R614 RULES

5-YEAR MINE PERMIT RENEWAL APPLICATION

TEXT

VALLEY CAMP OF UTAH, INC.

SCOFIELD ROUTE, HELPER, UTAH 84526

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GEOLOGY AND COAL RESERVE STUDY OF THE BELINA NO. 1 AND NO. 2 MINES

VALLEY CAMP OF UTAH

October 1982

GATES ENGINEERING COMPANY
Consultants
Beckley, West Virginia

Pittsburgh Chicago Denver

GATES
ENGINEERING
COMPANY
CONSULTANTS
BECKLEY
WEST VIRGINIA

JOHN W. STRATON, P. E.
Executive Vice President-Consulting

October 14, 1982

FILE D-93147.1557

Mr. William H. Haynes, Jr.
President, Western Division
The Valley Camp Coal Company
Scofield Route
Helper, Utah 84526

Dear Mr. Haynes:

Under letter of agreement dated March 24, 1982, and your letter dated April 7, 1982, you asked Gates Engineering Company to prepare a geological study of your Belina No. 1 and No. 2 Mines. Specific testing included:

1. Study geological conditions in the Upper and Lower O'Connor seams contiguous to and including the current Belina No. 1 and No. 2 Mines.

2. Prepare a schedule identifying and tabulating the total and recoverable reserves for each lease and for the entire property.

3. Recommend any additional drilling required to improve the quality of the information available.

4. Discuss potential reserves that might be acquired in contiguous properties.

5. Prepare thickness and quality isopach maps, coal elevations and structure maps, map photographic features and map interburden if necessary.

Mr. William Haynes, Jr. and Mr. Trevor Whiteside of Valley Camp were very helpful in the course of this study.

Yours very truly,

John W. Straton

John W. Straton, P.E.
Executive Vice President - Operations

Prepared by Miles Rader, C.P.G.

POST OFFICE DRAWER AF · BECKLEY, WEST VIRGINIA 25801 · TELEPHONE 304 253-2701, TWX 710 938-8460

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GATES

SUMMARY

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I. SUMMARY

Gates Engineering Company (Gates) was asked by Valley Camp of Utah, Incorporated (Valley Camp) to examine various data concerning this property and to:

A. Study the geological conditions in the O'Connor seams.

B. Assess minability of the entire reserves.

C. Tabulate total and recoverable reserves in each lease.

D. Project general quality of future production.

E. Recommend additional drilling.

F. Discuss potential reserves that may be acquired in contiguous properties.

G. Map thickness, quality and structure of the coal. Map photographic features. Map interburden where indicated.

The O'Connor seams lie at altitudes of 8,200 to 9,600 feet in the ridge between Pleasant Valley and Huntington Canyon in the Wasatch Plateau Coal Field of north central Utah. The seams dip west at two to eight degrees. Overburden ranges up to 1,100 feet but is generally less than 700 feet.

Four fault zones oriented N20-30°E cross the property. These are assumed to have throws up to hundreds of feet. Minor fault zones also exist. One or more igneous dike complexes, oriented approximately N70°W, cross the property.

The degree of minability of these seams is well known, as both O'Connor seams are now being worked on the property. As in the rest of this part of the Wasatch Plateau Coal Field, major faults are serious problems in mining but are handled by the creation of separate mines in separate fault blocks or by tunneling through rock.

East of the fault which lies near the western edge of the property, little coal is likely to be lost because of faulting. The two seams can probably be mined throughout most of the central portion of the property where interburden is minimal by careful superposition of the workings.

Calculations developed in this study indicate that in-place reserves are 112 million tons, 59 million tons of which are minable. Of this total, 91 million tons in-place and 48 million tons of minable coal occur in the area north of the O'Connor Fault.

The average characteristics of O'Connor coal encountered in drill holes north of the O'Connor Fault are, on an as-received basis, 12,350 Btu, 5.5 percent ash and sulfur of 0.57 percent. These high volatile B bituminous coals are quite uniform in character across the northern portion of the property, and in the southern part their character is most likely the same.

To better assess the thickness of O'Connor coals in the southeastern portion of the block, two shallow drill holes should be drilled on ridge tops immediately east of the property boundary in Section 6.

Coals southwest of the property might be assessed by drilling as few as five holes. Examination of coals at the surface along the shores of Electric Lake and in Cox, Coal and James Canyons would be useful.

Maps included in this report suggest that about 19 million tons of Lower O'Connor coal might be found on open federal land southwest of the property and perhaps 13 million tons in the area held by Utah Power and Light, but these figures should be confirmed.

The extent of Upper O'Connor coal is even less certain. Six million tons could exist southwest of the property, and a similar amount could exist to the southeast on open federal land.

Maps of coal thickness, structure, interburden and overburden have been prepared. No maps of coal quality were made because the quality is very uniform and any variations are small and seem to have no meaningful pattern.

A map of photolinears was prepared. It indicates the presence of two joint systems, one a little east of north and the other approximately at a right angle, confirming the evidence found in the form of cleats and joints in the Belina Mines.

This report was prepared under the direction of Mr. Niles E. Grosvenor, P. E., Senior Vice President. Geological interpretation was by Mr. Miles Rader, Registered Geologist.

