PRELIMINARY GEOLOGY OF THE OAKDALE FIELD
NW RATON BASIN, HUERFANO COUNTY, COLORADO

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Abstract: The purpose of this paper is to document the geology of the Oakdale field. This field has four unique characteristics: (1) the field produces from a double-thrusted anticline in a basin that is otherwise not very structurally complex; (2) one of the pay zones is a three hundred foot thick igneous rock that has both primary and fracture porosity; (3) the Dakota and Entrada reservoir sandstones have twice as much porosity as typically seen in the Raton basin; and (4) each of the three reservoirs contain a gas of radically different composition, varying from 24% to 97% carbon dioxide and 3% to 75% hydrocarbons. Production of the field will require significant investment in processing and pipeline facilities. Total reserves for the Dakota and Entrada sandstones are estimated at 450 BCFG in place.

Introduction: The Oakdale field is located in the northwest corner of the Raton basin, twenty miles west of Walsenburg, in Huerfano County of south-central Colorado (Figure 1). This field was discovered in 1997 and is under development. It is located on approximately 6,000 Fee, Federal and State acres under lease to Rocky Mountain Gas Supply LLC, of Roswell, New Mexico. The company is owned by the project investors and managed by John Worrall, Don Fedric and George Scott.

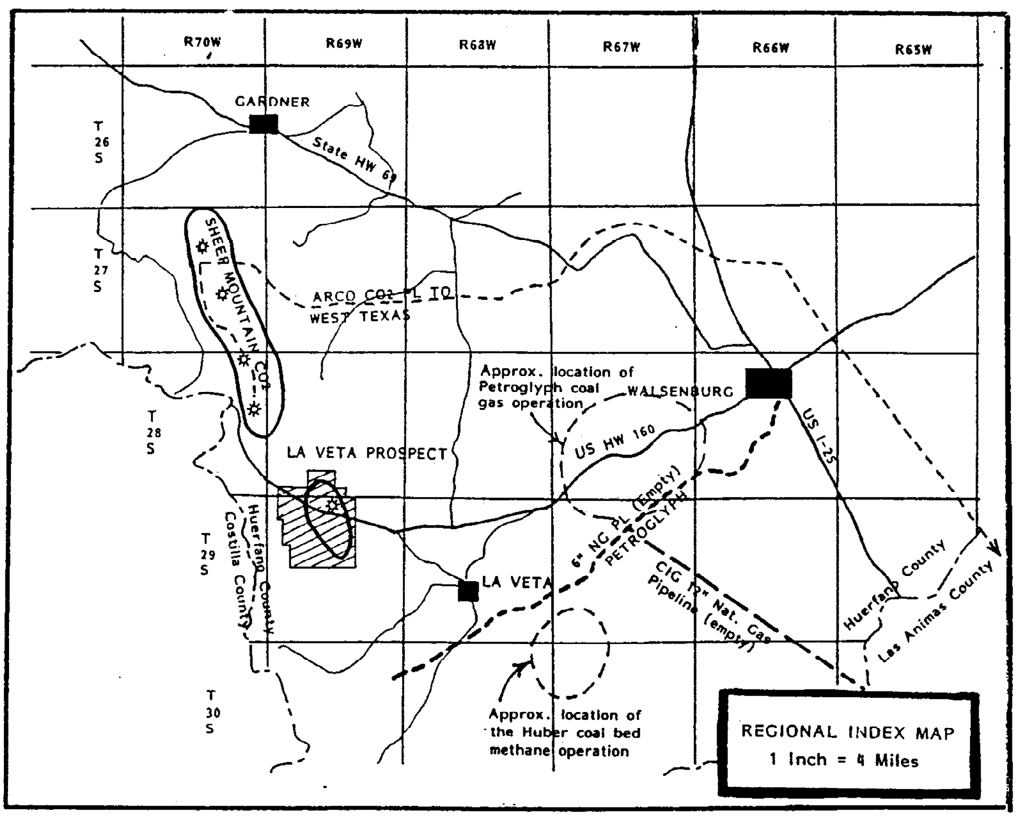


Figure 1. Location map of the Oakdale field, Huerfano County, SE Colorado.

