

PETRO-TECH PERUANA

DIRECTIONAL SURVEY FOR WELL L016-23
RAW DATA

THE CONDUCTOR IS VERTICAL

No.	MEASURED DEPTH	DEVIATION ANGLE	ORIENTATION
1	715	1.20	S - 48.70 - W
2	1364	1.10	S - 80.90 - W
3	1513	1.40	S - 87.19 - W
4	1545	1.70	S - 86.90 - W
5	1671	4.40	S - 73.09 - W
6	1703	5.30	S - 60.40 - W
7	1734	6.50	S - 52.00 - W
8	1766	7.70	S - 46.29 - W
9	1829	10.20	S - 63.70 - W
10	1892	13.60	S - 65.69 - W
11	1955	17.10	S - 64.09 - W
12	2019	20.20	S - 62.29 - W
13	2082	23.20	S - 63.00 - W
14	2145	26.80	S - 62.70 - W
15	2208	30.10	S - 61.29 - W
16	2303	34.80	S - 59.09 - W
17	2367	36.70	S - 57.59 - W
18	2462	41.90	S - 56.90 - W
19	2625	45.40	S - 56.90 - W
20	2783	45.20	S - 58.29 - W
21	2939	44.70	S - 58.70 - W
22	3128	43.80	S - 58.29 - W
23	3286	43.80	S - 59.00 - W
24	3445	43.80	S - 59.09 - W
25	3613	43.60	S - 58.90 - W
26	3772	43.20	S - 59.00 - W
27	3931	42.70	S - 59.00 - W
28	4089	41.30	S - 59.20 - W
29	4247	40.00	S - 59.79 - W
30	4404	39.10	S - 60.50 - W
31	4561	39.20	S - 60.70 - W
32	4688	38.50	S - 59.79 - W
33	4866	37.30	S - 59.09 - W
34	5030	37.10	S - 59.79 - W
35	5124	38.60	S - 60.40 - W
36	5283	40.90	S - 61.00 - W
37	5440	43.10	S - 61.90 - W
38	5599	46.00	S - 62.79 - W
39	5752	46.60	S - 63.70 - W
40	5846	46.50	S - 64.59 - W
41	5942	46.20	S - 64.69 - W
42	6037	46.00	S - 65.09 - W
43	6132	46.00	S - 64.19 - W
44	6227	45.80	S - 65.40 - W
45	6356	45.60	S - 61.40 - W
46	6389	45.70	S - 59.90 - W
47	6452	43.70	S - 58.70 - W
48	6520	42.30	S - 57.59 - W
49	6584	41.80	S - 57.59 - W
50	6679	41.40	S - 58.50 - W
51	6838	40.30	S - 58.09 - W

(L016-23)

DIRECTIONAL SURVEY FOR WELL L016-23
RAW DATA

THE CONDUCTOR IS VERTICAL

No.	MEASURED DEPTH	DEVIATION ANGLE	ORIENTATION
52	6996	39.80	S - 58.09 - W
53	7155	40.20	S - 58.29 - W
54	7313	39.20	S - 58.40 - W
55	7472	38.40	S - 58.50 - W
56	7630	37.80	S - 58.20 - W
57	7787	36.80	S - 57.59 - W
58	7945	36.20	S - 56.29 - W
59	8103	34.60	S - 56.09 - W
60	8261	33.90	S - 56.59 - W
61	8352	33.80	S - 55.00 - W
62	8446	33.50	S - 55.40 - W
63	8542	33.40	S - 55.40 - W
64	8637	33.40	S - 55.50 - W
65	8731	33.20	S - 55.79 - W
66	8826	32.60	S - 55.50 - W
67	8921	32.50	S - 55.29 - W
68	9016	32.50	S - 54.59 - W
69	9112	31.70	S - 53.40 - W
70	9207	30.50	S - 52.90 - W
71	9302	29.60	S - 52.40 - W
72	9397	28.70	S - 52.20 - W
73	9492	28.30	S - 51.50 - W
74	9587	27.70	S - 50.70 - W
75	9682	26.80	S - 51.09 - W
76	9775	25.80	S - 51.09 - W
77	9871	24.60	S - 51.59 - W
78	9965	24.00	S - 52.29 - W
79	10004	23.90	S - 51.90 - W

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

	MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES			HORIZONTAL DISTANCE
*	563	563.00	513.00	N	0.00	E	0.00	0.00
	570	570.00	520.00	S	0.00	W	0.01	0.01
	580	580.00	530.00	S	0.02	W	0.02	0.03
	590	590.00	540.00	S	0.04	W	0.05	0.07
	600	600.00	550.00	S	0.08	W	0.09	0.12
	610	610.00	560.00	S	0.12	W	0.14	0.18
	620	620.00	570.00	S	0.17	W	0.20	0.26
	630	630.00	580.00	S	0.23	W	0.27	0.35
	640	640.00	590.00	S	0.30	W	0.35	0.46
	650	650.00	600.00	S	0.38	W	0.44	0.58
	660	660.00	610.00	S	0.47	W	0.54	0.71
	670	670.00	620.00	S	0.57	W	0.65	0.86
	680	679.99	629.99	S	0.67	W	0.77	1.02
	690	689.99	639.99	S	0.79	W	0.90	1.20
	700	699.99	649.99	S	0.91	W	1.04	1.39
	710	709.99	659.99	S	1.05	W	1.19	1.59
*	715	714.99	664.99	S	1.12	W	1.27	1.69
	720	719.99	669.99	S	1.13	W	1.38	1.78
	730	729.98	679.98	S	1.17	W	1.58	1.97
	740	739.98	689.98	S	1.20	W	1.79	2.15
	750	749.98	699.98	S	1.23	W	1.99	2.34
	760	759.98	709.98	S	1.27	W	2.20	2.54
	770	769.98	719.98	S	1.30	W	2.40	2.73
	780	779.97	729.97	S	1.33	W	2.61	2.93
	790	789.97	739.97	S	1.36	W	2.81	3.13
	800	799.97	749.97	S	1.40	W	3.02	3.33
	810	809.97	759.97	S	1.43	W	3.22	3.53
	820	819.97	769.97	S	1.46	W	3.43	3.73
	830	829.96	779.96	S	1.50	W	3.63	3.93
	840	839.96	789.96	S	1.53	W	3.83	4.13
	850	849.96	799.96	S	1.56	W	4.04	4.33
	860	859.96	809.96	S	1.59	W	4.24	4.53
	870	869.95	819.95	S	1.63	W	4.44	4.73
	880	879.95	829.95	S	1.66	W	4.65	4.93
	890	889.95	839.95	S	1.69	W	4.85	5.13
	900	899.95	849.95	S	1.72	W	5.05	5.34
	910	909.95	859.95	S	1.76	W	5.25	5.54
	920	919.94	869.94	S	1.79	W	5.45	5.74
	930	929.94	879.94	S	1.82	W	5.65	5.94
	940	939.94	889.94	S	1.85	W	5.85	6.14
	950	949.94	899.94	S	1.88	W	6.06	6.34
	960	959.94	909.94	S	1.92	W	6.26	6.54
	970	969.93	919.93	S	1.95	W	6.46	6.74
	980	979.93	929.93	S	1.98	W	6.66	6.94
	990	989.93	939.93	S	2.01	W	6.85	7.14

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
1000	999.93	949.93	S	2.04 W 7.05	7.34
1010	1,009.93	959.93	S	2.08 W 7.25	7.54
1020	1,019.92	969.92	S	2.11 W 7.45	7.74
1030	1,029.92	979.92	S	2.14 W 7.65	7.94
1040	1,039.92	989.92	S	2.17 W 7.85	8.14
1050	1,049.92	999.92	S	2.20 W 8.05	8.34
1060	1,059.92	1,009.92	S	2.23 W 8.24	8.54
1070	1,069.91	1,019.91	S	2.27 W 8.44	8.74
1080	1,079.91	1,029.91	S	2.30 W 8.64	8.94
1090	1,089.91	1,039.91	S	2.33 W 8.83	9.14
1100	1,099.91	1,049.91	S	2.36 W 9.03	9.33
1110	1,109.91	1,059.91	S	2.39 W 9.23	9.53
1120	1,119.90	1,069.90	S	2.42 W 9.42	9.73
1130	1,129.90	1,079.90	S	2.45 W 9.62	9.93
1140	1,139.90	1,089.90	S	2.49 W 9.81	10.12
1150	1,149.90	1,099.90	S	2.52 W 10.01	10.32
1160	1,159.90	1,109.90	S	2.55 W 10.21	10.52
1170	1,169.89	1,119.89	S	2.58 W 10.40	10.72
1180	1,179.89	1,129.89	S	2.61 W 10.59	10.91
1190	1,189.89	1,139.89	S	2.64 W 10.79	11.11
1200	1,199.89	1,149.89	S	2.67 W 10.98	11.30
1210	1,209.89	1,159.89	S	2.70 W 11.18	11.50
1220	1,219.88	1,169.88	S	2.74 W 11.37	11.69
1230	1,229.88	1,179.88	S	2.77 W 11.56	11.89
1240	1,239.88	1,189.88	S	2.80 W 11.76	12.08
1250	1,249.88	1,199.88	S	2.83 W 11.95	12.28
1260	1,259.88	1,209.88	S	2.86 W 12.14	12.47
1270	1,269.87	1,219.87	S	2.89 W 12.33	12.67
1280	1,279.87	1,229.87	S	2.92 W 12.52	12.86
1290	1,289.87	1,239.87	S	2.95 W 12.72	13.05
1300	1,299.87	1,249.87	S	2.98 W 12.91	13.25
1310	1,309.87	1,259.87	S	3.01 W 13.10	13.44
1320	1,319.87	1,269.87	S	3.04 W 13.29	13.63
1330	1,329.86	1,279.86	S	3.07 W 13.48	13.82
1340	1,339.86	1,289.86	S	3.10 W 13.67	14.02
1350	1,349.86	1,299.86	S	3.13 W 13.86	14.21
1360	1,359.86	1,309.86	S	3.16 W 14.05	14.40
* 1364	1,363.86	1,313.86	S	3.18 W 14.12	14.48
1370	1,369.86	1,319.86	S	3.18 W 14.24	14.59
1380	1,379.85	1,329.85	S	3.19 W 14.44	14.79
1390	1,389.85	1,339.85	S	3.20 W 14.64	14.99
1400	1,399.85	1,349.85	S	3.21 W 14.84	15.19
1410	1,409.85	1,359.85	S	3.22 W 15.05	15.39
1420	1,419.85	1,369.85	S	3.23 W 15.26	15.60
1430	1,429.84	1,379.84	S	3.24 W 15.48	15.81

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF I

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES			HORIZONTAL DISTANCE
1440	1,439.84	1,389.84	S	3.25	W	15.70	16.03
1450	1,449.84	1,399.84	S	3.26	W	15.92	16.25
1460	1,459.84	1,409.84	S	3.28	W	16.14	16.47
1470	1,469.83	1,419.83	S	3.29	W	16.37	16.70
1480	1,479.83	1,429.83	S	3.30	W	16.60	16.93
1490	1,489.83	1,439.83	S	3.31	W	16.84	17.16
1500	1,499.82	1,449.82	S	3.32	W	17.08	17.40
1510	1,509.82	1,459.82	S	3.33	W	17.32	17.64
* 1513	1,512.82	1,462.82	S	3.34	W	17.40	17.71
1520	1,519.82	1,469.82	S	3.35	W	17.58	17.89
1530	1,529.82	1,479.82	S	3.36	W	17.85	18.16
1540	1,539.81	1,489.81	S	3.38	W	18.14	18.45
* 1545	1,544.81	1,494.81	S	3.39	W	18.28	18.59
1550	1,549.81	1,499.81	S	3.43	W	18.43	18.75
1560	1,559.80	1,509.80	S	3.53	W	18.77	19.10
1570	1,569.79	1,519.79	S	3.65	W	19.14	19.49
1580	1,579.78	1,529.78	S	3.77	W	19.55	19.91
1590	1,589.77	1,539.77	S	3.91	W	20.00	20.38
1600	1,599.76	1,549.76	S	4.05	W	20.48	20.88
1610	1,609.75	1,559.75	S	4.21	W	21.00	21.41
1620	1,619.73	1,569.73	S	4.38	W	21.55	21.99
1630	1,629.71	1,579.71	S	4.56	W	22.13	22.60
1640	1,639.69	1,589.69	S	4.75	W	22.76	23.25
1650	1,649.66	1,599.66	S	4.95	W	23.42	23.93
1660	1,659.64	1,609.64	S	5.16	W	24.11	24.66
1670	1,669.61	1,619.61	S	5.38	W	24.84	25.42
* 1671	1,670.61	1,620.61	S	5.40	W	24.92	25.49
1680	1,679.58	1,629.58	S	5.76	W	25.55	26.19
1690	1,689.54	1,639.54	S	6.19	W	26.30	27.02
1700	1,699.50	1,649.50	S	6.64	W	27.09	27.89
* 1703	1,702.49	1,652.49	S	6.77	W	27.33	28.16
1710	1,709.45	1,659.45	S	7.19	W	27.87	28.78
1720	1,719.40	1,669.40	S	7.83	W	28.68	29.73
1730	1,729.34	1,679.34	S	8.51	W	29.55	30.76
* 1734	1,733.31	1,683.31	S	8.79	W	29.91	31.18
1740	1,739.27	1,689.27	S	9.28	W	30.42	31.80
1750	1,749.19	1,699.19	S	10.13	W	31.31	32.91
1760	1,759.11	1,709.11	S	11.03	W	32.25	34.09
* 1766	1,765.05	1,715.05	S	11.58	W	32.83	34.82
1770	1,769.02	1,719.02	S	11.83	W	33.32	35.36
1780	1,778.91	1,728.91	S	12.46	W	34.61	36.79
1790	1,788.80	1,738.80	S	13.13	W	35.96	38.28
1800	1,798.67	1,748.67	S	13.83	W	37.37	39.85
1810	1,808.54	1,758.54	S	14.55	W	38.84	41.48
1820	1,818.39	1,768.39	S	15.31	W	40.37	43.18

