UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

GEOPHYSICAL AND LITHOLOGIC LOGS OF TWO HOLES DRILLED IN THE WASATCH PLATEAU COAL FIELD, OLD WOMAN PLATEAU QUADRANGLE, SEVIER COUNTY, UTAH

By

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INTRODUCTION

Two holes, totaling 1,824.4 feet, were rotary drilled and cored in the Wasatch Plateau coal field, Utah, for the U.S. Geological Survey in June and July 1978. Drilling was done by Himes Drilling Co., Grand Junction, Colorado, under contract no. 14-08-0001-17342, awarded by the USGS. Geophysical logging was done by Strata Surveys, Grand Junction, Colorado, and permission to drill was granted by officials of the Fishlake National Forest, Utah. The purpose of the drilling was to obtain information on the thickness, quality, and extent of coal beds and the lithology of the enclosing rocks in the Upper Cretaceous Blackhawk Formation. The overall goal of the project is to evaluate and classify federally owned coal lands.

Drilling was done in the Old Woman Plateau quadrangle, Sevier County, Utah, using truck-mounted rotary drilling and coring rigs. Drilling fluids were air and foam for the rotary drilling and mud for the coring. Both holes were drilled adjacent to holes drilled and logged in 1977 (Blanchard, 1978)--hole no. W-LCC-12a-OWP (fig. 1) adjacent to W-LCC-12-OWP, and hole no. W-LCC-13a-OWP (fig. 2) adjacent to W-LCC-13-OWP. The core intervals were chosen from geophysical logs.

Drill-hole W-LCC-12-a-OWP was logged by geophysical methods and the suite of logs includes resistivity (RES), natural gamma (G), and density (Den). No geophysical logs were run for drill-hole W-LCC-13a-OWP. The logs were run at a scale of 1 inch to 10 feet; but, to facilitate reproduction of this report, they were reduced to 1 inch to 50 feet. All measurements are in feet; to convert to meters, multiply by 0.3048.

The age, generalized lithology, and thickness of each sedimentary unit encountered are shown in figure 3. A summary of information for the two drill holes is given in table 1.

