

CORE LOG

U. S. GEOLOGICAL SURVEY

DRILL HOLE USGS CH 78-5  
 LOCATION NE1/4, NW1/4, sec. 32, T. 2 N., R. 97 W. ELEVATION ~6,250' TOTAL DEPTH 323.0'  
 DATE BEGUN 8/7/78 DATE COMPLETED 8/9/78 DRILLER McCabe LOGGED BY Kurt Hollocher  
 CASING 6' of 4" pulled REMARKS: Dip of bedding ~10°, Fractures common in core and outcrop.

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FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	core
6.0'	30.9'		Brown to light brown weathered shale, generally thinly bedded with some turbation. Smells of oil below ~12.0'.	#1 D 6.0'-11.3' 6.0'-11.4' KH $\Delta' = +0.1'$
			Tuff (?) 0.2' thick at 7.6'-7.8'	
			Tuff (?) 0.1' thick at 7.9'	#2 D 11.3'-16.6'
			Clay 0.2' thick at 11.8'-12.0'	KH 11.4'-16.8'
			Tan calcitic layer with shale chips, 0.2' thick at 25.5'-25.7'	$\Delta' = +0.2'$
				#3 D 16.6'-33.7'
30.9'	97.1'		Brown to dark-brown rich oil shale thinly bedded with some turbation. Units common with chips or lenses of dark-brown rich oil shale in a lighter colored matrix, and vice versa. Generally calcareous.	KH 16.8'-33.7' $\Delta' = 0$
			Tuffs common, few gray-clay rich shale layers	#4 D 33.7'-50.6'
				KH 33.7'-50.0'
				$\Delta' = -0.6'$
			Tuff 0.2' thick at 37.3'-37.5' with minor shale	
			Tuff 0.1' thick at 38.7'	#5 D 50.6'-66.9'
			Tuff 0.2' thick at 49.3'-49.5'	KH 50.0'-66.5'
			Tuff 0.4' thick at 51.0'-51.4' with minor shale	$\Delta' = -0.4'$
			Tuff 0.1' thick at 55.8'	
			Tuff 0.1' thick at 68.1' with minor shale	D 66.9'-83.2'
			Tuff 0.1' thick at 72.1'	KH 66.5'-80.0'
			Tuff 0.3' thick at 72.5'-72.8'	$\Delta' = -3.2'$
			Tuff 0.1' thick at 79.8'	

Core Hole

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 CASING \_\_\_\_\_ REMARKS: Slickensides and brecciated zones common

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	
			Tuff 0.2' thick at 93.0'-93.2'	83.2'-96.7' D#7
				80.0'-96.5' KH
				Δ' = -0.2'
97.1'	177.5'		Dark-gray and gray-brown lean-clay rich oil shale with tan lean to brown moderately-rich oil shale interbedded. Thinly bedded with some distinct tuffs. Virtually noncalcareous.	96.7'-113.5' D #8
				96.5'-113.1' KH
				Δ' = -0.4'
			Tuff 0.2' thick at 113.4'-113.5'	113.5'-130.5' D #9
			Tuff 0.1' thick at 113.8'	113.1'-129.3' KH
			Tuff 0.1' thick at 133.0'	Δ' = -1.2'
			Tuff 0.2' thick at 146.6'-146.8'	
			Tuff 0.1' thick at 147.8'	
			Very dark brown rich oil shale, 157.9'-162.2', 5.3' thick	130.5'-146.0' D#10
			Tuff 0.1' thick at 165.0'	129.3'-144.7' KH
			Tuff 0.2' thick at 165.6'-165.8'	Δ' = -1.3'
			Dark-brown rich oil shale 169.0'-172.0', 3.0' thick	
				146.0'-161.4' D#11
				144.7'-160.6' KH
				Δ' = -0.8'
				616.4'-177.4' D#12
				160.6'-174.6' KH
				Δ' = -2.8

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 CASING \_\_\_\_\_ REMARKS: Water production rate 1-3 gpm

FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	
177.5'	197.8'		Gray to brown somewhat silty shale, lean oil shale. Medium bedding with some tuffs. Somewhat calcareous.	177.4'-191.4' D #13 174.6'-191.0' KH
			Tuff 0.1' thick at 181.7'	$\Delta' = -0.4'$
			Tuff 0.1' thick at 191.5'	191.4'-207.3' D #14
			Dark brown moderately rich oil shale 192.8'-194.4', 1.6' thick	191.0'-206.8' KH
				$\Delta' = -0.5'$
197.8'	323.0'		Dark brown thinly bedded oil shale with some light brown oil shale and tuffs.	207.3'-223.7' D #15
Bottom of hole			Very clay rich with some calcite	206.8'-223.0' KH
				$\Delta' = -0.7'$
			Tuff 0.1' thick at 205.7'	
			Tuff 0.2' thick at 207.7'-207.9'	223.7'-239.9' D #16
			Tuff 0.1' thick at 218.1'	223.0'-240.1' KH
			Tuff 0.2' thick at 222.1'-222.3'	$\Delta' = +0.2'$
			Tuff 0.2' thick at 236.2-236.5'	
			Tuff 0.1' thick at 236.8'	239.9'-256.7' D #17
			Tuff 0.1' thick at 245.7'	240.1'-256.5' KH
			Tuff 0.2' thick at 246.8'-247.0'	$\Delta' = -0.2'$
			Tuff 0.1' thick at 248.4'	
			Tuff 0.1' thick at 248.8'	
			Tuff 0.2' thick at 250.1'-250.3'	
			Tuff 0.2' thick at 253.1'-253.3' with minor shale	
			Tuff 0.2' thick at 254.5'-254.7'	

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 CASING \_\_\_\_\_ REMARKS: See below

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FROM	TO	THICK- NESS	LITHOLOGIC DESCRIPTION	
			Tuff 0.1' thick at 255.8'	256.7'-273.0' D #18
			Tuff 0.1' thick at 256.4'	256.5'-273.2' KH
			Limestone 0.2' thick at 260.8'-261.0'	Δ' = +0.2'
			Limestone 0.25' thick at 265.8'-266.05' ostrocods?	
			Sandstone? 0.3' thick at 268.4'-268.7'	273.0'-289.5' D #19
			Limestone 0.1' thick at 271.0'	273.2'-289.1' KH
			Limestone 0.2' thick at 275.6'-275.8'	Δ' = -0.4'
			Limestone 0.1' thick at 282.3'	
			Limestone 0.2' thick at 284.2'-284.4'	289.5'-306.3' D #20
			Limestone 0.1' thick at 284.9'	289.1'-305.8' KH
			Limestone 0.3' thick at 287.4-287.7'	Δ' = -0.5'
			Limestone 0.2' thick at 300.3'-300.5'	
			Limestone 0.1' thick at 308.7'	306.3'-323.0' D #21
			Limestone 0.2' thick at 309.6'-309.8'	305.8'-322.6' KH
			Limestone 0.1' thick at 311.7'	Δ' = -0.4'
			Limestone 0.25' thick at 318.95'-319.2'	Bottom of hole
			The hole was capped with a large stone slab and is in service as a Water	
			Conservation Division observation and test well. Water production with drilling	
			Fluid probably began between 50-100' depth and slowly increased with increasing	
			depth. At 290' water production dropped off, possibly due to loss in lower	
			fractures or fluid back pressure sealing.	

Drill hole

