



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

AS-BUILT	
LARSEN & TOUBRO LIMITED	
NAME : VAIBHAV VERMA	
DESIGNATION : AGM	
SIGNATURE :	
DATE : 12-Aug-2018	
DEPT/ DIVISION : ENGINEERING	

AREA PROTECTED	NO. OF NOZZLES	K FACTOR	SPRAY ANGLE	TRIGGER HEADS	LINE No. 1	LINE No. 2	LINE No. 3	LINE No. 4	LINE No. 6	LINE No. 7	LINE No. 8	TAG A	TAG B	TAG C	TAG D	TAG E	TAG F	TAG G	TAG H	TAG I	TAG J	TAG K	TAG L	TAG M	TAG N	TAG O	TAG AA	DV SKID NO.
TO INLET FUEL GAS K.O. DRUM 530-Y-031	03	50	120°	03	3"-WF-9335-Q35A	2"-WF-9128-Q35A	3"-WF-9129-Q15A	3"-WF-9130-Q15A	3"-WF-9127-Q35A	1"-AI-1759-S10A	1/2"-AI-9008-S10A	9019A	9019B	9019C	9019D	9019E	9019F	9019G	9019H	9019I	9019J	9019K	9019L	9019M	9019N	9019O	SP-008	DVS-14

GENERAL NOTES:

- A. FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS 50489-530-020-PID-1104.001 & 1105.001.  
B. ALL EQUIPMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 530-  
C. FOR ESDV, SDOV AND MOV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001 & 1107.001.  
D. FOR MISCELLANEOUS PIPING DETAILS SEE DRAWINGS 50489-530-020-PID-1108.001.  
E. FOR TYPICAL VALVING, DRAINAGE AND GENERAL ARRANGEMENT OF LEVEL INSTRUMENTATION, PUMPS AND CONTROL VALVES SEE DRAWING 50489-530-020-PID-1109.001.

NOTES:

1. UV/IR FLAME DETECTORS AUTOMATICALLY DETECT FIRE AND WHEN ACTIVATED A SIGNAL IS SENT TO THE F&G PANEL IN THE CCR.  
2. AIR SET IS FITTED WITH AIR FILTER, REGULATOR AND PI.  
3. RO SUPPLIED TO GIVE PRESSURE/LOSS CHARACTERISTICS OF THE DELUGE VALVE.  
4. 4 WAY SUCTION COLLECTION HEAD IS INSTALLED TO ALLOW SECONDARY SUPPLY OF WATER TO DELUGE SYSTEM.  
5. DELUGE VALVE IS DIAPHRAGM TYPE DESIGNED FOR DELUGE OPERATION AND BE UL LISTED AND FM APPROVED  
6. TRIGGER HEAD CONFIGURATION  
1/2" FUSABLE PLUGS OVER PROTECTED EQUIPMENT ON A GENERAL 3 x 3 METRE MATRIX  
7. 2 VALVES REQUIRED IN BYPASS LINE TO PREVENT UNNECESSARY LOSS OF WATER DUE TO GATE VALVE PASSING.  
8. ADEQUATE DRAINAGE IS PROVIDED AROUND DELUGE SYSTEM TO AVOID ACCUMULATION OF WATER AROUND THE EQUIPMENT  
9. PROVISION IS MADE FOR PRESSURE TESTING AS PER NFPA 15 CLAUSE NO. 6.4.4 & 6.4.5 NEAR THE HYDRAULICAL REMOTEST NOZZLE  
10. DELUGE VALVES ARE HELD CLOSED BY AIR PRESSURE SUPPLIED FROM THE INSTRUMENT AIR SYSTEM.  
11. DELUGE VALVES SHALL FULLY OPEN WITHIN 10 SECONDS ON REMOVE OF INSTRUMENT AIR BY:  
A. REMOTE OPERATION OF A PUSH BUTTON AT THE MAIN FIRE AND GAS PENEL, LOCATED IN THE CONTROL ROOM, TO ENERGIZE A SOLENOID VALVES IN INSTRUMENT AIR SUPPLY TO DELUGE VALVE.  
B. LOCAL OPERATION OF A MECHANICAL AIR RELEASE UNIT OF DELUGE VALVE STATION.  
12. SPRAY NOZZLE IS CONSTRUCTED FROM MAIN BRASS.  
13. DELUGE VALVE STATIONS ARE PROTECTED FROM RADIATED HEAT BY THE PROVISION OF METAL RADIATION SHIELDS.  
14. PIPE MOC (AS PER KOC-L-009):  
3" SIZE AND BELOW : 90-10 COPPER NIKEL TO ASTM B 466 UNS.  
4" SIZE AND ABOVE : CARBON STEEL API 5L GRB WITH PHENOLIC EPOXY COATING.  
15. FLANGE INSULATION KITS ARE PROVIDED AT DISSIMILAR METAL JUNCTIONS HAVING ELECTROMOTIVE POTENTIAL DIFFERENCE GREATER THAN 0.05V AS PER CLAUSE 7.3.1.17 OF KOC-L-009.  
16. INTERNALLY COATED UG PIPING ARE FLANGED SPOOLS AS PER KOC-L-009.  
17. FLUSHING DRAIN PIT IS ACCESSIBLE FROM GROUND LEVEL.  
18. THE UNDERGROUND SECTION ARE EXTERNALLY COATED WITH 3 LAYERS EXTRUDED HDPE AS PERKOC-P004 PART 6, REV-2 WITH THE INTERNAL PHENOLIC EPOXY ON THE PIPING SHALL BE AS PER KOC-P-005 REV-1.  
19. THE ABOVE GROUND PIPING SECTION ARE COATED WITH SYSTEM A1-1 OF KOC-P-001 REV 3  
20. TOP CHAMBER OF DELUGE VALVE IS CONNECTED TO WATER LINE & TO WATER INLET OF ACTUATOR WHEN THE AIR PRESSURE DROPS DUE TO DETECTION OF FIRE THE DIAPHRAGM OF ACTUATOR IS LIFTED AND ALLOWS THE WATER PRESSURIZING DIAPHRAGM OF DELUGE VALVE TOP CHAMBER TO DRAIN. THIS RELEASES THE PRESSURE IN THE TOP CHAMBER OF DELUGE VALVE ALLOWING THE DELUGE VALVE TO OPEN.

