



## 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 PRECEDED BY 530--.
- ALL INSTRUMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 030--.
- FOR TYPICAL INSTRUMENT CONNECTION SBOV, XV, MOV & ESDV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001, .002, .003, .004, .005, .006 & .007.
- 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.
- 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 1023.
- 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:

- HEATER FIRE-TUBES AND PROCESS COILS ARE EASILY REMOVABLE AND MAINTAINABLE.
- VESSEL PIPING AND INSTRUMENTATION IN HOT SERVICE ARE INSULATED.
- HEATER IS BASED ON TWO FIRE TUBE ASSEMBLY.
- FOR CHEMICAL CLEANING/ PURGE CONNECTION AND FOR MANUAL ADDITION OF CHEMICAL.
- THE MAIN GAS BURNER FLAME MONITORS ARE OF THE UV TYPE, SELF CHECKING AND CONTINUOUSLY PURGED WITH CLEAN AIR AND IT IS EQUIPPED WITH "SIGHTING TUBE".
- PIPING EXPOSED TO CRUDE IS SUBJECT TO FOULING FOR DESIGN OF HEATER COIL.
- REFER TO 50489-530-020-29021-CAL-V002
- STACK HEIGHT IS DESIGNED FOR SAFE DISPOSAL OF EXHAUST GASES WITH ADEQUATE SUPPORTS TO AVOID ANY VIBRATION.
- ADEQUATE SPACE AND CLEAR AREA IS PROVIDED AROUND HEATER TO ENABLE EASY PULL OUT AND LIFTING OF HEATER COIL AND FIRETUBES.
- FOR WASH INJECTION NOZZLE DETAIL. SEE STANDARD DWG.50489-530-020-PID-1108.001
- PILOT BURNER FLAME DETECTOR IS UV TYPE.
- SAMPLE POINT ON STACK IS ACCESSIBLE VIA PLATFORM.
- PRESSURE INSTRUMENTS REFER DWG.50489-530-020-PID-1106.001
- ALL HEATER STACKS HAVE LIGHTING PROTECTION AND FLAME ARRESTOR.
- UTILITY CONSUMPTION: REFER TO 50489-530-020-29021-LST-V001
- FEED HEATER IS DESIGNED FOR BOTH EXCHANGER BY-PASS CASE & ALSO 43% RECYCLE OF HOT WET CRUDE TO WEI/DUAL TANK WHEN WATER OUT INCREASED. RECYCLE SYSTEM CAN BE INSTALLED IN FUTURE.
- AS SOON AS BURNER DUTY (I.E. FUEL GAS FLOW RATE) IS STABILIZED (CRITERION FG FLOW RATE VARIATION <4% OVER A PERIOD OF 5 MINUTES) WILL BE ADJUSTED DURING COMMISSIONING), CASCADE REGULATION AG 1158 -> FC 1171 A (RESPECTIVELY AG 1159 -> FC 1172 A) IS ACTIVE. REFER CONTROL PHILOSOPHY 50489-530-020-29021-PHL-V001
- DRAIN PIT COMMON FOR ALL HEATERS, PUMP OUT BY VACUUM TRUCK.
- TIC-1207 IS CONTROLLED IN CASCADE MODE BY TIC-1209 DURING NORMAL OPERATION.
- HIGH DEVIATION (>5 C) BETWEEN TIC-1209 SET POINT AND TIC-1209 CURRENT VALUE OVERRIDES BURNER CONTROL SYSTEM FROM TIC-1207 TO TIC-1209. AS SOON AS THE DIFFERENCE BETWEEN THE REQUIRED AND THE MEASURED OIL TEMPERATURE IS REDUCED (DIFF. TEMP <1 °C), THE CONTROL IS REVERTED TO ITS NORMAL CONFIGURATION.
- ALL SAMPLING CONNECTIONS ARE ACCESSIBLE AT GRADE.
- FOR LEVEL OF SHUT DOWN REFER TO 50489-530-020-29021-CAE-V001
- INSTRUMENT AIR FLUSH TO AVOID SOLID DEPOSIT ON UV FLAME DETECTOR LENS.
- VENT TO SAFE LOCATION IS AS PER KOC-G-002.
- FOR THE QUANTITY OF PATHS FOR FIRE-TUBE COILS AND PROCESS COILS PLEASE REFER TO DATASHEET FOR DESALTER FEED HEATER 50489-530-020-29021-DAT-V001.
- FIRING RATE CONTROLLER TO SUPPORT THE HEATER START-UP SELECTION, IS PART OF CONTROL PHILOSOPHY 50489-530-020-29021-PHL-V001.
- SHUTDOWN LEVELS SHALL BE EXECUTED IN BMS (BURNER MANAGEMENT SYSTEM) LOGIC.
- THE HEATER IS TRIPPED AS SOON AS OIL LAYER IS DETECTED ON WATER.
- STRAIGHT LENGTH REQUIREMENT FOR ORIFICE FLOW METER ARE 20D UPSTREAM & 5D DOWNSTREAM.
- A LOCAL HEATER CONTROL PANEL HAVE PUSHBUTTONS AND ALARM / SEQUENCE REPEAT LAMPS FOR MANUALLY INITIATE THE HEATER START-UP SEQUENCE, AS WELL AS ALLOWING MANUAL INITIATION OF HEATER SHUTDOWN, LOCAL ALARM REST, LOCAL / REMOTE FUNCTIONALITY.

No.	SERVICE	SIZE	RATING
TP-503	POTABLE WATER SUPPLY	2"	150#
TP-502	WET CRUDE IN	10"	300#
TP-504	WET CRUDE OUT	10"	300#
TP-506	PROCESS COIL DRAIN	2"	150#
TP-507	WATER BATH DRAIN	4"	150#

ZO	ISSUED FOR AS-BUILT	HSB/VSA	AKG	SRA	RAK	16.08.18
O	ISSUED FOR CONSTRUCTION	HSB/VSA	AKG	SRA	RAK	25.07.16
E	ISSUED INCORPORATED CLIENT COMMENTS	HSB/VSA	AKG	SRA	RAK	17.06.16
D	ISSUED INCORPORATED CLIENT COMMENTS	HSB/PS	AKG	SRA	RAK	11.05.16
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	11.09.15
OC	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	30.05.15
B	ISSUED INCORPORATED CLIENT COMMENTS	BAK/VSA	AKG	SRA	RAK	17.02.15
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 DESALTER FEED HEATER TRAIN A (F-101B)**

PROJECT NO.	DRAWING NO.
50489-530-020-PID-1134.002	ZO
SHEET NO. 2 OF 4	SHEET NO.
EF1902	A4