II. INTRODUCTION

A. Location

The property is located in Carbon and Emery Counties in north central Utah, a few miles southwest of the town of Scofield (Figure 1). A north-south paved highway, Utah 96, is a mile and a half east of the property. A main transcontinental highway, US 6/50, is 22 miles away.

The tracks of the Denver and Rio Grande Western Railroad lie parallel to highway Utah 96.

B. Geography

Pleasant Valley Canyon, oriented north-south, lies a mile and a half east of the area of investigation. The elevation of the valley floor is 8,300 feet at Clear Creek, a hamlet east of the southern portion of the property.

The leases investigated, which comprise approximately 2,780 acres, lie on Trough Spring Ridge at elevations of 8,450 to 10,050 feet (Figure 2). Trough Spring Ridge trends northwest-southeast and marks the division between Carbon and Emery Counties.

An east-west seasonal road up Eccles Canyon passes near the northern edge of the property. This road will soon be upgraded to an all weather highway, thus giving access between Pleasant Valley in Carbon County and relatively major population centers in the valley 15 miles to the west in Emery County. The two valleys have previously been 80 miles apart by road in the winter.

In that portion of the Wasatch Plateau which is of interest, the drainage is dendritic and the slopes are steep. North facing slopes are densely covered with fir trees. South facing slopes are generally grass covered. Other surfaces are sparsely covered by aspen trees.

The annual precipitation is equivalent to at least 30 inches of water, perhaps considerably more. Snow falls in all months except July and August.

C. Mining History

The Pleasant Valley portion of the Wasatch Plateau Coal Field has been mined for well over 100 years. In 1875, the Fairview Coal and Coke Company was extracting coal at Connelville in Coal Canyon, about a mile and a half west of the south end of this property.

