



SR.	STATUS		OPERATION			
	MOV IN REMOTE/MANUAL	PUMP RUNNING	MOV CAN OPEN FROM LOCAL	MOV CAN CLOSE FROM LOCAL	MOV CAN OPEN FROM REMOTE	MOV CAN CLOSE FROM REMOTE
1.	LOCAL	NO	YES	YES	NO	NO
2.	LOCAL	YES	YES	YES	NO	NO
3.	REMOTE	NO	NO	NO	NO	AUTO ACTION TO CLOSE
4.	REMOTE	YES	NO	NO	YES	YES

26. OPERATOR SHOULD ENSURE THAT SUCTION VALVE MOV-0105C IS OPEN AND DISCHARGE VALVE IS CLOSED BEFORE INITIATING THE START SEQUENCE OF THE PUMP.
27. AUTO ACTION TO SUCTION MOV-0105C WILL BE APPLIED IN REMOTE CONDITION AND FUNCTIONALITY WILL BE AS PER BELOW TABLE.

- 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, SDBV, XV, MOV & ESDD DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001, .002, .003, .004, .005, .006 & .007.
- E. FOR MISCELLANEOUS PIPING TYPICAL VALVING, DRAINAGE & GENERAL ARRANGEMENT OF LEVEL INSTRUMENTS, PUMPS, STRAINERS & CONTROL VALVES SEE DRAWINGS 50489-530-020-PID-1108.001 TO 1108.010.
- F. DRAWINGS 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 INDICATED IN P&ID.
- K. FOR CAUSE & EFFECT REFER DOC. NO. 50489-530-020-PH-1100.
- L. FOR ALARM VALUES REFER DOC. NO. 50489-530-020-SUM-1006.

NOTES:

1. IF SUCCTION PRESSURE REDUCES TO NPSH REQUIREMENTS OF THE CRUDE OIL EXPORT PUMPS PIC-0105 (PID - 1126.001) ASSUMES CONTROL VIA FIC-0102A/B/C REDUCING PUMP SPEED TO MAINTAIN ADEQUATE NPSH MARGIN.
2. HS-0110 ALLOWS OVERRIDE OF THE RESET ACTION OF TANK LEVEL ON THE FLOW INDICATOR CONTROLLER (FIC) AND THE MANUAL LOADING OF THE FLOW CONTROLLER.
3. FACILITIES ARE PROVIDED TO ALLOW THE CRUDE OIL EXPORT PUMPS TO BE STARTED AND RUN AS FIXED SPEED UNITS WITH THE VARIABLE SPEED UNIT OUT OF OPERATION ON LOW POWER CONDITION ONLY.
4. VSD SPEED CONTROLLER RECEIVES SET POINT FROM DCS. CONTROLLER SUPPLIES STATUS ONLY TO DCS.
5. THE VIBRATION AND TEMPERATURE SIGNALS OF G-004C ARE TRANSFERRED FROM LOCAL TRANSMITTER TO DCS AND ESD SYSTEM THROUGH THE TMS/VAS.
6. ALL INDIVIDUAL VIBRATION HIGH-HIGH SIGNALS GENERATE COMMON TRIP SIGNAL WITH ESD LOGIC.
7. DELETED.
8. ALL INDIVIDUAL VIBRATION HIGH-HIGH SIGNALS GENERATE COMMON TRIP SIGNAL WITH ESD LOGIC.
9. REDUNDANCY IS PROVIDED FOR SENSORS FOR BEARING AND WINDING TEMPERATURE.
10. DELETED.
11. NON-SLAM TYPE CHECK VALVE.
12. DELETED.
13. FOR CRUDE OIL PUMP DETAILS, SEE DWGS. 50489-530-020-PID-1126.009, 1126.010 AND 1126.011.
14. MINIMUM EXPORT PRESSURE SET POINT NOT ACCESSIBLE TO OPERATOR. ONLY ENTERED BY AUTHORIZED SUPERVISOR.
15. DELETED.
16. TWO OFF 50% PUMPS OPERATING AND ONE OFF 50% STANDBY.
17. PUMP PURGE CONNECTION IS PROVIDED TO PURGE THE PUMP FROM SUCTION LINE TO DISCHARGE LINE.
18. FOR CORROSION MONITORING STATIONS (CMS):-
 - (a) CMS ARE INSTALLED AS PER KOC-MP-035.
 - (b) PROPER ACCESS PIT OR PLATFORM ARE PROVIDED FOR RETRIEVAL OF COUPEN/PROBE.
 - (c) MATERIAL FOR CMS ARE PROCURED FROM KOC APPROVED VENDOR LIST.
 - (d) CMS ARE LOCATED IN BOTTOM 6 O'CLOCK POSITION.
 - (e) TAG NUMBERING OF CMS IS AS PER APPENDIX-C OF KOC-MP-035.
19. ALL A/C PIPING SUPPORTS & MOV'S ARE FIRE PROTECTED INSIDE THE CRUDE OIL EXPORT PUMP SHELTER.
20. STRAIGHT LENGTH REQUIREMENT FOR ORIFICE FLOW METER ARE 20D UPSTREAM & 5D DOWNSTREAM.
21. PUMP VALVE SPEED OPERATION, CONTROL VALVE FCV-0103 REMAINS 100% OPEN.
22. DISCREPANCY ALARM BETWEEN SET VALUE (BASED ON LIC-0091, PID: 1122 & LIC-0045, PID: 1124 IN DRY MODE) AND PROCESS VALUE OF FIC-0103 IS PROVIDED.
23. BLEED POINT IS PROVIDED.
24. REFLECT CONTROL NARRATIVE FOR CRUDE OIL EXPORT PUMP DOC. NO. 50489-530-020-07278-PHL-V001.
25. START PERMISSIVE FOR MOTOR OF CRUDE OIL EXPORT PUMP. MOV-0105C SHALL BE IN OPEN POSITION PRIOR TO START-UP OF THE CRUDE OIL EXPORT PUMP WITH DRY CRUDE STORAGE TANK, THE FOLLOWINGS SHOULD BE VERIFIED.
 - A. MANUAL EQUIPMENT BLOCK VALVES IN CRUDE OIL EXPORT PUMP SYSTEM ARE IN THEIR NORMAL OPERATING POSITIONS. REFER BELOW:
 - (i) DRY CRUDE STORAGE TANK OUTLET - ESDV-0094 / XV-0095 - OPEN.
 - (ii) CRUDE OIL BOOSTER PUMPS MCF LINE - MOV. MOV-0092 - OPEN.
 - (iii) CRUDE OIL EXPORT PUMPS MCF LINE - MOV. MOV-0091 - OPEN.
 - (iv) CRUDE OIL EXPORT BATTERY LIMIT VALVES. - ESDV-0143 / MOV-0142 - OPEN.
 - B. PROCESS OVERRIDE FOR CRUDE OIL EXPORT PUMPS:
 - (i) CRUDE OIL EXPORT PUMPS DISCHARGE FLOW LOW-LOW - FALL-0101A (FOR G-004A) / FALL-0101B (FOR G-004B) / FALL-0101C (FOR G-004C) III). CRUDE OIL EXPORT HEADER PRESSURE LOW-LOW - PALL-0143.

