G-004B-E-001
LUBE OIL COOLER (INDUCED DRAFT)

DUTY MMKCAL/HR (MMBTU/HR)	: 0.0079 (0.0314)
OP. PRESS./DESIGN PRESS. barg (PSIG)	: 4/12 (58/174)
OP. TEMP.INLET/OUTLET °C (°F)	: 75.4/65 (167.7/149)
DESIGN TEMP. °C (°F)	: 99/–3 (210/26.6)
MATERIAL OF CONSTRUCTION	: SS AISI 316L

G-004B-E-003
LUBE OIL HEATER

POWER SUPPLY	: 440VAC, 3 Ph, 50 Hz
POWER: KW (HP)	: 2 (2.68)
DESIGN TEMP.	: 99/–3 (210/26.6)
MATERIAL OF CONSTRUCTION	: SS AISI 316L

G-004B-D-001
LUBE OIL TANK

CAPACITY m3 (BBLS)	: 0.759 (4.77)
LENGTH mm (ft–in)	: 1100 (3'–7.3")
WIDTH mm (ft–in)	: 1200 (3'–11.2")
HEIGHT mm (ft–in)	: 650 (2'–1.6")
OP. PRESS./DESIGN PRESS.barg (PSIG)	: ATM (ATM+FULL OF LIQUID)
OP. TEMP./DESIGN TEMP.°C (°F)	: 75 (167)/ 99/–3 (210/26.6)
MATERIAL OF CONSTRUCTION	: SS AISI 316L

G-004B-L-001 & 002
LUBE OIL FILTER

CAPACITY m3 (BBLS)	: 0.002 (0.0126)
LENGTH mm (ft–in)	: 300 (0.98'–0")
WIDTH mm (ft–in)	: 220 (0.72'–0")
HEIGHT mm (ft–in)	: 440 (0'–8.66")
DESIGN PRESS.barg (PSIG)	: 9.9 (143.5)
DESIGN TEMP.°C (°F)	: 99/–3 (210/26.6)
MATERIAL OF CONSTRUCTION	: SS AISI 316L

LCS FOR LOC & PLAN 53B

LOC COOLER MAIN MOTOR	LOC COOLER AUX. MOTOR	PLAN 53B COOLER MOTOR
UL 0118B LOCAL/OFF REMOTE	UL 0119B LOCAL/OFF REMOTE	UL 0121B LOCAL/OFF REMOTE
UA 0118E EMERGENCY STOP	UA 0119E EMERGENCY STOP	UA 0121E EMERGENCY STOP
HS 0118A START	HS 0119A START	HS 0121A START
HS 0118B STOP	HS 0119B STOP	HS 0121B STOP

LCS FOR LOC

LOC AUX. MOTOR	LOC HEATER
UL 0120B LOCAL/OFF REMOTE	UL 0117B LOCAL/OFF REMOTE
UA 0120E EMERGENCY STOP	HS 0117A START
HS 0120A START	HS 0117B STOP
HS 0120B STOP	

GENERAL NOTES:

A. FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS 50489–530–020–PID–1104.001 & .002.
B. ALL EQUIPMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 530–.
C. ALL INSTRUMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 030–.
D. FOR TYPICAL INSTRUMENT CONNECTION SBDV, XV, MOV AND ESDV DETAILS SEE DRAWINGS 50489–530–020–PID–1106.001, .002, .003, .004, .006 & .007.
E. FOR MISCELLANEOUS PIPING TYPICAL VALVING, DRAINAGE AND GENERAL ARRANGEMENT OF LEVEL INSTRUMENTS, PUMPS, STRAINERS & CONTROL VALVES SEE DRAWING 50489–530–020–PID–1108.001 TO 1108.010.
F. DRAWING NUMBERS SHOWN IN P&ID CONTINUATION BOXES ARE ABBREVIATED SHOWING DRAWING SEQUENTIAL NUMBERS ONLY. THE FULL FORM OF THE DRAWING NUMBER IS 50489–530–020–PID–XXXX.SHT. NO.
G. FOR MATERIAL SELECTION DIAGRAM SEE DRAWINGS 50489–530–020–MSD–1001.001 TO 1023.
H. DETAIL NUMBERING FOR CI, SC, CC & CP SEE DRAWING 50489–530–020–PID–1108.003.
I. PAINTING & COATING ARE IN ACCORDANCE WITH KOC–P–001.
J. LOW POINT DRAIN & HIGH POINT VENT ARE PROVIDED AS PER PIPING LAYOUT.
K. FOR CAUSE & EFFECT REFER DOC. NO. 50489–530–020–PHL–1009.
L. FOR ALARM VALUES REFER DOC. NO. 50489–530–020–SUM–1006.