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
* 1829	1,827.25	1,777.25	S 16.02	W 41.80	44.77
1830	1,828.23	1,778.23	S 16.09	W 41.96	44.94
1840	1,838.06	1,788.06	S 16.86	W 43.67	46.81
1850	1,847.86	1,797.86	S 17.67	W 45.46	48.78
1860	1,857.65	1,807.65	S 18.52	W 47.34	50.83
1870	1,867.41	1,817.41	S 19.40	W 49.30	52.98
1880	1,877.16	1,827.16	S 20.32	W 51.34	55.22
1890	1,886.88	1,836.88	S 21.29	W 53.46	57.55
* 1892	1,888.83	1,838.83	S 21.48	W 53.89	58.02
1900	1,896.59	1,846.59	S 22.33	W 55.64	59.95
1910	1,906.27	1,856.27	S 23.43	W 57.91	62.47
1920	1,915.92	1,865.92	S 24.57	W 60.26	65.08
1930	1,925.54	1,875.54	S 25.75	W 62.69	67.78
1940	1,935.14	1,885.14	S 26.98	W 65.21	70.57
1950	1,944.72	1,894.72	S 28.24	W 67.82	73.46
* 1955	1,949.50	1,899.50	S 28.89	W 69.14	74.93
1960	1,954.27	1,904.27	S 29.58	W 70.46	76.41
1970	1,963.79	1,913.79	S 31.00	W 73.17	79.47
1980	1,973.28	1,923.28	S 32.46	W 75.95	82.60
1990	1,982.75	1,932.75	S 33.96	W 78.80	85.81
2000	1,992.19	1,942.19	S 35.50	W 81.72	89.10
2010	2,001.60	1,951.60	S 37.07	W 84.72	92.47
* 2019	2,010.04	1,960.04	S 38.51	W 87.47	95.57
2020	2,010.98	1,960.98	S 38.67	W 87.78	95.92
2030	2,020.34	1,970.34	S 40.28	W 90.93	99.45
2040	2,029.66	1,979.66	S 41.92	W 94.15	103.06
2050	2,038.95	1,988.95	S 43.60	W 97.44	106.75
2060	2,048.21	1,998.21	S 45.31	W 100.80	110.52
2070	2,057.44	2,007.44	S 47.05	W 104.23	114.36
2080	2,066.64	2,016.64	S 48.84	W 107.73	118.28
* 2082	2,068.48	2,018.48	S 49.19	W 108.43	119.07
2090	2,075.81	2,025.81	S 50.67	W 111.28	122.27
2100	2,084.93	2,034.93	S 52.55	W 114.93	126.37
2110	2,094.01	2,044.01	S 54.47	W 118.66	130.56
2120	2,103.04	2,053.04	S 56.44	W 122.46	134.84
2130	2,112.03	2,062.03	S 58.44	W 126.35	139.21
2140	2,120.98	2,070.98	S 60.49	W 130.32	143.67
* 2145	2,125.44	2,075.44	S 61.53	W 132.32	145.93
2150	2,129.90	2,079.90	S 62.62	W 134.32	148.20
2160	2,138.76	2,088.76	S 64.84	W 138.38	152.82
2170	2,147.58	2,097.58	S 67.11	W 142.51	157.52
2180	2,156.36	2,106.36	S 69.41	W 146.71	162.30
2190	2,165.09	2,115.09	S 71.75	W 150.99	167.17
2200	2,173.78	2,123.78	S 74.13	W 155.33	172.11
* 2208	2,180.70	2,130.70	S 76.06	W 158.85	176.12

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO -	ORDINATES	HORIZONTAL DISTANCE
2210	2,182.43	2,132.43	S	76.57	W 159.71	177.12
2220	2,191.03	2,141.03	S	79.19	W 164.09	182.20
2230	2,199.58	2,149.58	S	81.85	W 168.53	187.36
2240	2,208.09	2,158.09	S	84.55	W 173.04	192.59
2250	2,216.56	2,166.56	S	87.29	W 177.61	197.90
2260	2,224.97	2,174.97	S	90.06	W 182.24	203.28
2270	2,233.34	2,183.34	S	92.87	W 186.93	208.73
2280	2,241.67	2,191.67	S	95.72	W 191.69	214.26
2290	2,249.94	2,199.94	S	98.60	W 196.51	219.86
2300	2,258.17	2,208.17	S	101.52	W 201.38	225.53
* 2303	2,260.63	2,210.63	S	102.40	W 202.85	227.24
2310	2,266.37	2,216.37	S	104.56	W 206.24	231.23
2320	2,274.53	2,224.53	S	107.65	W 211.12	236.98
2330	2,282.66	2,232.66	S	110.77	W 216.04	242.78
2340	2,290.76	2,240.76	S	113.92	W 220.99	248.62
2350	2,298.83	2,248.83	S	117.08	W 225.97	254.50
2360	2,306.87	2,256.87	S	120.27	W 230.99	260.43
* 2367	2,312.48	2,262.48	S	122.51	W 234.52	264.60
2370	2,314.88	2,264.88	S	123.49	W 236.03	266.39
2380	2,322.82	2,272.82	S	126.81	W 241.12	272.43
2390	2,330.71	2,280.71	S	130.17	W 246.27	278.56
2400	2,338.53	2,288.53	S	133.57	W 251.49	284.76
2410	2,346.30	2,296.30	S	137.01	W 256.77	291.04
2420	2,354.00	2,304.00	S	140.49	W 262.11	297.39
2430	2,361.65	2,311.65	S	144.01	W 267.51	303.81
2440	2,369.23	2,319.23	S	147.57	W 272.97	310.31
2450	2,376.75	2,326.75	S	151.18	W 278.49	316.88
2460	2,384.21	2,334.21	S	154.81	W 284.08	323.52
* 2462	2,385.69	2,335.69	S	155.54	W 285.19	324.85
2470	2,391.63	2,341.63	S	158.47	W 289.69	330.20
2480	2,399.03	2,349.03	S	162.15	W 295.32	336.91
2490	2,406.40	2,356.40	S	165.84	W 300.98	343.64
2500	2,413.75	2,363.75	S	169.54	W 306.66	350.41
2510	2,421.07	2,371.07	S	173.26	W 312.37	357.20
2520	2,428.37	2,378.37	S	176.99	W 318.10	364.02
2530	2,435.64	2,385.64	S	180.74	W 323.85	370.87
2540	2,442.88	2,392.88	S	184.51	W 329.62	377.75
2550	2,450.10	2,400.10	S	188.29	W 335.42	384.65
2560	2,457.30	2,407.30	S	192.08	W 341.24	391.59
2570	2,464.46	2,414.46	S	195.89	W 347.08	398.55
2580	2,471.60	2,421.60	S	199.71	W 352.95	405.53
2590	2,478.72	2,428.72	S	203.55	W 358.83	412.55
2600	2,485.81	2,435.81	S	207.40	W 364.74	419.59
2610	2,492.87	2,442.87	S	211.27	W 370.67	426.66
2620	2,499.90	2,449.90	S	215.15	W 376.63	433.75

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

	MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO -	ORDINATES	HORIZONTAL DISTANCE
*	2625	2,503.41	2,453.41	S	217.10	W 379.61	437.30
	2630	2,506.93	2,456.93	S	218.97	W 382.64	440.86
	2640	2,513.95	2,463.95	S	222.71	W 388.69	447.98
	2650	2,520.97	2,470.97	S	226.45	W 394.75	455.09
	2660	2,528.00	2,478.00	S	230.19	W 400.80	462.20
	2670	2,535.03	2,485.03	S	233.93	W 406.85	469.31
	2680	2,542.06	2,492.06	S	237.66	W 412.90	476.42
	2690	2,549.09	2,499.09	S	241.40	W 418.95	483.52
	2700	2,556.13	2,506.13	S	245.14	W 425.00	490.63
	2710	2,563.16	2,513.16	S	248.87	W 431.04	497.73
	2720	2,570.20	2,520.20	S	252.61	W 437.09	504.83
	2730	2,577.24	2,527.24	S	256.34	W 443.13	511.94
	2740	2,584.28	2,534.28	S	260.08	W 449.17	519.03
	2750	2,591.32	2,541.32	S	263.81	W 455.21	526.13
	2760	2,598.36	2,548.36	S	267.54	W 461.25	533.23
	2770	2,605.40	2,555.40	S	271.27	W 467.29	540.32
	2780	2,612.45	2,562.45	S	275.00	W 473.33	547.42
*	2783	2,614.56	2,564.56	S	276.12	W 475.14	549.54
	2790	2,619.50	2,569.50	S	278.70	W 479.38	554.51
	2800	2,626.55	2,576.55	S	282.38	W 485.44	561.60
	2810	2,633.61	2,583.61	S	286.06	W 491.49	568.68
	2820	2,640.67	2,590.67	S	289.74	W 497.54	575.76
	2830	2,647.73	2,597.73	S	293.42	W 503.59	582.84
	2840	2,654.80	2,604.80	S	297.09	W 509.63	589.91
	2850	2,661.88	2,611.88	S	300.77	W 515.67	596.98
	2860	2,668.95	2,618.95	S	304.44	W 521.71	604.04
	2870	2,676.03	2,626.03	S	308.11	W 527.74	611.10
	2880	2,683.12	2,633.12	S	311.77	W 533.77	618.16
	2890	2,690.21	2,640.21	S	315.44	W 539.80	625.21
	2900	2,697.30	2,647.30	S	319.10	W 545.82	632.26
	2910	2,704.40	2,654.40	S	322.76	W 551.84	639.30
	2920	2,711.50	2,661.50	S	326.42	W 557.86	646.34
	2930	2,718.60	2,668.60	S	330.07	W 563.87	653.38
*	2939	2,725.00	2,675.00	S	333.36	W 569.28	659.71
	2940	2,725.71	2,675.71	S	333.73	W 569.88	660.41
	2950	2,732.83	2,682.83	S	337.43	W 575.86	667.44
	2960	2,739.95	2,689.95	S	341.12	W 581.83	674.46
	2970	2,747.07	2,697.07	S	344.80	W 587.80	681.47
	2980	2,754.20	2,704.20	S	348.49	W 593.76	688.48
	2990	2,761.34	2,711.34	S	352.17	W 599.72	695.48
	3000	2,768.49	2,718.49	S	355.85	W 605.68	702.47
	3010	2,775.64	2,725.64	S	359.52	W 611.62	709.46
	3020	2,782.79	2,732.79	S	363.20	W 617.57	716.45
	3030	2,789.95	2,739.95	S	366.86	W 623.50	723.43
	3040	2,797.12	2,747.12	S	370.53	W 629.44	730.40