Historically, there has been little oil and gas development in the northern Raton basin. Coal mining literally was "king" of Huerfano County during 1895 to 1935 (see "Coal Was King", Christofferson, 1999). Various mines were operated in and around the Oakdale field with miners extracting the Vermejo formation coals from the surface and then tunneling underground to depths of 400 to 600 feet. The town of Ojo (Section 4 S/2, T29S-R69W) and the town of Oakview, or alternately Oakdale, (Section 9 and 10, T29S-R69W) sprung up around the mines and waxed and waned in the 1910-1930 era before the Ojo and Oakdale fields ultimately closed for good in 1941 and 1954 respectively. At its peak in the 1920s, Oakview contained some 800 residents. Now the town site is largely a cultivated field of hay with little evidence the town ever existed. A guard tower (circa 1913) built with gun turrets, stands on a ridge overlooking the site, as evidence of a turbulent past that included various labor strikes, mine explosions and at least one massacre of mine guards by unhappy striking miners (Christofferson, 1999). Willis Lee and F. H. Knowlton in 1917 in describing these mines were the first to publish evidence of the Oakdale field anticline, as shown in Figure 2.

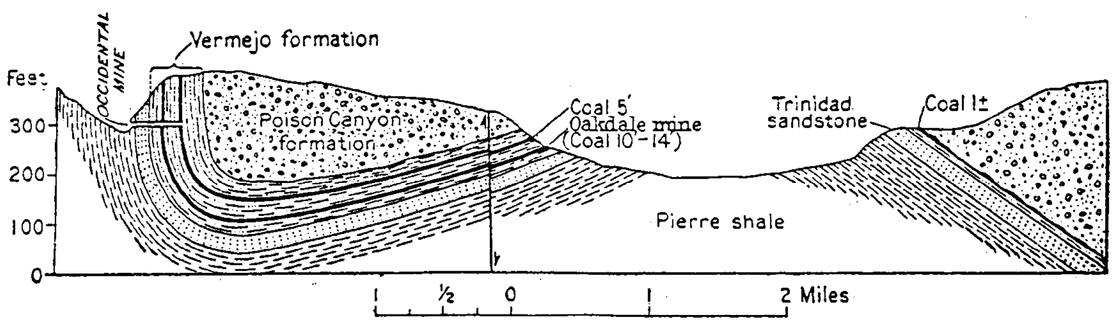


Figure 2. From Lee and Knowlton, 1917, a sketch showing the unconformable relations between the Vermejo formation and the overlying Tertiary Poison Canyon formation. The Raton formation is absent. The Pierre shale is present at the anticlinal axis of the Oakdale anticline, while the Poison Canyon is present in the axis of the Ojo syncline.

The first commercial gas field in Huerfano County was developed by Arco Oil and Gas, and Exxon USA, who developed the Sheep Mountain carbon dioxide field. This field was developed from five drill pads with twenty-eight wells directionally drilled underneath Sheep Mountain to target a structural anticline buried beneath a laccolith. George Roth (1983) provides a good summary of this field. The Sheep Mountain field produces relatively pure (96 + %) carbon dioxide from the Dakota and Entrada sandstones. The CO_2 is trapped in a folded thrust sheet where a gas column of over 1900 feet has been defined. In 1983 Arco and Exxon connected the field to a 408 mile 20" pipeline that transports the carbon dioxide south to the Permian Basin CO_2 hub of Denver City, Texas, where the carbon dioxide is used for enhanced oil recovery. The Sheep Mountain field has produced 1.2 trillion cubic feet of carbon dioxide from 1983 to 2002. Current production is 120 MMCFPD down from a peak of 300 MMCFPD in 1988. This field has been the single most important source of tax revenue to Huerfano County during this time.

