

CORE LOG

78-1

U. S. GEOLOGICAL SURVEY

6342

DRILL HOLE USGS Core #1 PAGE 1 OF 5
 LOCATION NW 1/4 SE 1/4 sec. 6, T. 4 S. R. 94 W. ELEVATION 7120' TOTAL DEPTH 232'
 DATE BEGUN 6/13/78 DATE COMPLETED 6/15/78 DRILLER McCabe LOGGED BY Kurt Hollocher
 CASING 6' REMARKS: Tuffs ~0.1' thick only noted. Many sub vertical fractures above 45'

DELTA IS CUMULATIVE

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	Core #	Driller #1
6.0	26.65		Brown to brownish gray oil shale with minor tuff. Little turbation with thin bedding. Moderately rich.	6.0-11.3 Me	A' = 0
			tuff ~0.15' thick at 14.85-15.0	11.3-16.6 driller #2	
			tuff 0.15' thick at 15.6-15.75	11.3-16.8 me	
			18.7-21.5' highly contorted bedding	A' = + 0.2	
			tuff ~0.2' thick at 19.0-19.3	16.6-24.4 driller #3	
			tuff 0.3' thick at 20.2-20.5	16.8-24.4 me	
			tuff 0.35' thick at 21.05-21.4	A' = 0	
			Tuffaceous zone with minor turbated oil shale 24.8-25.2, 0.4' thick tuff	24.4-37.3 driller #4	
			0.25' thick at 26.4-26.65	24.4-36.8' me	
26.65	30.2		Dark brown rich oil shale interbedded with tuff and some leaner oil shale. Parts are well mixed tuff and oil shale. Tuff 0.2' thick at 28.6-28.8'; tuff 0.4' thick at 28.9'-29.3'.	A' = 0.5'	
30.2	46.4		Brown to brownish gray oil shale with abundant tuff. Moderately rich. Tuff 0.5' thick at 31.9-32.4 tan to brown, oxidized; tuff 0.1' thick at 32.8-32.9'; tuff 0.15' thick at 35.5-35.65; tuff 0.75' thick at 36.3-37.05; highly tuffaceous zone 38.5-40.9' 2.4' thick, homogenized.		

Drill hole

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DRILL HOLE USGS Core #1 PAGE 2 OF 5
 LOCATION NW 1/4 SE 1/4 sec 6, T. 4 S., R. 94 W. ELEVATION 7120' TOTAL DEPTH 232'
 DATE BEGUN 6/13/78 DATE COMPLETED 6/15/78 DRILLER McCabe LOGGED BY Kurt Hollöcher
 CASING 6' REMARKS: From 100' to bottom drilling is much slower than at sites 2 and 3A, probably due to high quantities of silt.

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	DELTA	IS CUMULATIVE
46.4	113.1		Dark brown to brown rich oil shale with abundant intermixed tuff. Green and blue material in some fractures and in beds, some folding, but generally even bedding	37.3-53.6	driller #5
			tuff 0.4' thick at 49.05-49.45	36.8-53.2	Me
			tuff 0.1' thick at 58.0'	53.6-67.3	driller #6
			tuff 0.1' thick at 64.0	53.2-66.5	me
			tuff 0.15' thick at 65.3-65.45	Δ' = -0.8'	
			tuff 0.2' thick at 73.2-73.4	67.3-83.8	#7
			tuff 0.25' thick at 73.7 - 73.95	66.5-82.9	
			tuff at 0.25' thick at 74.05- 74.3	Δ' = -0.9'	
			tuff 0.1' thick at 74.5'		
			Sequence of thick tuffs with thin even layers of oil shale between them from 74.8-77.2. 2.4' thick white tuff 0.15' thick at 77.2-77.35	83.8-97.3	#8
			Very dark brown to black oil shale with some tuffs. 77.35-78.1	Δ' = 1.3'	96.0
			Sequence of thick and thin tuffs of different textures with thin interbedded dark rich oil shale, 80.9'-86.5', 5.6' thick tuff 0.1' thick at 89.3'		
			Tuff 0.2' thick at 92.0-92.2		
			Tuff 0.1' thick at 92.8	97.3-113.0	
			Tuff 0.25' thick at 95.0-95.25	96.0-112.1	
			Tuff 0.15' thick at 95.85 - 96.0	Δ' = 0.9'	
			Tuff 0.2' thick at 99.2-99.4 contorted		

Drill Hole #9

CORE LOG

U. S. GEOLOGICAL SURVEY

DRILL HOLE USGS Core #1 LOCATION NW 1/4 SE 1/4 sec. 6, T. 4 S., R. 94 W. ELEVATION 7120 PAGE 3 OF 5
 DATE BEGUN 6/13/78 DATE COMPLETED 6/15/78 DRILLER McCabe LOGGED BY Kurt Hollerher TOTAL DEPTH 232'
 CASING 6' REMARKS: _____

