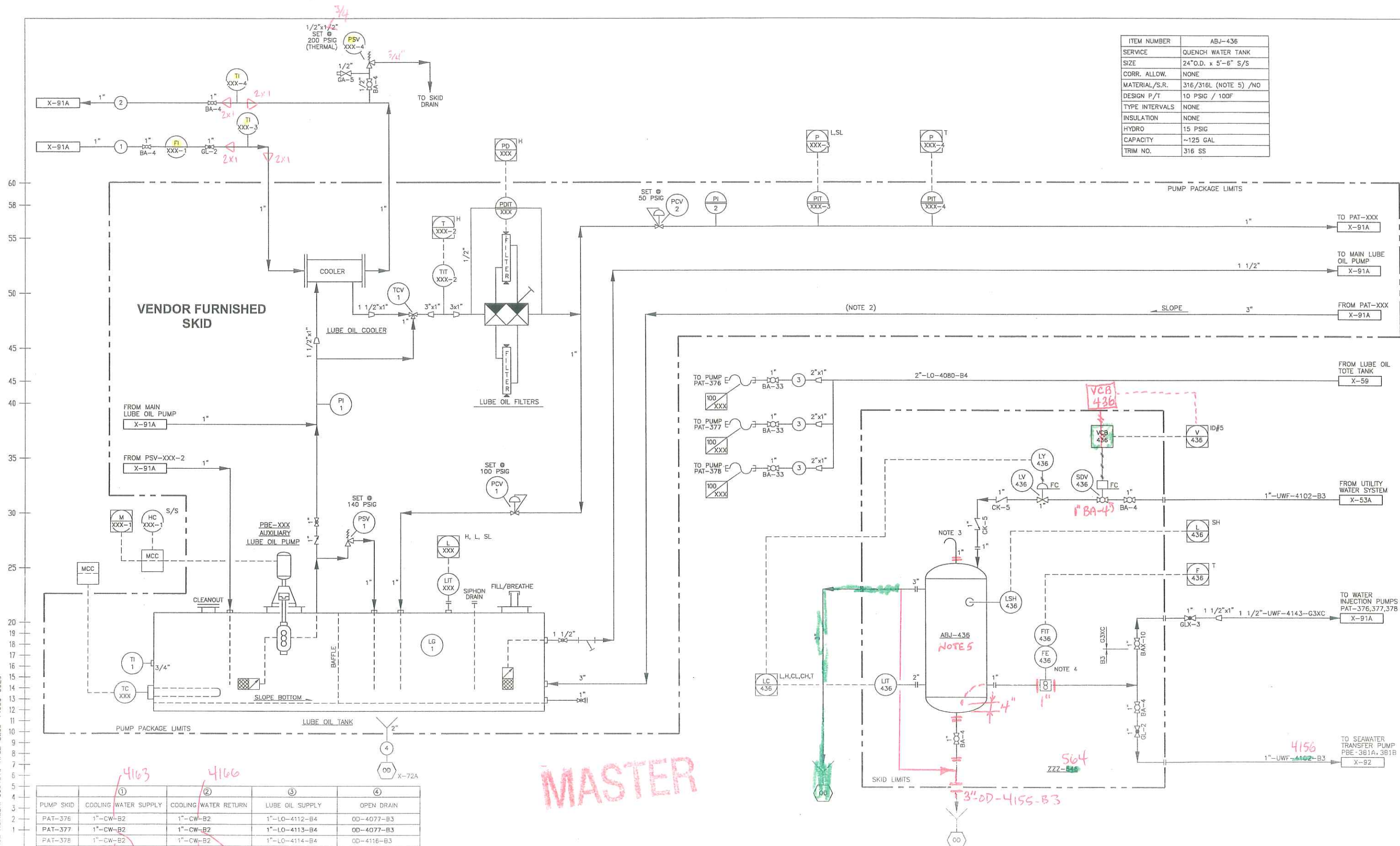


HFGE DOCUMENT CONTROL NUMBER: 0604010-HFGE-3200-14900-0026



PUMP SKID	COOLING WATER SUPPLY	COOLING WATER RETURN	LUBE OIL SUPPLY	OPEN DRAIN
PAT-376	1\"-CW-B2	1\"-CW-B2	1\"-LO-4112-B4	OD-4077-B3
PAT-377	1\"-CW-B2	1\"-CW-B2	1\"-LO-4113-B4	OD-4077-B3
PAT-378	1\"-CW-B2	1\"-CW-B2	1\"-LO-4114-B4	OD-4116-B3