R. 4 E.

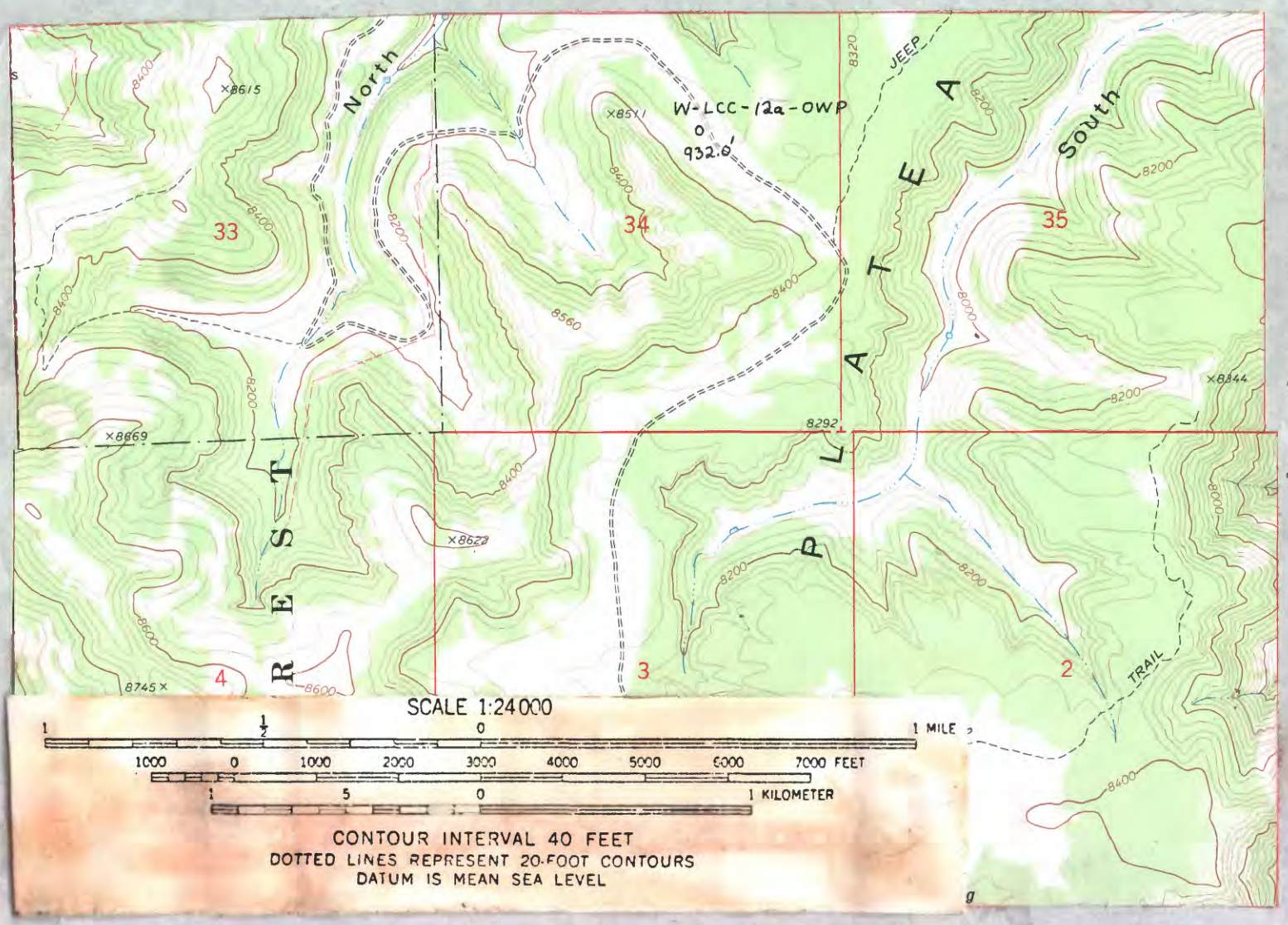
