8037.W.1202D
FLOTATION UNIT FEED PIT

8037.P.1204 A,D,E&F
FLOTATION FEED PUMPS

FLANGE RATING	: 150#
ELECTRICAL	: 3 PH / 60 CY / 460 V

8037.W.1208
POLLUTION CONTROL PIT

WDE	: 80'-0"
LENGTH	: 230'-0"
SLOPE	: 0.1 %
T.O.C.	: 98.85 (17'-11")
UPSTREAM BOTTOM LEVEL	: 95.34 (6'-5")
DOWNSTREAM BOTTOM LEVEL	: 95.23 (6'-0")
PUMP BOX BOTTOM LEVEL	: 93.39 (0'-0")
LSH	: 97.50 (13'-6")
NLL	: 97.40 (13'-2")
LSLL	: 97.30 (12'-10")

8037.W.1208A
WATER INTAKE PIT

DIMENSION	: 35'-7"L x 15'-0"W x 17'-0"D (PRELIMINARY)
CAPACITY	: 1616 BBL

8037.P.1230 A,B,C&D
EFFLUENT WATER INTAKE PUMP

TYPE	: VERTICAL TURBINE PUMP
CAPACITY	: 1750 GPM
TDH	: 40.45 FT
DIFF. PRESSURE	: 17.01 PSI
MOTOR	: 40 HP/ 480 V/ 3 PH/ 60 HZ
DRIVER	: ELECTRIC MOTOR

8037.P.1251 A&B
POLLUTION CONTROL PIT PUMPS

DUTY	: 2,500 GPM
FLANGE RATING	: 150#
ELECTRICAL	: 3 PH / 60 CY / 460 V

8037.W.1202E
FLOTATION UNIT FEED PIT

8037.P.1204 G,K,L&M
FLOTATION FEED PUMPS

DUTY	: 2500 GPM PER PUMP
FLANGE RATING	: 150 #
PUMP LENGTH	: -
ELECTRICALELECTRICAL	: 3 PH / 60 CY/ 460 V

8037.P.1503A&B
SURGE TANK MAKE UP WATER FEED PUMPS

CAPACITY	: 800 GPM
HEAD	: 106 FT
POWER	: 50 HP

8037.P.0804E
RECOVERED OIL PUMP

CPI CONFIRM

8037.W.1203
PRIMARY BRINE PIT

8037.P.1205 A&B
BRINE RECIRCULATION PUMPS

8037.W.1204 A&B
SECONDARY BRINE PITS

~~8037.P.1206 D&E~~
~~BRINE PUMPS~~

8037.P.1204 G–M
FLOTATION FEED PUMPS

DUTY	: 325 GPM / 158 FT. TDH. (80 PSIG) / 40 HP

~~8037.F.1201 A&B~~
~~BRINE FILTERS~~

8037.MFU.1204 A,B☒E,F&H
MECH. FLOTATION UNITS

TRIM.	: TE-ZW-04-81
CAPACITY	: 170,000 BPD

8037.T.1207
WATER TREATMENT SURGE TANK – 1,600 BBL.

DIM.	: 38'-0"DIA. X 8'-0"H.
TRIM	: TE-T-07-81
DESIGN PRESSURE	: 1.15 OZ/IN² VAC-1.73 OZ/IN²
MAX OPERATING TEMP :	212°F

8037.P.1205A THRU ☒
WATER TREATMENT FEED PUMPS

DUTY	: 3063 GPM / 346FT TDH. (102.9 PSIG) 300 HP.

8037.T.1209
BACKWASH WATER STORAGE TANK – 10,100 BBL.

DIM.	: 42'-6"DIA. X 40'-0"H.
TRIM	: TE-T-08-81
OPER	: ATMOS. @ 195 F
DESIGN PRESSURE	: 1.15 O.Z/IN² VAC. – 1.73 O.Z/IN
DESIGN TEMPERATURE	: 200°F

8037.P.1210 A,B & C
BACKWASH WATER PUMPS

DUTY	: 4500 GMP / 85FT THD. (36 PSIG) 125 HP (EA)

8037.ZF.1201 H,J,N,Q,R,S&T
HORIZONTAL OIL REMOVAL FILTERS

DIMENSIONS	: 8'-0" DIA. x 34'-6" T/T
DESIGN	: 125 PSIG @ 200 F
LINED WITH	: ENGARD 482
FILTER MEDIA	: 1'-3" GARNET (BOTTOM) 1'-9" ANTHRACITE (TOP)
WORKING PRESS	: 75 PSIG @ 100 F TO 200 F

