CHEVRON SHALE OIL COMPANY
DRILL HOLE RECORD

DRILL HOLE No. CC 24
DRILL AREA

COORDINATES		COLLAR ELEV	TD		
N	E				

DRILL CO	DRILLER	CORE SIZE	DIA. HOLE	CASING	DATE START	DATE COMPL

RADIOMETRIC LOG	LOGGER	TD LOGGED		

GEOLOGIC LOG BY C. Scott C. Creighton

DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
490	7999	s.s.	s.s. (~95%) w̄ interbedded o.sh/mrlst abundant pyrite along fractures, $CaCO_3$ cement somewhat fractured & broken, med-fine grained buff - lt. brn.
		o.sh.	o.sh., lean - med
500	7989		396.4 - 396.8 tuff with wavy o.sh laminations (≤ 1 cm)
			500.9 1½ cm tuff, minor tar, pyrite & tar
		mrlst	diamond shaped fracture, few mm in thickness, filled with nahcolite mrlst 512-513, 516-518
510	7979		512.3 1cm lens of tuff, tar abundant
			512.4 - 512.8 slightly contorted to dipping beds (to 12°) o.sh.
			516.3 - 1½" dragon shaped pyrite & Fe filled fracture body running parallel to core axis
520	7969		
		o.sh.	
530	7959		carbon layer (coal) 1 cm thick
540	7949		o.sh. has spotted appearance caused by small clay lenses 539.3 - 551.0
			coarse grained tuff, 1½ cm thick, lt brn, tar & pyrite present

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
			1cm lt.brn s.s, tar, med-fine gr.
550	7939		551.6 4" buff colored tuff, very fine grained, slightly (very) vesicular, effervesces mrlst 551-552
		o.sh.	
560	7929		lean o.sh - mrlst, somewhat brecciated or contorted, dips vary from horizontal to ±17°, minor xtal in some cavities, slight tar & pyrite
			lean - med.
		mrlst	568.5 - 568.9 pyritized lenses in lean o.sh.
570	7919	o.sh.	1" beige tuff, o.sh. interbeds, non effervescing fractured directly above filled w pyrite & anatase
		mrlst	
		o.sh.	
580	7909	mrlst	
			589.6 - 591.0 spotted o.sh. - clay lenses
590	7899		mrlst 590-592 596-599 601-603
600	7889		
			607.0 - 607.4 mostly tuff w 35% o.sh. in interbeds tar abundant
610	7879	mrlst	616.0, 617.9, 621.6 tuffs, lt. brn - buff, med-fine grained (3") (1') (3") slightly vesicular, some tar & pyrite
		o.sh.	

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
		o.sh.	mrlst 618-619 624-625 630-631 636-638
620	7869		624.3 - 625.5 mrlst 625.5 - 625.7 vug 625.7 - 625.9 rich o.sh 625.9 - 626.6 core loss 626.7 - dip of med grade o.sh. ≈ 13°
630	7859		627.0 - 677.0 mostly o.sh., lean - med, with numerous interbeds (15%) tuffs major tuff units @ 641.5, 643.3, 653.7 gray - lt. brn, some tan
640	7849	o.sh/tuffs	
650	7839		665.8 - 667.0 dipping (10°) lean o.sh.
660	7829		mrlst 659-660 673-675
		mrlst	
670	7819		
			stromatolite appearance, s.s. intrusion?
680	7809		
		o.sh.	
			688.6 - 691.8 vug/core loss in med o.sh. some $CaCO_3$ xtals

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
		o.sh.	
690	7799		mrlst 697-699
			vug 1"
700	7789		700.0 - 700.4 highly broken zone of higrade o.sh zone has higrade o.sh. above & below broken zone resembles pebbles
		mrlst	
			slippage - 1" displacement
710	7779		
720	7769		
			lean o.sh. 730-731 732-733
		o.sh.	o.sh becomes leaner ↓
730	7759		A groove mrlst is watered, vuggy, fractured & broken; buff-gray, lotar, pyritized in lenses near vertical fracture @ 737.5 contains sulfides; white xtals (gypsum?) non-reactive 732.3 - prelithified collapse breccia
		mrlst	
740	7749	o.sh	R-7 Mahogany zone initially med grade, minor dipping & contortions w interbeds of dualitized tuffs 742.0-750.0
		o.sh/tuffs	745.5 false MM?
750	7739		
		o.sh.	
			758.3 10% altn analcite? 6" tuff, mahogany marker gray - lt brn, pyrite 1-2%, 35% void space, 10% smoky qtz, 45% qtz like min, hardness ≤5