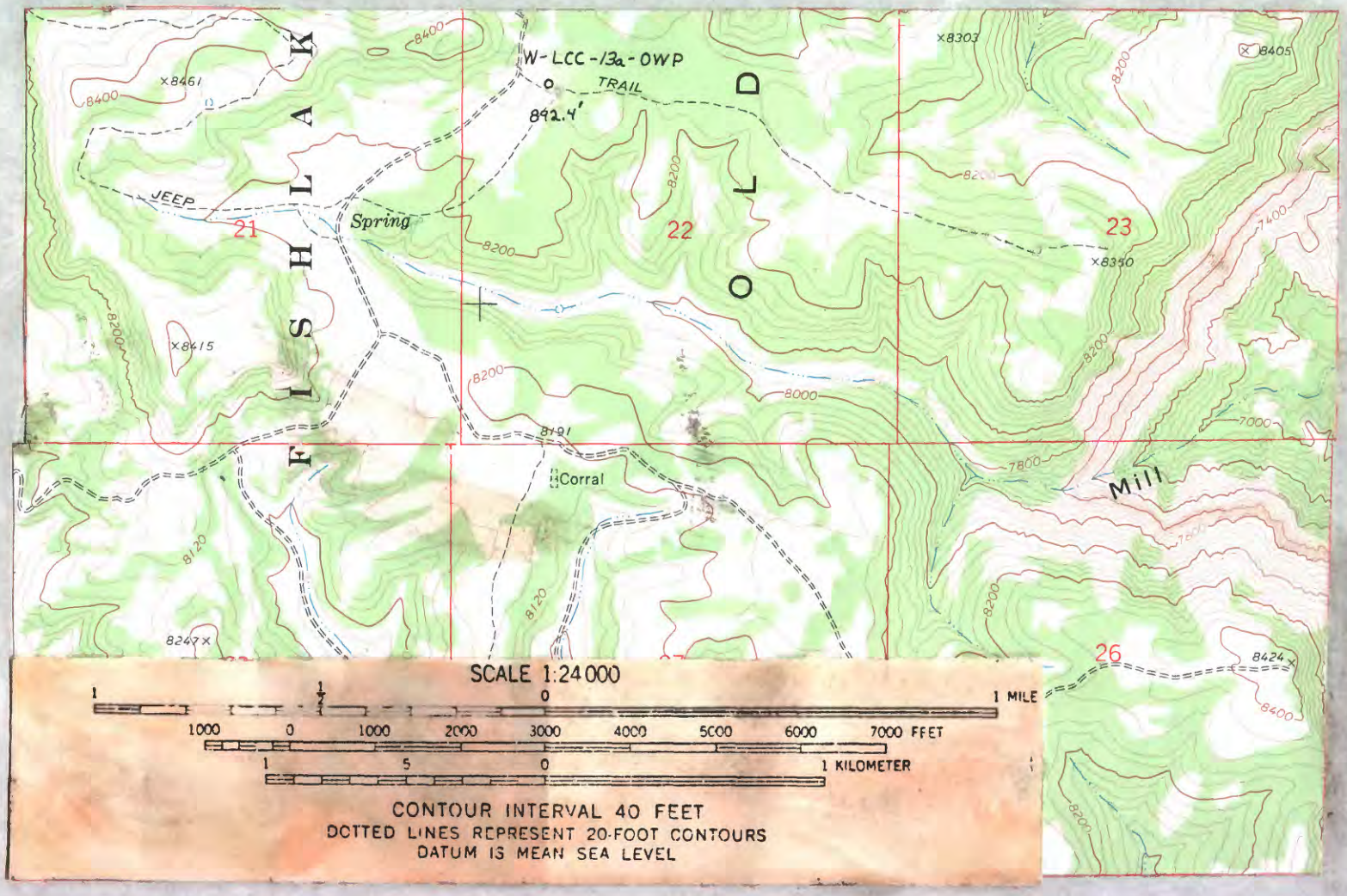


