

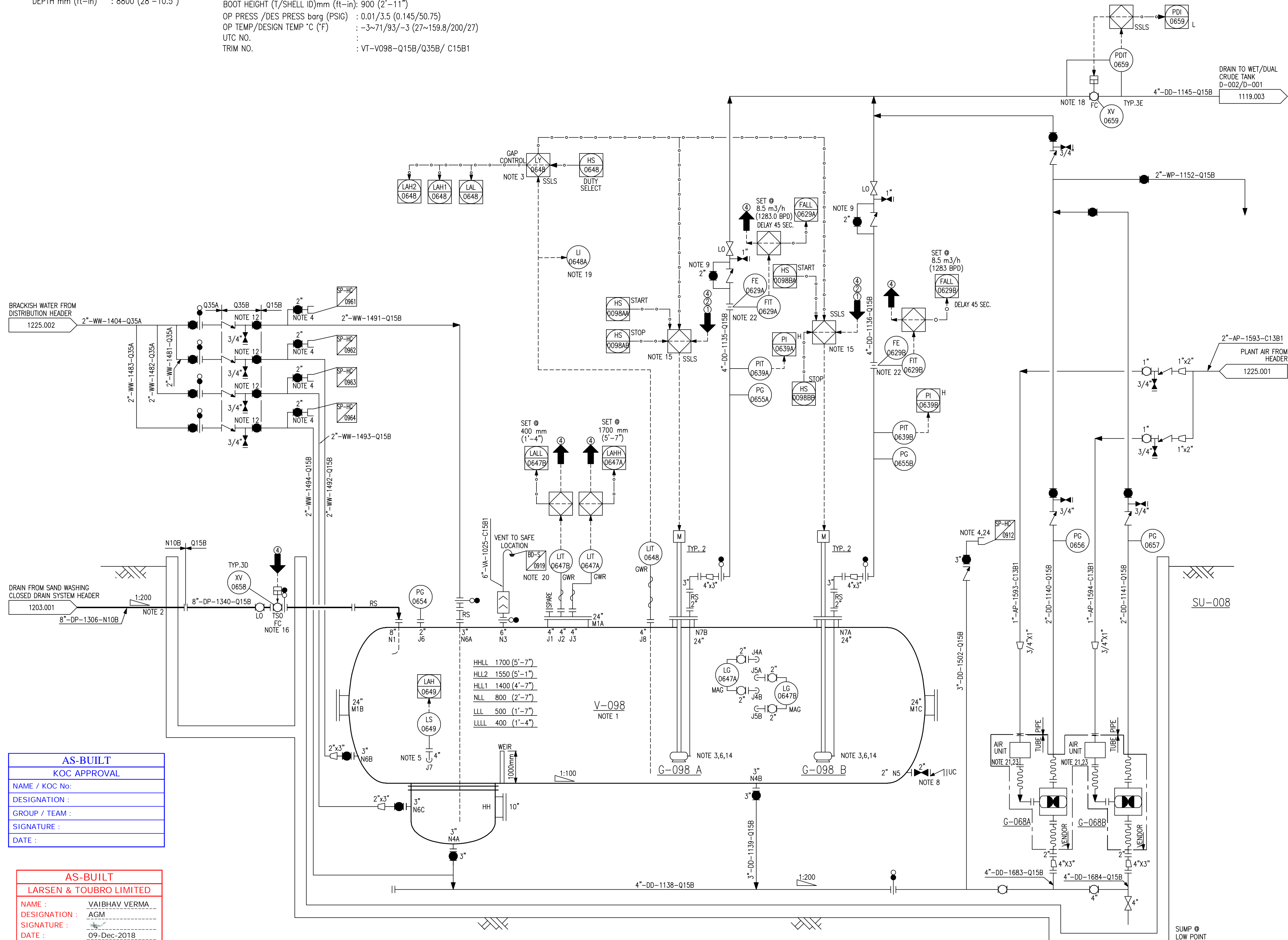
SU-008

SAND WASHING DRAIN VESSEL PIT  
CAPACITY m3 (BBLs) : 686.4 (4317.3)  
LENGTH mm (ft-in) : 13000 (42'-8")  
WIDTH mm (ft-in) : 6000 (2'-1.6")  
DEPTH mm (ft-in) : 8800 (28'-10.5")

