

E-110
TANK VAPOUR COMPRESSOR DISCHARGE COOLER (TRAIN A) NOTE 20
DUTY MMkcal (MMBTU/hr) : 0.35 (1.39)
OP PRESS /DES PRESS barg (PSIG): 3.53/7 (51.2/101.5)
OP TEMP INLET/OUTLET °C (°F) : 132.4/60 (270.3/140)
DESIGN TEMP °C (°F) : -3/200 (27/392)
UTC NO. :
TRIM NO. : ET- E110-S10B-PP

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

AS-BUILT
LARSEN & TOUBRO LIMITED
NAME : VAIBHAV VERMA
DESIGNATION : AGM
SIGNATURE :
DATE : 21-Nov-2018
DEPT/ DIVISION : ENGINEERING

GENERAL NOTES:

- FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS 50489-530-020-PID-1104.001 & .002.
- ALL EQUIPMENT NUMBERS SHOWN ON THIS P&ID ARE PREFIXED BY 530-.
- ALL INSTRUMENT NUMBERS SHOWN ON THIS P&ID ARE PREFIXED BY 030-.
- FOR TYPICAL INSTRUMENT CONNECTION SBDV, XV, MOV AND ESDV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001, .002, .003, .004, .006 & .007.
- 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.
- 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.
- FOR MATERIAL SELECTION DIAGRAM SEE DRAWINGS 50489-530-020-MSD-1001.001 TO 1018.001.
- DETAIL NUMBERING FOR CI, SC, CC & CP SEE DRAWING 50489-530-020-PID-1108.003.
- PAINTING & COATING ARE IN ACCORDANCE WITH KOC-P-001.
- LOW POINT DRAIN & HIGH POINT VENT ARE INDICATED IN P&ID.
- FOR CAUSE & EFFECT REFER DOC. NO. 50489-530-020-PHL-1009.
- FOR ALARM VALUES REFER DOC. NO. 50489-530-020-SUM-1006.

- NOTES:
- RELIEF VALVE INLET AND DISCHARGE VALVES ARE KEY INTERLOCKED SUCH THAT ONE RELIEF VALVE IS ALWAYS ON LINE AT ANY TIME.
 - CHECK VALVE IS MINIMUM DISTANCE FROM COMPRESSOR DISCHARGE NOZZLE.
 - SUPPORT LINE FOR 2-PHASE FLOW DOWNSTREAM OF E-110.
 - CHECK VALVE IS NON-SLAM TYPE.
 - DELETED.
 - COMPRESSOR SUCTION/DISCHARGE ESDV'S & ANTI SURGE VALVE ARE OPENED BY STARTING SEQUENCE. ON COMPRESSOR TRIP, SUCTION & DISCHARGE ESDV'S ARE CLOSED.
 - DELETED.
 - REMOTE RESET IS PROVIDED AT GRADE.
 - * MARKED ITEM IS SUPPLIED BY VENDOR.
 - DELETED.
 - COMMISSIONING STRAINERS ARE PROVIDED.
 - IF COMPRESSOR DISCHARGE PRESSURE IN PIT-1331 IS LESS THAN 2.5 BARG FOR 30MINUTES EVEN WHEN THE COMPRESSOR IS OPERATING ABOVE 80% SPEED, THE UCP PLC WILL OPEN PCV-1325 (LOW MW CONTROL VALVE) IN 50% FOR 5 MINUTES TO PURGE LOW MW GAS TO FLARE WITH HIGH MW GAS (MW= 36-48) FROM TV GAS HEADER.
 - THE COMPRESSORS SHOULD BE CAPABLE OF RUNNING WITH OR WITHOUT LOAD SHARING MODE, VENDOR TO DESIGN THE CONTROL SYSTEM ACCORDINGLY.
 - THE ANTI-SURGE CONTROL TO BE DEVELOPED AND SUPPLIED BY VENDORS.
 - DELETED.
 - HIGH TEMPERATURE PROTECTION ON DOWNSTREAM EQUIPMENT.
 - 3 x 50% CENTRIFUGAL COMPRESSORS.
 - ON SHUTDOWN, COMPRESSORS SHOULD AUTO-DEPRESSURE BY OPENING SBDV-1323.
 - VENDOR TO DECIDE ON COMPREHENSIVE CONTROL PHILOSOPHY FOR FLOW CONTROL AND MINIMUM DISCHARGE PRESSURE REQUIRED TO ROUTE THE COMPRESSED GAS TO THE EXPORT HEADER.
 - AIR COOLER SHALL BE FORCED DRAFT.
 - 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.
 - MINIMUM STRAIGHT LENGTH REQUIRED FOR ORIFICE FLOW (FE-1324/1325) METER ARE 20 D UPSTREAM/5 D DOWNSTREAM.
 - REFERENCE P&ID:- 50489-530-020-07355-PID-V001, SHEET 2 OF 6.
 - MINIMUM STRAIGHT LENGTH OF PIPING REQUIRED UPSTREAM OF INLET = 3.5 D FOR COMPRESSOR SUCTION.
 - MINIMUM STRAIGHT LENGTH OF PIPING REQUIRED DOWNSTREAM OF DISCHARGE = 3 D FOR COMPRESSOR DISCHARGE.
 - ONE ADDITIONAL INTERNAL CORROSION MONITORING POINT SHALL BE INSTALLED AT THE TOP AT 12 O'CLOCK.
 - MINIMUM STRAIGHT LENGTH REQUIRED FOR ORIFICE FLOW (FE-1323) METER SHALL BE 15 D UPSTREAM/5 D DOWNSTREAM.
 - REFERENCE P&ID FOR DELUGE SYSTEM 50489-530-000-PID-1127.001 AND 50489-530-000-PID-1127.002.
 - DRAIN AND VENT VALVE WITH BLIND FLANGE PROVIDED FOR LOCATION OF DRAIN & VENT VALVE REFER 50489-530-041-07831-GAD-V001.
 - POSITION TRANSMITTER FOR ANTI-SURGE CONTROL VALVE PERCENTAGE FEEDBACK TO UCP.
 - FOR ALL ASC, LSC & MPC CONNECTION AND ALARM DETAILS REFER 50489-530-020-07355-SPC-V003
 - ON COMPRESSOR STOP TY-1324,1325 & 1326 WILL CLOSE & ON COMPRESSOR RUN, TY-1324 WILL OPEN
 - AIR FLOW RATE SHALL BE REGULATED BY AUTOMATIC VARIABLE FAN PITCH CONTROL WITH ALARM OPTION.