Z1	RE-ISSUED FOR AS-BUILT	VPA/CHS	CHS	SRA	DER	10.10.18
Z0	ISSUED FOR AS-BUILT	VPA/CHS	CHS	SRA	DER	17.09.18
04	RE-ISSUED FOR CONSTRUCTION	VPA/CHS	CHS	SRA	DER	07.02.18
03	RE-ISSUED FOR CONSTRUCTION	VPA/CHS	CHS	SRA	DER	06.01.18
02	ISSUED FOR CONSTRUCTION	VPA/CHS	CHS	SRA	DER	05.10.17
01	ISSUED FOR CONSTRUCTION	HSH/SSI	AKG	SRA	DER	22.12.16
0	ISSUED FOR CONSTRUCTION	HSH/VSA	AKG	SRA	RAK	30.03.16
D	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	29.12.15
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	15.10.15
0C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	30.05.15
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
REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM APPR.	DATE

		شركة نفط الكويت ش.م.ك.	
KUWAIT OIL CO. K. S. C.		إيسى افراتابرو سوسايتى A Subsidiary of Farid Petroleum Corporation	
CONTRACTOR DETAILS:--			
		LARSEN & TOUBRO LIMITED FARIDABAD	
PROJECT TITLE:--			
NEW GATHERING CENTRE GC-30 IN NORTH KUWAIT			
DOCUMENT TITLE:--			
PIPING & INSTRUMENTATION DIAGRAM CRUDE OIL EXPORT PUMP G- 004C			
PROJECT NO.		DRAWING NO.	
EF1902	CONTRACTOR DRG. NO. 50489-530-020-PID-1126.002	REV. Z1	KOC DRG. NO.
	SHEET NO. 2 OF 11 COMPANY DRG. NO. EF1902-530-DCO-PID-0126.002	REV. A4	SHEET NO.
	SHEET NO.		