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
3050	2,804.29	2,754.29	S	374.19 W	737.37
3060	2,811.47	2,761.47	S	377.85 W	744.33
3070	2,818.65	2,768.65	S	381.51 W	751.28
3080	2,825.84	2,775.84	S	385.16 W	758.23
3090	2,833.04	2,783.04	S	388.81 W	765.17
3100	2,840.24	2,790.24	S	392.46 W	772.11
3110	2,847.45	2,797.45	S	396.10 W	779.04
3120	2,854.66	2,804.66	S	399.74 W	785.96
* 3128	2,860.44	2,810.44	S	402.65 W	791.50
3130	2,861.88	2,811.88	S	403.37 W	792.88
3140	2,869.10	2,819.10	S	406.93 W	799.81
3150	2,876.31	2,826.31	S	410.50 W	806.73
3160	2,883.53	2,833.53	S	414.06 W	813.65
3170	2,890.75	2,840.75	S	417.63 W	820.57
3180	2,897.97	2,847.97	S	421.19 W	827.49
3190	2,905.19	2,855.19	S	424.76 W	834.41
3200	2,912.40	2,862.40	S	428.32 W	841.33
3210	2,919.62	2,869.62	S	431.89 W	848.25
3220	2,926.84	2,876.84	S	435.45 W	855.17
3230	2,934.06	2,884.06	S	439.02 W	862.10
3240	2,941.27	2,891.27	S	442.58 W	869.02
3250	2,948.49	2,898.49	S	446.14 W	875.94
3260	2,955.71	2,905.71	S	449.71 W	882.86
3270	2,962.93	2,912.93	S	453.27 W	889.78
3280	2,970.15	2,920.15	S	456.84 W	896.70
* 3286	2,974.48	2,924.48	S	458.98 W	900.85
3290	2,977.36	2,927.36	S	460.40 W	903.62
3300	2,984.58	2,934.58	S	463.96 W	910.54
3310	2,991.80	2,941.80	S	467.51 W	917.47
3320	2,999.02	2,949.02	S	471.07 W	924.39
3330	3,006.23	2,956.23	S	474.62 W	931.31
3340	3,013.45	2,963.45	S	478.18 W	938.23
3350	3,020.67	2,970.67	S	481.73 W	945.15
3360	3,027.89	2,977.89	S	485.29 W	952.07
3370	3,035.11	2,985.11	S	488.84 W	958.99
3380	3,042.32	2,992.32	S	492.40 W	965.91
3390	3,049.54	2,999.54	S	495.96 W	972.84
3400	3,056.76	3,006.76	S	499.51 W	979.76
3410	3,063.98	3,013.98	S	503.07 W	986.68
3420	3,071.19	3,021.19	S	506.62 W	993.60
3430	3,078.41	3,028.41	S	510.18 W	1,000.52
3440	3,085.63	3,035.63	S	513.73 W	1,007.44
* 3445	3,089.24	3,039.24	S	515.51 W	1,010.90
3450	3,092.85	3,042.85	S	517.30 W	1,014.36
3460	3,100.07	3,050.07	S	520.87 W	1,021.28

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO -	ORDINATES	HORIZONTAL DISTANCE
3470	3,107.29	3,057.29	S	524.45	W 884.39	1,028.20
3480	3,114.51	3,064.51	S	528.02	W 890.31	1,035.12
3490	3,121.74	3,071.74	S	531.59	W 896.24	1,042.03
3500	3,128.96	3,078.96	S	535.16	W 902.15	1,048.94
3510	3,136.19	3,086.19	S	538.73	W 908.07	1,055.85
3520	3,143.42	3,093.42	S	542.30	W 913.99	1,062.76
3530	3,150.65	3,100.65	S	545.87	W 919.90	1,069.67
3540	3,157.88	3,107.88	S	549.44	W 925.82	1,076.58
3550	3,165.11	3,115.11	S	553.00	W 931.73	1,083.48
3560	3,172.35	3,122.35	S	556.57	W 937.64	1,090.39
3570	3,179.58	3,129.58	S	560.14	W 943.55	1,097.29
3580	3,186.82	3,136.82	S	563.70	W 949.46	1,104.19
3590	3,194.06	3,144.06	S	567.26	W 955.37	1,111.09
3600	3,201.30	3,151.30	S	570.83	W 961.28	1,117.99
3610	3,208.54	3,158.54	S	574.39	W 967.18	1,124.89
* 3613	3,210.71	3,160.71	S	575.46	W 968.95	1,126.95
3620	3,215.78	3,165.78	S	577.94	W 973.09	1,131.78
3630	3,223.03	3,173.03	S	581.49	W 979.00	1,138.67
3640	3,230.28	3,180.28	S	585.04	W 984.90	1,145.56
3650	3,237.53	3,187.53	S	588.59	W 990.80	1,152.44
3660	3,244.79	3,194.79	S	592.13	W 996.70	1,159.32
3670	3,252.05	3,202.05	S	595.67	W 1,002.60	1,166.20
3680	3,259.31	3,209.31	S	599.21	W 1,008.49	1,173.08
3690	3,266.57	3,216.57	S	602.75	W 1,014.38	1,179.95
3700	3,273.84	3,223.84	S	606.29	W 1,020.27	1,186.82
3710	3,281.11	3,231.11	S	609.83	W 1,026.15	1,193.68
3720	3,288.39	3,238.39	S	613.36	W 1,032.03	1,200.54
3730	3,295.66	3,245.66	S	616.89	W 1,037.91	1,207.40
3740	3,302.94	3,252.94	S	620.43	W 1,043.79	1,214.26
3750	3,310.23	3,260.23	S	623.95	W 1,049.66	1,221.11
3760	3,317.51	3,267.51	S	627.48	W 1,055.53	1,227.96
3770	3,324.80	3,274.80	S	631.01	W 1,061.40	1,234.80
* 3772	3,326.26	3,276.26	S	631.71	W 1,062.57	1,236.17
3780	3,332.09	3,282.09	S	634.53	W 1,067.27	1,241.65
3790	3,339.39	3,289.39	S	638.05	W 1,073.13	1,248.48
3800	3,346.69	3,296.69	S	641.57	W 1,078.98	1,255.32
3810	3,354.00	3,304.00	S	645.09	W 1,084.84	1,262.15
3820	3,361.30	3,311.30	S	648.61	W 1,090.69	1,268.98
3830	3,368.61	3,318.61	S	652.12	W 1,096.54	1,275.80
3840	3,375.93	3,325.93	S	655.63	W 1,102.38	1,282.62
3850	3,383.25	3,333.25	S	659.14	W 1,108.22	1,289.43
3860	3,390.57	3,340.57	S	662.65	W 1,114.06	1,296.24
3870	3,397.90	3,347.90	S	666.16	W 1,119.89	1,303.05
3880	3,405.23	3,355.23	S	669.66	W 1,125.72	1,309.85
3890	3,412.56	3,362.56	S	673.16	W 1,131.55	1,316.65

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
3900	3,419.90	3,369.90	S	676.66 W 1,137.38	1,323.44
3910	3,427.24	3,377.24	S	680.16 W 1,143.20	1,330.23
3920	3,434.59	3,384.59	S	683.65 W 1,149.01	1,337.02
3930	3,441.94	3,391.94	S	687.15 W 1,154.82	1,343.80
* 3931	3,442.67	3,392.67	S	687.50 W 1,155.41	1,344.47
3940	3,449.29	3,399.29	S	690.62 W 1,160.64	1,350.57
3950	3,456.66	3,406.66	S	694.08 W 1,166.45	1,357.33
3960	3,464.04	3,414.04	S	697.53 W 1,172.24	1,364.08
3970	3,471.43	3,421.43	S	700.98 W 1,178.03	1,370.81
3980	3,478.83	3,428.83	S	704.43 W 1,183.81	1,377.54
3990	3,486.24	3,436.24	S	707.86 W 1,189.57	1,384.25
4000	3,493.66	3,443.66	S	711.30 W 1,195.33	1,390.96
4010	3,501.10	3,451.10	S	714.72 W 1,201.08	1,397.65
4020	3,508.54	3,458.54	S	718.14 W 1,206.82	1,404.33
4030	3,515.99	3,465.99	S	721.56 W 1,212.54	1,411.00
4040	3,523.45	3,473.45	S	724.97 W 1,218.26	1,417.65
4050	3,530.93	3,480.93	S	728.37 W 1,223.97	1,424.30
4060	3,538.41	3,488.41	S	731.77 W 1,229.67	1,430.93
4070	3,545.90	3,495.90	S	735.16 W 1,235.36	1,437.55
4080	3,553.41	3,503.41	S	738.54 W 1,241.03	1,444.16
* 4089	3,560.17	3,510.17	S	741.58 W 1,246.14	1,450.10
4090	3,560.92	3,510.92	S	741.92 W 1,246.71	1,450.76
4100	3,568.44	3,518.44	S	745.23 W 1,252.40	1,457.35
4110	3,575.97	3,525.97	S	748.54 W 1,258.08	1,463.93
4120	3,583.52	3,533.52	S	751.84 W 1,263.76	1,470.49
4130	3,591.07	3,541.07	S	755.14 W 1,269.42	1,477.05
4140	3,598.63	3,548.63	S	758.44 W 1,275.08	1,483.59
4150	3,606.20	3,556.20	S	761.72 W 1,280.73	1,490.13
4160	3,613.78	3,563.78	S	765.01 W 1,286.36	1,496.65
4170	3,621.37	3,571.37	S	768.28 W 1,291.99	1,503.16
4180	3,628.97	3,578.97	S	771.55 W 1,297.61	1,509.66
4190	3,636.57	3,586.57	S	774.82 W 1,303.22	1,516.15
4200	3,644.19	3,594.19	S	778.08 W 1,308.82	1,522.63
4210	3,651.82	3,601.82	S	781.33 W 1,314.41	1,529.10
4220	3,659.45	3,609.45	S	784.58 W 1,319.99	1,535.56
4230	3,667.10	3,617.10	S	787.83 W 1,325.56	1,542.00
4240	3,674.75	3,624.75	S	791.07 W 1,331.12	1,548.44
* 4247	3,680.11	3,630.11	S	793.33 W 1,335.01	1,552.94
4250	3,682.41	3,632.41	S	794.28 W 1,336.68	1,554.87
4260	3,690.08	3,640.08	S	797.44 W 1,342.27	1,561.28
4270	3,697.76	3,647.76	S	800.60 W 1,347.85	1,567.69
4280	3,705.44	3,655.44	S	803.75 W 1,353.42	1,574.09
4290	3,713.13	3,663.13	S	806.90 W 1,358.99	1,580.48
4300	3,720.82	3,670.82	S	810.04 W 1,364.55	1,586.87
4310	3,728.52	3,678.52	S	813.18 W 1,370.10	1,593.25

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES	HORIZONTAL DISTANCE
4320	3,736.23	3,686.23	S 816.32 W 1,375.64	1,599.62
4330	3,743.94	3,693.94	S 819.46 W 1,381.18	1,605.98
4340	3,751.66	3,701.66	S 822.59 W 1,386.72	1,612.34
4350	3,759.39	3,709.39	S 825.71 W 1,392.24	1,618.68
4360	3,767.12	3,717.12	S 828.84 W 1,397.76	1,625.02
4370	3,774.86	3,724.86	S 831.95 W 1,403.27	1,631.35
4380	3,782.61	3,732.61	S 835.07 W 1,408.78	1,637.68
4390	3,790.36	3,740.36	S 838.18 W 1,414.28	1,643.99
4400	3,798.11	3,748.11	S 841.29 W 1,419.77	1,650.30
* 4404	3,801.22	3,751.22	S 842.53 W 1,421.96	1,652.83
4410	3,805.88	3,755.88	S 844.38 W 1,425.26	1,656.61
4420	3,813.63	3,763.63	S 847.47 W 1,430.76	1,662.92
4430	3,821.39	3,771.39	S 850.56 W 1,436.27	1,669.22
4440	3,829.15	3,779.15	S 853.64 W 1,441.77	1,675.53
4450	3,836.91	3,786.91	S 856.73 W 1,447.27	1,681.84
4460	3,844.67	3,794.67	S 859.82 W 1,452.78	1,688.15
4470	3,852.42	3,802.42	S 862.91 W 1,458.28	1,694.46
4480	3,860.18	3,810.18	S 866.00 W 1,463.79	1,700.77
4490	3,867.93	3,817.93	S 869.09 W 1,469.29	1,707.08
4500	3,875.68	3,825.68	S 872.18 W 1,474.80	1,713.40
4510	3,883.44	3,833.44	S 875.27 W 1,480.31	1,719.71
4520	3,891.19	3,841.19	S 878.36 W 1,485.81	1,726.03
4530	3,898.94	3,848.94	S 881.45 W 1,491.32	1,732.34
4540	3,906.69	3,856.69	S 884.55 W 1,496.83	1,738.66
4550	3,914.44	3,864.44	S 887.64 W 1,502.34	1,744.98
4560	3,922.19	3,872.19	S 890.73 W 1,507.86	1,751.30
* 4561	3,922.97	3,872.97	S 891.04 W 1,508.41	1,751.93
4570	3,929.95	3,879.95	S 893.90 W 1,513.32	1,757.61
4580	3,937.71	3,887.71	S 897.07 W 1,518.77	1,763.92
4590	3,945.48	3,895.48	S 900.24 W 1,524.21	1,770.21
4600	3,953.25	3,903.25	S 903.41 W 1,529.65	1,776.50
4610	3,961.03	3,911.03	S 906.57 W 1,535.08	1,782.79
4620	3,968.81	3,918.81	S 909.73 W 1,540.50	1,789.06
4630	3,976.60	3,926.60	S 912.88 W 1,545.92	1,795.33
4640	3,984.40	3,934.40	S 916.03 W 1,551.33	1,801.59
4650	3,992.20	3,942.20	S 919.18 W 1,556.73	1,807.85
4660	4,000.01	3,950.01	S 922.32 W 1,562.13	1,814.09
4670	4,007.83	3,957.83	S 925.46 W 1,567.52	1,820.33
4680	4,015.65	3,965.65	S 928.60 W 1,572.91	1,826.56
* 4688	4,021.91	3,971.91	S 931.10 W 1,577.21	1,831.54
4690	4,023.48	3,973.48	S 931.74 W 1,578.28	1,832.79
4700	4,031.31	3,981.31	S 934.94 W 1,583.61	1,839.00
4710	4,039.15	3,989.15	S 938.12 W 1,588.93	1,845.21
4720	4,047.00	3,997.00	S 941.31 W 1,594.25	1,851.40
4730	4,054.86	4,004.86	S 944.48 W 1,599.56	1,857.59