| REV. | DESCRIPTION | DRAWN | CHECKED | HOD | PEM | DATE |
|------|-------------------------------------|---------|---------|-----|-----|----------|
| Z2 | ISSUED FOR AS-BUILT | BAK/SSI | AKG | SRA | DER | 21.11.18 |
| Z1 | ISSUED FOR AS-BUILT | BAK/SSI | AKG | SRA | DER | 17.10.18 |
| Z0 | ISSUED FOR AS-BUILT | BAK/SSI | AKG | SRA | DER | 25.09.18 |
| 3 | ISSUED FOR CONSTRUCTION | BAK/SSI | AKG | SRA | DER | 20.12.16 |
| 2 | RE-ISSUED FOR CONSTRUCTION | HSB/VSA | AKG | SRA | RAK | 25.07.16 |
| 1 | RE-ISSUED FOR CONSTRUCTION | HSB/VSA | AKG | SRA | RAK | 13.06.16 |
| 0 | ISSUED FOR CONSTRUCTION | PAK/VSA | AKG | SRA | RAK | 06.05.16 |
| D | ISSUED INCORPORATED CLIENT COMMENTS | HSB/VSA | AKG | SRA | RAK | 12.03.16 |
| C | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 09.09.15 |
| OC | ISSUED INCORPORATED CLIENT COMMENTS | JSI/VSA | AKG | SRA | RAK | 30.05.15 |
| B | ISSUED INCORPORATED CLIENT COMMENTS | JSI/VSA | AKG | SRA | RAK | 17.02.15 |
| A | ISSUED FOR APPROVAL | BAK/VSA | AKG | SRA | RAK | 05.12.14 |