Most recently, the Raton Basin has been experiencing a drilling boom for coalbed methane. Evergreen Resources and El Paso Energy are the most active operators in the play. Hemborg (1998) provides a good summary of this play, which is now producing approximately 100 MMCFGPD. The play has been most successful in the central and southern portions of the Raton Basin, in Las Animas county, Colorado and Colfax county, New Mexico. Production comes from depths of 800 to 3000 feet from multiple coal seams in the Cretaceous Raton and Vermejo formations. To date no commercial CBM reserves have been produced in Huerfano Country, which lies north of the Spanish Peaks in the northernmost portion of the basin. Approximately 60 coal bed methane exploration wells have been drilled in Huerfano County since 1996 by Petroglyph Operating, the J. M. Huber Corporation, and Cedar Ridge L.L.C., but to date these operators have not started producing commercial quantities of gas. The projects are still being de-watered.

The following paper documents the presence of a new sizable accumulation of carbon dioxide and hydrocarbons in Huerfano County beneath the "Oakdale" anticline, which is recognized by the Colorado Oil and Gas Commission as the Oakdale field. Like the Sheep Mountain field, the Oakdale field's main Dakota and Entrada sandstone reservoirs produce from a folded thrust sheet.

Surface Geology: In our current understanding, the Oakdale field is believed to encompass parts of Sections 32-34, T28S-R69W, and Sections 3-5, 8-10 and 15-16, T29S-R69W. Over the crest of the anticline, NW-SE striking, dark grey shales of the Pierre shale are exposed at surface, as recognized by Lee and Knowlton (1917), Johnson and Stephens (1959) and Vine (1974), among others. The axis of the Ojo syncline, present to the west (Figure 2), contains the Tertiary Poison Canyon sandstones, successively underlain by the coal-bearing Cretaceous Vermejo formation, then the Cretaceous Trinidad sandstone, and then the Cretaceous Pierre shale. NW-SE striking Tertiary dikes form vertical walls with over 100 feet of relief in section 33 and 34 of T28S-R69W. These dikes are composed of a hornblende porphyry containing distinctive large black phenocrysts of hornblende up to 20 cm in size, contained in a medium grey ground mass. The dikes are believed to have the same composition as Silver Mountain three miles north.

The NW corner of the Oakdale field abuts Mount Maestas, which rises to an elevation of over 11,500 test. It is composed of a microcrystalline rock of granitic composition that is termed a felsite (Vine, 1974). Vine has interpreted Mount Maestas to have the geometry of a pluton or stack, while Roth (1983) interprets Mount Maestas as a laccolith. Limited seismic data available to RMGS along the SE side of Mount Maestas show no continuous subsurface reflection below the top of the buried felsite, which appears to support a stock or pluton geometry. This is the interpretation presented herein.

Stratigraphy of the Oakdale field: Figure 3 shows the stratigraphic column of the Raton Basin. There has been numerous reviews of the stratigraphy of the Raton basin including among others Lee and Knowlton 1917, Johnson and Wood, 1956, Johnson et al 1966, Stevens et al 1992, Tyler et al 1995, and Hemborg, 1998. In the absence of complicating factors such as multiple igneous dikes and sills, and repeated sections die to at least two episodes of thrust faulting, the stratigraphy of this area is fairly easy to understand and the beds have reasonably consistent thickness. The anticlinal axis is expressed at the surface by dark grey shale of the Cretaceous Pierre formation. It is underlain by Cretaceous Niobrara shale which is essentially indistinguishable from the Pierre during drilling. The total Pierre and Niobrara is 2700 feet thick, as determined in wells drilled east of the folded thrust belt, where the section is flat or relatively flat. The base of the Niobrara shale and Niobrara formation is marked by a thirty foot thick limestone known as the Fort Hayes limestone. During drilling, this marker bed is very helpful to determine structure. This marker bed generally reflects the structure of the underlying Dakota and Entreaty sandstone reservoirs. Between the Fort Hayes limestone and Dakota sandstones are rocks of the Benton group - the Codell sandstone, the Carlile shale, the Greenhorn limestone, and the Graneros shale, totaling approximately 600 feet. The underlying Cretaceous Dakota sandstone is two hundred feet thick, the Jurassic Morrison shales 350 feet thick and the basal objective Jurassic, Entrada Sandstone is 60 feet thick. In summary, the true thickness of the interval between the top of the Pierre shale and the top of the Dakota sandstone is approximately 3300 feet.

