



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

| AS-BUILT | |
|-------------------------|---------------|
| LARSEN & TOUBRO LIMITED | |
| NAME : | VAIBHAV VERMA |
| DESIGNATION : | AGM |
| SIGNATURE : | |
| DATE : | 24-Sep-2018 |
| DEPT/ DIVISION : | ENGINEERING |

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 530-..
D. FOR TYPICAL INSTRUMENT CONNECTION, SBOV, 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:
- INTERNAL DISTRIBUTOR TO ENSURE UNIFORM DISTRIBUTION OF LIQUID ACROSS FULL CROSS SECTIONAL AREA OF TANK. LOCATE CLOSE TO MINIMUM INTERFACE LEVEL.
 - INTERNAL COLLECTION HEADER ABOVE DIAMETER OF TANK.
 - LOCATE ESDV'S OUTSIDE OF THE TANK BUNDED AREA.
 - ENSURE THAT LOCATION OF BALL VALVES PROVIDED ON THE DRAIN LINES CLOSE TO THE DIVERTING DRAIN LINE TO THE FUNNEL.
 - HIGH HIGH LEVEL SHUTS DOWN ALL WET SEPARATORS.
 - HYDROCARBON A/G PIPING AND SUPPORT WITHIN TANK BUNDED AREA ARE FIRE PROOFED IN ACCORDANCE WITH PASSIVE FIRE PROTECTION LIST, 50489-530-000-LST-1003.
 - DESIGN CRUDE INLET TWO-PHASE LINE OF WET TANK TO AVOID SLUG FLOW CONDITIONS WITH MULTIPLE RISERS FROM THE HEATER AND MULTIPLE ENTRY INTO THE DEGASSING BOOT, FOR FULL RANGE OF PROCESS FLOWS.
 - TRI COCKS TO STRADDLE OIL/WATER INTERFACE LEVEL.
 - FOR DETAILS OF FIRE PROTECTION SYSTEM & PIT LOCATION REF TO P&ID 50489-530-000-PID-1105.001.
 - PUMP OUT NOZZLE IS LOCATED ABOVE MAXIMUM INTERFACE LEVEL.
 - IF ESDV IS NOT FULLY OPEN, THE ASSOCIATED PUMP IS INHIBITED FROM STARTING, OR IF RUNNING, STOPPED.
 - BOTH WET TANKS D-001 AND D-002 ARE OPERATED IN PARALLEL OR SEPARATELY, THEREFORE ELEVATION OF LEVEL TRANSMITTERS IS THE SAME.
 - STRAIGHT LENGTH REQUIREMENT FOR THERMAL MASS FLOW METER ARE 10D UPSTREAM & 5D DOWNSTREAM.
 - EXTERNAL FIRE WATER DELUGE SPRAY RING IS AROUND COLLECTION DOME.
 - LOCATE PIT CLOSE TO TANK D-002.
 - PVRV HAS SPARE VALVE. DRIP PAN FOR PVRV PIPED TO TANK BASE. LINE IS CONNECTED TO DRAIN SYSTEM.
 - FOR SAMPLE NOZZLE DETAIL, SEE STANDARD DWG. 50489-530-020-PID-1108.001.
 - PVRV IS N+2 WITH FLAME ARRESTOR & AS PER KOC-MW-007 CL 9.6.
 - 4" CONNECTIONS FOR CHEMICAL CLEANING PURPOSE.
 - a) CAPACITY OF PVRV FOR INBREATHING & OUTBREATHING IS 4439 & 7315 Nm3/hr RESPECTIVELY. b) THE CAPACITY OF CONTROL VALVE IS NOT GREATER THAN PVRV OUTBREATHING REQUIREMENT.
 - SUCTION LINES ARE SIZED FOR BOTH DESALTER TRAINS TAKING FEED FROM ONE TANK.
 - MOBILE PUMP CONNECTION IN EASY ACCESS SPACE.
 - THE ISOLATION VALVE FOR TANK VAPOUR LOCATED NEAR TO TV HEADER.
 - TANK BOTTOM DRAIN NOZZLE FLUSHING.
 - LOCATE AT GRADE OUTSIDE OF DYKE.
 - LOCATE ON THE ROOF OF TANK.
 - MOV-0070, 0071 & 0072 OPERATED TO CONTROL 2-PHASE FLOW REGIME ARE INCHING TYPE.
 - TRICOCKS ELEVATIONS BASED ON WET CRUDE & INTERFACE LEVEL.
 - 2 OUT OF 3 VOTING.
 - FY PROVIDES PRESSURE AND TEMPERATURE COMPENSATION FOR FOI.
 - MULTIPLE LEVEL GAUGES ARE PROVIDED TO COVER ALL OPERATING RANGES.
 - PURGE CONNECTION.
 - DEVIATION OF PIT-0071/0072 OUTPUT OF 5% INITIATES ALARM.
 - VALVE IS INSTALLED IN HORIZONTAL POSITION ALONG WITH THE STEM.
 - AT LEAST ONE OF MOV-0073 AND MOV-0043 (P&ID 1122.001) MUST ALWAYS BE OPEN.
 - AT LEAST ONE OF MOV-0076 AND MOV-0048 (P&ID 1122.001) MUST ALWAYS BE OPEN.
 - HEIGHT OF TANK IS TO BE INCREASED AS NECESSARY BY CONTRACTOR TO INCLUDE FREEBOARD REQUIREMENT ABOVE HILL PER API 650 PARA E.7.2. THE TOTAL HEIGHT SHOULD ALLOW FOR THE BOTTOM OF THE ROOF SUPPORT TRUSS TO BE ABOVE THE FREEBOARD ALLOWANCE.

