



- 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-1106.001, .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. 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:
- 1,2,3. DELETED.
 - 4. DUPLEX STRAINERS WITH DRAIN ARRANGEMENT TO DRAIN SYSTEM. REFER P&ID-- 50489-530-020-PID-1108.004.
 - 5,6,7,8. DELETED.
 - 9. TWO OF 50% PUMPS OPERATING AND ONE OF 50% STANDBY.
 - 10. MOV USED FOR START UP.
 - 11. VALVE IS HAVING INCHING FACILITY.
 - 12. SPLIT FLOW BETWEEN WELLS THAT ARE OPERATING OR INDIVIDUAL CONTROL.
 - 13. DELETED.
 - 14. PURGE CONNECTION IS PROVIDED TO PURGE THE PUMP FROM SUCTION LINE TO DISCHARGE LINE.
 - 15. THE MENTIONED SET POINT IS FOR LATER LIFE. FOR EARLY LIFE SET POINT WILL BE 834.6 m3/hr (126000 BPD).
 - 16. STRAIGHT LENGTH REQUIRED FOR FLOW ORIFICE ARE 20D UPSTREAM AND 5D DOWNSTREAM.
 - 17. FOR EARLY YEARS OF PLANT OPERATION, PUMP FLOW RATE (RATED) IS 437 m3/hr. (66000 BPD).
 - 18. BLEED POINT IS PROVIDED.
 - 19. OUTPUT OF FIC-0374 IS SET POINT TO FIC-0428 (PID-1153.005).
 - 20. THE PUMP DISCHARGE MOV-0383A/0383B/0383C WILL BE CLOSED AUTOMATICALLY IN CASE RESPECTIVE DISPOSAL PUMP G-005A/005B/005C PUMP(S) STOPS/TRIPS.
 - 21. THE DISPOSAL PUMP G-005A/005B/005C WILL HAVE START PERMISSIVE FROM THE CLOSURE STATUS OK FEEDBACK FROM THEIR RESPECTIVE DISCHARGE MOV-0383A/0383B/0383C.
 - 22. THE DISPOSAL PUMP DISCHARGE MOV-0383A/0383B/0383C CAN BE OPERATED IN REMOTE MODE ONLY IF RESPECTIVE DISPOSAL G-005A/005B/005C PUMP(S) ARE IN RUNNING CONDITION.
 - 23. OPERATOR SHOULD ENSURE THAT SUCTION VALVE MOV IS OPEN AND DISCHARGE VALVE IS CLOSED BEFORE INITIATING THE START SEQUENCE OF THE PUMP.
 - 24. AUTO ACTION TO DISCHARGE MOV WILL BE APPLIED IN REMOTE CONDITION AND FUNCTIONALITY WILL BE AS PER BELOW TABLE.

| 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 | NO | YES | YES | NO | NO |
| 2. | LOCAL | YES | YES | YES | YES | NO | NO |
| 3. | REMOTE | NO | NO | NO | NO | NO | AUTO ACTION TO CLOSE |
| 4. | REMOTE | YES | NO | NO | NO | YES | YES |

AS-BUILT
KOC APPROVAL

NAME / KOC NO.:
DESIGNATION :
GROUP / TEAM :
SIGNATURE :
DATE :

AS-BUILT
LARSEN & TOUBRO LIMITED

NAME :
DESIGNATION :
SIGNATURE :
DATE :
DEPT/ DIVISION : ENGINEERING

| | | | | | | |
|------|-------------------------------------|---------|---------|-----|-----|----------|
| Z0 | ISSUED FOR AS-BUILT | VPA/CHS | AKG | SRA | RAK | 25.08.18 |
| 04 | ISSUED FOR CONSTRUCTION | VPA/CHS | AKG | SRA | RAK | 17.10.17 |
| 03 | ISSUED FOR CONSTRUCTION | BAK/SSI | AKG | SRA | RAK | 05.10.17 |
| 02 | ISSUED FOR CONSTRUCTION | BAK/SSI | AKG | SRA | RAK | 12.12.16 |
| 1 | RE-ISSUED FOR CONSTRUCTION | HSB/VSA | AKG | SRA | RAK | 13.06.16 |
| 0 | ISSUED FOR CONSTRUCTION | HSB/VSA | AKG | SRA | RAK | 28.03.16 |
| D | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 22.12.15 |
| C | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 14.10.15 |
| 0C | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 30.05.15 |
| B | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 19.02.15 |
| A | ISSUED FOR APPROVAL | BAK/VSA | AKG | SRA | RAK | 05.12.14 |
| REV. | DESCRIPTION | DRAWN | CHECKED | HOD | PEM | DATE |

CONTRACTOR REVISION

KUWAIT OIL CO. K. S. C. **شركة نفط الكويت ش.م.ك.**

CONTRACTOR DETAILS:-

LARSEN & TOUBRO LIMITED
FARIDABAD

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

| | |
|--|-------------------|
| DOCUMENT TITLE:- PIPING & INSTRUMENTATION DIAGRAM TREATED WATER DISPOSAL PUMP (G-005A/B/C) | |
| PROJECT NO. | DRAWING NO. |
| CONTRACTOR DRG. NO. | REV. KOC DRG. NO. |
| 50489-530-020-PID-1153.003 | Z0 |
| SHEET NO. 3 OF 23 | SHEET NO. |
| COMPANY DRG. NO. | REV. |
| EF1902-530-DCO-PID-0153.003 | A4 |
| SHEET NO. | |

G-005A/B/C NOTE 9, 17
TREATED WATER DISPOSAL PUMP

| | |
|--------------------------------|-------------------------------|
| FLOWRATE m3/hr (BPD) | : 874 (132000) |
| DRIVER POWER KW (HP) | : 2900 (3887) |
| DIFF PRESS ΔP bar (PSI) | : 89.07 (1291) |
| SP GRAVITY @ OP/OT | : 1.16~1.17 |
| FLUID VISCOSITY @ PT CP | : 3.36~1.13 |
| OP PRESS/DES PRESS barg (PSIG) | : 106.47/131.16 (1544/1902) |
| OP TEMP/DESIGN TEMP °C (°F) | : 15~55/93/~3 (59~131/200/27) |
| UTC NO. | |
| TRIM NO. | : GT-G005A/B/C-Q95B |