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
		o.sh.	mrlst 758-760
760	7729		o.sh. becomes med - hi grade
			3" tuff, very fine grained, lo void space, tan, small pockets of pyrite
770	7719		
			nahcolite in distinct lenses, forms partings w hi grade o.sh. Zone 3" thick, 30% lenses, white powder assoc.
780	7709		782.3 - 783.0 core loss
			1" tuff, mostly fine grained, buff - lt brn.
790	7699		mrlst 809-810, 812-813, 819-821, 823-824
			tuffs (3) 1 - 2 cm thick fine-med grain, some tar, pyrite, brn - lt. brn
			794.7 1cm band of spots in o.sh.
			794.5 - 799.0 thin, discontinuous bands form laminations of o.sh.
800	7689		798.8 3" band of contorted o.sh. with 1" band of spots located in center spots become gray when dry
			806.8 - 809.0. thin, discontinuous bands in o.sh. forms lams
810	7679		o.sh becomes leaner
			3" sltst gray - brn, fine grained, lo void space, mod pyrite
820	7669		fractured mrlst w tar (3")
			821.3 - 822.1 distorted, twisted bedding of o.sh amongst fine grained lt brn. rock
			822.3 - 823.7 stromatolite appearance, very little o.sh.
	----	827.0 mrlst	B groove mrlst - lean o.sh. fractured, wafered, brecciated, broken gray - buff

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
		mrlst	
830	7659		831.5 1" unit } lt gry fine gr. sugary text. w/ dk 832.3 2" unit } gry pyr. rich bands, patchy yellow staining
		"B"	
			"B" interval highly fragmented, brecciated, w/ pyrite rich cavities
840	7649		lean-rich o.sh. 829-830, 840-841, 842-844, 845-846
			6" rich osh
850	7639	- - - -	R-6 pyr. continues in sparse bands ≤ 2mm
		o.sh.	½ cm unit 852.9 } gry sugary text., Fe Ox contacts 3" unit ? 853. } very fine gr.
		mrlst	1" unit 860.1
860	7629	- - -	3" unit 865.7 as above w/out FeOx. contains interstitial kerogen
		mrlst / o.sh.	mrlst 852 - 853
870	7619		
		o.sh.	
		mrlst	
880	7609		879.5 2 distinct rich 1" bands 2" apart. 880.1 1" vfg hard rk tan-gry, clear somewhat x'stln
		o.sh.	
890	7599		1" very fine gr. rk tan to gry, hard,
		mrlst	895.0 Near vert. fractures

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DEPTH	ELEV.	ROCK UNIT	DESCRIPTION
		mrlst	mrlst 901-903
900	7589	o.sh.	thin < 1mm discontinuous dk. bands with small clastic lenses 903-904.2
			905.0 2" tuff unit w/ interstitial tar.
		mlstn	white hard min in upper 1 cm. (repl. analcite?)
910	7579		910.7 1.5' in unit fine gr. w/ larger grained opaque white mineral, secondary hardness ≈ 5 devitrified tuff?
		o.sh.	
920	7569		pyr. absent
			928.0
930	7559	mlstn	barren - little or no pyrite, brecciated in places 935.1 ripple mark cast?
			936.0
940	7549		wavy discontinuous laminations 936-937.5'
			pyr. filling voids in distorted bedding and occuring in lenses 944-946
		o.sh.	
950	7539		30° dip @ 949-950 w/ pyr. along bedding plane
			tr. coal like substance @ 952'
			Marlstone distorted bedding and brecciation pyr. in irregular voids & discont. laminations 954-962
960	7529	mrlst	
		o.sh.	@ 958.4 - 959.0 distinct folding. pyrite lensed along bedding plane 964-968.8 watered & fractured mrlst 968.8 - 970.8

lean o.sh. 925-926, 927-929

mrlst 942-943, 944-946, 955-957

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		o.sh.	mrlst.: pyrite: along bedding planes, cavity filling, along fractures mostly laminated, lotar buff - gray
970	7519		lean o.sh. 971-972, 979-980, 997-998, 1011-1012, 1014-1015, 1020-1022
980	7509	mrlst	
		mrlst/clastics	mostly marlstone, 20% non-laminated slts/s.s. interbeds & lenses increasing downward. pyrite common
990	7499		
			<1cm layer of tar (gilsonite?)
1000	7489		1 cm layer carbon (coal appearance)
			2" tuff unit, possible sulfur deposits on exposed surface fine grain, gray
1010	7479		1010.7 - 1011.6 extensive folding, some slippage
1020	7469		1022-1023 50% sand
1030	7459		1028.9 - 1029.1 hi grade o.sh T.D. 1029.1 - 1030 mrlst/s.s.

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