8037.ZF.1201 B,C,D,E,F☒K,L,M&P
VERTICAL OIL REMOVAL FILTERS

DIMENSIONS	: 14'-0" DIA. x 21'-1" H
DESIGN	: 125 PSIG
WORKING	: 80 PSIG
LINED WITH	: CALTEX SPEC. EMS-S-4743 COATING SYSTEM 8.6
FILTER MEDIA	: PECAN, A-51 WALNUT, AX-102

8037.ZF.1203 A,B,C,D,E,F,G,H,I,J,K,L,M☒O,P,Q,R,S & T
WATER SOFTENERS

PRIMARY SOFTENER

DIMENSIONS	: 12'-0"DIA O.D. X 13'-6" S/S MINIMUM
DESIGN	: 125 PSIG @ 200°F
LINED WITH	: PLASITE 7156 HAR, 15 MILS DFT
RESIN CAPACITY	: 1000 FT3.
CORROSION ALLOWANCE	: 0.0625 IN.

SECONDARY SOFTENER

DIMENSIONS	: 9'-0"DIA. O.D. X 8'-0" S/S MINIMUM
DESIGN	: 125 PSIG @ 200°F
LINED WITH	: PLASITE 7156 HAR, 15 MILS DFT
RESIN CAPACITY	: 345 FT3.
CORROSION ALLOWANCE	: 0.0625 IN.

8037.P.1213A & B
TRANSFER PUMPS

DUTY	: 3600 GPM / 200 PSIG / 1800 RPM
SUCTION CONN.	: 14" RF.–300#
DISCHARGE CONN.	: 8" RF.–300#
MOTOR	: 700 HP / 1800 RPM 3 PH / 60 CY / 4160 V

8037.T.1208
HOT WATER STORAGE TANK

CAPACITY – 21,920 BBL.

DIM.	: 70'-0"O.D X 32'-0"H.
OPER	: 0.50 O.Z/IN VAC. 0.75 O.Z/IN PRESSURE @ 150–200 F°
DESIGN	: 1.15 O.Z/IN VAC. – 1.73 O.Z/IN PRESSURE @ 200 F°

8037.T.1201
FEEDWATER STORAGE TANK

15,100 BBL

DIMENSION	: 52'-0" OD X 40'-0" H
TRIM	: TE-T-01-82
OPER	: 0.50 OZ / IN² VAC, 0.75 OZ/IN² PRESS, @ 150°–200°F
DESIGN	: 1.15 OZ/IN VAC-1.73 OZ/IN PRESS, @ 212°F

8037.P.1201 A,B,C☒E&F
FEED WATER TRANSFER PUMPS

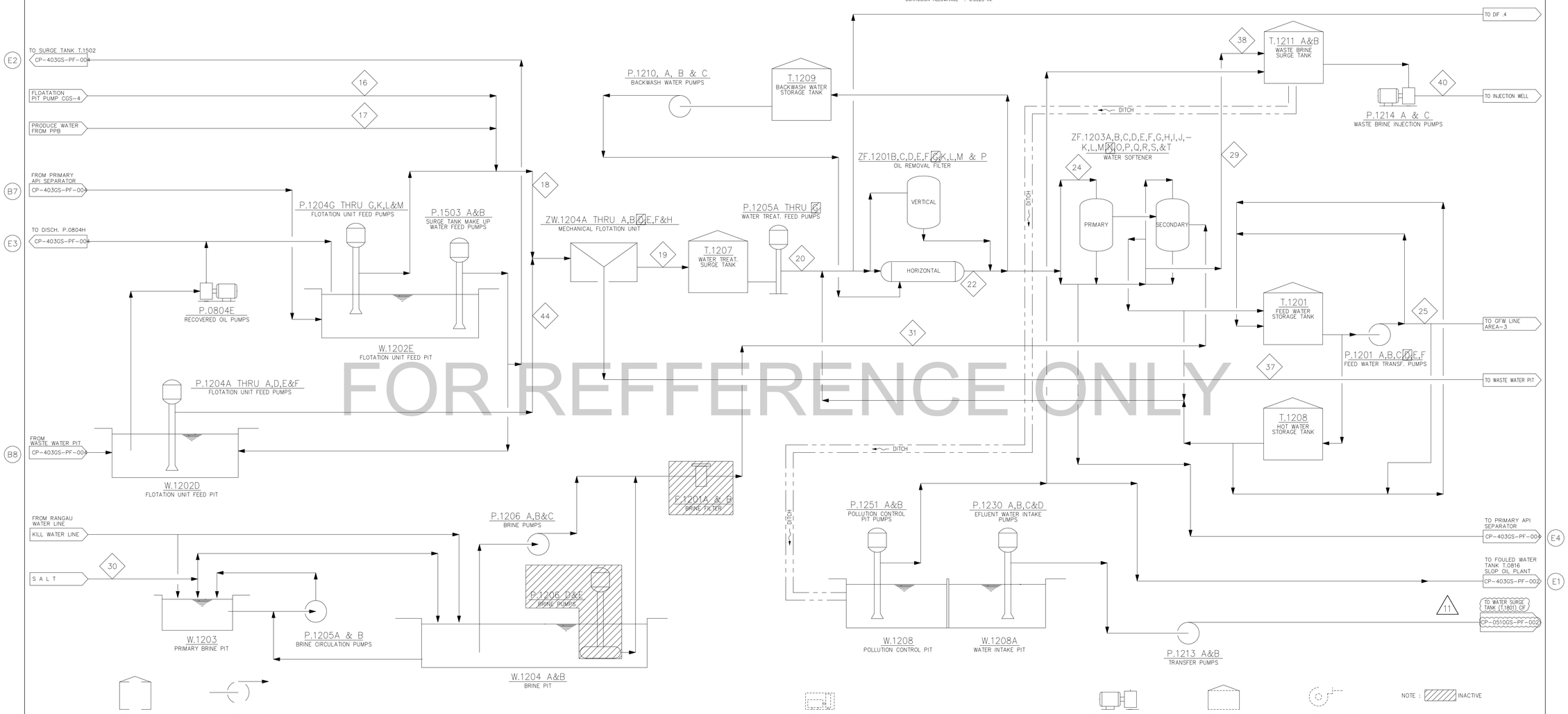
DUTY	: 3300 GPM/200 PSIG/1775 RPM/700 HP
MOTOR	: 700 HP/1789 RPM 3 PH/60 HZ/4160 V