Figure 1.--Drill-hole location in the Wasatch Plateau coal field, northern part of the Old Woman Plateau quadrangle, Sevier County, Utah.

R. 4 E.



T. 23 S.

3

Figure 2.--Drill-hole location in the Wasatch Plateau coal field, southern part of the Old Woman Plateau quadrangle, Sevier County, Utah.

Table 1.--Summary of information for two drill holes in the Wasatch Plateau coal field, Old Woman Plateau quadrangle, Sevier County, Utah

[FEL, from east line; FWL, from west line; FNL, from north line; FSL, from south line]

Drill-hole No.	Location	Rotary drilled depth (ft)	Cored interval (ft)	Depth logged (ft)	Total depth (ft)
W-LCC-12a-OWP	T. 22 S., R. 4 E., sec. 34 1,750 FEL, 1,450 FNL	782	782-932	931	932
W-LCC-13a-OWP	T. 23 S., R. 4 E., sec. 22 900 FNL, 1,050 FWL	740	740-892.4	---	892.4

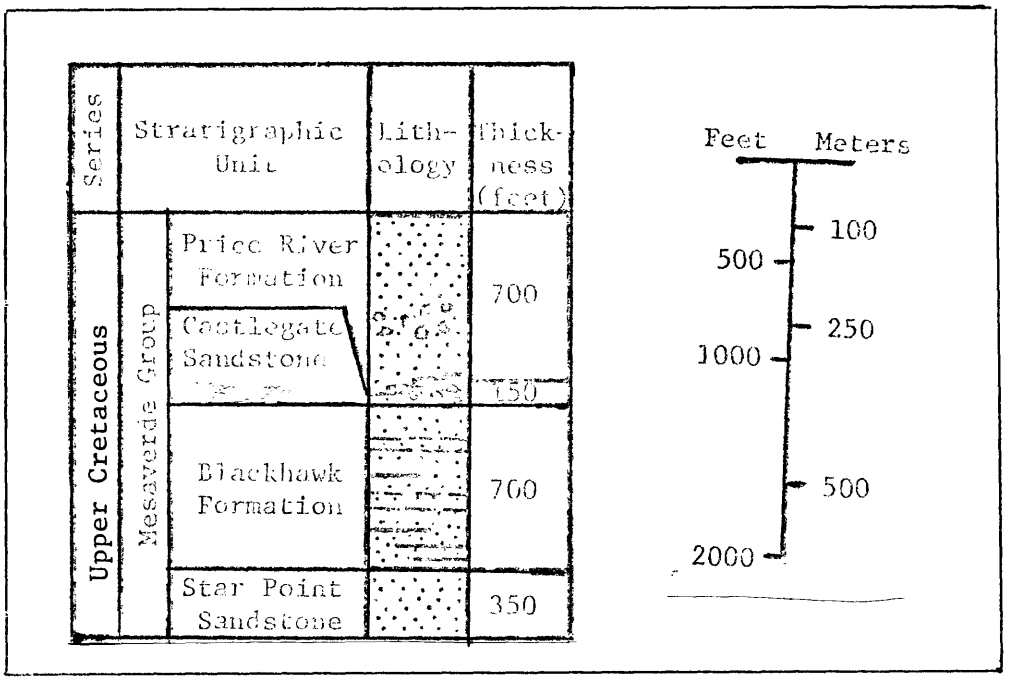


Figure 3.--Columnar section of rocks in the Wasatch Plateau coal field, Sevier County, Utah. (Modified from Spieker, 1931, plate 3.)

REFERENCES

Blanchard, L. F., 1978, Geophysical and lithologic logs of holes drilled in the Wasatch Plateau and Emery coal fields, Johns Peak and Old Woman Plateau quadrangle, Sevier County, Utah: U.S. Geological Survey Open-File Report 78-363.

Spieker, E. M., 1931, The Wasatch Plateau coal field, Utah: U.S. Geological Survey Bulletin 819, 219 p.

U.S. GEOLOGICAL SURVEY
DRILL-HOLE LOG, SEVIER COUNTY, UTAH

Hole No. W-LCC-12a-OWP Quadrangle Old Woman Plateau Elevation 8,310'

Location: T. 22 S., R. 4 E., sec. 34, 1,750 FEL 1,450 FNL

Rotary-drilled depth 782' Cored interval 782-932' Logged depth 931 Total depth 932'

Drilling medium air and foam

Geophysical logs: Logging speed 20 ft/min

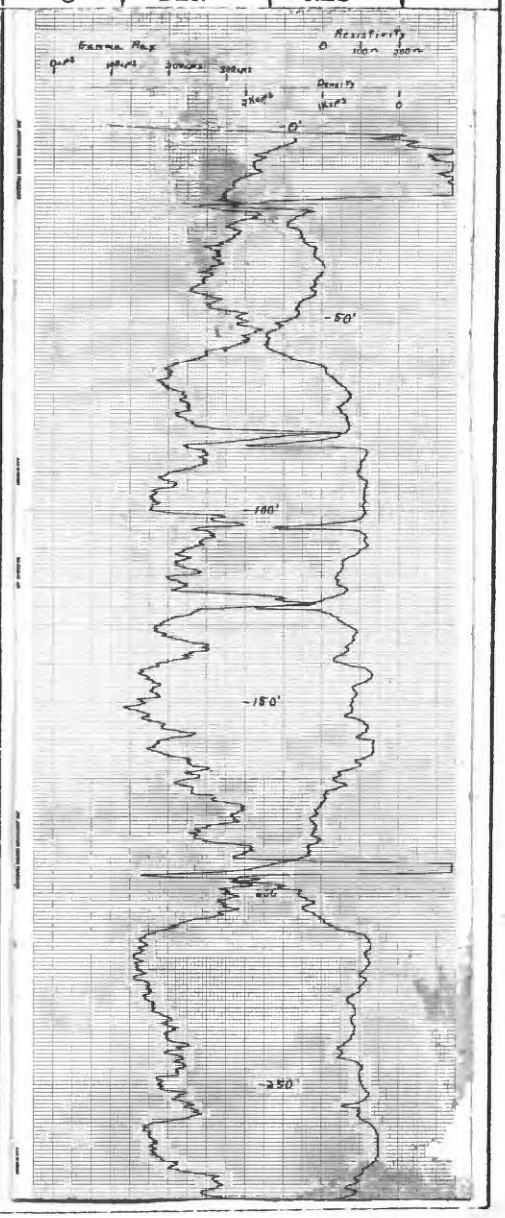
Resistivity (RES): Scale 100 Ω/in

Gamma (G): T.C. 2 sec. Scale 100 cps/1.5 in.

