

PACIFIC PROPERTY
SW $\frac{1}{4}$, SE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 5, T 6S, R 9W

HOLE NO. PAC - 1

DATE DRILLED 11/17/80 - 11/20/80

COORDINATES 635,768.5 NORTH 1,224,809.6 EAST

SURFACE ELEVATION 8,380.9 FEET

TOTAL DEPTH 817 FEET

CORED INTERVAL 650 - 817 FEET

LENGTH AND DIAMETER OF SURFACE CASING 24' x 6 5/8"

SIZE OF CORE 3 INCHES

CONTACT UINIA FORMATION - GREEN RIVER FORMATION 121 FEET

<u>KEY BEDS</u>	<u>DEPTH</u>	<u>ELEVATION</u>	<u>ELEVATION RELATIVE TO MM</u>
UPPER WAVY BED (BASE)	<u>NA</u>	<u>-</u>	<u>-</u>
A-GROOVE (BASE)	<u>696.6</u>	<u>7,684.3</u>	<u>+ 19.6</u>
MAHOGANY MARKER (TOP)	<u>716.2</u>	<u>7,664.7</u>	<u>0</u>
B-GROOVE (TOP)	<u>801.0</u>	<u>7,579.9</u>	<u>- 84.8</u>

CLEVELAND — CLIFFS

1/7

HOLE NO. 1

PROJECT: Pacific Property

RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
↑ #1	650	.65 .83				650.00' to 655.00' Oil shale, low to medium grade. Indistinct thin laminations. Pale yellow brown and moderate yellow brown, calcareous, laminations become distinct from 654.50 to 655.00'.
RQD 100	651					
	652					
	653	.68			.68	
	654					
	655				.51	
	656				.54	
	657				.45	
.42	658				.38	
	659				.42	
#2	660				.72	664.53' to 666.00' Oil shale, low to very low grade, 1/4" laminations, very pale orange and pale yellow brown, calcareous.
RQD 90	661				.84	
	662					
	663					
	664	.03			.53	
	665			Broken	.27 .38	
	666				.12 .80 .87	
	667					
	668				.45	
	669				.64	
	670				.77	666.00' to 668.25' Oil shale, low grade, 1/4" laminations to 1/2" bands, pale yellow brown and moderate yellow brown, calcareous.
	671	.47				
	672				.08 .36	668.25' to 669.00' Oil shale, medium grade, thin laminations, pale yellow brown and dark yellow brown, calcareous. 669.00' to 671.00' Oil shale, low to medium grade, pale yellow brown and moderate yellow brown with 1/4" laminations of dark yellow brown, calcareous. 671.00' to 673.63' Oil shale, low grade, 1/4" laminations to 1/4" bands, very pale orange, pale yellow brown, moderate yellow brown, calcareous.

CLEVELAND — CLIFFS -

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HOLE NO. 1		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
	673				.63	673.63' to 674.55' Oil shale, medium grade, 1/2" bands to 1/4" laminations, moderate yellow brown and dark yellow brown, calcareous.
	674				Broken → .4	
	675					674.55' to 675.25' Oil shale, medium to high grade 1/4" laminations, moderate yellow brown, dark yellow brown, dusky yellow brown, less calcareous.
#3	676					
RQD 89	677	.95			.95	675.25' to 675.72' Oil shale, medium grade, 1/4" laminations, dark yellow brown, and 1/2" bands, moderate yellow brown, calcareous.
	678					
	679					681.45' to 681.82' Oil shale, low to medium grade, pale yellow brown, finely laminated.
	680				.5	
	681					681.82' to 682.15' Oil shale, medium to high grade, 1/8" laminations, dusky yellow brown, less calcareous.
	682					
	683					682.15' to 682.30' Medium to low grade, pale yellow brown and moderate yellow brown with 1/4" laminations, dark yellow brown.
	684				.92	
	685					682.30' to 684.92' Oil shale, low grade, 1/4" laminations, pale yellow brown and moderate yellow brown, calcareous.
	686	.76 .79 .94				
	687	.48 .76 .83				684.92' to 685.75' Oil shale, high grade, dusky yellow brown with very thin laminations of pale yellow brown and moderate yellow brown, slightly calcareous.
	688	.25 Multiple Partings				
.35	689	.35			.35, .43 .66, .67 .77, .86	685.75' to 690.00' Top of A-Groove, Oil shale, very low grade, 1/2" banding, pale yellow brown and very pale orange, 687.75' tuff lenses 1/2", moderate brown, 688.25' - 689.35' continuous parting planes, form bisquits and broken pieces, calcareous.
#4	690				.05 .10 .60	
RQD 79	691		.91		Broken .43 .91	690.00' to 692.75' Oil shale, medium grade, 3/8" bands, pale yellow brown and dark yellow brown, calcareous, 690.60' - 691.43' tuffaceous, broken pieces.
	692		Pyrite			
	693		.37		.37 .81	(692.91' - 693.37' bisquits)
	694					692.75' to 696.60' Base of A-Groove Oil shale, very low grade, indistinct banding, very pale orange, calcareous (696.57' - 696.70' shaley partings).
	695	.10			.35	
	696	.57 .76				696.60' to 699.40' Oil shale, low grade, 1/4" laminations to 1/2" bands, pale yellow brown and very pale orange, shaley, calcareous.