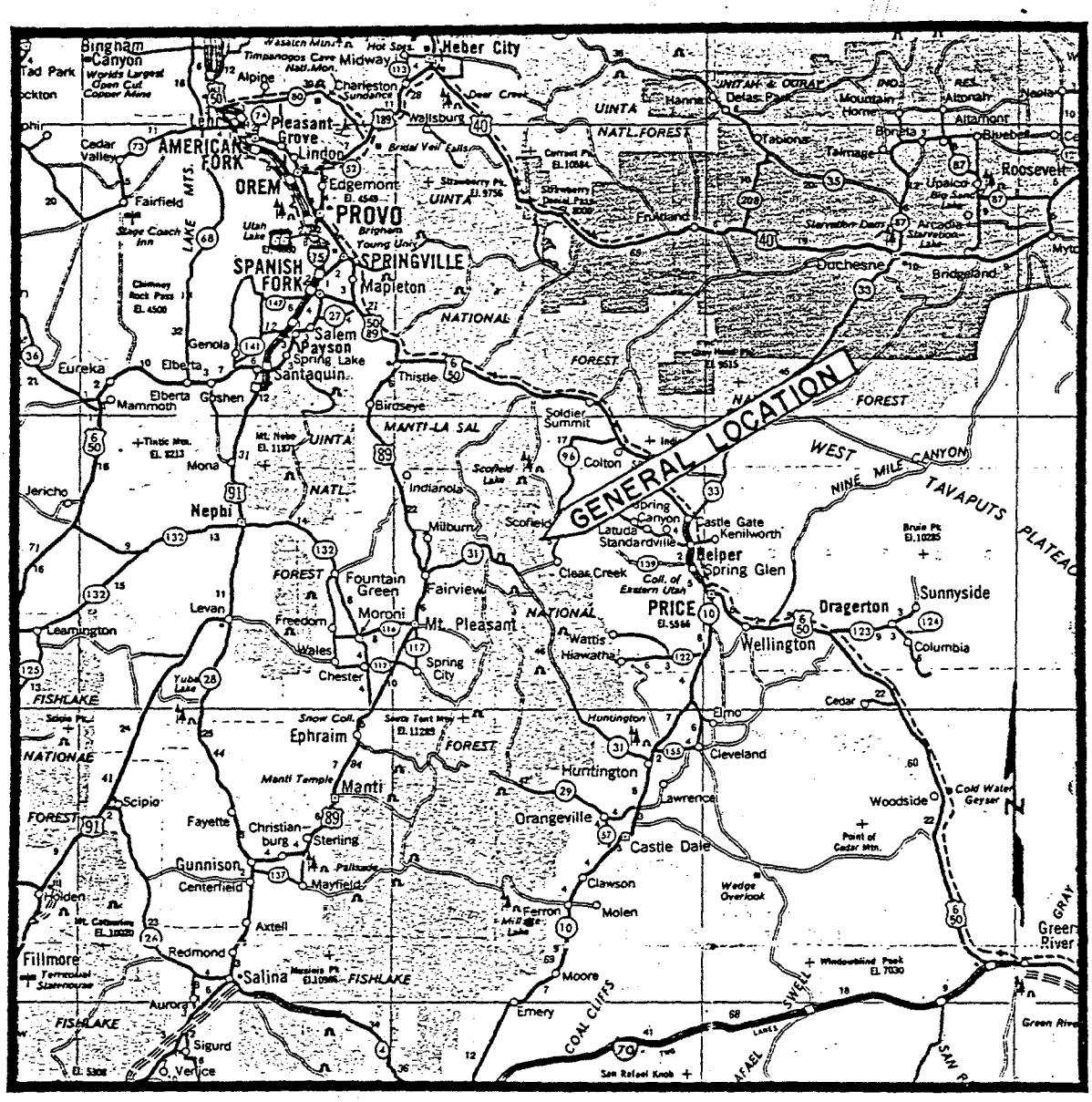

FIGURE 1

INDEX MAP

VALLEY CAMP PROPERTY

CARBON & EMERY COUNTIES, UTAH

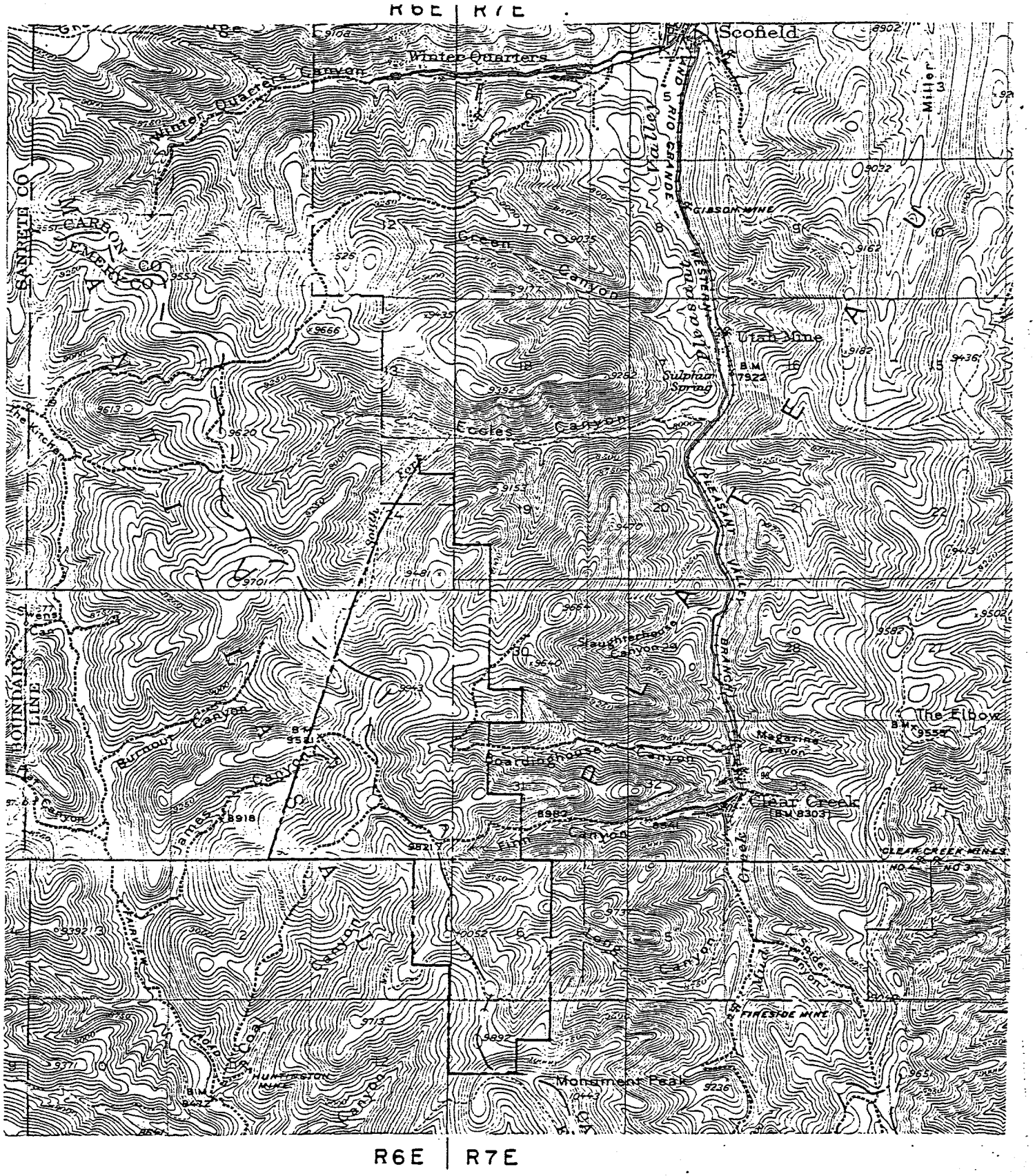

FIGURE 2

TOPOGRAPHIC MAP OF VALLEY CAMP OF UTAH PROPERTY

In 1878, Utah Fuel opened the Utah Mine in Pleasant Valley near the mouth of Eccles Canyon. Mining along the east side of Pleasant Valley has continued intermittently. Valley Camp's Utah No. 2 Mine is a short distance north of the original mine.

The Clear Creek and Union Pacific Mines, two miles south and three miles north of the Utah Mine, are also located on the east side of the valley.

