

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 & ESDV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.002, .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. 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 INDICATED IN P&ID.
- 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. DELETED.
- 2. FOR CHEMICAL INJECTION NOZZLE, DETAIL SEE STANDARD DRAWING 50489-530-020-PID-1108.001.
- 3. DUPLEX STRAINERS WITH DRAINAGE TO DRAIN SYSTEM. REFER P&ID:- 50489-530-020-PID-1108.004.
- 4. DELETED.
- 5. EFFLUENT WATER FOR LP WET CRUDE SEPARATORS SAND REMOVAL.
- 6. FOR PUMP SEAL PLAN SEE 50489-530-020-PID-1108.006.
- 7. DISSIMILAR TYPE CHECK VALVES.
- 8. TWO OFF 50% PUMPS OPERATING AND ONE OFF 50% STANDBY.
- 9. MENTIONED SET POINT IS FOR LATER LIFE, EARLY LIFE SET WILL BE 835 m3/hr (126000 BPD).
- 10. DELETED.
- 11. PURGE CONNECTION IS PROVIDED TO PURGE THE PUMP FROM SUCTION LINE TO DISCHARGE LINE.
- 12. 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 COUPON/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.
- 13. HS-0290S IS USED TO SELECT THREE OPERATING MODES OF EFFLUENT WATER BALANCE TANK.
  - (a) SINGLE TANK OPERATION D-005A.
  - (b) SINGLE TANK OPERATION D-005B.
  - (c) PARALLEL TANK OPERATION OF D-005A/B.
- 14. PUMP PARAMETERS MENTIONED ARE FOR 'LATER LIFE' CONDITION OF THE PUMP.
- 15. STRAIGHT LENGTH REQUIRED FOR FLOW ORIFICE ARE 20D UPSTREAM & 5D DOWNSTREAM.
- 16. BIOCIDES A & B ARE STORED BELOW 60°C TO PREVENT DEGRADATION. PIPING ARE INSULATED TO PROTECT THE FLOW FROM HEAT BUILD UP DUE TO SOLAR RADIATION.
- 17. PUMP EARLY LIFE CAPACITY IS 437m3/hr (66000 BPD). LATER LIFE CAPACITY IS ACHIEVED BY CHANGING THE PUMP IMPELLER. PUMP MOTOR & ALL ANCILLARIES ARE SIZED FOR LATER LIFE CONDITION WHILE THE INSTALLED IMPELLER IS DESIGNED FOR EARLY LIFE. DIFFERENTIAL PRESSURE & POWER FOR EARLY LIFE ARE 10.23 bar (148.2 PSI) & 176.6 KW (236.9 HP) RESPECTIVELY.
- 18. LOGIC ARE SUCH THAT SOURCE TANK MINIMUM CIRCULATION FLOW VALVE ARE KEPT OPEN WHEN PUMPS ARE RUNNING.
  - (a) SINGLE TANK OPERATION D-005A - MOV-0293 OPEN & MOV-0294 CLOSED
  - (b) SINGLE TANK OPERATION D-005B - MOV-0294 OPEN & MOV-0293 CLOSED
  - (c) PARALLEL TANK OPERATION D-005A/D-005B - EITHER MOV-0293 OR MOV-0294 OPEN OR BOTH ARE OPEN
- 19. BLEED POINT IS PROVIDED.
- 20. THE MENTIONED SET POINT IS FOR LATER LIFE & EARLY LIFE.

REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE
01	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	06.05.18
01	ISSUED FOR CONSTRUCTION	BAK/SSI	AKG	SRA	RAK	01.12.16
0	ISSUED FOR CONSTRUCTION	SHH/PRS	AKG	SRA	RAK	24.05.16
D	ISSUED INCORPORATED CLIENT COMMENTS	SHH/VSA	AKG	SRA	RAK	19.04.16
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	14.10.15
OC	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	30.05.15
B	ISSUED INCORPORATED CLIENT COMMENTS	JSI/VSA	AKG	SRA	RAK	19.02.15
A	ISSUED FOR APPROVAL	BAK/VSA	AKG	SRA	RAK	05.12.14



**KUWAIT OIL CO.**  
**K. S. C.**

**شركة نفط الكويت**  
**ش.م.ك.**



**LARSEN & TOUBRO LIMITED**  
FARIDABAD

PROJECT TITLE:-  
**NEW GATHERING CENTRE GC-30**  
IN NORTH KUWAIT

DOCUMENT TITLE:- PIPING & INSTRUMENTATION DIAGRAM EFFLUENT WATER TRANSFER PUMP (G-007A/B/C)			
PROJECT NO.	DRAWING NO.	REV.	DATE
EF1902	CONTRACTOR DRG. NO.	REV.	KOC DRG. NO.
	50489-530-020-PID-1152	Z0	
	SHEET NO. 1 OF 1		SHEET NO.
	COMPANY DRG. NO.	REV.	
EF1902-530-DCO-PID-0152.001	A3		

AS-BUILT

KOC APPROVAL

NAME / KOC No:

DESIGNATION:

GROUP / TEAM:

SIGNATURE:

DATE:

AS-BUILT

LARSEN & TOUBRO LIMITED

NAME: VAIBHAV VERMA

DESIGNATION: AGM

SIGNATURE:

DATE: 06-Aug-2018

DEPT/ DIVISION: ENGINEERING

EFFLUENT WATER TRANSFER PUMP NOTE 8, 14, 17

FLOWRATE m3/hr (BPD)	: 1057 (159567)
DRIVER POWER KW (HP)	: 410 (550)
DIFF PRESS ΔP bar (PSI)	: 10.23 (148.34)
SP GRAVITY @ OP/OT	: 1.17~1.15
FLUID VISCOSITY @ PT CP	: 3.36~1.1
OP PRESS/DES PRESS barg (PSIG)	: 10.11/13.52 (146.6/196.04)
OP TEMP/DESIGN TEMP °C (°F)	: 15~55/93~3 (59~131/200/27)
UTC NO.	:
TRIM NO.	: GT-G007A/B/C-Q15B