CLEVELAND — CLIFFS -

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HOLE NO. 1

PROJECT: Pacific Property

RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
	697				.60	
	698	.40 .47				699.40' to 699.60' Oil shale, high grade, thin laminations, dark yellow brown and dusky yellow brown, slightly calcareous.
	699					699.60' to 703.00' Oil shale, low grade, 1/4" laminations to 1" bands, very pale orange and pale yellow brown, calcareous (702.60' angular bedding begins).
	700					
	701	.80				703.00' to 703.60' Oil shale, medium grade, thin laminations, dark yellow brown and pale yellow brown, angular bedding, calcareous.
	702				.57 .75	703.60' to 703.80' Irregular bed, sandstone tuff, secretes tar-like substance over a period of time in the core box (few days).
	703				.60 .67	703.80' to 704.25' Oil shale, high grade, fine laminations, dusky yellow brown, slightly calcareous.
	704				.52	704.25' to 704.80' Irregular wavy sandstone tuff, moderate brown.
	705					704.80' to 705.50' Oil shale, medium to high grade, thick laminations, dusky yellow brown and pale yellow brown, less calcareous.
#5	706	.41			.41	705.50' to 707.45' Oil shale, low grade, thin laminations, pale yellow brown, calcareous.
RQD 98	707	.92			.92	707.45' to 708.85' Oil shale, medium to high grade, fine laminations, dark yellow brown, less calcareous, 708.5' irregular tuff lens.
	708					708.85' to 710.16' Oil shale, low grade, pale yellow brown and dark yellow brown, calcareous.
	709					710.16' to 716.22' Oil shale, very low grade, pale yellow brown and very pale orange, calcareous.
	710				.16	
	711	.72			.72	
	712					716.22' to 716.48' Mahogany Marker, medium light gray, siliceous tuff, sandy texture.
	713					716.48' to 719.80' Oil shale, low grade, pale yellow brown, calcareous.
	714					
	715				.60	
	716				.22 .48	719.80' to 720.02' Oil shale, medium grade, moderate yellow brown and dark yellow brown, calcareous.
	717					720.02' to 720.80' Oil shale, medium to high grade, dark yellow brown and dusky yellow brown, less calcareous.
	718	.28 .66			.28 .66	720.80' to 721.75' Oil shale, medium grade, dark yellow brown, calcareous.
	719				.66	
	720				.17	

