



TYPICAL SKID OF DELUGE VALVE FOR TANK VAPOUR COMPRESSOR (530-K-101/530-K-201/530-K-301)

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. 9	LINE NO. 10	LINE NO. 11	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 P	TAG AA	DV SKID NO.	SUCTION COLLECTION HEAD NO.
COMPRESSOR (530-K-101)	21	50	140°	21	4"-WF-9286-Q35A	4"-WF-9261-Q35A	4"-WF-9262-Q15A	4"-WF-9260-Q35A	1"-AI-1775-S10A	1/2"-AI-9019-S10A	9023A	9023B	9023C	9023D	9023E	9023F	9023G	9023H	9023I	9023J	9023K	9023L	9023M	9023N	9023O	9023P	SP-013	DVS-23	SCH-27
COMPRESSOR (530-K-201)	21	50	140°	21	4"-WF-9277-Q35A	4"-WF-9270-Q35A	4"-WF-9271-Q15A	4"-WF-9269-Q35A	1"-AI-1774-S10A	1/2"-AI-9020-S10A	9024A	9024B	9024C	9024D	9024E	9024F	9024G	9024H	9024I	9024J	9024K	9024L	9024M	9024N	9024O	9024P	SP-014	DVS-24	SCH-28
COMPRESSOR (530-K-301)	21	50	140°	21	4"-WF-9268-Q35A	4"-WF-9279-Q35A	4"-WF-9280-Q15A	4"-WF-9278-Q35A	1"-AI-1773-S10A	1/2"-AI-9021-S10A	9025B	9025B	9025C	9025D	9025E	9025F	9025G	9025H	9025I	9025J	9025K	9025L	9025M	9025N	9025O	9025P	SP-015	DVS-25	SCH-29

GENERAL NOTES:

- FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS 50489-530-020-PID-1104.001 & 1105.001.
  - ALL EQUIPMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 530-.
  - FOR ESDV, SBDV AND MOV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.001 & 1107.001.
  - FOR MISCELLANEOUS PIPING DETAILS SEE DRAWING 50489-530-020-PID-1108.001.
  - FOR TYPICAL VALVING, DRAINAGE AND GENERAL ARRANGEMENT OF LEVEL INSTRUMENTATION, PUMPS AND CONTROL VALVES SEE DRAWING 50489-530-020-PID-1109.001.
- NOTES:
- UV/IR FLAME DETECTORS AUTOMATICALLY DETECT FIRE AND WHEN ACTIVATED A SIGNAL IS SENT TO THE F&G PANEL IN THE CCR.
  - AIR SET IS FITTED WITH AIR FILTER, REGULATOR AND PI.
  - RO SUPPLIED TO GIVE PRESSURE/LOSS CHARACTERISTICS OF THE DELUGE VALVE.
  - 4 WAY SUCTION COLLECTION HEAD IS INSTALLED TO ALLOW SECONDARY SUPPLY OF WATER TO DELUGE SYSTEM.
  - DELUGE VALVE IS DIAPHRAGM TYPE DESIGNED FOR DELUGE OPERATION AND BE UL LISTED AND FM APPROVED
  - TRIGGER HEAD CONFIGURATION  
1/2" FUSABLE PLUGS OVER PROTECTED EQUIPMENT ON A GENERAL 3 x 3 METRE MATRIX
  - 2 VALVES REQUIRED IN BYPASS LINE TO PREVENT UNNECESSARY LOSS OF WATER DUE TO GATE VALVE PASSING.
  - ADEQUATE DRAINAGE IS PROVIDED AROUND DELUGE SYSTEM TO AVOID ACCUMULATION OF WATER AROUND THE EQUIPMENT
  - PROVISION ARE MADE FOR PRESSURE TESTING AS PER NFPA 15 CLAUSE NO. 6.4.4 & 6.4.4.5 NEAR THE HYDRAULICALLY REMOTEST NOZZLE.
  - DELUGE VALVES SHALL BE HELD CLOSED BY AIR PRESSURE SUPPLIED FROM THE INSTRUMENT AIR SYSTEM.
  - 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 PANEL, 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.
  - SPRAY NOZZLE IS CONSTRUCTED FROM MAINE BRASS.
  - DELUGE VALVE STATIONS ARE PROTECTED FROM RADIATED HEAT BY THE PROVISION OF METAL RADIATION SHIELDS.
  - 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.
  - 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.
  - INTERNALLY COATED UG PIPING ARE FLANGED SPOOLS AS PER KOC-L-009.
  - FLUSHING DRAIN PIT IS ACCESSIBLE FROM GROUND LEVEL.
  - THE UNDERGROUND SECTION SHALL BE EXTERNALLY COATED WITH 3 LAYERS EXTRDDED 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.
  - THE ABOVE GROUND PIPING SECTION ARE COATED WITH SYSTEM A1-1 OF KOC-P-001 REV 3
  - 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 DIAPHRAM 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-1015	HYDRAULIC CALCULATION FOR WATER SPRAY SYSTEM FOR TANK VAPOUR COMPRESSOR
KOC-L-009	KOC STANDARD FOR FIRE PROTECTION SYSTEMS
50489-530-000-LAD-1065	FIRE WATER NETWORK LAYOUT

REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE
01	ISSUED FOR AS-BUILT	PAK/DEU	NJ	SRA	RAK	12.08.18
01	RE-ISSUED FOR CONSTRUCTION	PAK/DEU	NJ	SRA	RAK	16.07.16
0	ISSUED FOR CONSTRUCTION	PAK/DEU	NJ	SRA	RAK	13.05.16
B	ISSUED FOR APPROVAL	PAK/DEU	NJ	SRA	RAK	10.12.15
A	ISSUED FOR APPROVAL	PAK/DEU	NJ	SRA	RAK	20.04.15

CONTRACTOR REVISION



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 TANK VAPOUR COMPRESSOR (530-K-101/201/301)**

PROJECT NO.	DRAWING NO.		
EF1902	CONTRACTOR DRG. NO.	REV.	KOC DRG. NO.
	50489-530-000-PID-1127.001	Z0	
	SHEET NO. 1 OF 2	SHEET NO.	
	COMPANY DRG. NO.	REV.	