The Winter Quarters Mine, located a mile west of the Union Pacific Mine, was active from 1884 to 1928. To the south in other canyons extending westward from Pleasant Valley, several other mines were operating intermittently into the 1960's. Most notable of these is the O'Connor Mine in Boardinghouse Canyon, which lent its name to the principal coals in the area.

Two properties are now being mined. One is the property discussed in this report, and the other is Coastal States Energy Company's Skyline property adjoining it to the west.

D. Previous Investigations

The first report of any useful scope was that of Spieker[1]. A more detailed structural interpretation was presented by Walton[2]. Doelling[3] consolidated all geologic work up to 1972.

Beginning in 1973, Sanders and Associates of Kaysville, Utah, prepared a series of reports covering the general Pleasant Valley area, particularly the area encompassing this property and that of Coastal States immediately to the west. These reports are voluminous and detailed and are based upon field investigations, the study of aerial photographs and the examination of data collected in the drilling of over 75 holes.

Gates' geologists have consulted three of these reports, entitled "Clear Creek Coal Properties," 1974 revision; "Connelville Coal Reserve Block," 1975; and "Eccles Canyon Trade Areas," 1976.

The first was prepared for Valley Camp and covers the general area. The second, also prepared for Valley Camp, specifically regards the northern portion of the area covered by this report. The third was prepared for Routt County Development, Ltd., holder of what is now the Skyline property; and for Valley Camp.

[1]Spieker, Edmund M., The Wasatch Plateau Coal Field, Utah, USGS Bulletin 819, 1931.

[2]Walton, P. F., Wasatch Plateau Gas Fields, Utah, AAPG Bulletin Vol. 39, 1955, pp. 385-421.

[3]Doelling, H. H., Central Utah Coal Fields; Utah Geological and Mineral Survey, Mon. No. 3, 1982.

In 1977, Gates' geologists made field examinations of the property covered by this report and examined cores and geophysical logs of holes drilled on and near it. The cores were examined at drill sites, at a core warehouse in Clear Creek and at the core library maintained by Energy Fuels Corporation (Routt County Development, Ltd.) near Steamboat Springs, Colorado.

III. INVESTIGATION

A. Geology

1. **Structure.** The Clear Creek anticline, a major domal uplift hundreds of square miles in size, has been well defined by deep holes drilled for natural gas. This anticline is cut by many faults trending north to northeast. The valley of Clear Creek, Pleasant Valley, is the site of a major north-south fault zone.

On the east side of this fault zone, coals are found at the level of the valley floor, as in the Utah Mines, whereas west of the valley, the coals are much higher, as in the property herein discussed, Plate 1, which lies on the west flank of the anticline.

Dips in this property are generally west and range from two to perhaps as much as eight degrees. Several faults cross the property, as shown on Plate 2.

The Connelville Fault is found on the west. Sanders' 1976 report stated that this fault marks the course of South Eccles Canyon, and on this basis, this property was defined. Spieker mentions a "sharp drop" in a coal bed across South Eccles, presumably on the basis of pits now vanished. There were many of these when he did his work about 60 years ago, but he says that ". . .by 1923 many of the pits were almost destroyed, which is reasonable in this area of high moisture and consequent soil creep".

A fairly recent pit in South Eccles Canyon near drill hole 75-24-1 reveals a coal and a fault of unknown magnitude striking southwest and dipping southeast, a strike and dip not consistent with that expected if this were the Connelville Fault and it followed the course of this canyon. Valley Camp's Belina No. 1 Mine in the Upper O'Connor seam encountered major faults parallel to South Eccles Canyon, 900 to 1,400 feet east of the canyon. For these and other reasons, the faults known to cross the property are shown on the maps as zones rather than lines. Within these zones, a number of faults will generally be found.

The Connelville Fault was named by Spieker after the town of Connelville in Coal Canyon. Spieker thought that the southern end of the fault was oriented north-south and passed through that settlement. We found no evidence of this.

Various geologists who have worked the area agree, on the basis of drill hole data, that this fault exists and that this same fault marks the western edge of the Winter Quarters Mine. Regardless of its length and magnitude, this fault is not well defined as a surficially recognizable feature.

The Coal Canyon/O'Connor Fault is based upon the known fault marking the western edge of the O'Connor Mine, aerial photolineations north of that area and the linear nature of Coal Canyon to the south. The fault or fault zone probably does not exist in the bed of Coal Canyon because coal outcrops on both sides of the canyon at the same approximate elevation. Aerial photographic study suggests that a fault traverses the west wall of the canyon.

The Cox Canyon Fault is based upon the linear nature of the upper portion of that canyon and various topographic features to the northeast. This fault and the one described below are presumed to merge in Finn Canyon and run due north from that point.

The Valentines Gulch Fault is Spieker's Valentine Fault. The designation is changed here because Sanders used the name "Valentine Fault" for a feature several miles northwest, thus confusing the term. The fault is based upon the lineup of three saddles and three stream courses, including Valentines Gulch.

Spieker felt that he could see evidence of faulting in the form of offset beds in this gulch. Gates' geologists have not visited the gulch but have examined the property and have found no clear evidence of such an offset, which is normal, considering the nature of the interbedded sands and shales which form the topography and the degree to which their outcrops are covered.