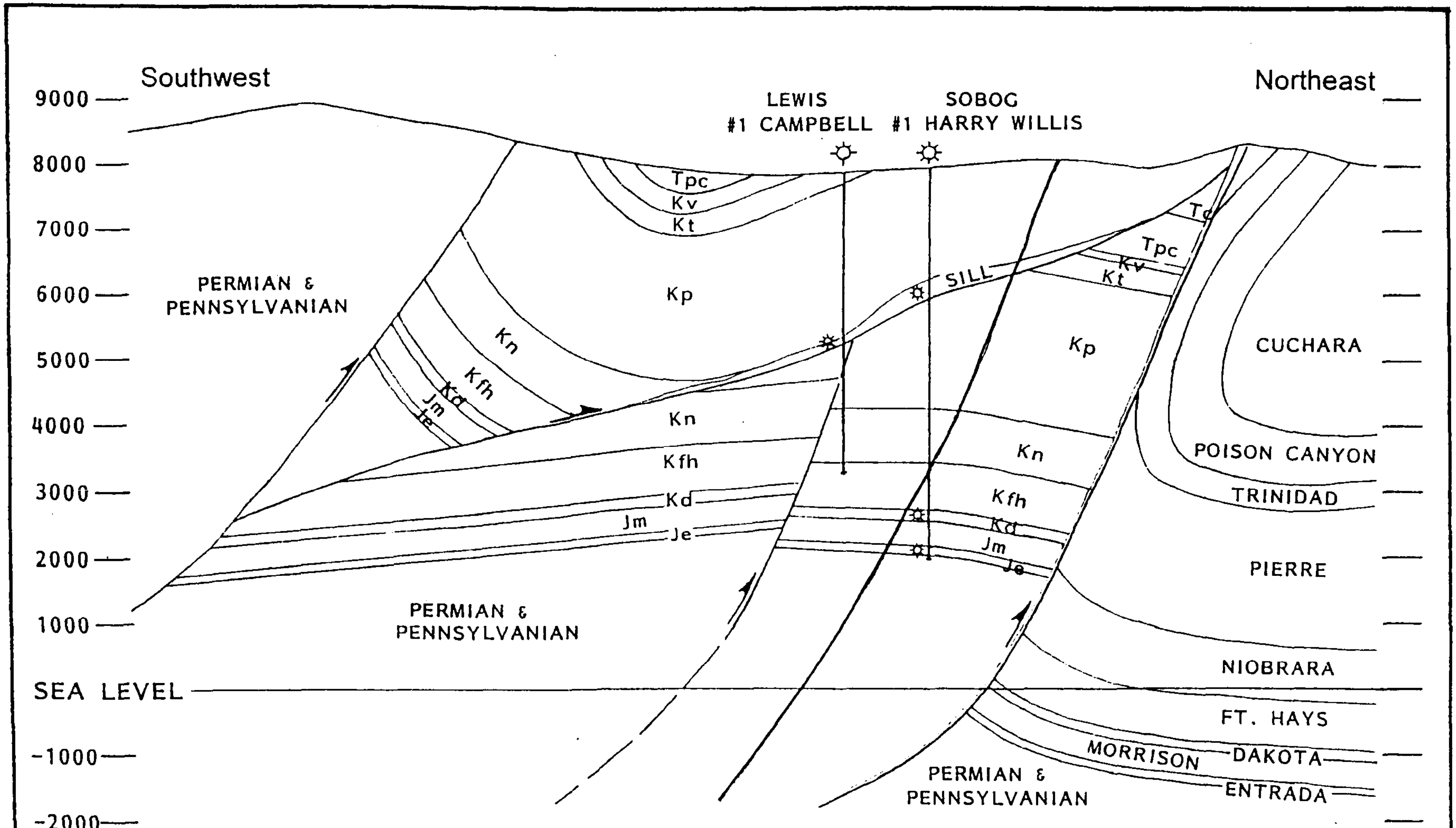
ERA	PERIOD / EPOCH	FORMATION	THICKNESS (FT)	LITHOLOGY
CENOZOIC	Recent		0—30	Alluvium, basalt flows
CENOZOIC	Miocene	Devils Hole Formation	25–1,300	Light-gray conglomeratic tuff and conglomerate
CENOZOIC	Oligocene	Farisita Formation	0–1,200	Buff conglomerate and sandstone
CENOZOIC	Eocene	Huerfano Formation	0–2,000	Variegated maroon shale and red, gray, and tan claystone
CENOZOIC	Eocene	Cuchara Formation	0–5,000	Red, pink, and white sandstone, and red, gray, and tan claystone
CENOZOIC	Paleocene	Poison Canyon Formation	0–2,500	Buff arkosic conglomerate and sandstone, yellow siltstone, and shale
CENOZOIC	Paleocene	Raton Formation	0–2,075	Light-gray to buff sandstone, dark-gray siltstone, shale, and coal; conglomerate at base
MESOZOIC	Upper Cretaceous	Vermejo Formation	0–360	Dark-gray silty and coaly shale, buff to gray carbonaceous siltstone, and sandstone beds; coal
MESOZOIC	Upper Cretaceous	Trinidad Sandstone	0–255	Light-gray to buff sandstone
MESOZOIC	Upper Cretaceous	Pierre Shale	1,300–2,900	Dark-gray fissile shale and siltstone