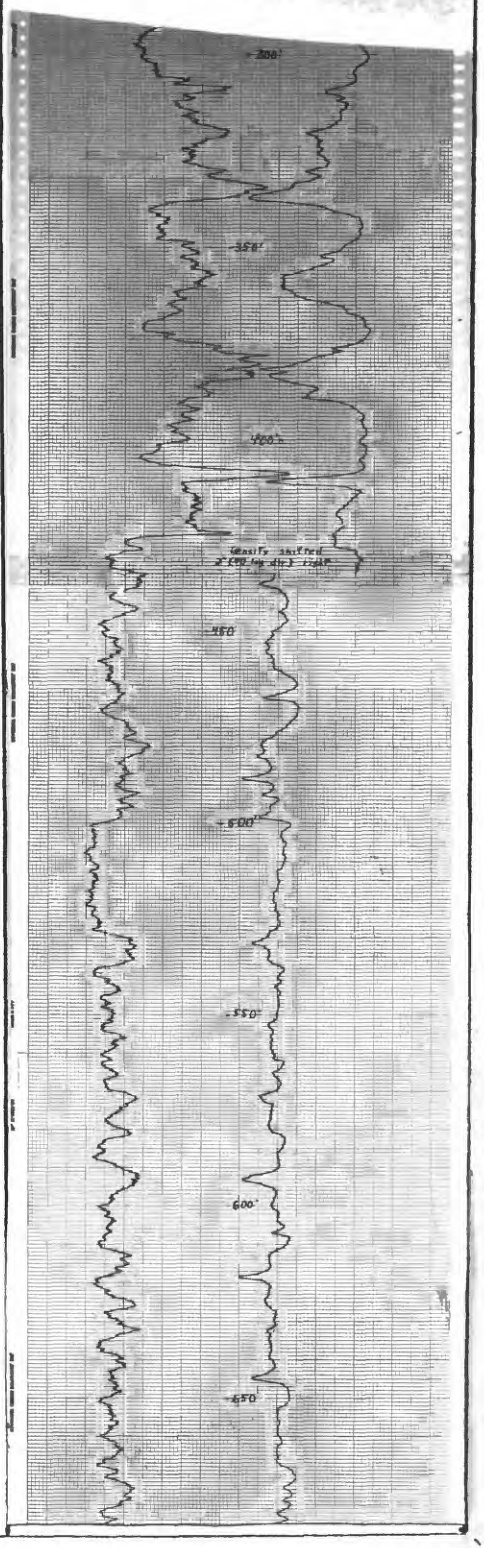
Density (DEN): T.C. 2 sec. Scale 500 cps/in. from 0 to 931

Remarks:

LITHOLOGY		STRIP LOG	GEOPHYSICAL LOGS
0-782.0	Samples not described		G DEN RES
782.0-789.5	Shale, dark-gray, carbonaceous mudstone, gray, carbonaceous and coaly stringers; sandstone, gray, very fine grained; contains carbonaceous streaks		
789.5-791.2	Siltstone, gray, slightly carbonaceous; sandstone, light-gray, very fine grained		
791.2-799.6	Mudstone, dark-gray, carbonaceous at top; siltstone, gray, mottled		
799.6-810.4	Sandstone, light-gray, very fine to fine-grained; mudstone, dark-brown, carbonaceous, coaly		
810.4-815.0	Coal		
815.0-817.5	Mudstone, dark-gray, carbonaceous		
817.5-819.2	Coal, shaly at base		
819.2-841.9	Sandstone, light-gray, very fine grained, containing thin, shaly, carbonaceous and coaly streaks; siltstone, brown, carbonaceous, coaly; mudstone, dark-gray, carbonaceous. Individual units are 2-7' thick		
841.9-858.9	Sandstone, light-gray, fine-grained, coaly partings; siltstone, light-gray, with coaly and shaly partings; lower sandstone unit contains shale clasts		

