GEOLOGIC AND ROCK STRUCTURE LOG

C-416

COMPANY : UNION OIL COMPANY OF CALIFORNIA
CORE HOLE: LR 2-74
LOCATION: APPROX. 380' FNL AND 1340' FEL, SEC. 20, T55S, R95W. N 655,930' AND E 1,274,095' BY COLORADO STATE COORDINATE SYSTEM.
CORE SIZE : NX
ELEVATION : 8179'
DESCRIBED BY : THOMAS, LYTTLE, CLARDY, ABRAHAMSON
DATE DESCRIBED: SUMMER 1974 AND 2-27-75

MARKER BED:	DEPTH	ELEVATION
Top "A" Groove	1003.5'	7175'
Base "A" Groove	1015'	7160'
Mahogany Marker	1038.5'	7140.5'
Top 60' Mine Zone	1042.5'	7136.5'
Top "B" Groove	1135' 1134'	7044' 7045'
Base "B" Groove	NOT PENETRATED	

Depth	Core: Footage	Core: Recovery	Joints and Fractures: Location	Joints and Fractures: Dip	Joints and Fractures: Nature	Partings: Location	Partings: Nature	RQD: Sum of Piece Lengths >0.35'	RQD: RQD Percentage	Oil Shale Grade	Lithology	Description and Remarks
600'												Detail lithology notes 600'-940.5' in well folder. Note: No differentiation made between calcareous and dolomitic oil shale or marlstone.
												Light brown, coarse siltstone.
	12'	8'						7.7'	64%			Low grade oilshale.
												603-607 Core missing
610'				80°						2/3		Low to medium grade oilshale.
612'				80°								Coarse siltstone.
				90°								Low grade marlstone; cavaties.
	7'			75°				5.1'	73%	2/3		
619'				60°								Low and medium grade oilshale.
	10'	10'		60°				9.1'	91%	2/3		
				80°						4		High grade oilshale.
629'										2		Low grade oilshale.
	10'	10'		50°				10'	100%			
639'										2		Coarse siltstone; medium brown, good porosity and permeability, carbonaceous debris.
				15°						2		Low grade oilshale.
	10'	10'						9.6'	96%			Low grade marlstone.
												Coarse siltstone.
649'				70°						2		Low grade marlstone, locally silty.
	10'	10'						9.75'	97.5%	2		Coarse siltstone.
												Silty low grade marlstone.
												Coarse siltstone; medium brown, pyrite modules.
659'										2/3		Low and medium grade marlstone.
	10'	10'		40°				8.3'	83%			Broken zone, 2p, 2c
669'												
	5'	5'		60°				4.2'	84%			Siltstone; light tan, slightly to non-calcareous, good porosity and permeability, disseminated pyrite, some organic debris, clay rip up clasts, coarsens to very fine grained sandstone at base.
674'												
	7'	7'		60°				6.25'	90%			
681'												
	10'	10'						9.2'	92%			
				45°								
691'												
	10'	10'		70°				8.1'	81%			
701'												
	10'	10'						8.4'	84%			
				85°						2		Low grade marlstone; solution cavaties start at about 713'.
711'												
	10'	10'						9.65'	96.5%	2		
										3		Medium grade oilshale horizons.
721'										2		
	9'	9'		15°				8.2'	91%			Barren marlstone
				90°								
730'				90°								Coarse calcareous siltstone.
	10'	10'						7.0'	70%	3/4		Medium to high grade oilshale; local solution cavaties.
				90°								
740'				90°						2		Low grade marlstone.
				75°								
	10'	10'		75°				7.9'	79%	2		
750'				70°								
	11'	11'		70-80°				8.8'	80%	2/3		Low to medium grade oilshale.
761'												
	10'	10'						9.2'	92%			1/8" tuff
771'				80-90°						2/3		1/8" tuff
	10'	10'						10'	100%			1" tuffs 1/4" tuff
781'										2/3		1/4" tuff
	10'	10'						9.8'	98%			
791'												2" tuff
	10'	10'						10'	100%	2/3		1/2" tuff
801'												
	10'	10'						9.65'	96.5%	3/4		Medium to high grade oilshale. 1/2" tuff 2 thin tuffs
811'				80-90°								
	10'	10'		90°				8.7'	87%	3		Medium grade oilshale. Several very thin tuffs 812-814'
821'				80°								
	10'	10'		90°				6.6'	66%	3		
831'												
	10'	10'		75°				8.4'	84%	3		
				80°								
				80°						3/4		Medium to high grade oilshale.
841'				75°						3		Medium grade oilshale.
	10'	10'		90°				10'	100%	2/3		NOTE: Red arrows on cores are upside down.
				45°						3/4		Medium to high grade oilshale.
851'										3		Medium grade oilshale.
	7'	7'		45°				5.5'	79%	3/4		Medium to high grade oilshale.
858'				90°								
	5'	5'						4.9'	98%	2/3		Low to medium grade oilshale.
863'										4		High grade oilshale.
										3/4		Medium to high grade oilshale.
	10'	10'		90°				9.0'	90%			
				75°						2/3		Medium to low grade oilshale.
873'												1" tuff; bitumen impregnated.
	10'	10'		80°				7.65'	76.5%	3		1/2" tuff bed Medium grade oilshale.
				75°								
883'										3		1" tuff
887'	4'	2.7'						1.9'	48%			Solution cavity; barren marlstone Poker chip Lost core.
	4'											

Assay — Gallons Per Ton (0, 20, 40, 60, 80)

Union Oil Simulated Fischer — C.S.M. Modified Fischer — Union Oil Simulated Fischer

C.S.M. Modified Fischer