NOTES:

1,2. DELETED.
3. REFERENCE VENDOR P&ID:– 50489–530–020–07278–PID–V001, SHEET 1 OF 3.
4. AUXILIARY LUBE OIL PUMP CONTINUES TO RUN WITHOUT ON AND OFF OPERATION TIMER TO BE ACTIVE ONLY DURING START UP.
5. LUBE OIL ELETRICAL HEATER OFF AT 21°C (69.8°F) & ON AT 18°C (64.4°F). LUBE OIL HEATER POWER CUT AT 80°C (176°F)
6. AUXILLARY LUBE OIL PUMP STARTS AT 1.2 BARG (17.4 PSIG) & STOPS AT 1.5 BARG (21.75 PSIG).
7. LUBE OIL COOLER FAN STARTS AT 70°C (158°F) & STOPS AT 20°C (68°F).
8. SAMPLING POINT FOR LUBE OIL.
9. FOR DETAILS & LEGENDS REFER; 50489–530–020–PID–1126.012.
10. FOR VENDOR CAUSE & EFFECT REFER; 50489–530–020–07278–CAE–V001.
11. FOR VENDOR ALARM VALUES REFER; 50489–530–020–07278–LST–V003.
12. FOR VENDOR PIPING DETAILS REFER 50489–530–040–07278–GAD–V006, V–0005.
13. CRUDE OIL EXPORT PUMP (G–004B) PERMISSIVE FOR START IF
    a. LUBE OIL HEATER PRESSURE (PIT–0116 > 1.5 BARG)
    b. LUBE OIL TEMPERATURE TIT–0104 > 20°C)
    c. LUBE OIL TANK LEVEL (LAL–0101 > 275MM)
    d. SEAL SYSTEM PRESSURE (PIT–0130/0133 > 13 BARG)
    e. LUBE OIL COOLER FAN STATUS (RUNNING)
    f. SEAL SYSTEM COOLER FAN STATUS (RUNNING)
14. 'XX'–USED FOR CASING VENT/DRAIN INSIDE THE PACKAGE. REFER P&ID NO. 50489–530–020–PID–1108.005.

PIPING CONNECTIONS		
REF.	DIMENSION	SERVICE
TP1B	10" 600 RF	PUMP SUCTION
TP2B	6" 600 RF	PUMP DISCHARGE
TP3B	3/4" 600 RF	PUMP DRAIN
TP4B	3/4" 600 RF	PUMP VENT
TP5B	1" 150 RF	L.O. TANK DRAIN
TP6B	1" 150 RF	L.O. TO AIR COOLER
TP7B	1" 150 RF	L.O. FROM AIR COOLER
TP8B	1" 150 RF	L.O. AIR COOLER INLET
TP9B	1" 150 RF	L.O. AIR COOLER OUTLET
TP10B	3/4" 150 RF	L.O. AIR COOLER DRAIN
TP11B	3/4" 150 RF	L.O. AIR COOLER VENT
TP14B1	3/4" 600 RF	FILLING FLAN 53B
TP15B1/B2	1" 150 RF	L.O. BASE DRAIN
TP16B1/B2	2" 150 RF	BASE PLATE DRAIN
TP18B	3/4" 600 RF	BLEED PUMP DRAIN
TP19B	3/4" 600 RF	BLEED PUMP VENT
TP20B	1" 150 RF	VENT PROVISION
TP21B	1" 150 RF	PURGING PROVISION
TP22B	2" NPT	FILLER BREATHER

REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE
				APPRD.		
Z0	ISSUED FOR AS–BUILT	BAK/SSI	AKG	SRA	RAK	17.09.18
01	ISSUED FOR CONSTRUCTION	BAK/SSI	AKG	SRA	RAK	30.11.16
0	ISSUED FOR CONSTRUCTION	PAK/PRS	AKG	SRA	RAK	09.06.16
D	ISSUED INCORPORATED CLIENT COMMENTS	PAK/ABY	AKG	SRA	RAK	26.04.16
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	09.09.15
B	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	13.02.15
A	ISSUED FOR APPROVAL	BAK/VSA	AKG	SRA	RAK	29.11.14

CONTRACTOR REVISION

AS-BUILT	
KOC APPROVAL	
NAME / KOC No:	
DESIGNATION :	
GROUP / TEAM :	
SIGNATURE :	
DATE :	

AS-BUILT	
LARSEN & TOUBRO LIMITED	
NAME :	VAIBHAV VERMA
DESIGNATION :	AGM
SIGNATURE :	
DATE :	17-Sep-2018
DEPT/ DIVISON :	ENGINEERING

KUWAIT OIL CO. K. S. C. — شركة نفط الكويت ش.م.ك.
A Subsidiary of Kuwait Petroleum Corporation

CONTRACTOR DETAILS:–
LARSEN & TOUBRO LIMITED
FARIDABAD

PROJECT TITLE:–
NEW GATHERING CENTRE GC–30
IN NORTH KUWAIT

DOCUMENT TITLE:–
PIPING & INSTRUMENTATION DIAGRAM
LUBE OIL SYSTEM FOR CRUDE OIL EXPORT PUMP (G–004B)

PROJECT NO.	DRAWING NO.			
EF1902	CONTRACTOR DRG. NO. 50489–530–020–PID–1126.006	REV. Z0	KOC DRG. NO.	REV.
	SHEET NO. 6 OF 12		SHEET NO.	
	COMPANY DRG. NO. EF1902–530–DCO–PID–0126.006	REV. A1		
	SHEET NO.			

A1