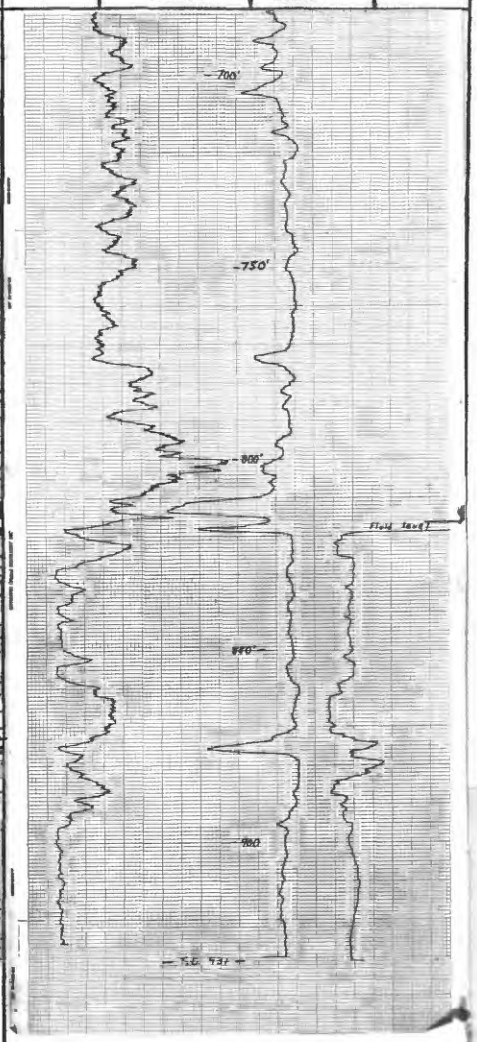


Hole No. W-LCC-12a-OWP (continued)

LITHOLOGY		STRIP LOG	GEOPHYSICAL LOGS
858.9-872.4	Mudstone, dark-gray to black, carbonaceous; increasingly fossiliferous downward (pelecypods)		
872.4-872.7	Coal		
872.7-874.3	Shale, dark-gray, carbonaceous, coaly		
874.3-874.8	Coal		
874.8-875.1	Sandstone, light-gray, with coal, thinly interbedded		
875.1-876.5	Coal		
876.5-883.1	Sandstone, light-gray, very fine grained, with carbonaceous streaks and shaly partings		
883.1-887.6	Siltstone, gray, with carbonaceous stringers; mudstone, gray, carbonaceous, pyritic, fossiliferous at base		
887.6-895.8	Sandstone, light-gray, very fine grained, fossiliferous, pyritic, carbonaceous; coarsens downward with coaly streaks at base		
895.8	TOP OF STAR POINT SANDSTONE		
895.8-932.0	Sandstone, light-gray, brown tint at top (slightly carbonaceous), fine-grained		

Hole No. W-LCC-12a-OWP (continued)

LITHOLOGY	STRIP LOG	GEOPHYSICAL LOGS			
		G	DEN	RES	



U.S. GEOLOGICAL SURVEY
DRILL-HOLE LOG, SEVIER COUNTY, UTAH

Hole No. W-LCC-13a-OWP Quadrangle Old Woman Plateau Elevation 8,250'

Location: T. 23 S., R. 4 E. sec. 22, 900 FNL 1,050 FWL

Rotary-drilled depth 740' Cored interval 740-892.4' Logged depth -- Total depth 892.4'

