

Directional Survey Calculations	Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
	SHL	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5109	200	1980
BHL	9129	89.11	356.89	4712.63	4767.55	-162.31	4769.71	0.00	340	4969	1905	3365
Miss Entry	4958	64.75	357.98	4721.26	608.28	-19.93	608.54	10.37	4500	808	1971	3324
Top Perf	4983	67.74	358.54	4731.21	631.19	-20.60	631.46	11.79	4478	831	1971	3324
Bottom Perf	9018	89.36	357.19	4711.11	4656.72	-156.55	4658.79	2.10	451	4858	1908	3362

Survey Points	X	Y	Surface XY	X	Y	North Line slope	East Line slope	South Line slope	West Line slope
NW Corner XY Coord	2082045	139904		2084118	134812	0.008164	-0.0243259	0.0096245	-0.018264
SW Corner XY Coord	2082142	134593							
NE Corner XY Coord	2087312	139947							
SE Corner XY Coord	2087441	134644							

	Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
	0	0.0	0	0	0	0	0	0	0	5109	200	1980
20	0.00	0.00	20.00	0	0	0.00	0.00	0.00	5109	200	1980	3319
250	1.00	213.56	249.99	-2	-1	-1.65	0.43	5111	198	1979	3320	
500	2.00	213.56	499.90	-7	-5	-7.04	0.40	5116	193	1975	3324	
735	2.00	213.56	734.76	-14	-9	-13.79	0.00	5123	186	1970	3329	
816	0.17	213.56	815.74	-15	-10	-15.05	2.26	5124	185	1970	3329	
1001	0.24	314.10	1000.74	-15	-11	-15.00	0.17	5124	185	1969	3330	
1185	3.39	325.24	1184.62	-10	-14	-10.20	1.71	5119	190	1966	3333	
1276	5.18	322.71	1275.36	-5	-18	-4.65	1.98	5114	195	1962	3337	
1368	4.34	318.64	1367.05	1	-23	1.35	0.98	5108	201	1957	3342	
1460	2.15	319.10	1458.89	5	-26	5.33	2.38	5104	205	1954	3345	
1550	0.51	321.47	1548.87	6	-28	6.94	1.82	5102	207	1953	3346	
1642	0.28	186.89	1640.86	7	-28	7.05	0.80	5102	207	1952	3347	
1734	0.31	147.41	1732.86	6	-28	6.61	0.22	5103	206	1952	3346	
1828	0.47	351.99	1826.86	6	-28	6.78	0.81	5102	207	1952	3346	
1923	0.18	171.64	1921.86	7	-28	7.02	0.68	5102	207	1952	3346	
2018	0.25	44.22	2016.86	7	-28	7.01	0.41	5102	207	1953	3346	
2113	0.19	95.81	2111.86	7	-27	7.14	0.21	5102	207	1953	3346	
2208	0.34	231.14	2206.86	6	-27	6.95	0.52	5102	207	1953	3346	
2303	0.22	215.26	2301.86	6	-28	6.63	0.15	5103	206	1953	3346	
2397	0.24	162.22	2395.86	6	-28	6.30	0.22	5103	206	1952	3346	
2492	0.14	315.73	2490.86	6	-28	6.19	0.39	5103	206	1952	3346	
2587	0.10	20.86	2585.86	6	-28	6.35	0.14	5103	206	1952	3346	
2682	0.44	2.05	2680.86	6	-28	6.79	0.37	5102	207	1952	3346	
2777	0.29	41.71	2775.86	7	-27	7.33	0.30	5102	207	1953	3346	
2967	0.38	346.69	2965.85	8	-27	8.30	0.17	5101	208	1953	3346	
3156	0.48	57.44	3154.85	9	-27	9.33	0.27	5100	209	1953	3345	
3251	1.23	8.97	3249.84	10	-26	10.54	1.03	5099	210	1954	3345	
3346	0.67	345.15	3344.82	12	-26	12.08	0.71	5097	212	1954	3345	
3441	0.21	239.88	3439.82	12	-27	12.54	0.79	5097	212	1954	3345	
3536	0.19	242.18	3534.82	12	-27	12.38	0.02	5097	212	1953	3345	
3631	0.07	150.72	3629.82	12	-27	12.26	0.21	5097	212	1953	3346	
3726	0.22	126.41	3724.82	12	-27	12.10	0.17	5097	212	1953	3345	
Top of Tangent @ 4612'	3820	0.69	66.27	3818.82	12	-26	12.21	0.65	5097	212	1954	3345
	3852	1.77	28.01	3850.81	12	-26	12.71	4.06	5096	212	1954	3344