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
4740	4,062.73	4,012.73	S 947.66	W 1,604.86	1,863.76
4750	4,070.60	4,020.60	S 950.83	W 1,610.15	1,869.93
4760	4,078.48	4,028.48	S 953.99	W 1,615.43	1,876.09
4770	4,086.36	4,036.36	S 957.15	W 1,620.71	1,882.24
4780	4,094.25	4,044.25	S 960.30	W 1,625.98	1,888.38
4790	4,102.15	4,052.15	S 963.45	W 1,631.24	1,894.51
4800	4,110.06	4,060.06	S 966.60	W 1,636.49	1,900.63
4810	4,117.98	4,067.98	S 969.74	W 1,641.73	1,906.74
4820	4,125.90	4,075.90	S 972.87	W 1,646.97	1,912.85
4830	4,133.83	4,083.83	S 976.00	W 1,652.20	1,918.94
4840	4,141.76	4,091.76	S 979.13	W 1,657.42	1,925.02
4850	4,149.71	4,099.71	S 982.25	W 1,662.63	1,931.10
4860	4,157.66	4,107.66	S 985.36	W 1,667.83	1,937.16
* 4866	4,162.43	4,112.43	S 987.23	W 1,670.95	1,940.80
4870	4,165.61	4,115.61	S 988.45	W 1,673.05	1,943.22
4880	4,173.57	4,123.57	S 991.50	W 1,678.28	1,949.28
4890	4,181.53	4,131.53	S 994.55	W 1,683.51	1,955.34
4900	4,189.49	4,139.49	S 997.59	W 1,688.74	1,961.39
4910	4,197.45	4,147.45	S 1,000.64	W 1,693.98	1,967.44
4920	4,205.41	4,155.41	S 1,003.68	W 1,699.20	1,973.49
4930	4,213.37	4,163.37	S 1,006.73	W 1,704.43	1,979.54
4940	4,221.34	4,171.34	S 1,009.77	W 1,709.66	1,985.59
4950	4,229.30	4,179.30	S 1,012.81	W 1,714.88	1,991.63
4960	4,237.27	4,187.27	S 1,015.85	W 1,720.11	1,997.68
4970	4,245.24	4,195.24	S 1,018.89	W 1,725.33	2,003.72
4980	4,253.21	4,203.21	S 1,021.93	W 1,730.55	2,009.76
4990	4,261.18	4,211.18	S 1,024.97	W 1,735.77	2,015.80
5000	4,269.15	4,219.15	S 1,028.01	W 1,740.98	2,021.84
5010	4,277.12	4,227.12	S 1,031.05	W 1,746.20	2,027.87
5020	4,285.10	4,235.10	S 1,034.08	W 1,751.41	2,033.90
* 5030	4,293.07	4,243.07	S 1,037.12	W 1,756.63	2,039.94
5040	4,301.03	4,251.03	S 1,040.11	W 1,761.89	2,045.99
5050	4,308.97	4,258.97	S 1,043.11	W 1,767.17	2,052.07
5060	4,316.90	4,266.90	S 1,046.12	W 1,772.48	2,058.16
5070	4,324.81	4,274.81	S 1,049.14	W 1,777.80	2,064.28
5080	4,332.70	4,282.70	S 1,052.18	W 1,783.14	2,070.42
5090	4,340.57	4,290.57	S 1,055.22	W 1,788.50	2,076.59
5100	4,348.43	4,298.43	S 1,058.28	W 1,793.88	2,082.77
5110	4,356.27	4,306.27	S 1,061.34	W 1,799.27	2,088.98
5120	4,364.09	4,314.09	S 1,064.42	W 1,804.69	2,095.21
* 5124	4,367.22	4,317.22	S 1,065.66	W 1,806.86	2,097.71
5130	4,371.90	4,321.90	S 1,067.47	W 1,810.14	2,101.45
5140	4,379.69	4,329.69	S 1,070.51	W 1,815.63	2,107.72
5150	4,387.46	4,337.46	S 1,073.56	W 1,821.13	2,114.01
5160	4,395.22	4,345.22	S 1,076.62	W 1,826.64	2,120.32

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
5170	4,402.97	4,352.97	S 1,079.69	W 1,832.18	2,126.64
5180	4,410.69	4,360.69	S 1,082.77	W 1,837.73	2,132.99
5190	4,418.40	4,368.40	S 1,085.86	W 1,843.30	2,139.36
5200	4,426.10	4,376.10	S 1,088.95	W 1,848.89	2,145.74
5210	4,433.77	4,383.77	S 1,092.06	W 1,854.49	2,152.15
5220	4,441.44	4,391.44	S 1,095.17	W 1,860.11	2,158.57
5230	4,449.08	4,399.08	S 1,098.30	W 1,865.75	2,165.01
5240	4,456.71	4,406.71	S 1,101.43	W 1,871.40	2,171.48
5250	4,464.32	4,414.32	S 1,104.58	W 1,877.08	2,177.96
5260	4,471.92	4,421.92	S 1,107.73	W 1,882.76	2,184.46
5270	4,479.50	4,429.50	S 1,110.89	W 1,888.47	2,190.98
5280	4,487.06	4,437.06	S 1,114.06	W 1,894.19	2,197.52
* 5283	4,489.33	4,439.33	S 1,115.02	W 1,895.91	2,199.48
5290	4,494.61	4,444.61	S 1,117.18	W 1,899.96	2,204.07
5300	4,502.15	4,452.15	S 1,120.28	W 1,905.76	2,210.64
5310	4,509.66	4,459.66	S 1,123.39	W 1,911.58	2,217.24
5320	4,517.16	4,467.16	S 1,126.50	W 1,917.42	2,223.85
5330	4,524.64	4,474.64	S 1,129.63	W 1,923.27	2,230.47
5340	4,532.11	4,482.11	S 1,132.76	W 1,929.14	2,237.12
5350	4,539.56	4,489.56	S 1,135.90	W 1,935.02	2,243.79
5360	4,546.99	4,496.99	S 1,139.05	W 1,940.92	2,250.47
5370	4,554.41	4,504.41	S 1,142.21	W 1,946.84	2,257.17
5380	4,561.81	4,511.81	S 1,145.38	W 1,952.77	2,263.89
5390	4,569.20	4,519.20	S 1,148.55	W 1,958.72	2,270.63
5400	4,576.57	4,526.57	S 1,151.74	W 1,964.68	2,277.38
5410	4,583.92	4,533.92	S 1,154.93	W 1,970.66	2,284.16
5420	4,591.25	4,541.25	S 1,158.13	W 1,976.65	2,290.95
5430	4,598.57	4,548.57	S 1,161.34	W 1,982.67	2,297.76
* 5440	4,605.87	4,555.87	S 1,164.56	W 1,988.69	2,304.58
5450	4,613.15	4,563.15	S 1,167.70	W 1,994.79	2,311.43
5460	4,620.41	4,570.41	S 1,170.84	W 2,000.91	2,318.30
5470	4,627.65	4,577.65	S 1,174.00	W 2,007.05	2,325.19
5480	4,634.86	4,584.86	S 1,177.17	W 2,013.21	2,332.10
5490	4,642.05	4,592.05	S 1,180.34	W 2,019.38	2,339.04
5500	4,649.22	4,599.22	S 1,183.53	W 2,025.58	2,346.00
5510	4,656.37	4,606.37	S 1,186.73	W 2,031.80	2,352.99
5520	4,663.50	4,613.50	S 1,189.94	W 2,038.04	2,359.99
5530	4,670.60	4,620.60	S 1,193.15	W 2,044.30	2,367.02
5540	4,677.68	4,627.68	S 1,196.38	W 2,050.58	2,374.07
5550	4,684.74	4,634.74	S 1,199.62	W 2,056.88	2,381.15
5560	4,691.77	4,641.77	S 1,202.87	W 2,063.20	2,388.24
5570	4,698.79	4,648.79	S 1,206.13	W 2,069.54	2,395.36
5580	4,705.78	4,655.78	S 1,209.40	W 2,075.90	2,402.50
5590	4,712.74	4,662.74	S 1,212.68	W 2,082.28	2,409.67
* 5599	4,719.00	4,669.00	S 1,215.64	W 2,088.04	2,416.13

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
5600	4,719.69	4,669.69	S 1,215.96	W 2,088.68	2,416.85
5610	4,726.63	4,676.63	S 1,219.15	W 2,095.14	2,424.03
5620	4,733.57	4,683.57	S 1,222.34	W 2,101.60	2,431.22
5630	4,740.50	4,690.50	S 1,225.54	W 2,108.06	2,438.41
5640	4,747.43	4,697.43	S 1,228.73	W 2,114.52	2,445.61
5650	4,754.35	4,704.35	S 1,231.93	W 2,120.99	2,452.81
5660	4,761.26	4,711.26	S 1,235.13	W 2,127.47	2,460.01
5670	4,768.18	4,718.18	S 1,238.33	W 2,133.95	2,467.23
5680	4,775.08	4,725.08	S 1,241.54	W 2,140.43	2,474.44
5690	4,781.98	4,731.98	S 1,244.74	W 2,146.92	2,481.66
5700	4,788.88	4,738.88	S 1,247.95	W 2,153.41	2,488.89
5710	4,795.77	4,745.77	S 1,251.16	W 2,159.91	2,496.12
5720	4,802.66	4,752.66	S 1,254.38	W 2,166.41	2,503.35
5730	4,809.54	4,759.54	S 1,257.59	W 2,172.91	2,510.59
5740	4,816.42	4,766.42	S 1,260.81	W 2,179.42	2,517.84
5750	4,823.29	4,773.29	S 1,264.03	W 2,185.93	2,525.08
* 5752	4,824.66	4,774.66	S 1,264.67	W 2,187.23	2,526.54
5760	4,830.16	4,780.16	S 1,267.16	W 2,192.48	2,532.33
5770	4,837.04	4,787.04	S 1,270.28	W 2,199.04	2,539.57
5780	4,843.91	4,793.91	S 1,273.40	W 2,205.60	2,546.81
5790	4,850.79	4,800.79	S 1,276.51	W 2,212.16	2,554.04
5800	4,857.66	4,807.66	S 1,279.63	W 2,218.72	2,561.28
5810	4,864.54	4,814.54	S 1,282.74	W 2,225.27	2,568.52
5820	4,871.42	4,821.42	S 1,285.86	W 2,231.83	2,575.75
5830	4,878.30	4,828.30	S 1,288.97	W 2,238.38	2,582.98
5840	4,885.19	4,835.19	S 1,292.08	W 2,244.94	2,590.21
* 5846	4,889.32	4,839.32	S 1,293.95	W 2,248.87	2,594.55
5850	4,892.07	4,842.07	S 1,295.19	W 2,251.49	2,597.45
5860	4,898.96	4,848.96	S 1,298.29	W 2,258.04	2,604.67
5870	4,905.85	4,855.85	S 1,301.39	W 2,264.59	2,611.89
5880	4,912.75	4,862.75	S 1,304.48	W 2,271.14	2,619.11
5890	4,919.65	4,869.65	S 1,307.58	W 2,277.68	2,626.32
5900	4,926.56	4,876.56	S 1,310.67	W 2,284.22	2,633.53
5910	4,933.46	4,883.46	S 1,313.76	W 2,290.75	2,640.74
5920	4,940.38	4,890.38	S 1,316.85	W 2,297.29	2,647.94
5930	4,947.29	4,897.29	S 1,319.94	W 2,303.81	2,655.14
5940	4,954.22	4,904.22	S 1,323.02	W 2,310.34	2,662.34
* 5942	4,955.60	4,905.60	S 1,323.64	W 2,311.64	2,663.78
5950	4,961.14	4,911.14	S 1,326.07	W 2,316.88	2,669.53
5960	4,968.07	4,918.07	S 1,329.11	W 2,323.42	2,676.72
5970	4,974.99	4,924.99	S 1,332.15	W 2,329.96	2,683.90
5980	4,981.93	4,931.93	S 1,335.18	W 2,336.50	2,691.08
5990	4,988.86	4,938.86	S 1,338.22	W 2,343.03	2,698.26
6000	4,995.80	4,945.80	S 1,341.25	W 2,349.57	2,705.44
6010	5,002.74	4,952.74	S 1,344.28	W 2,356.10	2,712.62