Drilling medium air and foam

Geophysical logs: Logging speed ____ ft/min

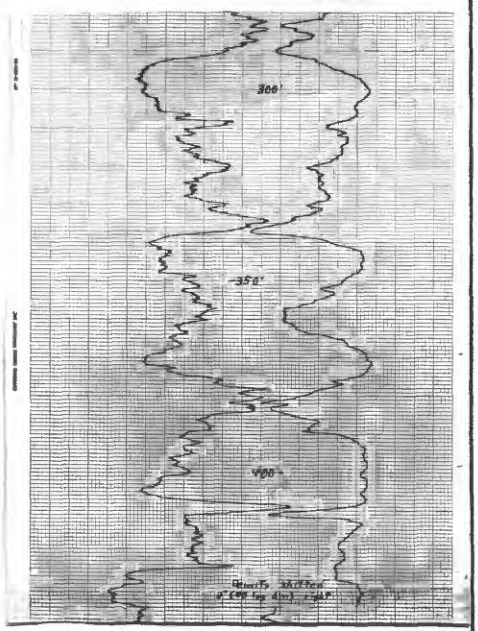
Resistivity (RES): Scale ____

Gamma (G): T.C. ____ sec. Scale ____

Density (DEN): T.C. ____ sec. Scale ____ cps/in. from ____ to ____

Remarks: No geophysical log was run

LITHOLOGY		STRIP LOG	GEOPHYSICAL LOGS
0-740	Samples not described		
740-750.8	Sandstone, light-gray, fine-grained, subangular; contains occasional thin interbeds of coal		
750.8-752.1	Coal, with shale partings, pyritic		
752.1-754.7	Shale, dark-gray, carbonaceous, coaly; mudstone, gray to dark-gray, coaly. Coaliness decreases downward		
754.7-759.2	Coal, pyritic		
759.2-759.5	Siltstone, dark-gray, carbonaceous, coaly, pyritic		
759.5-765.05	Siltstone, gray to dark-gray; interbedded with light-gray to gray, very fine grained sandstone		
765.05-770.4	Mudstone, gray to black, slightly carbonaceous to coaly		
770.4-778.8	Siltstone, gray to dark-gray, carbonaceous		
778.8-778.9	Shale, black, very carbonaceous		
778.9-780.4	Coal, shaly		
780.4-806.3	Mudstone, gray to dark-gray, carbonaceous to very coaly at base of unit, fossiliferous (pelecypods) between 787.9 and 803.2', with minor shale and siltstone		



LITHOLOGY		STRIP LOG	GEOPHYSICAL LOGS			
			G	DEN	RES	
806.3-807.8	Coal, shaly and pyritic at base					
807.8-808.9	Mudstone, dark-gray, coaly					
808.9-812.7	Sandstone, light-gray, very fine grained; shale, gray slightly carbonaceous, containing leaf fossils; siltstone, gray, with carbonaceous stringers					
812.7-819.75	Sandstone, light-gray, very fine grained, slightly carbonaceous					
819.75-824.1	Mudstone, gray, carbonaceous, fossiliferous at base (pelecypods)					
824.1-824.6	Coal					
824.6-827.45	Shale, gray, carbonaceous, coaly; siltstone, gray, pyritic; sandstone, very fine grained, pyritic, with coaly stringers					
827.45-840.5	Mudstone, gray to black, silty at top, carbonaceous, fossiliferous (pelecypods); siltstone, gray to dark-gray, carbonaceous, pyritic					
840.5-848.2	Sandstone, light-gray, fine-grained, fossiliferous (oysters), carbonaceous streaks at base					
848.2-850.45	Siltstone, dark-gray, carbonaceous, containing sandstone blebs					
850.45	TOP OF STAR POINT SANDSTONE					
850.45-872.65	Sandstone, light-gray, very fine grained, carbonaceous stringers, pyritic, fossiliferous (oysters), coaly in places					
872.65-873.7	Coal, shaly at very top					
873.7-873.9	Shale, dark-gray, carbonaceous, coaly					

LITHOLOGY		STRIP LOG	GEOPHYSICAL LOGS
			G DEN RES
873.9-886.7	Sandstone, light-gray, very fine grained, containing carbonaceous stringers and very thin carbonaceous shale partings		
886.7-892.4	Sandstone, gray, fine- to medium-grained, slightly salt-and-peppery colored