8037.T.1211 A & B
WASTE BRINE SURGE TANK

DIM.	: 21'-6" DIA. x 16'-0" H.
OPER:	: 0.5 OZ/IN2 VAC, 075 OZ/IN2 PRESS.
DESIGN	: 1.15 OZ/IN2 VAC, 1.73 OZ/IN2 PRESS.
COATING	: PLASITE 7156

8037.P.1214 A & C
WASTE BRINE INJECTION PUMPS

DUTY	: 120 GPM/615 PSIG MAX
TEMP.	: 145 °F
MOTOR	: 30 HP
TYPE	: TRIPLEX PLUNGER PUMPS



FOR REFFERENCE ONLY

STREAM NUMBERS	15	16	17	18	19	20	21	22	23	24	25	26	27	28
DESCRIPTION	PRODUCED WATER FROM WATER LEGS	PRODUCE WATER FROM CGS-4	INCOMING PPB WATER	PRODUCE WATER MFU FEED	FLOATATED WATER TO WATER TREATMENT SURGE TANK	FLOTATED WATER PROCESSED IN ORF.	FLOATATED WATER PROCESSED IN MEMCO FILTER	FILTER WATER FROM ORF	FILTERED WATER FROM MEMCO FILTER	TOTAL FILTERED WATER FEED TO SOFTENER	SOFT WATER TO STEAM GENERATOR STATION	ORF EFFLUENT BACK WASH	MEMCO FILTER EFFLUENT BACK WASH	FILTER EFFLUENT BACK WASH TO WASTE PIT-A
DESIGN FACTOR				1,048	1,008	1,034	0,908			1,213	1,1254			
DESIGN FLOW BPD *				688.500	612.000	320.000	270.000			684.500	622.286			
OPERATING FLOW	317.000	140.000	200.000	657.000	607.000	310.000	297.000	265.000	280.000	564.000	553.000	25.000	18.000	45.000
SPECIFIC GRAVITY														
TEMPERATURE : OPERATING RANGE, F°	180 – 200	180 – 200	140 – 170	120 – 140	160 – 180	160 – 180	160 – 180	160 – 180	160 – 180	160 – 180	140 – 160	140 – 160	140 – 160	140 – 160
PRESSURE : OPERATING, PSIG	STATIC/ATM	50	50	50	15	102	102	75	75	75	196	50	50	50
VISCOSITY : @ 70°F														
VISCOSITY : @ OPERATING TEMPERATURE, CP	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL HARDESS AS CaCO3, PPM	160	120	85	140	140	140	140	140	140	140	< 1 PPM	140	140	140
DISSOLVED OXIGEN,											< 20 PPB			
HYDROCARBON CONTENT, PPM PPM (OR % VOL)	2000 PPM	200 PPM	200 PPM	200 PPM	4 PPM	4 PPM	4 PPM	< 1 PPM	< 1 PPM	< 1 PPM	< 1 PPM	39 PPM	51 PPM	40 PPM
WATER CONTENT,														
GAS / OIL RATIO														
BRINE CONCENTRATION %														