These major faults certainly exist, but locating the faults with any precision is not possible except where they have been encountered in mines. Where they have been found, they are sharp, clean, free from gouge and vertical or nearly so.

Minor faulting is also expected and has been noted in the Belina Mines where faults with displacements up to four feet have been encountered.

The structural grain of this property is clearly north-northwest. Lamprophyre dikes are generally found along this direction of weakness in this part of the Wasatch Plateau. Numerous dikes were encountered in the Winter Quarters Mine, and one has been mined through in the Belina No. 1.

These zones of igneous dike material range in thickness up to 100 feet in the Winter Quarters and over 200 feet in the Belina. The dikes are not hard and offer little impediment to mining. Where weathered, they may be so soft as to flow into the workings. In rare instances, igneous material has

flowed horizontally from the dike zone, forming a sill. One such area is in the vicinity of drill hole 75-25-3, where the Upper O'Connor seam is split by a sill which is 2.6 feet thick in that drill hole.

The dike zone found in the Belina No. 1 can be seen in roadcuts in Boardinghouse Canyon where it crops out across N½NW¼NW¼ Section 31. It can also be seen in the wall of a strip mine on the east side of Clear Creek across from the mouth of this canyon, where the lamprophyre is weathered to orange clay.

The emplacement of these dikes appears to be later than the major faults. The dikes are found in fractures, not faults. No displacement of the seam occurs across the 200+ foot zone encountered in the Belina No. 1.

Stereoscopic examination of high altitude black and white aerial photographs of this area reveals the presence of the linear features which are almost always noted on such photographs and which are assumed to be evidence of jointing. These photolinears are straight lineups of tonal anomalies caused by the joints which, being lines of weakness, lead to topographic and vegetational changes which can be seen from high altitude. Such features are rarely noted on low altitude photographs, and field checks fail to reveal them.

Photolinears are generally found in two or three directions. The photographs used in this study, taken at mid-morning in late October 1973, reveal two sets of linears, the more prominent of which have been mapped on Plate 11.

Note that the major faults in this area are generally not coincident with photolinears. A linear on the steep hillside east of South Eccles Canyon is roughly coincident with the faults found in Belina No. 1. A linear running from the east boundary of the property to the junction of Whisky and Eccles Canyons may represent the O'Connor Fault. The roughly north-south linear with the sharp bend, which is seen east of the property, is very likely the north end of the Valentines Gulch Fault and its northward extension north of Finn Canyon.

In the northern portion of the property, the two linear directions match the direction of fractures and coal cleat in the Belina Mines.

b. Stratigraphy. The sandstones and shales exposed in this area are all of upper Cretaceous (Campanian) Age. They form a portion of the Mesaverde Group, which was deposited near the western shore of an inland sea. They are shoreline, bay and swamp sediments.

The Blackhawk Formation, nearly 2,000 feet thick here, contains all of the coals to be mined on this property (Figure 3). The Blackhawk consists of sandstones, siltstones, shales and coal. Four or five coal seams occur in its lower portion.

The lowest of these seams, the Flat Canyon, is not the subject of this report. It has been penetrated by most of the holes on or near the property and is less than three feet thick in most of these holes and reaches a maximum of only five feet. It is not considered to be feasible for exploitation.

The Lower O'Connor seam is present as a single seam up to 25 feet thick over most of the property; however, in two areas it splits into two seams designated as "A" and "B". It is presumed that the lower of these, the A seam, will be mined at the southern end of the area and that the undivided seam or the B split will be mined in the rest of the area. The O'Connor No. 2 Mine was in Lower O'Connor coal. The Belina No. 2 Mine is now being worked in this seam. Plates 3 through 9 show seam structure overburden isopachs and seam isopachs for the various O'Connor seams.

It is presumed that the outcrops of coal in Coal Canyon are Lower O'Connor, as shown on Plate 7, but this is unconfirmed. Further drilling must be done to determine the reserves of coal south and southwest of the property and to determine which seams are present.

Suggested sites for future holes are designated A to G on Plate 7. Sites B, C, E and F are on ridge tops and are easily accessible from the Trough Spring Ridge road. Sites A and D are in the bottoms of canyons and would require extensive road building or aerial lifting of equipment. Site G is at the side of an existing road in North Hughes Canyon, very near the paved highway in Huntington Canyon.

The drilling of these holes and the examination of coals at the outcrops near Electric Lake might provide sufficient data to assess the area, or further drilling may be necessary. The difficulties encountered in correlating holes 74-6-1, 74-1-3 and NTS-1 suggest that closer spacing may be necessary in some parts of the area.

Drilling should proceed from north to south. Holes F and G might be unnecessary after the drilling of hole E. Hole NTS-2 either was not drilled deep enough or encountered no meaningful amount of O'Connor coal.