NOTES:

- INSTRUMENT NUMBERS DESIGNATED BY XXX ARE SAME AS ASSOCIATED PUMP SKID NUMBERS (376, 377 OR 378)
- LUBE OIL RETURN LINE SHALL BE CONTINUOUSLY SLOPED BETWEEN PUMP AND MOTOR BEARINGS AND LUBE OIL RESERVOIR AT 3\"/FOOT.
- BUG SCREEN TO BE LOCATED ON THIS VENT.
- PROVIDE 10D UPSTREAM AND 5D DOWNSTREAM STRAIGHT PIPE LENGTH.
- MATERIALS TO BE DUAL CERTIFIED A312 GR. TP316/316L.

ISSUED FOR REVIEW

DATE 11/18/06

HOWI OPERATING "SEAWATER & PRODUCED WATER INJECTION"

HFG Engineering US, Inc.
A HEEREMA GROUP COMPANY

JOB: 06040-02

FILE: 10-406-H03-X-91B

EXXON COMPANY USA
PRODUCTION DEPARTMENT
WESTERN DIVISION

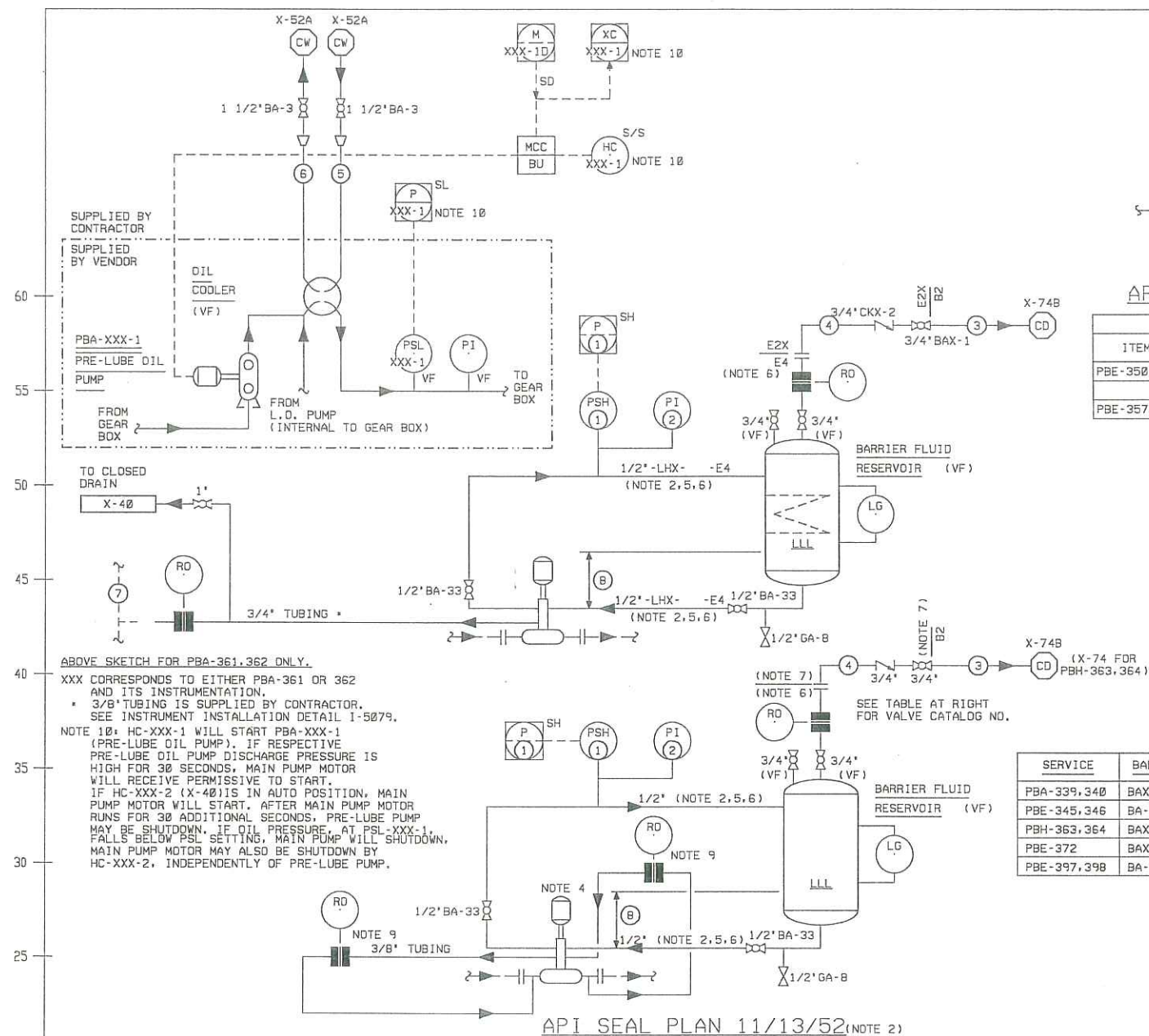
PIPING AND INSTRUMENT DIAGRAM
WATER INJECTION PUMP UTILITIES/DETAILS
(SHEET 2 OF 2)