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
6020	5,009.68	4,959.68	S 1,347.32	W 2,362.62	2,719.79
6030	5,016.62	4,966.62	S 1,350.35	W 2,369.15	2,726.96
* 6037	5,021.49	4,971.49	S 1,352.47	W 2,373.72	2,731.98
6040	5,023.57	4,973.57	S 1,353.41	W 2,375.66	2,734.13
6050	5,030.52	4,980.52	S 1,356.54	W 2,382.14	2,741.31
6060	5,037.46	4,987.46	S 1,359.67	W 2,388.61	2,748.48
6070	5,044.41	4,994.41	S 1,362.80	W 2,395.09	2,755.66
6080	5,051.36	5,001.36	S 1,365.93	W 2,401.56	2,762.84
6090	5,058.30	5,008.30	S 1,369.07	W 2,408.04	2,770.02
6100	5,065.25	5,015.25	S 1,372.20	W 2,414.51	2,777.19
6110	5,072.20	5,022.20	S 1,375.33	W 2,420.99	2,784.37
6120	5,079.14	5,029.14	S 1,378.46	W 2,427.46	2,791.55
6130	5,086.09	5,036.09	S 1,381.59	W 2,433.94	2,798.73
* 6132	5,087.48	5,037.48	S 1,382.22	W 2,435.24	2,800.16
6140	5,093.04	5,043.04	S 1,384.62	W 2,440.47	2,805.89
6150	5,099.99	5,049.99	S 1,387.61	W 2,447.00	2,813.05
6160	5,106.95	5,056.95	S 1,390.60	W 2,453.54	2,820.21
6170	5,113.90	5,063.90	S 1,393.59	W 2,460.07	2,827.37
6180	5,120.86	5,070.86	S 1,396.58	W 2,466.60	2,834.53
6190	5,127.82	5,077.82	S 1,399.57	W 2,473.12	2,841.68
6200	5,134.79	5,084.79	S 1,402.56	W 2,479.65	2,848.83
6210	5,141.76	5,091.76	S 1,405.54	W 2,486.17	2,855.97
6220	5,148.73	5,098.73	S 1,408.53	W 2,492.69	2,863.12
* 6227	5,153.61	5,103.61	S 1,410.62	W 2,497.25	2,868.12
6230	5,155.70	5,105.70	S 1,411.65	W 2,499.14	2,870.27
6240	5,162.67	5,112.67	S 1,415.08	W 2,505.43	2,877.44
6250	5,169.65	5,119.65	S 1,418.51	W 2,511.72	2,884.60
6260	5,176.63	5,126.63	S 1,421.94	W 2,518.01	2,891.76
6270	5,183.61	5,133.61	S 1,425.36	W 2,524.30	2,898.92
6280	5,190.59	5,140.59	S 1,428.79	W 2,530.58	2,906.08
6290	5,197.57	5,147.57	S 1,432.22	W 2,536.87	2,913.24
6300	5,204.56	5,154.56	S 1,435.64	W 2,543.15	2,920.39
6310	5,211.54	5,161.54	S 1,439.07	W 2,549.43	2,927.54
6320	5,218.53	5,168.53	S 1,442.49	W 2,555.71	2,934.69
6330	5,225.53	5,175.53	S 1,445.91	W 2,561.99	2,941.84
6340	5,232.52	5,182.52	S 1,449.33	W 2,568.26	2,948.99
6350	5,239.52	5,189.52	S 1,452.75	W 2,574.54	2,956.14
* 6356	5,243.71	5,193.71	S 1,454.81	W 2,578.30	2,960.42
6360	5,246.51	5,196.51	S 1,456.24	W 2,580.77	2,963.28
6370	5,253.50	5,203.50	S 1,459.83	W 2,586.96	2,970.43
6380	5,260.49	5,210.49	S 1,463.41	W 2,593.15	2,977.58
* 6389	5,266.78	5,216.78	S 1,466.64	W 2,598.72	2,984.02
6390	5,267.48	5,217.48	S 1,467.02	W 2,599.33	2,984.74
6400	5,274.50	5,224.50	S 1,470.71	W 2,605.41	2,991.85
6410	5,281.57	5,231.57	S 1,474.39	W 2,611.46	2,998.92

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF L

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
6420	5,288.68	5,238.68	S 1,478.04	W 2,617.47	3,005.95
6430	5,295.82	5,245.82	S 1,481.68	W 2,623.44	3,012.94
6440	5,303.00	5,253.00	S 1,485.29	W 2,629.39	3,019.90
6450	5,310.23	5,260.23	S 1,488.89	W 2,635.30	3,026.81
* 6452	5,311.67	5,261.67	S 1,489.60	W 2,636.48	3,028.19
6460	5,317.47	5,267.47	S 1,492.56	W 2,641.13	3,033.69
6470	5,324.75	5,274.75	S 1,496.23	W 2,646.92	3,040.55
6480	5,332.05	5,282.05	S 1,499.90	W 2,652.70	3,047.37
6490	5,339.37	5,289.37	S 1,503.55	W 2,658.44	3,054.17
6500	5,346.72	5,296.72	S 1,507.18	W 2,664.17	3,060.95
6510	5,354.09	5,304.09	S 1,510.81	W 2,669.87	3,067.70
* 6520	5,361.48	5,311.48	S 1,514.41	W 2,675.56	3,074.42
6530	5,368.89	5,318.89	S 1,518.01	W 2,681.23	3,081.13
6540	5,376.31	5,326.31	S 1,521.61	W 2,686.89	3,087.83
6550	5,383.73	5,333.73	S 1,525.20	W 2,692.55	3,094.52
6560	5,391.16	5,341.16	S 1,528.79	W 2,698.20	3,101.20
6570	5,398.60	5,348.60	S 1,532.37	W 2,703.84	3,107.87
6580	5,406.06	5,356.06	S 1,535.94	W 2,709.47	3,114.53
* 6584	5,409.04	5,359.04	S 1,537.37	W 2,711.72	3,117.20
6590	5,413.51	5,363.51	S 1,539.46	W 2,715.13	3,121.19
6600	5,420.97	5,370.97	S 1,542.94	W 2,720.80	3,127.84
6610	5,428.44	5,378.44	S 1,546.41	W 2,726.47	3,134.49
6620	5,435.92	5,385.92	S 1,549.89	W 2,732.14	3,141.13
6630	5,443.39	5,393.39	S 1,553.35	W 2,737.80	3,147.77
6640	5,450.88	5,400.88	S 1,556.82	W 2,743.46	3,154.40
6650	5,458.36	5,408.36	S 1,560.29	W 2,749.11	3,161.03
6660	5,465.85	5,415.85	S 1,563.75	W 2,754.76	3,167.65
6670	5,473.35	5,423.35	S 1,567.20	W 2,760.40	3,174.26
* 6679	5,480.10	5,430.10	S 1,570.31	W 2,765.47	3,180.21
6680	5,480.85	5,430.85	S 1,570.66	W 2,766.03	3,180.87
6690	5,488.36	5,438.36	S 1,574.15	W 2,771.64	3,187.47
6700	5,495.88	5,445.88	S 1,577.64	W 2,777.24	3,194.06
6710	5,503.41	5,453.41	S 1,581.12	W 2,782.83	3,200.64
6720	5,510.94	5,460.94	S 1,584.60	W 2,788.41	3,207.21
6730	5,518.48	5,468.48	S 1,588.07	W 2,793.98	3,213.77
6740	5,526.03	5,476.03	S 1,591.53	W 2,799.55	3,220.32
6750	5,533.59	5,483.59	S 1,595.00	W 2,805.11	3,226.86
6760	5,541.15	5,491.15	S 1,598.45	W 2,810.66	3,233.40
6770	5,548.73	5,498.73	S 1,601.90	W 2,816.20	3,239.92
6780	5,556.31	5,506.31	S 1,605.35	W 2,821.74	3,246.44
6790	5,563.90	5,513.90	S 1,608.79	W 2,827.27	3,252.94
6800	5,571.50	5,521.50	S 1,612.23	W 2,832.79	3,259.44
6810	5,579.10	5,529.10	S 1,615.66	W 2,838.30	3,265.93
6820	5,586.71	5,536.71	S 1,619.09	W 2,843.80	3,272.41
6830	5,594.33	5,544.33	S 1,622.51	W 2,849.30	3,278.88

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO -	ORDINATES	HORIZONTAL DISTANCE
* 6838	5,600.44	5,550.44	S 1,625.25	W 2,853.69	3,284.05
6840	5,601.96	5,551.96	S 1,625.93	W 2,854.79	3,285.34
6850	5,609.59	5,559.59	S 1,629.35	W 2,860.28	3,291.80
6860	5,617.23	5,567.23	S 1,632.76	W 2,865.76	3,298.25
6870	5,624.86	5,574.86	S 1,636.17	W 2,871.24	3,304.70
6880	5,632.51	5,582.51	S 1,639.58	W 2,876.71	3,311.15
6890	5,640.15	5,590.15	S 1,642.99	W 2,882.18	3,317.59
6900	5,647.80	5,597.80	S 1,646.40	W 2,887.65	3,324.03
6910	5,655.45	5,605.45	S 1,649.80	W 2,893.12	3,330.46
6920	5,663.11	5,613.11	S 1,653.20	W 2,898.58	3,336.89
6930	5,670.77	5,620.77	S 1,656.60	W 2,904.03	3,343.31
6940	5,678.43	5,628.43	S 1,659.99	W 2,909.49	3,349.73
6950	5,686.10	5,636.10	S 1,663.39	W 2,914.94	3,356.15
6960	5,693.77	5,643.77	S 1,666.78	W 2,920.39	3,362.56
6970	5,701.44	5,651.44	S 1,670.17	W 2,925.83	3,368.97
6980	5,709.12	5,659.12	S 1,673.56	W 2,931.27	3,375.37
6990	5,716.80	5,666.80	S 1,676.94	W 2,936.70	3,381.77
* 6996	5,721.41	5,671.41	S 1,678.97	W 2,939.96	3,385.61
7000	5,724.48	5,674.48	S 1,680.32	W 2,942.14	3,388.17
7010	5,732.16	5,682.16	S 1,683.68	W 2,947.59	3,394.57
7020	5,739.84	5,689.84	S 1,687.05	W 2,953.04	3,400.97
7030	5,747.51	5,697.51	S 1,690.42	W 2,958.50	3,407.38
7040	5,755.18	5,705.18	S 1,693.80	W 2,963.96	3,413.79
7050	5,762.85	5,712.85	S 1,697.17	W 2,969.42	3,420.21
7060	5,770.51	5,720.51	S 1,700.55	W 2,974.88	3,426.63
7070	5,778.18	5,728.18	S 1,703.92	W 2,980.35	3,433.05
7080	5,785.84	5,735.84	S 1,707.30	W 2,985.82	3,439.48
7090	5,793.49	5,743.49	S 1,710.68	W 2,991.29	3,445.91
7100	5,801.15	5,751.15	S 1,714.07	W 2,996.77	3,452.34
7110	5,808.80	5,758.80	S 1,717.45	W 3,002.24	3,458.77
7120	5,816.44	5,766.44	S 1,720.84	W 3,007.72	3,465.21
7130	5,824.09	5,774.09	S 1,724.23	W 3,013.21	3,471.65
7140	5,831.73	5,781.73	S 1,727.62	W 3,018.70	3,478.10
7150	5,839.37	5,789.37	S 1,731.01	W 3,024.18	3,484.55
* 7155	5,843.19	5,793.19	S 1,732.71	W 3,026.93	3,487.77
7160	5,847.01	5,797.01	S 1,734.40	W 3,029.68	3,491.00
7170	5,854.66	5,804.66	S 1,737.77	W 3,035.16	3,497.44
7180	5,862.32	5,812.32	S 1,741.14	W 3,040.64	3,503.87
7190	5,869.98	5,819.98	S 1,744.51	W 3,046.11	3,510.29
7200	5,877.65	5,827.65	S 1,747.87	W 3,051.58	3,516.70
7210	5,885.33	5,835.33	S 1,751.23	W 3,057.04	3,523.11
7220	5,893.01	5,843.01	S 1,754.58	W 3,062.49	3,529.50
7230	5,900.70	5,850.70	S 1,757.93	W 3,067.93	3,535.89
7240	5,908.40	5,858.40	S 1,761.28	W 3,073.37	3,542.27
7250	5,916.10	5,866.10	S 1,764.62	W 3,078.80	3,548.64

