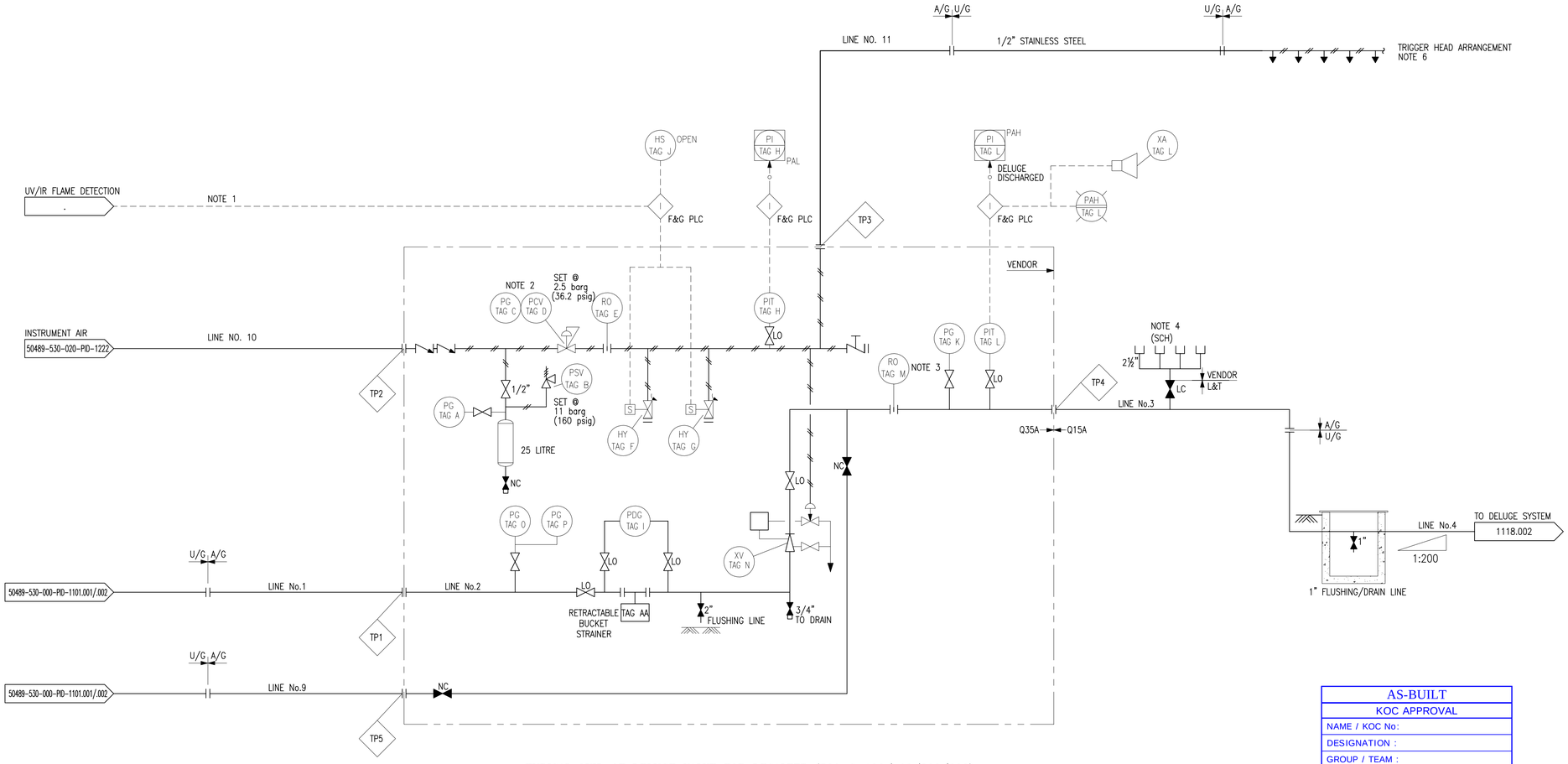


TYPICAL SKID OF DELUGE VALVE FOR DESALTER (530-C-102/103/202/203)