	3883	4.44	19.26	3881.76	14	-25	14.26	8.72	5095	214	1955	3344
	3915	7.46	15.83	3913.59	17	-24	17.41	9.50	5092	217	1956	3343
	3947	9.83	14.59	3945.22	22	-23	22.03	7.43	5087	222	1958	3341
Btm of Tangent @ 4802'	3978	11.07	15.01	3975.71	27	-21	27.44	4.01	5082	227	1959	3340
	4010	12.27	15.34	4007.04	33	-20	33.65	3.76	5075	233	1961	3338
	4042	13.51	16.04	4038.24	40	-18	40.49	3.91	5069	240	1963	3336
	4073	15.36	16.32	4068.26	48	-16	47.87	5.97	5061	248	1965	3333
	4105	17.28	16.03	4098.97	56	-13	56.46	6.01	5053	256	1968	3331
	4137	19.69	16.00	4129.31	66	-10	66.16	7.53	5043	266	1971	3328
	4168	22.71	16.23	4158.21	77	-7	76.87	9.75	5032	277	1974	3324
	4200	25.97	14.97	4187.36	89	-4	89.50	10.32	5019	289	1978	3320
	4232	29.35	12.69	4215.70	104	0	103.86	11.07	5005	304	1982	3317
	4263	31.22	10.73	4242.47	119	3	119.11	6.82	4990	319	1985	3313
	4295	32.50	9.57	4269.65	136	6	135.68	4.43	4973	336	1988	3310
	4327	31.92	8.14	4296.73	153	9	152.48	2.99	4956	353	1991	3307
	4359	32.22	5.82	4323.84	170	11	169.30	3.96	4939	369	1994	3304
	4390	33.99	3.17	4349.81	186	12	186.15	7.37	4923	386	1995	3302
	4422	35.83	1.06	4376.05	205	13	204.43	6.88	4904	405	1996	3301
	4454	37.38	359.16	4401.74	224	13	223.51	6.00	4885	424	1997	3301
	4485	39.45	357.42	4426.03	243	12	242.76	7.53	4866	443	1997	3301
	4517	42.47	355.81	4450.19	264	11	263.72	10.00	4845	464	1996	3302
	4549	45.07	355.00	4473.30	286	9	285.81	8.31	4823	486	1994	3303
	4580	47.68	354.90	4494.69	308	7	308.19	8.42	4801	508	1993	3304
	4612	49.75	354.51	4515.80	332	5	332.17	6.53	4777	532	1991	3306
	4676	50.55	354.08	4556.81	381	0	381.14	1.35	4728	581	1987	3310
	4771	50.74	353.50	4617.05	454	-8	454.30	0.51	4655	654	1980	3316
	4802	50.70	353.94	4636.68	478	-11	478.20	1.11	4631	678	1978	3318
	4834	52.60	354.49	4656.53	503	-13	503.20	6.09	4606	703	1976	3320
	4865	55.04	355.26	4674.83	528	-15	528.16	8.12	4581	728	1974	3321
	4897	58.47	356.37	4692.37	555	-17	554.88	11.10	4554	755	1973	3323

Measured Depth (ft)	Sub-Sea Incl. (deg)	Vertical Azim. (ft)	True Vert Depth (ft)	Northings (+) Southings (-) (ft)	Eastings (+) Westings (-) (ft)	Vert Section (ft)	DLS deg/100' (deg)	FNL	FSL	FWL	FEL
4929	61.84	357.17	4708.29	582	-19	582.61	10.75	4526	783	1972	3324
4961	65.05	358.06	4722.60	611	-20	611.22	10.34	4498	811	1971	3324
4992	68.84	358.73	4734.74	639	-21	639.74	12.39	4469	840	1971	3324
5024	71.90	357.92	4745.49	670	-22	669.87	9.86	4439	870	1971	3324
5055	74.70	358.08	4754.39	699	-23	699.56	9.05	4409	899	1970	3325
5087	78.19	357.93	4761.89	730	-24	730.66	10.92	4378	931	1970	3325
5119	81.13	357.56	4767.63	762	-25	762.13	9.26	4347	962	1969	3325
5150	83.83	357.69	4771.69	793	-26	792.85	8.72	4316	993	1968	3326
5182	86.71	357.74	4774.33	824	-28	824.73	9.00	4284	1025	1967	3326
5220	90.28	358.07	4775.33	862	-29	862.71	9.43	4246	1063	1967	3327
5271	90.89	358.14	4774.81	913	-31	913.70	1.20	4195	1114	1966	3327
5317	90.87	358.19	4774.10	959	-32	959.69	0.12	4149	1160	1965	3328