The Upper O'Connor coal, like the lower, is present as a single seam over much of the area, but it splits into two or three seams in several portions of the property. Plate 9 offers suggestions as to which split should be mined in each

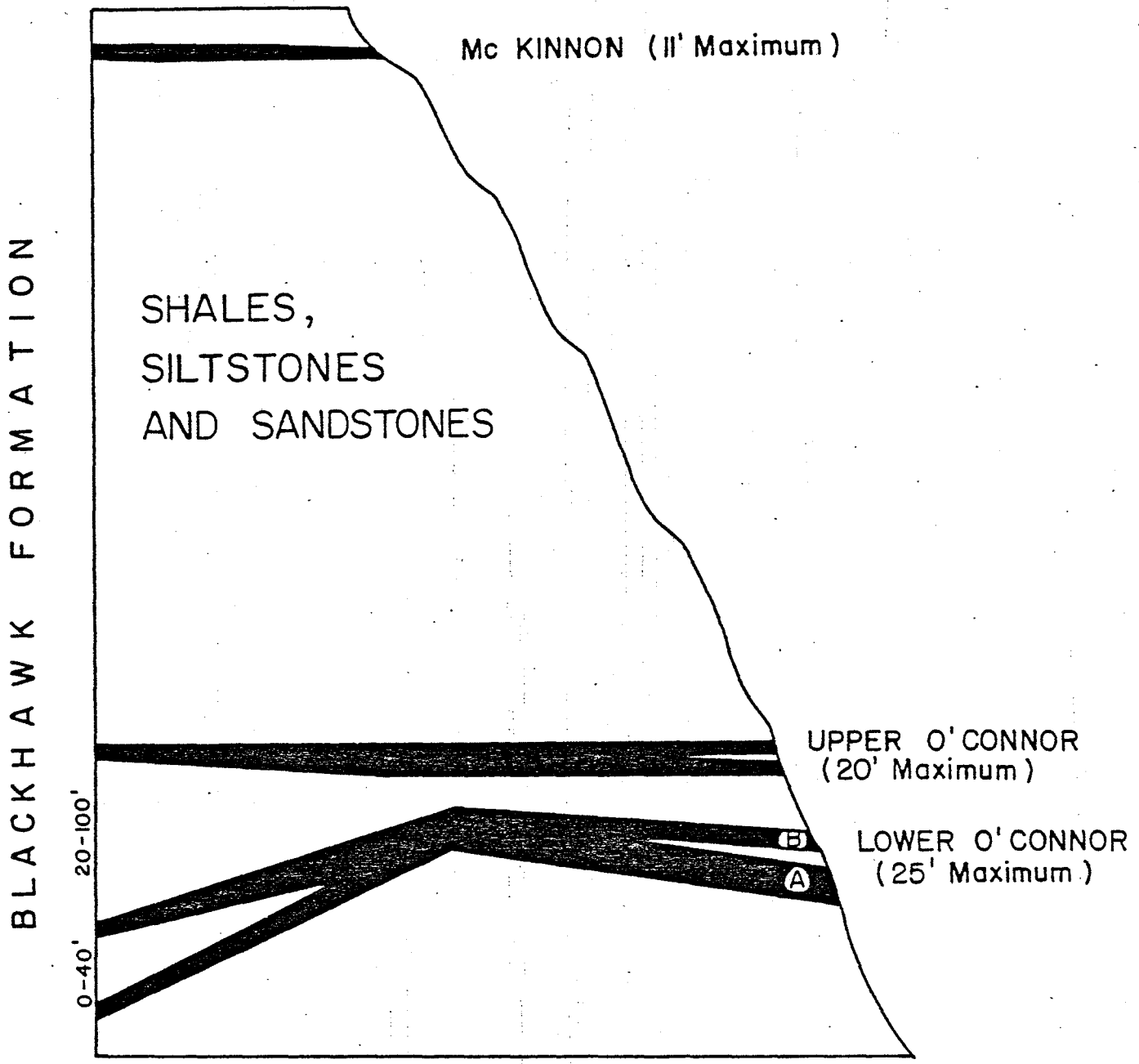

FIGURE 3

STRATIGRAPHIC COLUMN
VALLEY CAMP PROPERTY

SHOWING MINEABLE COALS

VERTICAL SCALE 1" = 100'

area, but the demands of the mining process may not always allow for this in limited areas. At the northern end of the property, the lowest split was not mined.

The Upper O'Connor has been removed by the O'Connor No. 1 Mine. The outline of this mine and that of the Belina No. 1 have not been placed on Plate 9 in the interest of simplicity and legibility.

The coal in NTS-1 has been assigned to the Upper O'Connor, but this correlation is uncertain. The coal in CLC-1 is probably Upper O'Connor. Two very shallow holes located on ridge tops, designated on Plate 9 as A and B, would be most useful in determining the extent of both O'Connor seams.

The topmost seam of interest is the McKinnon, which is said to reach a thickness of nine feet in the outcrop here (Sanders, 1974). Seam thicknesses up to 10.4 feet are found in drill holes, which is not likely to be the maximum. Although this seam contains only about 10 percent of the minable coal on this property, it is feasible for exploitation. Plate 10 is an isopach map of the McKinnon seam, Plates 12 and 13 illustrate cross sections through all minable seams.

