING PARTS MATERIALS SHALL MEET ASME SECTION II 2010 EDITION & 2011 ADDENDA FOR MATERIAL SPECIFICATIONS AND GENERAL SPECIFICATIONS TO THE PRODUCT FORM.

Document Number: CCK-4511951391-0111-B01-00005-002 Rev: 02

Approval Status:

1 - Approved, No Comment - Proceed with Fabrication/Construction

2 - Approved, Note Comments - Revise and Resubmit - Proceed with Fabrication/Construction

3 - Not Approved, Revise and Resubmit - do not proceed with Fabrication/Construction

4 - Information Only

VENDORS PLEASE NOTE: Permission to proceed does not constitute acceptance or approval of design details, calculations, analysis, test methods or materials developed or selected by the supplier and does not relieve supplier from full compliance with contractual obligations.

Responsible Engineer Signature: Wayne Gossett (Wayne.Gossett@shell.com) Date: 01/22/2015

DOCUMENT NUMBER: CCK-4511951391-0111-B01-00005-002 SHELL REV: 02

TAGS: See tags below

APPROVAL STATUS:

1 - APPROVED, NO COMMENT - PROCEED WITH FABRICATION

2 - APPROVED WITH COMMENTS - REVISE AND RESUBMIT. PROCEED WITH FABRICATION

3 - NOT APPROVED, REVISE AND RESUBMIT

4 - INFORMATION ONLY

SUPPLIER PLEASE NOTE: PERMISSION TO PROCEED DOES NOT CONSTITUTE ACCEPTANCE OR APPROVAL OF DESIGN DETAILS, CALCULATIONS, ANALYSES, TEST METHODS OR MATERIAL DEVELOPED OR SELECTED BY THE VENDOR AND DOES NOT RELIEVE SUPPLIER FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATION.

RESPONSIBLE ENGINEER SIGNATURE: DATE:

REV.	DATE	DESCRIPTION	DRWN	CHKD	REVD	APPD
2014.12.23		ISSUED FOR APPROVAL	TY-ENG	W.J.LEE	K.B.KIM	Y.G.PARK
2014.11.17		ISSUED FOR APPROVAL	TY-ENG	W.J.LEE	K.B.KIM	Y.G.PARK

CLIENT: SHELL CANADA ENERGY

PROJECT: CARMON CREEK PROJECT

P/O NO. 4511951391 TITLE: E-10180 (SEE ITEM NO. TABLE) TREATED BITUMEN COOLERS (GENERAL ASSEMBLY NOTE 2/2)

W/O NO. P-135G-007

SCALE: NONE CLIENT DOC. NO. CCK-4511951391-0111-B01-00005-002 REV NO. 02

ILSUNG ILSUNG CORPORATION ONSAN, KOREA VP-SG07-E10180-009

ITEM NO.			
1	E-10180	9	E-30180
2	E-10190	10	E-30190
3	E-10200	11	E-30200
4	E-10210	12	E-30210
5	E-20180	13	E-40180
6	E-20190	14	E-40190
7	E-20200	15	E-40200
8	E-20210	16	E-40210

ASME - U

SOUR SERVICE (SHELL SIDE)

SWEET SERVICE (TUBE SIDE)