MESOZOIC	Upper Cretaceous	Niobrara Group: Smokey Hill Marl	560–850	Yellow chalk, marine gray shale and thin white limestone; and light-gray limestone at base
MESOZOIC	Upper Cretaceous	Niobrara Group: Fort Hayes Limestone	0–55	
MESOZOIC	Upper Cretaceous	Benton Group: Codell Sandstone	0–30	Brownish sandstone, dark-gray shale, gray limestone and gray shale
MESOZOIC	Upper Cretaceous	Benton Group: Carlile Shale	165–225	
MESOZOIC	Upper Cretaceous	Benton Group: Greenhorn Limestone	30–80	
MESOZOIC	Upper Cretaceous	Benton Group: Graneros Shale	185–400	
MESOZOIC	Lower Cretaceous	Dakota Sandstone	100–200	Buff sandstone, buff conglomerate sandstone, and dark-gray shale
MESOZOIC	Lower Cretaceous	Purgatoire Formation	100–150	
MESOZOIC	Jurassic	Morrison Formation	150–400	Variegated maroon shale, gray limestone, red siltstone, gypsum, and gray sandstone
MESOZOIC	Jurassic	Ralston Creek Formation	30–100	
MESOZOIC	Jurassic	Entrada Sandstone	40–100	
MESOZOIC	Triassic	Dockum Group	0–1,200	Red sandstone, calcareous shales, and thin limestones
PALEOZOIC UNDIVIDED			5,000–10,000	Variegated shales, arkose, conglomerates, and thin marine limestone