B. Reserves

Over 90 percent of the reserves tabulated below are in the Assured category (being within 1,320 feet of a drill hole) with the remainder being Indicated. In calculating reserves, various restraints were imposed. These are:

1. The Connelville Fault zone is the western limit of mining, and the eastern edge of this zone is assumed to be 800 to 900 feet from the lease boundary where it has not yet been defined by mining.

2. The O'Connor Mines and barriers 200 feet wide around them are excluded from the reserve areas measured.

3. Barrier zones 180 feet wide at the property boundary are excluded, as provided by Utah law.

4. Barriers 200 feet wide at the outcrops are excluded.

5. The dike zone found in the Belina No. 1 Mine is excluded.

6. Gates' normal underground reserve criteria include four to 12 foot thick seams. However, coals 3.5 to 20 feet in thickness are included in these reserves, based on current Valley Camp mine plans. Coals thinner or thicker than this are excluded.

7. Fifty-five percent of the coal in the reserve areas is assumed minable. Recovery should be in excess of 70 percent in those areas of ideal thickness but will decrease rapidly in thinner and thicker coals. Gates did not conduct a specific recovery study.

8. A major gas pipeline crosses the property. Planes have been projected at angles 35 degrees from horizontal from the pipeline to the coal seams, and within the areas bounded by those intersections only 44 percent of the coal will be removed, to limit subsidence and consequent rupture of the line.

The proximity of the O'Connor seams is not considered a mining constraint for this study. The only area in which the two seams are less than 25 feet apart is mostly within the area of the O'Connor Mines, and here both seams were removed without superposition of the workings. This suggests that where mines in Upper and Lower O'Connor seams are carefully superposed, coal may be taken from both where the seams are 20 feet or further apart, in this particular case. An actual mining test will be required to confirm this procedure.

Maps reflecting the constraints listed above were prepared, and reserves were calculated from these maps at 1,800 tons per acre foot of coal. These reserves do not include the coal taken from the O'Connor Mines but do include the coal removed from the Belina Mines. To obtain correct reserve figures at any specific date, the coal extracted from the Belina Mines must be subtracted from the figures in Appendix A.

Coal reserves and quality data are summarized in the tables 1 through 7, Appendix A.

C. Quality

This section is based almost entirely on data found in the 1975 Sanders report entitled "Connelville Coal Reserve Block."

Thirty-five holes were drilled on or within 1,000 feet of this property from 1973 to 1976. Cores of Upper and Lower O'Connor coals from eight of the holes drilled in 1973 and 1975 were analyzed, giving seven full seam analyses of the Upper O'Connor and seven of the Lower O'Connor. The analyses were performed by Commercial Testing and Engineering Company.

These are high volatile B bituminous coals with 4.3 to 7.1 percent ash, sulfur averaging approximately 0.57 percent and as-received Btu of approximately 12,350. The samples are remarkably uniform and well distributed, allowing for evaluation of that portion of the property between Connelville and the O'Connor Fault.

The Lower O'Connor has higher Btu and less sulfur and ash than the Upper, but the differences are extremely small and perhaps not meaningful. Similarly, the differences between the individual seams are quite small and without any particular pattern. For instance, it could not be stated that either seam contains more ash or sulfur in any particular direction.

Without analyses of seams in any of the holes drilled south of the O'Connor Fault, the seams here cannot be assured to have the same characteristics as they do north of the fault. Considering the great uniformity of quality across the northern area; however, it is reasonable to assume that quality south of the fault will probably be similar.

No analyses of the McKinnon seam were available, but the seam has been analyzed in a few holes west of this property and appears to have the same characteristics as the O'Connor coal.

IV. CONCLUSIONS

A. In-place reserves for the Valley Camp property discussed in this report total 112 million tons, 91 million tons of which occur north of the O'Connor Fault. Minable reserves total 59 million tons with 48 million tons lying north of the fault.

B. Average quality characteristics of O'Connor coal encountered north of the O'Connor Fault are, on an as-received basis, 12,350 Btu, 5.5 percent ash and sulfur of 0.57 percent. The coal south of the fault is most likely the same.

V. RECOMMENDATIONS

A. Two holes should be drilled on ridge tops immediately east of the property boundary in Section 6 to assess O'Connor coal thickness.

B. Coal outcrops should be examined and mapped along the shore of Electric Lake and in Cox, Coal and James Canyons.

C. Coal southwest of the property should be assessed by drilling approximately five holes.

APPENDIX A

Tables of Coal Reserves and Quality

VALLEY CAMP OF UTAH

Table 1

Thousands of Tons of Coal In-place in Areas to be Mined

LEASE		SEAM: McKinnon	Upper O'Connor	Lower O'Connor B	Lower O'Connor A	Total
County	Section 24		50		403	453
County	Sections 19, 30, 31		5,182	5,016	279	10,477
Private	SE SW 30		677	787		1,464
Private	SW NW 31	221	353	188		762
Private	S½ SW 31	95	302		37	434
Federal	U020305		18,775	15,130	217	34,122
Federal	U017354	9,165	23,877	18,757	1,431	53,230
Federal	U044076	1,295	684	823		2,802
Federal	U067498	344	5,048		2,525	7,917
Total		11,120	54,948	40,701	4,892	111,661