HARMONY PLATFORM

SANTA YNEZ UNIT SANTA BARBARA CHANNEL

SCALE	REV	YEAR	SIZE	HW	FIELD	OPTION	TYPE	SEQUENCE
NONE	E	2008	E	10	406	H03	X	91

DESIGNED BY: BLJ DRAWN BY: FC CHECKED BY: DEN ENGINEERING CHECK: MCL



ITEM NUMBER	SERVICE	PSH- (1)	PI- (2)	LINE NO.	PLAN 13 TIE-IN (7)	MIN. LIQUID LV (8)	BARRIER FLUID	P&ID NO.
PBA-339, 340	STV SCRUBBER PUMP	339, 340	339-3, 340-3	(3) 3/4" - CD-1909-B2 (4) 3/4" - WDX-1419-B3X	-	2'-0"	GLYCOL/WATER	X-30
PBE-345, 346	HEATING OIL CIRC. PUMP	345, 346	345-3, 346-3	(3) 3/4" - CD-1838-B2 (4) 3/4" - HO-2532-C2	-	4'-0"	TERESSO 32	X-89
PBA-361	DEPROPANIZER BOTTOMS PUMP	361	361-3	(3) 3/4" - CD-1847-B2 (4) 3/4" - LHX-1019-E2X (5) 1" - CW-2125-B2 (6) 1" - CW-2151-B2	3" - LHX-1014-E2X	4'-6"	GLYCOL/WATER	X-40
PBA-362	DEPROPANIZER BOTTOMS PUMP	362	362-3	(3) 3/4" - CD-1847-B2 (4) 3/4" - LHX-1019-E2X (5) 1" - CW-2125-B2 (6) 1" - CW-2151-B2	3" - LHX-1015-E2X	4'-6"	GLYCOL/WATER	X-40
PBH-363, 364	CLOSED DRAIN SUMP PUMP	363, 364	363-3, 364-3	(3) 3/4" - CD-1893-B2 (4) 3/4" - LHX-1011-B2X	-	2'-0"	GLYCOL/WATER	X-74
PBE-372	WELL CLEANUP SEPARATOR PUMP	372	372-3	(3) 3/4" - CD-1821-B2 (4) 3/4" - EMX-651-B2X	-	2'-0"	GLYCOL/WATER	X-16
PBE-397, 398	AMINE HEATING OIL PUMP	397, 398	397-3, 398-3	(3) 3/4" - CD-1874-B2 (4) 3/4" - HO-2533-C2	-	4'-0"	TERESSO 32	X-66