Figure 3. Generalized stratigraphy of Cenozoic and Mesozoic units in the central and northern Raton basin from Tremain, 1980. Near the Oakdale field, the true thickness of the interval the top of the Pierre to the top of the Pierre formation is approximately 3300 feet.

Igneous felsite "sill" reservoir rock. Due to both thrust faulting and emplacement of multiple dikes and sills, the actual section encountered is more complex. For instance, the discovery well of the Oakdale field, the Harry Willis #1, spudded in the Pierre shale (SE/4 NE/4 Section 4-T29S-R69W) and did not penetrate the top of Dakota sandstone until 5248 feet below surface (+ 2714 subsea). Subsequent well control and seismic data shows the extra 2000 Feet is due to a shallow thrust located over the main productive thrust sheet as set forth in Figure 4. During drilling, the shales of the Pierre and Niobrara all look the same: fresh water sensitive, dark grey shales. However, log data shows that there is a radioactive bentonite present at 2146 to 2166 feet in the Harry Willis #1 that actually can be correlated from well to well in the shallow thrust sheet. This marker, which we call the Sharon Springs bentonite, provides a structural datum within this thick interval, that shows structural relief from the top of the anticline to the synclinal low of 2170 feet (see Figure 5). Just above the bentonite marker, in the Harry Willis #1, is a 310 foot thick (1770 to 2080 feet) white to light grey aphinitic rock. Thin section, SEM and core data show this rock is a white felsite of the same composition (microcrystalline granite) as Mount Maestas. Notably the well contains matrix porosity of up to 14.8%, and permeability of .1 to .5 millidarcies (see sidewall core data, table 1). A formation micro imaging log shows the 310 foot interval contains 412 open fractures, with fracture apertures ranging from 80 to 200 microns (.08 to .2 mm). By comparison, matrix pore diameters are typically 1 to 10 microns, so clearly fractures enhance porosity and permeability. The FMI log shows the fractures primarily strike N20W, parallel to the axis of the surface anticline, and dip most commonly 50 to 75 degrees to the east, with some dipping west. The felsite is entirely encased in the dark grey shales of the Pierre formation. The felsite appears to have been emplaced as a magmatic fluid intruded at or near the bentonite marker. It is sometimes present above and sometimes present below the bentonite marker. The felsite may have originally intruded along a shallow thrust plane also seen on seismic data. A complicating factor is that it is not always clear from sparse well control whether the felsite that may be present in one well, was emplaced the same time as a felsite body in another well. In the six wells where it has been encountered, in four wells it has been tested gas productive, in one well good hydrocarbon shows were observed and the sixth well was not evaluated. Where tested, the felsite has produced primarily methane with 20 to 25% carbon dioxide (see table 2). A drill stem of the Harry Willis #1 tested 280 MCFGPD from the upper felsite, with an 1' 30" ISIP of 663#, and a 2' FSIP of 679#. A maximum flow rate of 1400 MCFGPD was reported for the Kimbark Operating Stauder #1 (SW NE 4-T29S-R69W). Currently, two wells, the Harry Willis #7-4 and #2-4 (NE/4 4-T29S-R690W) are completed in the felsite zone as shut-in gas wells, pending the emplacement of a pipeline.

At least two other igneous bodies have been encountered. A hundred feet of hornblende porphyry dike was encountered in the interval between the Fort Hayes and Dakota in the Harry Willis #1. This dike is expressed at the surface in Section 33-T29S-R69W. Secondly, rock of felsite composition was found in this same interval in the White et al #1 (Section 9-T29S-R69W, NE/4). The igneous rock added to the interval of the section rather than replaced county rock. The base of the felsite is only thirty feet above the top of the Dakota in the White et al #1. This well does show an upwards decrease in Dakota porosity, likely the result of felsite fluids partially cementing the upper Dakota sandstone (28-T28S-R69W).

Enhanced Dakota and Entrada Porosity in the folded thrust sheet. In the Harry Willis #1, log data shows the Dakota sandstone has crossplot porosity of typically 16% to 20%. Core data shows the Dakota sandstones with up to 17.2% (Table 1) porosity and up to 126 millidarcies of permeability. By comparison this is roughly twice the porosity typically (6 to 10%) seen in wells penetrating the Dakota in the northern Raton basin. The Dakota porosity at the Oakdale field is more typical of the Dakota porosity observed at the Sheep Mountain field, (also 16 to 20%). Kam Chiang, the Denver-based geologist that originated this prospect, believes that the Dakota in the folded thrusted sheet contains enhanced porosity because it is not subject to silicification related to groundwater recharge. In all other areas of the Raton basin, the Dakota (and Entrada) sandstones are present around the circumference of the basin, with recharge primarily occurring on the west side, flowing east, into the basin. Due to the multiple thrusts, the Dakota does not outcrop on the west side of the thrust and recharge therefore does not occur.