CLEVELAND — CLIFFS -

HOLE NO. 1		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
#6	721					721.75' to 723.72' Oil shale, low grade, gray orange and dark yellow brown, calcareous.
RQD 99	722					723.72' to 725.60' Oil shale, medium to high grade, dark yellow brown and dusky yellow brown, less calcareous, 724.41'-724.56' sandy tuff band.
	723					725.60' to 726.65' Oil shale, medium grade, moderate yellow brown and dark yellow brown, calcareous.
	724	.56			.56	726.65' to 727.41' Oil shale, high grade, dusky yellow brown and dark yellow brown, slightly calcareous.
	725					727.41' to 728.65' Oil shale, medium grade, thin laminations, moderate yellow brown and dark yellow brown, calcareous.
	726					728.65' to 728.80' Oil shale, high grade, wide bands, dusky yellow brown and moderate yellow brown, slightly calcareous.
	727	.39 .41			.32 .39 .41	728.80' to 731.64' Oil shale, medium to high grade, thin laminations, dark yellow brown with some dusky yellow brown, less calcareous.
	728				.65	731.64' to 732.10' Oil shale, low grade, thin laminations, dark yellow orange and dark yellow brown, calcareous.
	729					732.10' to 733.70' Oil shale, medium to high grade, 1/4" laminations, dark yellow brown and dusky yellow brown, less calcareous.
	730					733.70' to 734.70' Oil shale, medium grade, 1/4" laminations, moderate yellow brown and dusky yellow brown, calcareous.
	731				.49	734.70' to 735.23' Oil shale, low grade, fine laminations, pale yellow brown and dark yellow brown, calcareous.
	732				.02 .47	735.23' to 735.65' Oil shale, medium to high grade, fine laminations, moderate yellow brown and dusky yellow brown, less calcareous.
	733					735.65' to 735.88' Oil shale, low grade, fine laminations, moderate yellow brown, calcareous.
.70	734				.70	735.88' to 736.97' Oil shale, high grade, fine laminations, dark yellow brown, slightly calcareous.
	735		.48			736.97' to 740.47' Oil shale, low grade, fine laminations, dark yellow orange and moderate yellow brown, calcareous.
#7	736					740.47' to 741.45' Oil shale, medium grade, 1/8" laminations, moderate yellow brown and dark yellow brown, secretes tar-like substance (after a few days).
RQD 75	737		.19			741.45' to 741.70' Oil shale, low to medium grade, 1/4" laminations, dark yellow orange, pale yellow brown, calcareous.
	738					741.70' to 743.05' Oil shale, low grade, 1/4" laminations, moderate yellow brown and dark yellow brown, calcareous, 742.03-742.09' tuff.
	739					743.05' to 744.08' Oil shale, medium to high grade, 3/8" laminations, dark yellow brown and dusky yellow brown, secretes tar-like substance (after a few days).
	740	.47 .52			.44 .47 .52	
.70	741				.68 .70	
	742	.70				
#8	743				.19 .47	
RQD 95	744					

CLEVELAND — CLIFFS -

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HOLE NO. 1		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
	745					744.08' to 745.50' Oil shale, low grade, fine laminations, moderate yellow brown and dark yellow brown, calcareous.
	746				.95	745.50' to 746.45' Oil shale, medium grade, fine laminations, moderate yellow brown and dusky yellow brown, calcareous.
	747					746.45' to 747.34' Oil shale, medium to high grade, fine laminations, dark yellow brown and dusky yellow brown, less calcareous.
	748				.24	747.34' to 749.07' Oil shale, very low grade, very pale orange and moderate yellow brown with widely spaced fine laminations of dusky yellow brown.
	749					747.65'-.02' tuff.
	750				.08 .52	749.07' to 749.14' Oil shale, medium to high grade, dark yellow brown, less calcareous.
	751				.83	749.14' to 749.35' Oil shale, low to medium grade, moderate yellow brown, calcareous.
	752				.08	749.35' to 751.25' Oil shale, medium to high grade, dark yellow brown and dusky yellow brown, 750.94'-751.03' tuff bed, 751.04'-751.13' tuff.
	753	.32			.32	751.25' to 755.00' Oil shale, low grade, thin laminations, pale yellow brown and moderate yellow brown, calcareous, 751.27' - .02' tuff.
	754	.53			.53 .82	755.00' to 757.00' Oil shale, low grade, thin laminations, moderate yellow brown and dark yellow brown, calcareous.
.68	755					757.00' to 757.30' Oil shale, medium grade, thin laminations, dark yellow brown, calcareous.
#9	756					757.30' to 758.30' Oil shale, low grade, thin laminations, dark yellow orange and dark yellow brown, calcareous.
RQD 99	757					758.30' to 759.05' Oil shale, medium to low grade, thin laminations, pale yellow brown and dark yellow brown, calcareous.
	758					759.05' to 760.45' Oil shale, low grade, thin laminations, grayish orange and dark yellow brown, calcareous.
	759					760.45' to 762.15' Oil shale, medium grade, thin laminations, moderate yellow brown and dusky yellow brown, calcareous.
	760					762.15' to 767.05' Oil shale, very low grade, grayish orange, calcareous.
	761					
	762					
	763				.50	
	764					
	765	.58			.58	767.05' to 767.30' Oil shale, low to medium grade, thin laminations, pale yellow brown and dark yellow brown, calcareous.
	766				.17	767.30' to 767.96' Oil shale, medium to high grade, thin laminations, dark yellow brown and dusky yellow brown, less calcareous.
	767				.13	
	768				.63	