API SEAL PLAN 02

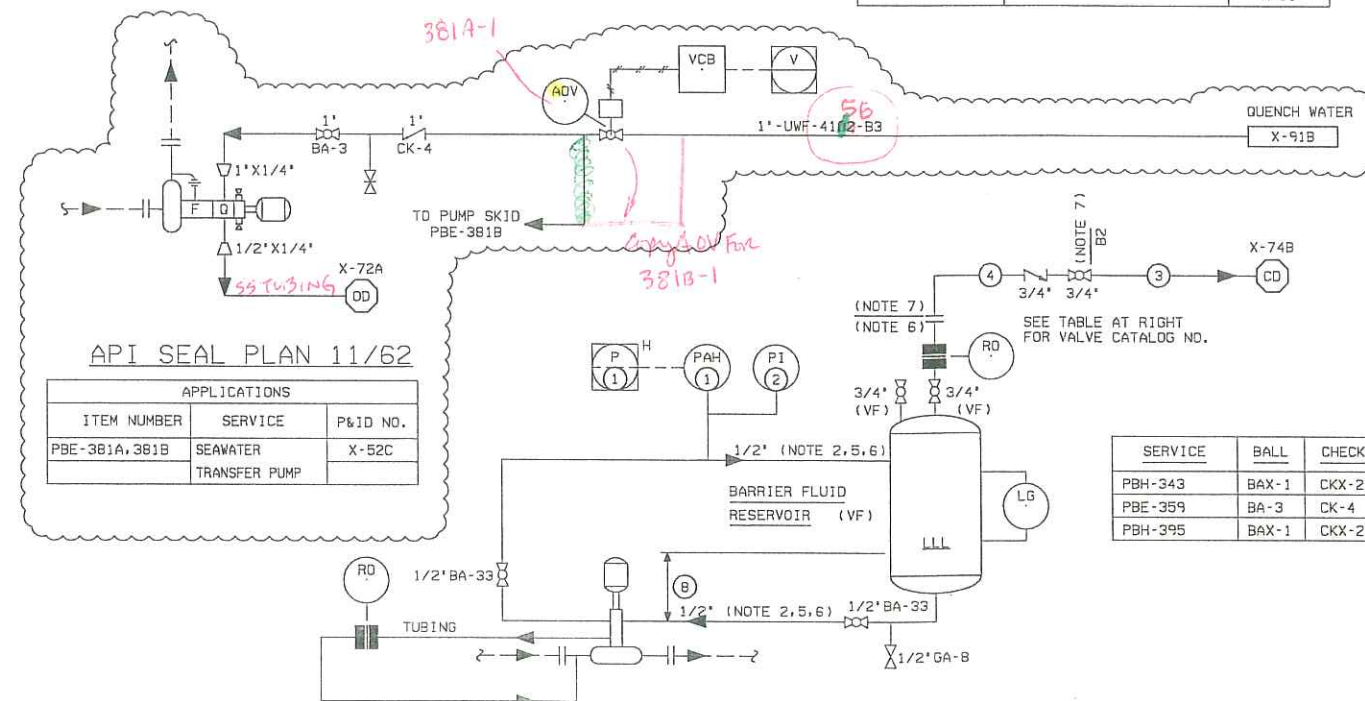
ITEM NUMBER	SERVICE	P&ID NO.
PBE-350, 351, 352	COOLING WATER	X-52
	CIRCULATION PUMP	
PBE-357	FIRE WATER PUMP	X-85