STREAM NUMBERS	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
DESCRIPTION	WASTE BRINE SOFTENER REGERATION TO WASTE BRINE INJECTION FACILITIES	ROCK SALT CONSUMPTION	BRINE SOLUTION FOR SOFTENER REGENERATION	RECOVERED OIL FROM PRIMARY API SEPARATOR	INCOMING RANGAU WATER	FILTERED COLD WATER FOR KILL WATER	EFFLUENT BACK WASH TO WASTE WATER PIT-A	KILL WATER TO DISTRIBUTION	MFU SKIMMING TO WASTE WATER PIT	WASTE BRINE	SOFTENER EFFLUENT BACKWASH	WASTE BRINE TO INJECTION WELL	WATER TREATMENT SURGE TANK OVERFLOW (INTERMITTEN)	WATER FROM POLUTION CONTROL PIT TO WATER MFU	RECOVERED OIL TO SLOP OIL PLANT	WATER TREATMENT SURGE TANK OVERFLOW (INTERMITTEN)	WASTE WATER MFU SKIMMING
DESIGN FACTOR					1,522												3,87
DESIGN FLOW BPD *					350.000					15428	56681	15428					75000
OPERATING FLOW	12.000	68 TONS	2000	6000	23.000	21.000	2000	21.000	62.000	3000	9000	3000			6000		19000
SPECIFIC GRAVITY																	
TEMPERATURE : OPERATING RANGE, F°	140 – 160	90	90	120 – 140	90 – 95	90 – 95	90 – 95	90 – 95	160 – 180	120 – 140	140 – 160	120 – 140	160 – 180		120 – 140	160 – 180	160 – 180
PRESSURE : OPERATING, PSIG	20		80				75		15	20	20	120	STATIC			STATIC	5
VISCOSITY : @ 70°F																	
VISCOSITY : @ OPERATING TEMPERATURE, CP	1		1	2	1	1	1	1	1	1	1		1			1	1
TOTAL HARDESS AS CaCO3, PPM				140													
DISSOLVED OXIGEN,																	
HYDROCARBON CONTENT, PPM PPM (OR % VOL)	30 PPM			18%	0 PPM	0 PPM			2/60 PPM	< 1 PPM	33 PPM	< 1 PPM	10 PPM		16,2%	10 PPM	13608 PPM
WATER CONTENT,				82%											83,8%		
GAS / OIL RATIO																	
BRINE CONCENTRATION %			18%							7,4%		7,4%					

REV.	DATE	DESCRIPTION	BY	CHKD	DESIGN ENG'R	DESIGN T. LDR	PROJ ENG'R	PSI COOR.	REFERENCE DRAWINGS
11	01–09–22	UPDATE AS PER PSI V&V–IMPACT REVALIDATION OF CIF–REVISE DESTINATION LINE INFORMATION	RKP	PIWW	–	–	–	RIS	
10	25–03–22	AS BUILT MOC #P14706/7815 (BLANKED–MOC INACTIVE EQUIPMENT–IN PLANT OPERATION DUR	RKP	PIWW	–	–	NOV	RIS	
9	08–10–19	UPDATE AS PER PSI V&V MOC#307724	RPGN	PUTM	–	–	–	AOZL	
8	01–10–19	UPDATE AS PER PSI V&V MOC#307724	RPGN	PUTM	–	–	–	AOZL	
7	17–09–19	UPDATE AS PER PSI V&V MOC#307724	RPGN	PUTM	–	–	–	AOZL	
6	12–06–19	UPDATE AS PER PSI V&V MOC#307724	RPGN	PUTM	–	–	–	AOZL	
5	25–03–19	UPDATE AS PER PSI V&V MOC#307724	RPGN	PUTM	–	–	–	AOZL	

PERTAMINA HULU ROKAN

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DRAWN	YAZ	08–12–96
CHECKED		JT
DESIGN ENG'R.		KRT
DESIGN TEAM LEADER		TIH
PROJECT ENG'R.		KRT
OPR'G DEPT.		

DRAWING TITLE

PROCESS FLOW DIAGRAM WATER TREATMENT PLANT DURI AREA–3

JOB NO. 5D–012

SCALE : NONE

SIZE : A0

CAD — DRAWN WITH CAD NEVER CHANGE THIS DRAWING BY HAND

DRAWING NO. CP–603GS–PF–002–11

DRAWING NO. DURI–WTPF03GS000–PRO–PFD–IBU–0003–00

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