VALLEY CAMP OF UTAH

Table 2

Thousands of Tons of Minable Coal

LEASE		SEAM: McKinnon	Upper O'Connor	Lower O'Connor B	Lower O'Connor A	Total
County	Section 24		28		222	250
County	Sections 19, 30, 31		2,725	2,555	153	5,433
Private	SE SW 30		372	433		805
Private	SW NW 31	122	194	104		420
Private	S½ SW 31	52	166		21	239
Federal	U020305		9,589	7,451	119	17,159
Federal	U017354	5,041	13,005	10,145	787	28,978
Federal	U044076	712	195	453		1,360
Federal	U067498	189	2,777		1,389	4,355
Total		6,116	29,051	21,141	2,691	58,999

VALLEY CAMP OF UTAH

Table 4

Thousands of Tons of Minable Coal Between Connelville and O'Connor Faults

LEASE		SEAM: McKinnon	Upper O'Connor	Lower O'Connor B	Lower O'Connor A	Total
County	Section 24		28		222	250
County	Sections 19, 30, 31		2,725	2,555	153	5,433
Private	SE SW 30					
Private	SW NW 31	20	194	104		318
Private	S½ SW 31					
Federal	U020305		9,589	7,451	119	17,159
Federal	U017354	3,591	9,653	10,145		23,389
Federal	U044076	712	195	453		1,360
Federal	U067498					
Total		4,323	22,384	20,708	494	47,909

VALLEY CAMP OF UTAH

Table 3

Thousands of Tons of Coal In-place in Areas to be Mined
Between Connelville and O'Connor Faults

LEASE		SEAM				
		McKinnon	Upper O'Connor	Lower O'Connor Lower O'Connor B	Lower O'Connor A	Total
County	Section 24		50		403	453
County	Sections 19, 30, 31		5,182	5,016	279	10,477
Private	SE SW 30					
Private	SW NW 31	35	353	188		576
Private	S½ SW 31					
Federal	U020305		18,775	15,130	217	34,122
Federal	U017354	6,529	17,783	18,757		43,069
Federal	U044076	1,295	684	823		2,802
Federal	U067498					
Total		7,859	42,827	39,914	899	91,499

VALLEY CAMP OF UTAH

Table 5

Thousands of Tons of Coal In-place in Areas to be Mined South of O'Connor Fault

LEASE		SEAM				
		McKinnon	Upper O'Connor	Lower O'Connor B	Lower O'Connor A	Total
County	Section 24					
County	Sections 19, 30, 31					
Private	SE SW 30		677	787		1,464
Private	SW NW 31	186				186
Private	S½ SW 31	95	302		37	434
Federal	U020305					
Federal	U017354	2,636	6,094		1,431	10,161
Federal	U044076					
Federal	U067498	344	5,048		2,525	7,917
Total		3,261	12,121	787	3,993	20,162

VALLEY CAMP OF UTAH

Table 6

Thousands of Tons of Minable Coal South of O'Connor Fault

LEASE		SEAM				
		McKinnon	Upper O'Connor	Lower O'Connor Lower O'Connor B	Lower O'Connor A	Total
County	Section 24					
County	Sections 19, 30, 31					
Private	SE SW 30		372	433		805
Private	SW NW 31	102				102
Private	S½ SW 31	52	166		21	239
Federal	U020305					
Federal	U017354	1,450	3,352		787	5,589
Federal	U044076	189	2,777		1,389	4,355
Federal	U067498					
Total		1,793	6,667	433	2,197	11,090

VALLEY CAMP OF UTAH

Table 7

Proximate Analyses, As-Received Basis*

Hole	Seam	Moisture	Ash	Volatile	F.C.	Sulfur	Btu
73-31-1	Upper O'Connor	4.74	5.71	42.54	47.01	0.45	12,495
73-31-1	Lower O'Connor	5.62	5.95	40.96	47.67	0.53	12,453
73-34-4	Upper O'Connor	6.56	6.84	43.08	43.52	0.49	12,109
73-31-4	Lower O'Connor	6.57	5.28	42.11	46.04	0.43	12,432
75-24-4	Upper O'Connor	7.13	4.36	42.70	45.81	0.63	12,394
75-24-4	Lower O'Connor	6.11	4.29	43.25	46.36	0.54	12,685
75-25-2	Upper O'Connor	6.57	7.14	43.03	43.26	0.67	12,050
75-25-2	Lower O'Connor	6.65	4.47	42.28	46.60	0.45	12,521
75-25-3	Lower O'Connor	7.24	5.77	39.88	47.11	0.55	12,335
75-30-2	Upper O'Connor	8.85	5.37	40.99	44.79	0.73	12,051
75-36-1	Upper O'Connor	7.40	6.95	41.13	44.52	0.57	12,034
75-36-1	Lower O'Connor	6.22	5.33	40.61	47.84	0.57	12,525
75-36-3	Upper O'Connor	7.65	4.56	41.82	45.89	0.70	12,347
75-36-3	Lower O'Connor	7.21	4.59	41.57	46.63	0.71	12,524
Average		6.75	5.47	41.85	45.93	0.57	12,354

*After Sanders (1975) revised Table 1.