| 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.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. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESALTER (530-C-102) | 56 | 50 | 140° | 56 | 8"-WF-9525-Q35A | 8"-WF-9096-Q35A | 8"-WF-9097-Q15A | 8"-WF-9098-Q15A | 8"-WF-9095-Q35A | 1"-AI-1762-S10A | 1/2"-AI-9012-S10A | 9012A | 9012B | 9012C | 9012D | 9012E | 9012F | 9012G | 9012H | 9012I | 9012J | 9012K | 9012L | 9012M | 9012N | 9012O | 9012P | SP-004 | DVS-10 | SCH-14 |
| DESALTER (530-C-103) | 56 | 50 | 140° | 56 | 8"-WF-9526-Q35A | 8"-WF-9100-Q35A | 8"-WF-9101-Q15A | 8"-WF-9102-Q15A | 8"-WF-9099-Q35A | 1"-AI-1763-S10A | 1/2"-AI-9013-S10A | 9013A | 9013B | 9013C | 9013D | 9013E | 9013F | 9013G | 9013H | 9013I | 9013J | 9013K | 9013L | 9013M | 9013N | 9013O | 9013P | SP-005 | DVS-11 | SCH-15 |
| DESALTER (530-C-202) | 56 | 50 | 140° | 56 | 8"-WF-9137-Q35A | 8"-WF-9104-Q35A | 8"-WF-9105-Q15A | 8"-WF-9106-Q15A | 8"-WF-9103-Q35A | 1"-AI-1765-S10A | 1/2"-AI-9014-S10A | 9014A | 9014B | 9014C | 9014D | 9014E | 9014F | 9014G | 9014H | 9014I | 9014J | 9014K | 9014L | 9014M | 9014N | 9014O | 9014P | SP-006 | DVS-12 | SCH-16 |
| DESALTER (530-C-203) | 56 | 50 | 140° | 56 | 8"-WF-9138-Q35A | 8"-WF-9108-Q35A | 8"-WF-9109-Q15A | 8"-WF-9110-Q15A | 8"-WF-9107-Q35A | 1"-AI-1764-S10A | 1/2"-AI-9015-S10A | 9015A | 9015B | 9015C | 9015D | 9015E | 9015F | 9015G | 9015H | 9015I | 9015J | 9015K | 9015L | 9015M | 9015N | 9015O | 9015P | SP-007 | DVS-13 | SCH-17 |

## 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 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
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 & 6.4.4.5 NEAR THE HYDRAULICALY 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 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 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 EXTRDED 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 DIAPHRAM OF DELUGE VALVE TOP CHAMBER TO DRAIN. THIS RELESES THE PRESSURE IN THE TOP CHAMBER OF DELUGE VALVE ALLOWING THE DELUGE VALVE TO OPEN.

**LEGENDS:**

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

**REFERENCE DRAWINGS:**

| | |
|---|---|
| 50489-530-000-CAL-1004 | HYDRAULIC CALCULATION FOR WATER SPRAY SYSTEM FOR FIRST STAGE AND SECOND STAGE DESALTER |
| KOC-L-009 | KOC STANDARD FOR FIRE PROTECTION SYSTEM |
| 50489-530-000-LAD-1065 | FIRE WATER NETWORK LAYOUT |
| 50489-530-000-LAD-1067 | FIRE WATER DETAIL ARRANGEMENT DRAWING FOR WATER SPRAY SYSTEM FOR DESALTER |

| REV. | DESCRIPTION | DRAWN | CHECKED | HOD | PEM APPRD. | DATE |
|---|---|---|---|---|---|---|
| Z0 | 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

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/ DIVISON : ENGINEERING

KUWAIT OIL CO. K. S. C.
شركة نفط الكويت ش.م.ك.
Kuwait Oil Company
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 1ST STAGE & 2ND STAGE DESALTER (530-C-102/103/202/203)

PROJECT NO. EF1902
DRAWING NO.
CONTRACTOR DRG. NO. 50489-530-000-PID-1118.001 REV. Z0
KOC DRG. NO. REV.
SHEET NO. 1 OF 2
COMPANY DRG. NO. REV.
SHEET NO.

A1