LEGENDS:

SYMBOL	DESCRIPTION
FW	FIRE WATER PIPING
SPRAY NOZZLE	SPRAY NOZZLE
REDUCER	REDUCER
GATE VALVE	GATE VALVE
END CAP	END CAP

REFERENCE DRAWINGS:

50489-530-000-CAL-1007	HYDRAULIC CALCULATION FOR WATER SPRAY SYSTEM FOR INLET FUEL GAS K.O. DRUM
KOC-L-009	KOC STANDARD FOR FIRE PROTECTION SYSTEMS
50489-530-000-LAD-1065	FIRE WATER NETWORK LAYOUT
50489-530-000-LAD-1070	FIRE WATER DETAIL ARRANGEMENT DRAWING FOR WATER SPRAY SYSTEM FOR INLET FUEL GAS KOD

REV.	DESCRIPTION	DRAWN	CHECKED	HOD APPRD.	PEM APPRD.	DATE
20	ISSUED FOR AS-BUILT	PAK/DEU	NIJ	SRA	RAK	12.08.18
01	RE-ISSUED FOR CONSTRUCTION	PAK/DEU	NIJ	SRA	RAK	16.07.16
0	ISSUED FOR CONSTRUCTION	PAK/DEU	NIJ	SRA	RAK	13.05.16
B	ISSUED "INCORPORATED CLIENT COMMENTS"	PAK/DEU	NIJ	SRA	RAK	15.10.15
A	ISSUED FOR APPROVAL	PAK/DEU	NIJ	SRA	RAK	10.04.15

CONTRACTOR REVISION

**KUWAIT OIL CO. K. S. C.**  **شركة نفط الكويت ش.م.ك.**  
A Subsidiary of Kuwait Petroleum Corporation

CONTRACTOR DETAILS:-  **LARSEN & TOUBRO LIMITED FARIDABAD**

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

DOCUMENT TITLE:- PIPING & INSTRUMENTATION DIAGRAM  
DELUGE WATER SPRAY SYSTEM FOR INLET FUEL GAS K.O. DRUM 530-V-031

PROJECT NO.	DRAWING NO.
CONTRACTOR DRG. NO.	REV. KOC DRG. NO.
50489-530-000-PID-1119.001	Z0
SHEET NO. 1 OF 2	SHEET NO.
COMPANY DRG. NO.	REV.
SHEET NO.	