PETRO-TECH PERUANA

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
			S 1,767.95	W 3,084.22	3,555.00
			S 1,771.28	W 3,089.63	3,561.36
			S 1,774.61	W 3,095.04	3,567.70
			S 1,777.93	W 3,100.44	3,574.04
			S 1,781.25	W 3,105.83	3,580.37
			S 1,784.56	W 3,111.22	3,586.69
			S 1,785.55	W 3,112.83	3,588.58
			S 1,787.86	W 3,116.60	3,593.00
			S 1,791.16	W 3,121.98	3,599.31
			S 1,794.45	W 3,127.35	3,605.61
			S 1,797.74	W 3,132.72	3,611.90
			S 1,801.03	W 3,138.08	3,618.19
			S 1,804.31	W 3,143.44	3,624.46
			S 1,807.59	W 3,148.79	3,630.74
			S 1,810.86	W 3,154.13	3,637.00
			S 1,814.14	W 3,159.47	3,643.26
			S 1,817.40	W 3,164.80	3,649.51
			S 1,820.67	W 3,170.13	3,655.76
			S 1,823.93	W 3,175.45	3,661.99
			S 1,827.19	W 3,180.76	3,668.22
			S 1,830.44	W 3,186.07	3,674.45
			S 1,833.69	W 3,191.38	3,680.66
			S 1,836.93	W 3,196.67	3,686.88
			S 1,837.58	W 3,197.73	3,688.12
			S 1,840.20	W 3,201.95	3,693.08
			S 1,843.47	W 3,207.22	3,699.28
			S 1,846.73	W 3,212.49	3,705.47
			S 1,850.00	W 3,217.75	3,711.66
			S 1,853.26	W 3,223.01	3,717.84
			S 1,856.51	W 3,228.26	3,724.02
			S 1,859.77	W 3,233.51	3,730.19
			S 1,863.02	W 3,238.76	3,736.36
			S 1,866.27	W 3,244.00	3,742.52
			S 1,869.52	W 3,249.23	3,748.68
			S 1,872.76	W 3,254.46	3,754.83
			S 1,876.00	W 3,259.69	3,760.98
			S 1,879.24	W 3,264.91	3,767.12
			S 1,882.47	W 3,270.13	3,773.26
			S 1,885.71	W 3,275.34	3,779.39
			S 1,888.94	W 3,280.55	3,785.51
			S 1,892.22	W 3,285.72	3,791.61
			S 1,895.49	W 3,290.88	3,797.71
			S 1,898.76	W 3,296.03	3,803.81
			S 1,902.03	W 3,301.18	3,809.91
			S 1,905.29	W 3,306.31	3,816.00
7260	5,923.82	5,873.82			
7270	5,931.54	5,881.54			
7280	5,939.26	5,889.26			
7290	5,947.00	5,897.00			
7300	5,954.74	5,904.74			
7310	5,962.48	5,912.48			
* 7313	5,964.81	5,914.81			
7320	5,970.24	5,920.24			
7330	5,978.00	5,928.00			
7340	5,985.76	5,935.76			
7350	5,993.53	5,943.53			
7360	6,001.31	5,951.31			
7370	6,009.09	5,959.09			
7380	6,016.87	5,966.87			
7390	6,024.67	5,974.67			
7400	6,032.46	5,982.46			
7410	6,040.27	5,990.27			
7420	6,048.07	5,998.07			
7430	6,055.89	6,005.89			
7440	6,063.71	6,013.71			
7450	6,071.53	6,021.53			
7460	6,079.36	6,029.36			
7470	6,087.20	6,037.20			
* 7472	6,088.77	6,038.77			
7480	6,095.04	6,045.04			
7490	6,102.88	6,052.88			
7500	6,110.73	6,060.73			
7510	6,118.58	6,068.58			
7520	6,126.44	6,076.44			
7530	6,134.30	6,084.30			
7540	6,142.17	6,092.17			
7550	6,150.04	6,100.04			
7560	6,157.91	6,107.91			
7570	6,165.79	6,115.79			
7580	6,173.67	6,123.67			
7590	6,181.55	6,131.55			
7600	6,189.44	6,139.44			
7610	6,197.34	6,147.34			
7620	6,205.23	6,155.23			
* 7630	6,213.14	6,163.14			
7640	6,221.04	6,171.04			
7650	6,228.96	6,178.96			
7660	6,236.88	6,186.88			
7670	6,244.81	6,194.81			
7680	6,252.74	6,202.74			

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF L

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL	CO - ORDINATES	HORIZONTAL DISTANCE
7690	6,260.69	6,210.69	S 1,908.55	W 3,311.44	3,822.07
7700	6,268.64	6,218.64	S 1,911.80	W 3,316.56	3,828.13
7710	6,276.59	6,226.59	S 1,915.05	W 3,321.68	3,834.18
7720	6,284.55	6,234.55	S 1,918.29	W 3,326.79	3,840.23
7730	6,292.52	6,242.52	S 1,921.53	W 3,331.89	3,846.26
7740	6,300.50	6,250.50	S 1,924.76	W 3,336.98	3,852.29
7750	6,308.48	6,258.48	S 1,927.99	W 3,342.06	3,858.31
7760	6,316.47	6,266.47	S 1,931.21	W 3,347.14	3,864.31
7770	6,324.47	6,274.47	S 1,934.43	W 3,352.21	3,870.31
7780	6,332.47	6,282.47	S 1,937.64	W 3,357.27	3,876.31
* 7787	6,338.08	6,288.08	S 1,939.89	W 3,360.81	3,880.50
7790	6,340.48	6,290.48	S 1,940.89	W 3,362.31	3,882.29
7800	6,348.49	6,298.49	S 1,944.21	W 3,367.28	3,888.26
7810	6,356.51	6,306.51	S 1,947.53	W 3,372.26	3,894.22
7820	6,364.53	6,314.53	S 1,950.84	W 3,377.22	3,900.18
7830	6,372.55	6,322.55	S 1,954.15	W 3,382.19	3,906.14
7840	6,380.58	6,330.58	S 1,957.46	W 3,387.15	3,912.09
7850	6,388.61	6,338.61	S 1,960.77	W 3,392.10	3,918.03
7860	6,396.65	6,346.65	S 1,964.07	W 3,397.05	3,923.97
7870	6,404.69	6,354.69	S 1,967.37	W 3,402.00	3,929.91
7880	6,412.73	6,362.73	S 1,970.67	W 3,406.94	3,935.83
7890	6,420.78	6,370.78	S 1,973.96	W 3,411.88	3,941.76
7900	6,428.83	6,378.83	S 1,977.25	W 3,416.81	3,947.68
7910	6,436.89	6,386.89	S 1,980.54	W 3,421.74	3,953.59
7920	6,444.95	6,394.95	S 1,983.83	W 3,426.66	3,959.50
7930	6,453.01	6,403.01	S 1,987.11	W 3,431.58	3,965.40
7940	6,461.08	6,411.08	S 1,990.39	W 3,436.50	3,971.29
* 7945	6,465.12	6,415.12	S 1,992.03	W 3,438.96	3,974.24
7950	6,469.15	6,419.15	S 1,993.67	W 3,441.40	3,977.18
7960	6,477.24	6,427.24	S 1,996.96	W 3,446.29	3,983.06
7970	6,485.33	6,435.33	S 2,000.23	W 3,451.16	3,988.91
7980	6,493.44	6,443.44	S 2,003.50	W 3,456.02	3,994.76
7990	6,501.56	6,451.56	S 2,006.76	W 3,460.87	4,000.58
8000	6,509.68	6,459.68	S 2,010.01	W 3,465.70	4,006.40
8010	6,517.82	6,467.82	S 2,013.25	W 3,470.53	4,012.20
8020	6,525.97	6,475.97	S 2,016.49	W 3,475.34	4,017.99
8030	6,534.13	6,484.13	S 2,019.71	W 3,480.14	4,023.76
8040	6,542.29	6,492.29	S 2,022.93	W 3,484.93	4,029.51
8050	6,550.47	6,500.47	S 2,026.14	W 3,489.70	4,035.26
8060	6,558.66	6,508.66	S 2,029.35	W 3,494.47	4,040.98
8070	6,566.86	6,516.86	S 2,032.54	W 3,499.22	4,046.70
8080	6,575.07	6,525.07	S 2,035.73	W 3,503.96	4,052.40
8090	6,583.28	6,533.28	S 2,038.91	W 3,508.69	4,058.08
8100	6,591.51	6,541.51	S 2,042.08	W 3,513.41	4,063.75
* 8103	6,593.98	6,543.98	S 2,043.03	W 3,514.82	4,065.45

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
8530	6,948.55	6,898.55	S 2,176.89	W 3,711.49	4,302.79
8540	6,956.89	6,906.89	S 2,180.02	W 3,716.02	4,308.28
* 8542	6,958.56	6,908.56	S 2,180.64	W 3,716.93	4,309.38
8550	6,965.24	6,915.24	S 2,183.14	W 3,720.55	4,313.77
8560	6,973.59	6,923.59	S 2,186.26	W 3,725.09	4,319.26
8570	6,981.94	6,931.94	S 2,189.37	W 3,729.63	4,324.75
8580	6,990.29	6,940.29	S 2,192.49	W 3,734.16	4,330.24
8590	6,998.64	6,948.64	S 2,195.61	W 3,738.70	4,335.73
8600	7,006.99	6,956.99	S 2,198.73	W 3,743.24	4,341.23
8610	7,015.33	6,965.33	S 2,201.85	W 3,747.77	4,346.72
8620	7,023.68	6,973.68	S 2,204.96	W 3,752.31	4,352.21
8630	7,032.03	6,982.03	S 2,208.08	W 3,756.85	4,357.70
* 8637	7,037.88	6,987.88	S 2,210.26	W 3,760.02	4,361.54
8640	7,040.38	6,990.38	S 2,211.19	W 3,761.39	4,363.19
8650	7,048.73	6,998.73	S 2,214.29	W 3,765.94	4,368.68
8660	7,057.08	7,007.08	S 2,217.38	W 3,770.48	4,374.16
8670	7,065.44	7,015.44	S 2,220.47	W 3,775.03	4,379.65
8680	7,073.80	7,023.80	S 2,223.55	W 3,779.57	4,385.13
8690	7,082.16	7,032.16	S 2,226.64	W 3,784.11	4,390.60
8700	7,090.52	7,040.52	S 2,229.72	W 3,788.64	4,396.08
8710	7,098.88	7,048.88	S 2,232.80	W 3,793.18	4,401.55
8720	7,107.25	7,057.25	S 2,235.89	W 3,797.71	4,407.01
8730	7,115.61	7,065.61	S 2,238.96	W 3,802.24	4,412.48
* 8731	7,116.45	7,066.45	S 2,239.27	W 3,802.69	4,413.02
8740	7,123.99	7,073.99	S 2,242.06	W 3,806.74	4,417.93
8750	7,132.37	7,082.37	S 2,245.15	W 3,811.24	4,423.38
8760	7,140.75	7,090.75	S 2,248.24	W 3,815.73	4,428.81
8770	7,149.14	7,099.14	S 2,251.32	W 3,820.22	4,434.24
8780	7,157.54	7,107.54	S 2,254.39	W 3,824.69	4,439.66
8790	7,165.94	7,115.94	S 2,257.46	W 3,829.16	4,445.06
8800	7,174.35	7,124.35	S 2,260.53	W 3,833.62	4,450.46
8810	7,182.77	7,132.77	S 2,263.59	W 3,838.07	4,455.85
8820	7,191.19	7,141.19	S 2,266.65	W 3,842.52	4,461.23
* 8826	7,196.24	7,146.24	S 2,268.48	W 3,845.18	4,464.46
8830	7,199.61	7,149.61	S 2,269.70	W 3,846.95	4,466.61
8840	7,208.04	7,158.04	S 2,272.77	W 3,851.38	4,471.98
8850	7,216.47	7,166.47	S 2,275.84	W 3,855.80	4,477.35
8860	7,224.89	7,174.89	S 2,278.90	W 3,860.23	4,482.72
8870	7,233.32	7,183.32	S 2,281.96	W 3,864.65	4,488.08
8880	7,241.75	7,191.75	S 2,285.03	W 3,869.07	4,493.45
8890	7,250.18	7,200.18	S 2,288.09	W 3,873.49	4,498.81
8900	7,258.61	7,208.61	S 2,291.15	W 3,877.91	4,504.17
8910	7,267.05	7,217.05	S 2,294.21	W 3,882.33	4,509.54
8920	7,275.48	7,225.48	S 2,297.27	W 3,886.75	4,514.89
* 8921	7,276.32	7,226.32	S 2,297.58	W 3,887.19	4,515.43