5413	90.68	357.51	4772.80	1055	-36	1055.66	0.74	4053	1256	1964	3329
5508	91.48	358.57	4771.01	1150	-39	1150.63	1.40	3958	1350	1962	3330
5603	91.83	358.58	4768.27	1245	-41	1245.59	0.37	3864	1445	1961	3330
5698	91.51	358.34	4765.50	1340	-44	1340.54	0.42	3769	1540	1961	3330
5793	91.08	357.42	4763.35	1435	-47	1435.50	1.07	3674	1635	1959	3331
5888	90.92	357.27	4761.69	1530	-52	1530.45	0.23	3579	1730	1956	3334
5984	91.68	358.51	4759.52	1626	-55	1626.40	1.51	3483	1826	1954	3335
6078	91.08	358.93	4757.25	1720	-57	1720.37	0.78	3389	1920	1954	3335
6173	90.80	359.00	4755.69	1815	-59	1815.36	0.30	3294	2015	1954	3334
6268	91.32	359.00	4753.94	1910	-61	1910.35	0.55	3199	2110	1954	3333
6363	91.39	359.54	4751.69	2005	-62	2005.32	0.57	3104	2205	1955	3332
6458	90.74	359.98	4749.92	2100	-62	2100.29	0.83	3009	2300	1956	3330
6553	92.50	359.73	4747.24	2194	-63	2195.24	1.87	2914	2395	1957	3328
6648	92.94	359.21	4742.73	2289	-64	2290.13	0.72	2819	2490	1958	3327
6742	93.03	359.42	4737.84	2383	-65	2384.00	0.24	2725	2584	1959	3326
6806	90.46	359.67	4735.89	2447	-65	2447.96	4.03	2661	2648	1959	3325
6869	89.52	359.56	4735.90	2510	-66	2510.95	1.50	2598	2711	1960	3323
6932	89.04	358.37	4736.69	2573	-67	2573.95	2.04	2535	2774	1960	3323
7027	90.15	356.16	4737.36	2668	-71	2668.90	2.60	2440	2869	1957	3325
7122	91.32	356.94	4736.14	2763	-77	2763.80	1.48	2345	2964	1953	3329
7217	90.84	0.01	4734.35	2858	-80	2858.77	3.27	2250	3059	1953	3329
7312	90.74	357.64	4733.04	2953	-81	2953.75	2.50	2155	3154	1952	3329
7407	90.03	356.59	4732.40	3048	-86	3048.70	1.33	2061	3248	1949	3331
7502	90.00	356.76	4732.38	3142	-92	3143.62	0.18	1966	3343	1946	3334
7558	90.19	356.82	4732.29	3198	-95	3199.58	0.36	1910	3399	1943	3336
7622	90.28	358.60	4732.02	3262	-97	3263.57	2.78	1846	3463	1942	3337
7716	90.00	357.38	4731.79	3356	-101	3357.55	1.33	1752	3557	1941	3338
7811	89.97	357.02	4731.82	3451	-105	3452.50	0.38	1657	3652	1938	3340
7906	91.05	359.17	4730.97	3546	-109	3547.48	2.53	1562	3747	1936	3341
8001	91.46	358.73	4728.89	3641	-110	3642.46	0.63	1467	3842	1936	3341
8096	90.77	359.15	4727.04	3736	-112	3737.44	0.85	1372	3937	1936	3340
8191	90.68	358.39	4725.84	3831	-114	3832.43	0.81	1277	4032	1936	3340
8286	91.02	357.11	4724.43	3926	-118	3927.40	1.39	1182	4127	1934	3341
8381	91.60	357.10	4722.26	4021	-123	4022.32	0.61	1087	4222	1931	3344
8476	91.73	356.89	4719.50	4116	-128	4117.23	0.26	992	4317	1928	3346
8571	91.08	357.50	4717.17	4210	-132	4212.15	0.94	897	4412	1925	3349
8666	90.93	356.20	4715.50	4305	-137	4307.07	1.38	803	4507	1921	3352
8761	91.33	357.22	4713.63	4400	-143	4401.98	1.15	708	4601	1917	3355
8856	90.74	357.30	4711.91	4495	-147	4496.92	0.63	613	4696	1915	3357
8951	90.62	356.13	4710.79	4590	-153	4591.84	1.24	518	4791	1911	3360
9046	88.83	357.64	4711.24	4685	-158	4686.77	2.47	423	4886	1907	3363
9087	89.11	356.89	4711.98	4726	-160	4727.74	1.95	328	4927	1906	3364
9129	89.11	356.89	4712.63	4768	-162	4769.71	0.00	340	4969	1905	3365
9129	89.11	356.89	4712.63	4768	-162	4769.71	0.00	340	4969	1905	3365