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	DELTA	TS. CUMULATIVE
			Tuff 0.3' thick at 99.9' - 100.2'		
			Tuff 0.2' thick at 103.1' - 103.3'		
			Tuff 0.4' thick at 103.4' - 103.8'		
			Tuff 0.4' thick at 104.4' - 104.8'		113.0-127.3 drill #196
			Tuffaceous section ⁷⁰ percent massive thick to thin tuffs with interbedded moderately rich to rich oil shale		112.1-125.5 me A' = 1.8'
			105.2'-111.0', 5.8' thick total		
113.1	122.6'	9.5'	Highly tuffaceous section with ⁷⁰ percent tuff interbedded with brown to very dark brown rich oil shale. Some turbation. Individual tuffs not described		
			Dark brown rich oil shale interbedded with tuff. Little turbation.		
122.6	143.0		tuff 0.1' thick at 124.6'		127.3'-143.6'
			Shallow dipping bedding plane slickensides at 124.9', 125.05, 125.2'		125.5-142.0 me #1
			Tuff 0.1' thick at 126.7'		Δ' = 1.6'
			Tuff 0.15' thick at 130.1'-130.3'		
			Tuff 0.12' thick at 130.6'		
			Tuff 0.1' thick at 130.6'		
			Tuff 0.1' thick at 130.7'		
			Tuff 0.1' thick at 132.3'		
			Tuff 0.1' thick at 133.8'		

Drill hole

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FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	DELTA IS CUMULATIVE
			Slickensides in bedding plane at 136.9', 137.05', 138.2', 138.3', 139.6', 139.8', 143.6-157.3' drill 11e	
			139.95', 140.2', 140.7', 141.4', 142.4',	142.0-154.9' me
			Tuff 0.1' thick at 138.1	A' = -2.4'
			Tuff 0.5' thick at 140.2'-140.7'	
			Tuff 0.1' thick at 141.0'	
			Tuff 0.1' thick at 142.0'	
			Tuff 0.1' thick at 146.0'	
143.0	204.2		Brown to gray brown moderately rich oil shale with several units of rich dark Brown oil shale, much tuff or silt intermixed with shale, bedding is thin and even with little turbation 70 percent tuff with mixed and discrete oil shale layers from 147.5-147.9', 0.4' thick, Bedded massive tuff with very thin shale layers from 149.9' - 150.3', 0.4' thick Tuff 0.1' thick at 152.3' Tuff 0.75' thick at 156.05-156.8 with minor shale Tuff 0.1' thick at 158.1' Tuff 0.8' thick at 158.7-159.5 Tuff 0.7' thick at 162.6-163.3 with minor shale Tuff 0.1' thick at 166.1' Tuff 0.2' thick at 168.3' - 168.5' with minor shale Tuff 0.5' thick at 171.6-172.1 Tuff 0.1' thick at 172.5'	Drill 11e 157.3-172.5 #13 154.9-171.5 me A' = -1.0'
				Drill 11e 172.5-187.3' #14
				Drill 11e 171.5-185.5' me
				A' = -1.8'

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ELEVATION 7120' TOTAL DEPTH 232.0

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LOGGED BY Kurt Hollocher

CASING 6' REMARKS: _____

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	DELTA	TS	CUMULATIVE
			Tuff 0.1' thick at 172.8'			
			Tuff 0.1' thick at 174.0'			
			Tuff 0.1' thick at 175.5'			
			Tuff 0.1' thick at 175.8'			
			Tuff 0.35' thick at 177.35-177.7			
			Tuff 0.45' thick at 178.75' -179.2'			
			Tuff 0.4' thick at 181.6-182.0'			187.3-203.1 Driller #15
			Highly tuffaceous section with shale mixed with tuff and/or silt - 183.9'-187.4', 3.5' thick			185.5-201.8' me Δ' = - 1.3
			Tuff 0.9' thick at 187.8' 188.7'			
			Tuff 0.1' thick at 189.7'			
			Tuff 0.15' thick at 194.95-195.1			203.1-217.3 D #16
			Tuff 0.3' thick at 195.3-195.6			201.8-216.3' me
			Tuff 0.15' thick at 197.0-197.15			Δ' = 1.0
						217.3'-233.0' D #17
204.2	232.0		Zone of gray siltstone with minor oil shale and probably abundant tuff. The rock retains water in this unit. Thin pyrite rich layers common.			216.3 - 232.0 Me
BOTTOM OF HOLE			Tuff 0.1' thick at 207.5'			
			Tuff 0.2' thick at 217.4-217.6			

Drill hole