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF I

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
8930	7,283.92	7,233.92	S 2,300.38	W 3,891.13	4,520.25
8940	7,292.35	7,242.35	S 2,303.49	W 3,895.51	4,525.60
8950	7,300.78	7,250.78	S 2,306.61	W 3,899.89	4,530.96
8960	7,309.22	7,259.22	S 2,309.72	W 3,904.27	4,536.31
8970	7,317.65	7,267.65	S 2,312.83	W 3,908.65	4,541.66
8980	7,326.09	7,276.09	S 2,315.95	W 3,913.03	4,547.02
8990	7,334.52	7,284.52	S 2,319.06	W 3,917.40	4,552.37
9000	7,342.95	7,292.95	S 2,322.17	W 3,921.78	4,557.73
9010	7,351.39	7,301.39	S 2,325.29	W 3,926.16	4,563.08
* 9016	7,356.45	7,306.45	S 2,327.15	W 3,928.79	4,566.29
9020	7,359.82	7,309.82	S 2,328.43	W 3,930.51	4,568.43
9030	7,368.27	7,318.27	S 2,331.63	W 3,934.81	4,573.76
9040	7,376.72	7,326.72	S 2,334.81	W 3,939.10	4,579.07
9050	7,385.18	7,335.18	S 2,337.99	W 3,943.38	4,584.37
9060	7,393.65	7,343.65	S 2,341.16	W 3,947.65	4,589.66
9070	7,402.13	7,352.13	S 2,344.33	W 3,951.91	4,594.94
9080	7,410.61	7,360.61	S 2,347.48	W 3,956.16	4,600.21
9090	7,419.10	7,369.10	S 2,350.63	W 3,960.40	4,605.46
9100	7,427.60	7,377.60	S 2,353.77	W 3,964.63	4,610.70
9110	7,436.11	7,386.11	S 2,356.91	W 3,968.85	4,615.93
* 9112	7,437.81	7,387.81	S 2,357.54	W 3,969.70	4,616.98
9120	7,444.62	7,394.62	S 2,360.06	W 3,973.04	4,621.14
9130	7,453.15	7,403.15	S 2,363.21	W 3,977.21	4,626.33
9140	7,461.69	7,411.69	S 2,366.35	W 3,981.35	4,631.50
9150	7,470.24	7,420.24	S 2,369.48	W 3,985.49	4,636.65
9160	7,478.81	7,428.81	S 2,372.59	W 3,989.61	4,641.78
9170	7,487.38	7,437.38	S 2,375.70	W 3,993.71	4,646.90
9180	7,495.97	7,445.97	S 2,378.79	W 3,997.80	4,651.99
9190	7,504.56	7,454.56	S 2,381.87	W 4,001.87	4,657.07
9200	7,513.17	7,463.17	S 2,384.94	W 4,005.93	4,662.13
* 9207	7,519.20	7,469.20	S 2,387.08	W 4,008.77	4,665.66
9210	7,521.79	7,471.79	S 2,388.01	W 4,009.97	4,667.17
9220	7,530.42	7,480.42	S 2,391.10	W 4,013.98	4,672.19
9230	7,539.05	7,489.05	S 2,394.17	W 4,017.97	4,677.20
9240	7,547.70	7,497.70	S 2,397.24	W 4,021.96	4,682.19
9250	7,556.35	7,506.35	S 2,400.30	W 4,025.93	4,687.17
9260	7,565.01	7,515.01	S 2,403.35	W 4,029.89	4,692.13
9270	7,573.68	7,523.68	S 2,406.39	W 4,033.84	4,697.08
9280	7,582.35	7,532.35	S 2,409.43	W 4,037.78	4,702.02
9290	7,591.04	7,541.04	S 2,412.45	W 4,041.70	4,706.94
9300	7,599.73	7,549.73	S 2,415.47	W 4,045.62	4,711.85
* 9302	7,601.47	7,551.47	S 2,416.07	W 4,046.40	4,712.83
9310	7,608.43	7,558.43	S 2,418.49	W 4,049.52	4,716.74
9320	7,617.14	7,567.14	S 2,421.50	W 4,053.40	4,721.62
9330	7,625.86	7,575.86	S 2,424.50	W 4,057.27	4,726.48

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
9340	7,634.59	7,584.59	S 2,427.49	W 4,061.13	4,731.33
9350	7,643.32	7,593.32	S 2,430.48	W 4,064.98	4,736.17
9360	7,652.06	7,602.06	S 2,433.46	W 4,068.82	4,740.99
9370	7,660.81	7,610.81	S 2,436.42	W 4,072.64	4,745.79
9380	7,669.57	7,619.57	S 2,439.38	W 4,076.45	4,750.59
9390	7,678.34	7,628.34	S 2,442.33	W 4,080.26	4,755.36
* 9397	7,684.48	7,634.48	S 2,444.39	W 4,082.91	4,758.70
9400	7,687.11	7,637.11	S 2,445.29	W 4,084.04	4,760.13
9410	7,695.88	7,645.88	S 2,448.27	W 4,087.79	4,764.88
9420	7,704.66	7,654.66	S 2,451.25	W 4,091.54	4,769.63
9430	7,713.45	7,663.45	S 2,454.23	W 4,095.28	4,774.36
9440	7,722.23	7,672.23	S 2,457.20	W 4,099.02	4,779.10
9450	7,731.02	7,681.02	S 2,460.17	W 4,102.75	4,783.82
9460	7,739.82	7,689.82	S 2,463.13	W 4,106.47	4,788.54
9470	7,748.62	7,698.62	S 2,466.09	W 4,110.20	4,793.26
9480	7,757.42	7,707.42	S 2,469.05	W 4,113.91	4,797.97
9490	7,766.22	7,716.22	S 2,472.00	W 4,117.62	4,802.67
* 9492	7,767.98	7,717.98	S 2,472.59	W 4,118.37	4,803.61
9500	7,775.03	7,725.03	S 2,474.99	W 4,121.30	4,807.35
9510	7,783.84	7,733.84	S 2,477.98	W 4,124.95	4,812.03
9520	7,792.66	7,742.66	S 2,480.97	W 4,128.60	4,816.69
9530	7,801.49	7,751.49	S 2,483.95	W 4,132.24	4,821.35
9540	7,810.32	7,760.32	S 2,486.92	W 4,135.87	4,825.99
9550	7,819.15	7,769.15	S 2,489.89	W 4,139.50	4,830.63
9560	7,827.99	7,777.99	S 2,492.85	W 4,143.11	4,835.25
9570	7,836.84	7,786.84	S 2,495.80	W 4,146.72	4,839.87
9580	7,845.69	7,795.69	S 2,498.75	W 4,150.33	4,844.48
* 9587	7,851.88	7,801.88	S 2,500.81	W 4,152.84	4,847.70
9590	7,854.54	7,804.54	S 2,501.69	W 4,153.93	4,849.08
9600	7,863.41	7,813.41	S 2,504.59	W 4,157.53	4,853.66
9610	7,872.28	7,822.28	S 2,507.49	W 4,161.12	4,858.23
9620	7,881.16	7,831.16	S 2,510.38	W 4,164.70	4,862.79
9630	7,890.04	7,840.04	S 2,513.26	W 4,168.27	4,867.33
9640	7,898.94	7,848.94	S 2,516.13	W 4,171.82	4,871.86
9650	7,907.84	7,857.84	S 2,518.99	W 4,175.37	4,876.38
9660	7,916.75	7,866.75	S 2,521.85	W 4,178.90	4,880.88
9670	7,925.67	7,875.67	S 2,524.69	W 4,182.42	4,885.36
9680	7,934.59	7,884.59	S 2,527.52	W 4,185.94	4,889.83
* 9682	7,936.38	7,886.38	S 2,528.09	W 4,186.64	4,890.72
9690	7,943.52	7,893.52	S 2,530.35	W 4,189.44	4,894.29
9700	7,952.46	7,902.46	S 2,533.16	W 4,192.92	4,898.72
9710	7,961.41	7,911.41	S 2,535.96	W 4,196.39	4,903.14
9720	7,970.37	7,920.37	S 2,538.76	W 4,199.85	4,907.55
9730	7,979.34	7,929.34	S 2,541.54	W 4,203.30	4,911.94
9740	7,988.31	7,938.31	S 2,544.31	W 4,206.73	4,916.31

DIRECTIONAL SURVEY FOR WELL LO16-23

10

WELL NO. Z-2B-21-57-D-LO16 (LO16-23) ELEVATION: 50 FEET NUMBER OF D

CONDUCTOR IS VERTICAL

CONDUCTOR DATA: 563' MD

MEASURED DEPTH	VERTICAL DEPTH	TRUE SUB-SEA	TOTAL CO - ORDINATES		HORIZONTAL DISTANCE
9750	7,997.29	7,947.29	S 2,547.07	W 4,210.15	4,920.66
9760	8,006.28	7,956.28	S 2,549.82	W 4,213.55	4,925.00
9770	8,015.28	7,965.28	S 2,552.56	W 4,216.95	4,929.32
* 9775	8,019.78	7,969.78	S 2,553.92	W 4,218.64	4,931.48
9780	8,024.29	7,974.29	S 2,555.27	W 4,220.34	4,933.63
9790	8,033.31	7,983.31	S 2,557.96	W 4,223.73	4,937.92
9800	8,042.33	7,992.33	S 2,560.63	W 4,227.10	4,942.19
9810	8,051.37	8,001.37	S 2,563.29	W 4,230.46	4,946.44
9820	8,060.41	8,010.41	S 2,565.94	W 4,233.80	4,950.67
9830	8,069.47	8,019.47	S 2,568.58	W 4,237.12	4,954.88
9840	8,078.53	8,028.53	S 2,571.20	W 4,240.43	4,959.07
9850	8,087.61	8,037.61	S 2,573.82	W 4,243.73	4,963.24
9860	8,096.69	8,046.69	S 2,576.42	W 4,247.01	4,967.39
9870	8,105.78	8,055.78	S 2,579.00	W 4,250.27	4,971.52
* 9871	8,106.69	8,056.69	S 2,579.26	W 4,250.60	4,971.94
9880	8,114.88	8,064.88	S 2,581.55	W 4,253.55	4,975.65
9890	8,123.98	8,073.98	S 2,584.08	W 4,256.83	4,979.77
9900	8,133.08	8,083.08	S 2,586.61	W 4,260.10	4,983.88
9910	8,142.19	8,092.19	S 2,589.13	W 4,263.36	4,987.97
9920	8,151.31	8,101.31	S 2,591.65	W 4,266.62	4,992.06
9930	8,160.43	8,110.43	S 2,594.16	W 4,269.86	4,996.14
9940	8,169.55	8,119.55	S 2,596.66	W 4,273.10	5,000.20
9950	8,178.68	8,128.68	S 2,599.16	W 4,276.33	5,004.26
9960	8,187.81	8,137.81	S 2,601.65	W 4,279.55	5,008.31
* 9965	8,192.38	8,142.38	S 2,602.89	W 4,281.16	5,010.33
9970	8,196.95	8,146.95	S 2,604.15	W 4,282.76	5,012.35
9980	8,206.09	8,156.09	S 2,606.65	W 4,285.96	5,016.38
9990	8,215.23	8,165.23	S 2,609.16	W 4,289.15	5,020.41
10000	8,224.37	8,174.37	S 2,611.66	W 4,292.34	5,024.43
* 10004	8,228.03	8,178.03	S 2,612.66	W 4,293.61	5,026.04

PETRO-TECH PERUANA S.A.