API SEAL PLAN 02

ITEM NUMBER	SERVICE	LINE NO.	P&ID NO.
PBE-348, 349	UTILITY WATER PUMP	(5) 1" - CW-2116-B2 (6) 1" - CW-2142-B2	X-53

API SEAL PLAN 13

ITEM NUMBER	SERVICE	P&ID NO.
PBE-334	DELUGE SYS. FLUSH PUMP	
PBE-337, 338	COMP. JACKET WATER PUMP	X-53
PBE-369, 370	CHILLED WATER PUMP	X-52B
PBE-399	FW SYSTEM PRESSURIZING PUMP	X-87
		X-86



API SEAL PLAN 13/52 (NOTE 2)

ITEM NUMBER	SERVICE	PAH- (1)	PI- (2)	LINE NO.	MIN. LIQUID LV (8)	BARRIER FLUID	P&ID NO.
PBH-343	GLYCOL SUMP PUMP	343	343-3	(3) 3/4" - CD-1894-B2 (4) 3/4" - GLX-1757-B2X	2'-0"	TERESSO 32	X-50
PBE-359	DIESEL FUEL TRANSFER PUMP	359	359-3	(3) 3/4" - CD-1832-B2 (4) 3/4" - DF-3206-B2	2'-0"	GLYCOL/WATER	X-60
PBH-395	AMINE SUMP PUMP	395	395-3	(3) 3/4" - CD-1907-B2 (4) 3/4" - LS-1537-B2X	2'-0"	GLYCOL/WATER	X-68

MASTER

PRELIMINARY
ISSUED FOR CONSTRUCTION

DATE 09/22/08

HOWI OPERATING "SEAWATER & PRODUCED WATER INJECTION"

- PUMP SUCTION AND DISCHARGE PIPING LINE NUMBERS ARE SHOWN ONLY ON THE REFERENCED P&ID FOR EACH PUMP SERVICE.
- API PLAN 52 SEAL PIPING IS SUPPLIED AND INSTALLED BY PUMP CONTRACTOR.
- DCS CONDITION FOR PBH-343, PBE-359 AND PBH-395 SHALL BE ALARM ONLY.
- PUMP TYPE FOR PBH-363, 364 (VERTICAL) AND PBE-372 (HORIZONTAL) IS PROGRESSING CAVITY TYPE. SEAL DEPICTION IS TYPICAL.
- SERVICE DESIGNATION IS IDENTIFIED IN LINE NO. (4) FOR EACH PUMP.

- PIPING SPECIFICATION IS IDENTIFIED IN LINE NO. (4) FOR EACH PUMP, EXCEPT MATERIAL SHALL BE 304 S/S E.G. B4, E4. PIPING SPECIFICATION THUS SHOWN IS AN EXCEPTION TO THE SERVICE.
- PIPING SPECIFICATION IS IDENTIFIED IN LINE NO. (4) FOR EACH PUMP.
- UNTAGGED INSTRUMENTATION AND TUBING (E.G. 3/8" TUBING) IS SUPPLIED BY PUMP VENDOR.
- API SEAL PLAN 11 IS APPLICABLE TO PBH-363, 364 ONLY (API SEAL PLAN 13 IS NOT APPLICABLE) AND IS PROVIDED BY PUMP VENDOR.

NO.	REVISION	DATE	ISS. ENGR.	DESIGN ENGR.	PROJ. ENGR.	EXAM. APP.	AFE CONTROL	SCALE	REV	YEAR	SIZE	DIV	FIELD	OPTION	TYPE	SEQUENCE
4F	PRELIMINARY-HOWI PROJECT	09/22/08	BUB		MLC											
3	REVISED ISSUED FOR CONST.															
2	REVISED ISSUED FOR CONST.	09/24/08	CFL		TO	GLR										
1	REVISED ISSUED FOR CONST.	09/24/08														
0	ISSUED FOR CONSTRUCTION	09/22/08	CFL		DLC	BHV										

HFG Engineering US, Inc.
A HEEREMA GROUP COMPANY

EXXON

EXXON COMPANY USA
PRODUCTION DEPARTMENT
WESTERN DIVISION

PIPING AND INSTRUMENT DIAGRAM
PUMP SEAL
DETAILS
HARMONY PLATFORM
DCS P-2198