CLEVELAND — CLIFFS -

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		HOLE NO. <u>1</u>		PROJECT: Pacific Property		
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P.P.	JOINT	SLICK	C. I.	
	769				.31	767.96' to 771.10' Oil shale, very low grade, thin laminations, very pale orange and moderate yellow brown, calcareous.
	770				.11 .30	771.10' to 771.92' Oil shale, low grade, thin laminations, pale yellow brown and moderate yellow brown, 771.85' - .04' sandy tuff.
.68	771	.92			.58	771.92' to 772.25' Oil shale, medium to high grade, dark yellow brown and dusky yellow brown, less calcareous.
	772					772.25' to 774.50' Oil shale, low grade, fine laminations; pale yellow brown, calcareous.
#10	773	.10			.39	774.50' to 775.33' Oil shale, high grade, thick laminations, dark yellow brown and dusky yellow brown, slightly calcareous.
RQD 80	774	.85				775.33' to 775.80' Oil shale, medium grade, moderate yellow brown and dark yellow brown, calcareous.
	775					775.80' to 777.40' Oil shale, low grade, thin laminations, pale yellow brown, calcareous.
	776				.17	777.40' to 779.10' Oil shale, low grade, thin laminations, dark yellow brown and pale yellow brown, calcareous.
	777					779.10' to 782.28' Oil shale, medium grade, thin laminations, dark yellow brown and dusky yellow brown, less calcareous.
	778				.17	
	779		.36		.46 .59	
	780		.50			
	781				.88	782.28' to 784.00' Oil shale, low grade, thin laminations, pale yellow brown, calcareous.
	782			Broken	.75 .91	783.10-783.40' some porous cavities (small).
	783	.20			.10 .98	
	784				.56	784.00' to 785.00' Oil shale, medium to high grade, dark yellow brown and dusky yellow brown, less calcareous, 784.45' - 1/4" tuff (sandy).
	785	.45				785.00' to 786.50' Oil shale, medium grade, dark yellow brown and dusky yellow brown, calcareous, 785.30-785.63' - tuff band.
.65	786				.34 .50	786.50' - 787.15' Sandstone.
	787			Broken	.15 .83	787.15' to 788.50' Oil shale, medium grade, 3/8" laminations, dark yellow brown and dusky yellow brown, less calcareous.
#11	788			Broken	.32 .48	788.50' to 790.23' Oil shale, low to medium grade, grayish orange and dark yellow brown, calcareous.
RQD 96	789				.03 .81	790.23' to 791.10' Oil shale, medium grade, dark yellow brown, calcareous.
	790				.22 .91	791.10' to 792.94' Oil shale, low grade, very pale orange and dark yellow brown, calcareous.
	791				.65	
	792				.35	

CLEVELAND — CLIFFS -

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HOLE NO. <u>1</u>		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P.P.	JOINT	SLICK	C. I.	
	793				.22	792.94' to 793.13' Oil shale, medium grade, dark yellow brown, calcareous.
	794				.32	793.13' to 795.50' Oil shale, low to medium grade, pale yellow brown and dark yellow brown, calcareous.
	795				.40	795.50' to 797.45' Oil shale, low grade, pale yellow orange and moderate yellow brown, calcareous.
	796				.42	
	797				.72 .82	797.45' to 802.00' Oil shale, very low grade, very pale orange and some pale yellow brown, 797.72'-797.82' - gray sandstone; 799.54'-799.73' - gray sandstone.
	798				.77	
	799				.54 Broken .73	
	800				.18 .55 .82	
	801				.10 .75	
.66	802				.22 .64	802.00' to 809.80' Marlstone, extremely low grade, occasionally sandy.
	803				.05 .54 .73	
#12	804				.30 .55	
RQD 72						
	805				.41 .74	
	806				.27 .65 .97	
	807				.25 .50 .60	
	808				.21, .40 .55, .80	
	809				.13 .42 .70	809.80' to 816.00' Oil shale, low grade, 1/4" laminations, very pale orange and pale yellow brown, calcareous. 813.2' - 813.32' - vug with pyrite.
	810				.03 .37 .80	
	811				.50 .69	
	812				.10 .63	
	813				.15 .40 .90	
	814				.33 .64	816.00' to 816.60' Oil shale, medium grade, dark yellow brown and dusky yellow brown.
	815				.01 .53	816.00' to 817.60' Oil shale, low grade, moderate yellow brown.
.66	816				Broken .66	
	END DRILLING					