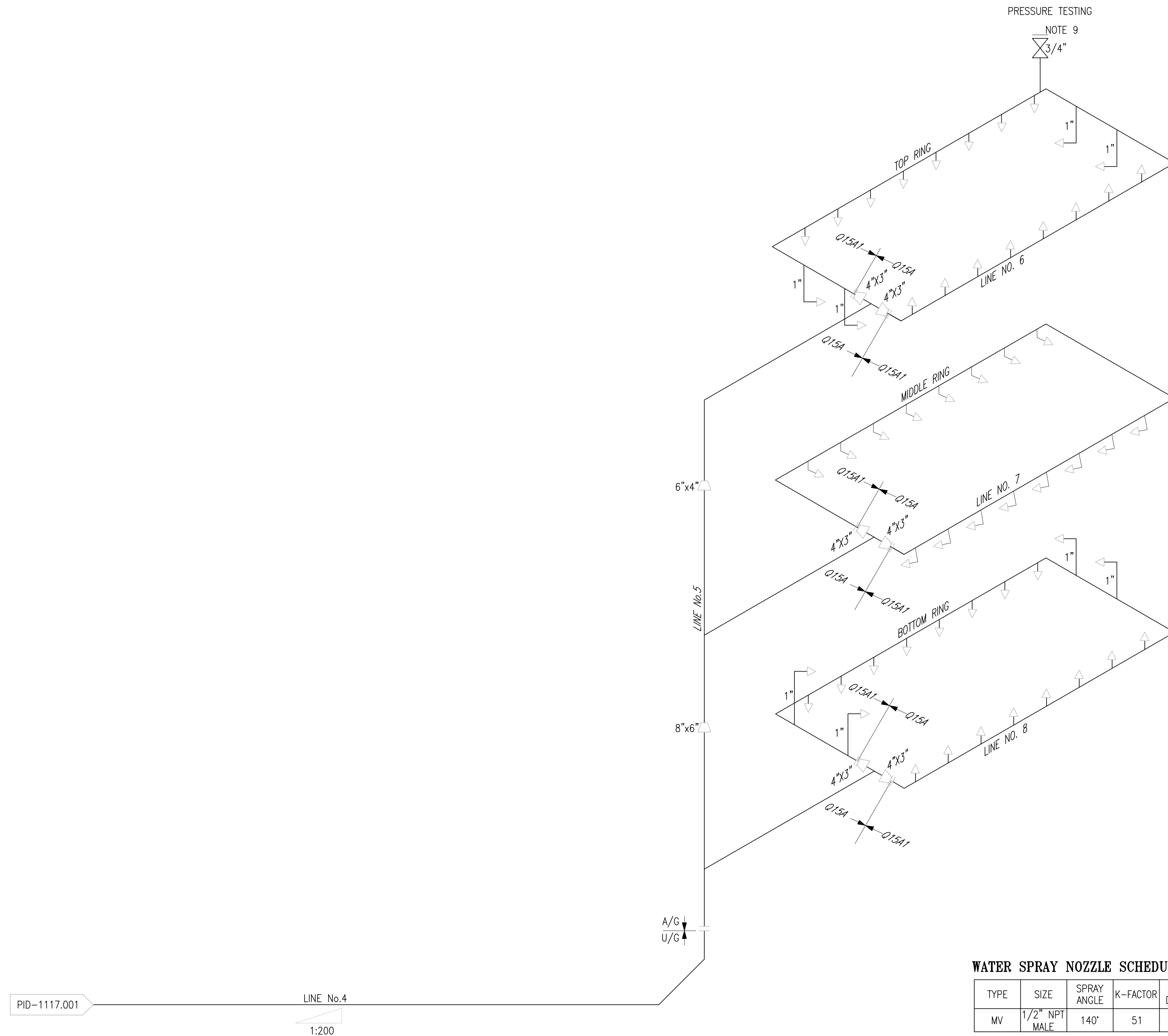


530-C-101/C-201/C-301  
(LP SEPARATOR)  
SIZE mm (ft-in) : 4100 (13'-5") ID X 16400 (53'-10") H