LO16
slot #24
LOBITOS
Offshore Peru

P R O P O S A L L I S T I N G

Well name : LO16-24

Your ref : Revision #3
Our ref : prop327

Date printed : 14-Jan-98
Date created : 9-Jan-98
Last revised : 9-Jan-98

Field is centred on 463049.010,9508638.880

Structure is centred on 459705.340,9506366.580

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/100Ft	Vert Sect	
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	0.00	
100.00	0.00	180.00	100.00	0.00 N	0.00 E	0.00	0.00	
200.00	0.00	180.00	200.00	0.00 N	0.00 E	0.00	0.00	
300.00	0.00	180.00	300.00	0.00 N	0.00 E	0.00	0.00	
400.00	0.00	180.00	400.00	0.00 N	0.00 E	0.00	0.00	
500.00	0.00	180.00	500.00	0.00 N	0.00 E	0.00	0.00	
600.00	0.00	180.00	600.00	0.00 N	0.00 E	0.00	0.00	
700.00	0.00	180.00	700.00	0.00 N	0.00 E	0.00	0.00	
800.00	0.00	180.00	800.00	0.00 N	0.00 E	0.00	0.00	
900.00	0.00	180.00	900.00	0.00 N	0.00 E	0.00	0.00	
1000.00	0.00	180.00	1000.00	0.00 N	0.00 E	0.00	0.00	KOP 4.0/100 ft
1100.00	4.00	180.00	1099.92	3.49 S	0.00 E	4.00	1.16	
1200.00	8.00	180.00	1199.35	13.94 S	0.00 E	4.00	4.65	
1250.00	10.00	180.00	1248.73	21.76 S	0.00 E	4.00	7.25	
1300.00	10.53	190.85	1297.94	30.59 S	0.86 W	4.00	11.00	
1400.00	12.50	208.42	1395.95	49.08 S	7.73 W	4.00	23.65	
1500.00	15.27	220.51	1493.04	68.62 S	21.44 W	4.00	43.08	
1600.00	18.49	228.72	1588.73	89.11 S	41.92 W	4.00	69.22	
1700.00	21.96	234.49	1682.56	110.44 S	69.07 W	4.00	101.93	
1800.00	25.58	238.73	1774.07	132.52 S	102.76 W	4.00	141.05	
1900.00	29.29	241.97	1862.81	155.23 S	142.83 W	4.00	186.39	
2000.00	33.07	244.53	1948.35	178.47 S	189.07 W	4.00	237.74	
2100.00	36.89	246.62	2030.27	202.12 S	241.27 W	4.00	294.84	
2200.00	40.73	248.36	2108.18	226.07 S	299.17 W	4.00	357.41	
2300.00	44.60	249.86	2181.70	250.20 S	362.49 W	4.00	425.15	
2400.00	48.49	251.16	2250.46	274.39 S	430.92 W	4.00	497.73	
2445.84	50.28	251.70	2280.30	285.47 S	463.90 W	4.00	532.52	Start Tangent Section
2500.00	50.28	251.70	2314.91	298.55 S	503.45 W	0.00	574.17	
2946.10	50.28	251.70	2600.00	406.28 S	829.23 W	0.00	917.22	Chacra
3000.00	50.28	251.70	2634.44	419.29 S	868.58 W	0.00	958.66	
3500.00	50.28	251.70	2953.98	540.03 S	1233.72 W	0.00	1343.16	
4000.00	50.28	251.70	3273.51	660.77 S	1598.85 W	0.00	1727.66	
4432.65	50.28	251.70	3550.00	765.25 S	1914.80 W	0.00	2060.36	Parinas
4500.00	50.28	251.70	3593.04	781.51 S	1963.98 W	0.00	2112.15	
4667.37	50.28	251.70	3700.00	821.93 S	2086.20 W	0.00	2240.86	Palegreda
5000.00	50.28	251.70	3912.57	902.25 S	2329.11 W	0.00	2496.65	
5500.00	50.28	251.70	4232.10	1022.99 S	2694.24 W	0.00	2881.15	
6000.00	50.28	251.70	4551.64	1143.73 S	3059.37 W	0.00	3265.64	
6500.00	50.28	251.70	4871.17	1264.47 S	3424.51 W	0.00	3650.14	
6936.31	50.28	251.70	5150.00	1369.84 S	3743.13 W	0.00	3985.66	Mogollon
7000.00	50.28	251.70	5190.70	1385.22 S	3789.64 W	0.00	4034.64	
7500.00	50.28	251.70	5510.23	1505.96 S	4154.77 W	0.00	4419.13	
8000.00	50.28	251.70	5829.76	1626.70 S	4519.90 W	0.00	4803.63	
8188.14	50.28	251.70	5950.00	1672.13 S	4657.29 W	0.00	4948.31	San Cristobal
8500.00	50.28	251.70	6149.30	1747.44 S	4885.03 W	0.00	5188.13	
9000.00	50.28	251.70	6468.83	1868.18 S	5250.16 W	0.00	5572.63	
9500.00	50.28	251.70	6788.36	1988.92 S	5615.29 W	0.00	5957.12	
9752.93	50.28	251.70	6950.00	2049.99 S	5800.00 W	0.00	6151.62	LO16-24/Basal Salina
10000.00	50.28	251.70	7107.89	2109.66 S	5980.43 W	0.00	6341.62	
10500.00	50.28	251.70	7427.43	2230.40 S	6345.56 W	0.00	6726.12	
10691.80	50.28	251.70	7550.00	2276.71 S	6485.62 W	0.00	6873.61	Balcones
10926.52	50.28	251.70	7700.00	2333.39 S	6657.03 W	0.00	7054.11	T.D.

All data is in feet unless otherwise stated
Coordinates are from slot #24 and TVDs are from wellhead.
Vertical section is from wellhead on azimuth 250.53 degrees.
Calculation uses the minimum curvature method.

PETRO-TECH PERUANA S.A.
 LO16 <not named>, LO16-24
 LOBITOS, Offshore Peru

PROPOSAL LISTING Page 2
 Your ref : Revision #3
 Last revised : 9-Jan-98

Comments in wellpath
 =====

MD	TVD	Rectangular Coords.		Comment
1000.00	1000.00	0.00 N	0.00 E	KOP 4.0/100 ft
2445.84	2280.30	285.47 S	463.90 W	Start Tangent Section
2946.10	2600.00	406.28 S	829.23 W	Chacra
4432.65	3550.00	765.25 S	1914.80 W	Parinas
4667.37	3700.00	821.93 S	2086.20 W	Palegreda
6936.31	5150.00	1369.84 S	3743.13 W	Mogollon
8188.14	5950.00	1672.13 S	4657.29 W	San Cristobal
9752.93	6950.00	2049.99 S	5800.00 W	LO16-24/Basal Salina
10691.80	7550.00	2276.71 S	6485.62 W	Balcones
10926.52	7700.00	2333.39 S	6657.03 W	T.D.

Casing positions in string 'A'
 =====

Top MD	Top TVD	Rectangular Coords.		Bot MD	Bot TVD	Rectangular Coords.		Casing
0.00	0.00	0.00N	0.00E	2500.00	2314.91	298.55S	503.45W	Csg. 13 3/8"
0.00	0.00	0.00N	0.00E	6900.00	5126.80	1361.07S	3716.61W	Csg. 9 5/8"

Targets associated with this wellpath
 =====

Target name	Position	T.V.D. Local rectangular coords.			Date revised
LO16-24/Basal Salina	457943.300,9505741.080	6950.00	2049.99S	5800.00W	9-Jan-98

All data is in feet unless otherwise stated
 Coordinates are from slot #24 and TVDs are from wellhead.
 Vertical section is from wellhead on azimuth 250.53 degrees.
 Calculation uses the minimum curvature method.

PETRO-TECH PERUANA S.A.

LO16-23

PETREX RIG #3

Page 2

MEASURED DEPTH	INCL.	DIRECTION	VERTICAL DEPTH	VERTICAL SECTION	RECTANGULAR COORDINATES	DLS Deg/100'
5124.00	38.60	240.40	4368.22	2100.71	1072.23 S 1806.49 W	1.64
5283.00	40.90	241.00	4490.45	2202.35	1121.97 S 1895.15 W	1.47
5440.00	43.10	241.90	4607.12	2307.34	1172.16 S 1987.43 W	1.45
5599.00	46.00	242.80	4720.42	2418.74	1223.90 S 2086.23 W	1.87
5752.00	46.60	243.70	4826.12	2529.12	1273.68 S 2185.01 W	.58
5846.00	46.50	244.60	4890.77	2597.15	1303.43 S 2246.42 W	.70
5942.00	46.20	244.70	4957.04	2666.34	1333.17 S 2309.20 W	.32
6037.00	46.00	245.10	5022.91	2734.50	1362.21 S 2371.18 W	.37
6132.00	46.00	244.20	5088.90	2802.57	1391.47 S 2432.94 W	.68
6227.00	45.80	245.40	5155.01	2870.50	1420.52 S 2494.67 W	.93
6356.00	45.60	241.40	5245.13	2962.59	1461.83 S 2577.19 W	2.22
6389.00	45.70	239.90	5268.20	2986.18	1473.40 S 2597.75 W	3.26
6452.00	43.70	238.70	5312.98	3030.49	1496.01 S 2635.86 W	3.45
6520.00	42.30	237.60	5362.71	3076.85	1520.48 S 2675.25 W	2.34
6584.00	41.80	237.60	5410.23	3119.69	1543.45 S 2711.45 W	.78
6679.00	41.40	238.50	5481.27	3182.74	1576.83 S 2764.96 W	.76
6838.00	40.30	238.10	5601.54	3286.71	1631.47 S 2853.45 W	.71
6996.00	39.80	238.10	5722.49	3388.34	1685.19 S 2939.76 W	.32
7155.00	40.20	238.30	5844.29	3490.51	1739.05 S 3026.62 W	.26
7313.00	39.20	238.40	5965.85	3591.41	1792.01 S 3112.53 W	.63
7472.00	38.40	238.50	6089.77	3691.02	1844.14 S 3197.43 W	.50
7630.00	37.80	238.20	6214.10	3788.49	1895.29 S 3280.43 W	.40
7787.00	36.80	237.60	6338.99	3883.59	1945.85 S 3361.02 W	.68
7945.00	36.20	236.30	6466.00	3977.46	1997.09 S 3439.80 W	.62
8103.00	34.60	236.10	6594.79	4068.83	2048.00 S 3515.85 W	1.01
8261.00	33.90	236.60	6725.39	4157.61	2097.28 S 3589.87 W	.48
SURVEYS BELOW THIS DEPTH FROM MULTISHOT						
8352.00	33.80	235.00	6800.96	4208.18	2125.77 S 3631.79 W	.99
8446.00	33.50	235.40	6879.21	4260.11	2155.50 S 3674.56 W	.40
8542.00	33.40	235.40	6959.31	4312.89	2185.54 S 3718.12 W	.10
8637.00	33.40	235.50	7038.62	4365.05	2215.20 S 3761.19 W	.06
8731.00	33.20	235.80	7117.19	4416.54	2244.32 S 3803.80 W	.28
8826.00	32.60	235.50	7196.95	4468.01	2273.44 S 3846.40 W	.65
8921.00	32.50	235.30	7277.03	4518.99	2302.46 S 3888.48 W	.15
9016.00	32.50	234.60	7357.15	4569.87	2331.77 S 3930.26 W	.40
9112.00	31.70	233.40	7438.48	4620.64	2361.75 S 3971.54 W	1.07
9207.00	30.50	232.90	7519.82	4669.40	2391.18 S 4010.80 W	1.29
9302.00	29.60	232.40	7602.05	4716.62	2420.04 S 4048.62 W	.98
9397.00	28.70	232.20	7685.02	4762.52	2448.33 S 4085.24 W	.95
9492.00	28.30	231.50	7768.50	4807.43	2476.33 S 4120.88 W	.55
9587.00	27.70	230.70	7852.38	4851.55	2504.34 S 4155.59 W	.74

Post-It[™] Transmisión por Fax 7671

FECHA / DATE	Jan. 9	Nº DE PAGINAS / # OF PAGES	2
PARA / TO	H. Borrojo	DE / FROM	M. Dague
COMPANIA / CO.		COMPANIA / CO.	
DEPARTAMENTO / DEPT.		TELEFONO / PHONE #	
FAX		FAX	

PETRO TECH - PERUANA S.A.

Gerencia de Exploración
y Desarrollo

09 ENE. 1998

RECIBIDO

PETRO-TECH PERUANA S.A.

LO16-23

PETREX RIG #3

Page 3

MEASURED DEPTH	INCL.	DIRECTION	VERTICAL DEPTH	VERTICAL SECTION	RECTANGULAR COORDINATES	DLS Deg/100'
9682.00	26.80	231.10	7936.84	4894.54	2531.77 S 4189.35 W	.97
9775.00	25.80	231.10	8020.21	4935.30	2557.65 S 4221.42 W	1.07
9871.00	24.60	231.60	8107.07	4975.75	2583.18 S 4253.33 W	1.27
9965.00	24.00	232.30	8192.75	5014.08	2607.02 S 4283.79 W	.71
10004.00	23.90	231.90	8228.39	5029.78	2616.75 S 4296.29 W	.49

Final location: 5030.45 feet at 238.66 degrees

Plane of Vertical Section: 239.59 degrees