CONTRACTOR REVISION

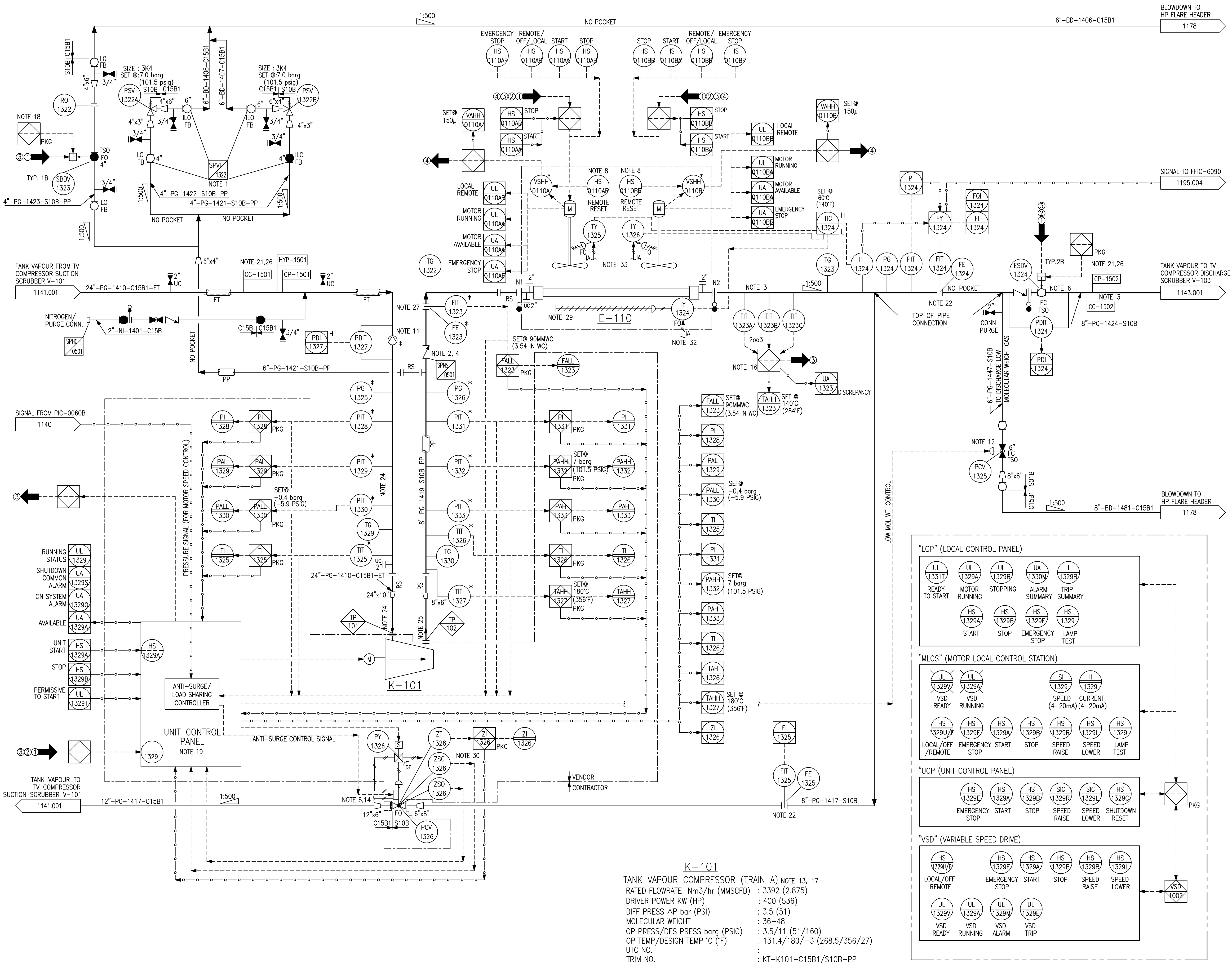


CONTRACTOR DETAILS:-
LARSEN & TOUBRO LIMITED
FARIDABAD

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

DOCUMENT TITLE:-
PIPING & INSTRUMENTATION DIAGRAM
TANK VAPOUR COMPRESSOR (K-101) TRAIN A

| PROJECT NO. | CONTRACTOR DRG. NO. | DRAWING NO. | REV. | KOC DRG. NO. | REV. |
|-------------|-----------------------------|-------------|------|--------------|------|
| EF1902 | 50498-530-020-PID-1142.001 | Z2 | | | |
| | SHEET NO. 1 OF 15 | | | | |
| | COMPANY DRG. NO. | REV. | | | |
| | EF1902-530-DCO-PID-0142.001 | A2 | | | |
| | SHEET NO. | | | | |



K-101
TANK VAPOUR COMPRESSOR (TRAIN A) NOTE 13, 17
RATED FLOWRATE Nm³/hr (MMSCFD) : 3392 (2.875)
DRIVER POWER KW (HP) : 400 (536)
DIFF PRESS ΔP bar (PSI) : 3.5 (51)
MOLECULAR WEIGHT : 36-48
OP PRESS/DES PRESS barg (PSIG) : 3.5/11 (51/160)
OP TEMP/DESIGN TEMP °C (°F) : 131.4/180/-3 (268.5/356/27)
UTC NO. :
TRIM NO. : KT-K101-C15B1/S10B-PP