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| ZO | ISSUED FOR AS-BUILT | BAK/SSI | AKG | SRA | RAK | 24.09.18 |
| O1 | ISSUED FOR CONSTRUCTION | BAK/SSI | AKG | SRA | RAK | 02.11.16 |
| 0 | ISSUED FOR CONSTRUCTION | HSR/VSA | AKG | SRA | RAK | 22.03.16 |
| E | ISSUED INCORPORATED CLIENT COMMENTS | JSI/VSA | AKG | SRA | RAK | 08.02.16 |
| D | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 30.12.15 |
| C | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 16.10.15 |
| OC | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 30.05.15 |
| B | ISSUED INCORPORATED CLIENT COMMENTS | BAK/VSA | AKG | SRA | RAK | 21.02.15 |
| A | ISSUED FOR APPROVAL | BAK/VSA | AKG | SRA | RAK | 29.11.14 |
| 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
WET CRUDE STORAGE TANK (D- 002)

| PROJECT NO. | | DRAWING NO. | |
|-----------------------------|------------------------|-------------|--------------|
| EF1902 | CONTRACTOR DRG. NO. | REV. | KOC DRG. NO. |
| | 50489-530-020-PID-1123 | Z0 | |
| | SHEET NO. 1 OF 1 | REV. | SHEET NO. |
| | COMPANY DRG. NO. | | |
| EF1902-530-DCO-PID-0123.001 | | REV. | |
| SHEET NO. | | | |

- NOTES: (CONTD.)
- 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.
 - DELUGE WATER DEFLECTOR PLATE TO DIRECT WATER TO TANK SHELL IS PROVIDED AS PER KOC-L-009, REV-4.
 - ELEVATION FROM TANK BOTTOM.
 - STRAIGHT LENGTH REQUIREMENT FOR ORIFICE FLOW METER ARE 20D UPSTREAM & 5D DOWNSTREAM.
 - PRESSURE INDICATOR IS LOCATED AT GRADE.
 - ONE ADDITIONAL INTERNAL CORROSION MONITORING POINT IS INSTALLED AT THE TOP AT 12 O'CLOCK.
 - WHEN THE DUAL TANK IS "IN WET MODE", LOW LOW LEVEL OF DUAL CRUDE STORAGE TANK (LALL 0041) OR LOW LOW LEVEL OF WET CRUDE STORAGE TANK (LALL 0071) SHALL CAUSE LEVEL-3 TRIP INDIVIDUALLY. WHEN BOTH THESE TANKS ARE IN PARALLEL OPERATION, LALL-0041 & LALL-0071 TOGETHER SHALL CAUSE DESALTERS LEVEL-3 SHUT DOWN.