V-098

SAND WASHING DRAIN VESSEL

CAPACITY m3 (BBLs) : 22.5 (141.5)  
ID mm (ft-in) : 2000 (6'-6")  
LENGTH (T/T) mm (ft-in) : 6500 (21'-4")  
BOOT ID mm (ft-in) : 1000 (3'-3")  
BOOT HEIGHT (T/SHELL ID)mm (ft-in): 900 (2'-11")  
OP PRESS /DES PRESS barg (PSIG) : 0.01/3.5 (0.145/50.75)  
OP TEMP /DESIGN TEMP °C (°F) : -3~71/93/-3 (27~159.8/200/27)  
UTC NO. :  
TRIM NO. : VT-V098-Q15B/Q35B/ C15B1



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

AS-BUILT
LARSEN & TOUBRO LIMITED
NAME : VAIBHAV VERMA
DESIGNATION : AGM
SIGNATURE :
DATE : 09-Dec-2018
DEPT/ DIVISION : ENGINEERING

G-068 A/B NOTE 17  
SAND WASHING DRAIN VESSEL PIT PUMP

FLOWRATE m3/hr (BPD) : 6 (905.8)  
DRIVER POWER KW (HP) : N/A  
DIFF PRESS ΔP barg (PSIG) : 5 (72.5)  
S.G. @ OP OT : 0.984~1.174  
FLUID VISCOSITY @ PT CP : 51.66  
OP PRESS/DES PRESS barg (PSIG) : 5/11.55 (72.5/167.52)  
OP TEMP/DESIGN TEMP °C (°F) : 15~55/93/-3 (59~131/200/27)  
UTC NO. :  
TRIM NO. : G061A/B-Q15B

G-098 A/B NOTE 17  
SAND WASHING DRAIN VESSEL PUMP

FLOWRATE m3/hr (BPD) : 28 (4227)  
DRIVER POWER KW (HP) : 30 (40.2)  
DIFF PRESS ΔP barg (PSIG) : 5.29 (76.7)  
S.G. @ OP OT : 0.847~1.17  
FLUID VISCOSITY @ PT CP : 51.66  
OP PRESS/DES PRESS barg (PSIG) : 5.3/14.4 (76.25/208.8)  
OP TEMP/DESIGN TEMP °C (°F) : -3~71/93/-3 (27~159.8/200/27)  
UTC NO. :  
TRIM NO. : G098A/B-Q15B

## 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 SBDV, XV, MOV & ESDV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.002, .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 O, 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:

- VESSEL IS LOCATED BELOW GRADE IN A PIT TO ACCOMMODATE GRAVITY DRAINS.
- DRAIN LINES AND HEADERS FROM ABOVE GROUND EQUIPMENT RUN UNDERGROUND WITH A SLOPE TO THE DRAIN SUMP FOR SELF DRAINING.
- G-098 A/B PUMPS ARE GAP CONTROLLED AS FOLLOWS:
  - LAH2 SET @ 1550 mm (5'-1") : START STANDBY PUMP BY SSLS
  - LAH1 SET @ 1400 mm (4'-7") : START DUTY PUMP BY SSLS
  - LAL SET @ 500 mm (1'-7") : STOP DUTY STANDBY PUMPS BY SSLS
- FAILURE OF DUTY PUMP : START STANDBY PUMP, DUTY PUMP IN LOCAL, START STANDBY PUMP ON DEMAND
- HHLL IN WET OR DRY/WET TANKS : INHIBIT START OF PUMPS
- STOP DUTY AND STANDBY PUMPS
- CONNECTION FOR REMOVAL OF SLUDGE/BACK FLUSHING.
- TUNING FORK TYPE INSTRUMENT TO DETECT SAND BUILD UP. (SET AT 700mm)
- PUMPS ARE REQUIRED TO HANDLE SAND PARTICLES.
- ALL LOCAL INSTRUMENTS ARE ABOVE GROUND LEVEL AND ACCESSIBLE AT A SAFE LOCATION.
- USED FOR UTILITY CONNECTION.
- FOR BACK FLUSHING OF PUMP WHEN PUMP IS TRIPPED BY STRAINER PLUGGING.
- (a) FLUSHING CONNECTIONS ARE PROVIDED AT END OF COLLECTION HEADERS AND AT ANY CHANGES IN DIRECTION OF UNDERGROUND PIPE OVER 90°.
- (b) ADDITIONAL CLEANING FACILITIES ARE PROVIDED AT ANY CHANGE IN DIRECTION 45° AND AT A MAXIMUM OF 60 METRE INTERVALS ON STRAIGHT RUN.
- (c) EQUIPMENT ISOLATION VALVES ARE SHOWN ON UPSTREAM P&ID'S.
- DELETED
- SPRING LOADED BALL VALVE.
- DELETED
- MINIMUM SUBMERGENCE IS 380mm FROM THE BOTTOM OF THE VESSEL.
- DURING SHUTDOWN LEVEL-1 AND 2, EMERGENCY GENERATOR SUPPLIES POWER TO THESE PUMPS, SO PUMPS CAN RUN AFTER THE RELATIVE ESD LOGICS ARE RESET.
- WHEN LEVEL MEASURED BY LIT-0648 IS COMING AT LOW, VALVE IS RESET AUTOMATICALLY.
- ONE PUMP OPERATING AND ONE PUMP ON STAND-BY.
- A. TO PREVENT BACK FLOW VALVE TO OPEN WHEN UPSTREAM PRESSURE EXCEEDS DOWNSTREAM PRESSURE.
- B. WHEN PUMP(S) ARE RUNNING PDAL ACROSS XV SHALL NOT STOP THE PUMPS.
- C. NO PUMP RUNNING AUTOMATICALLY CLOSE THE XV.
- D. PUMP(S) RUNNING & IN FIXED TIME IF XV FEED BACK IS NOT RECEIVED, STOP THE PUMP.
- LOCATE AT GRADE.
- VENT TO SAFE LOCATION ARE AS PER KOC-G-002.
- AIR UNIT IS KEPT AT PLATFORM OUTSIDE THE PIT.
- STRAIGHT LENGTH REQUIREMENT FOR ORIFICE FLOW METER ARE 20D UPSTREAM & 5D DOWNSTREAM.
- ADEQUATE PIPING SUPPORT IS PROVIDED TO AVOID OR MINIMIZE VIBRATION.
- PIT WATER SHALL BE REMOVED BY VACUUM TRUCK USING SLUDGE / BACK FLUSHING LINE (3"-DD-1502-Q15B).

REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE
Z1	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	09.12.18
Z0	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	23.09.18
02	RE-ISSUED FOR CONSTRUCTION	BAK/SSI	AKG	SRA	RAK	08.12.16
1	RE-ISSUED FOR CONSTRUCTION	PAK/VSA	AKG	SRA	RAK	15.06.16
0	ISSUED FOR CONSTRUCTION	HSB/VSA	AKG	SRA	RAK	29.03.16
D	ISSUED INCORPORATED CLIENT COMMENTS	JSI/CHS	AKG	SRA	RAK	22.12.15
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/ABY	AKG	SRA	RAK	16.10.15
0C	ISSUED INCORPORATED CLIENT COMMENTS	JSI/VSA	AKG	SRA	RAK	01.06.15
B	ISSUED INCORPORATED CLIENT COMMENTS	JSI/VSA	AKG	SRA	RAK	20.02.15
A	ISSUED FOR APPROVAL	JSI/ABY	AKG	SRA	RAK	11.12.14

## CONTRACTOR REVISION

<b>KUWAIT OIL CO.</b> <b>K. S. C.</b>	<b>شركة النفط الكويت</b> <b>ش.م.ك.</b>
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CONTRACTOR DETAILS:-	LARSEN & TOUBRO LIMITED FARIDABAD
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PROJECT TITLE:-	NEW GATHERING CENTRE GC-30 IN NORTH KUWAIT
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DOCUMENT TITLE:-	PIPING & INSTRUMENTATION DIAGRAM SAND WASHING DRAIN VESSEL (V-098) & PUMPS (G-098A/B)
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PROJECT NO.	DRAWING NO.	REV.	KOC DRG. NO.	REV.
EF1902	50489-530-020-PID-1205.005	Z1		
	SHEET NO. 5 OF 12			
	COMPANY DRG. NO.	REV.		
	EF1902-530-DCO-PID-0205.005	A3		
	SHEET NO.			