LP SEPARATOR	LINE No.5	LINE No.6	LINE No.7	LINE No.8
530-C-101	8"-WF-9075-Q15A	3"-WF-9076-Q15A1	3"-WF-9077-Q15A1	3"-WF-9078-Q15A1
530-C-201	8"-WF-9083-Q15A	3"-WF-9084-Q15A1	3"-WF-9085-Q15A1	3"-WF-9086-Q15A1
530-C-301	8"-WF-9091-Q15A	3"-WF-9092-Q15A1	3"-WF-9093-Q15A1	3"-WF-9094-Q15A1

WATER SPRAY NOZZLE SCHEDULE					
TYPE	SIZE	SPRAY ANGLE	K-FACTOR	FLOW @2.0 Bar DISCHARGE PRESSURE	QUANTITY
MV	1/2" NPT MALE	140°	51	72.12 LPM	56 OF EACH SEPARATOR

DESIGN OBJECTIVE : FIRE EXTINGUISHMENT & EXPOSURE PROTECTION	
DESIGN CALCULATION	
LP SEPARATOR SURFACE AREA TO BE PROVIDED	263.92 m <sup>2</sup>
WATER APPLICATION RATE (L/MIN/m <sup>2</sup> )	10.2
THEORETICAL FLOW (LPM)	2691.98
HYDRAULICALLY CALCULATED FLOW (LPM) REFER 50489-530-000-LAL-1003	4357

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, SBDV AND MOV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001 & 1107.001  
D. FOR MISCELLANEOUS PIPING DETAILS SEE DRAWING 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 THECCR.
2. AIR SET IS FITTED WITH AIR FILTER, REGULATOR AND PI.
3. RO SUPPLIED TO GIVE PRESSURE/LOSS CHARACTERISTICS OF THE DELUGE VALVE.
4. WAY SUCTION COLLECTION HEAD IS INSTALLED TO ALLOW SECONDARY
4. 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 ARE MADE FOR PRESSURE TESTING AS PER NFPA 15 CLAUSE NO. 6.4.4.1 & 6.4.4.5 NEAR THE HYDRAULIC REMOTE TEST NOZZLE.
10. DELUGE VALVE ARE HELD CLOSED BY AIR PRESSURE SUPPLIED FROM THE INSTRUMENT AIR SYSTEM.
11. DELUGE VALVE 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 MAINE 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 UNLS.
  - 4" SIZE AND ABOVE : CARBON STEEL API 5L GR 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 UNDER GROUND SECTION ARE EXTERNALLY COATED WITH 3 LAYERS EXTROD 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 AI-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
	FIRE WATER PIPING
	SPRAY NOZZLE
	REDUCER
	GATE VALVE
	END CAP

**REFERENCE DRAWINGS:**

50489-530-000-CAL-1003	HYDRAULIC CALCULATION FOR WATER SPRAY SYSTEM FOR LP WET CRUDE SEPARATOR
KOC-L-009	KOC STANDARD FOR FIRE PROTECTION SYSTEMS
50489-530-000-LAD-1065	FIRE WATER NETWORK LAYOUT
50489-530-000-LAD-1066	FIRE WATER SPRAY SYSTEM LAYOUT FOR LP SEPARATOR

NO	ISSUED FOR AS-BUILT	PAK/DEU	NLJ	SRA	RAK	09.09.18
0	ISSUED FOR CONSTRUCTION	PAK/DEU	NLJ	SRA	RAK	13.05.16
A	ISSUED "INCORPORATED CLIENT COMMENTS"	PAK/DEU	NLJ	SRA	RAK	15.10.15
B	ISSUED FOR APPROVAL	PAK/DEU	NLJ	SRA	RAK	10.04.15
REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE
				APPR.		

CONTRACTOR REVISION


**KUWAIT OIL CO.**  
**K. S. C.**
**شركة نفط الكويت**  
**ش.م.ك.**  
 إيسى شركة نفط الكويت  
 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 LP WET CRUDE  
SEPARATOR (530-C-101/201/301)

PROJECT NO.	DRAWING NO.			
EF1902	CONTRACTOR DRG. NO.	REV.	KOC DRG. NO.	REV.
	50489-530-000-PID-1117.002	20		
	SHEET NO. 2 OF 2		SHEET NO.	
	COMPANY DRG. NO.	REV.		
	SHEET NO.			