Southwest - Northeast true scale cross-section across the La Veta CO_2 Prospect.
Scale: ½ Inch = 1000 Feet. By John G. Worrall and George L. Scott, Jr., October, 1998.

Figure 4. NE-SW Cross section of the Oakdale field depicting the location of the felsite along a shallow thrust sheet located over the Oakdale anticline in the main thrust sheet.

Table 1. Harry Willis #1 Side Wall Cores			
Depth	Perm. MD	Porosity	Formation
1770.0	0.10	14.50%	Felsite
1780.0	0.10	12.70%	Felsite
1799.0	0.13	14.80%	Felsite
1819.0	0.04	10.60%	Felsite
1857.0	0.01	0.091%	Felsite
1907.0	0.15	10.70%	Felsite
1918.0	0.01	9.70%	Felsite
1959.0	0.06	8.50%	Felsite
2019.0	0.13	12.10%	Felsite
2061.0	0.03	12.00%	Felsite
2067.0	0.55	12.40%	Felsite
4581.0	0.02	5.80%	Codell
5263.0	52.70	13.80%	Dakota
5322.0	5.57	16.60%	Dakota
5344.0	0.84	13.40%	Dakota
5353.5	5.46	10.70%	Dakota
5372.0	32.20	15.60%	Dakota
5381.0	126.00	17.20%	Dakota
5387.0	103.00	14.60%	Dakota
5751.0	0.13	12.70%	Entrada
5787.5	1.56	15.50%	Entrada
5794.0	2.52	16.20%	Entrada
5803.0	29.20	21.20%	Entrada
5808.0	0.38	9.40%	Entrada
5824.0	3.12	17.60%	Entrada
5835.0	2.15	18.40%	Entrada

An exception to the presence of good porosity in the Dakota sandstone can be found on the northwest side of the Oakdale field, where Arco drilled the Arco #2-28 (28-T28S-R69W) and Arco #6-32 (32-T28S-R69W) wells. These wells are believed to be located within 1000 feet of the subsurface expression of the Mount Maestas stock. It is interpreted that porosity has been significantly reduced (to 6 to 12% crossplot) by related magmatic fluids in an aureole around Mount Maestas.

The Entrada sandstone also shows 16 to 20% cross plot porosity, with core data showing up to 21 - 20% porosity and 29 millidarcies. Both the Dakota and Entrada porosity show up to 12% crossover between the density and neutron logs (limestone matrix) in the Oakdale field wells, clearly indicating gas affect.

Structure: The sedimentary sequence present was folded and thrusted contemporaneous with the emplacement of the felsite sill and the Mount Maestas felsite stock. The thrusting and folding that formed the Oakdale field is believed to have occurred during Paleocene to Oligocene time during the Laramide orogeny that formed the Sangre de Cristo mountains, approximately 45 to 60 million years ago. At least two episodes of thrust faulting are recognized (Figure 4). Evidence for a shallow thrust in the Pierre is based on (1) the extra 2000 feet of shale encountered, (2) seismic data, and (3) different structural relief within the shallow thrust than present at the Dakota level in the main thrust sheet. Structural relief from the crest of the anticline to the synclinal low is 2137 feet at the bentonite marker (Figure 5) bed in the shallow thrust sheet. This relief is approximately 1400 feet in the main thrust sheet at the top of both the Fort Hays limestone, the Dakota sandstone and the Entrada sandstone (Figures 6 thru 8).

The folded thrust belt is the area between the eastern and western thrust faults shown on Figure 7, the Dakota structure map. The westernmost thrust is the leading edge of the Sangre de Cristo mountains that brings Pennsylvanian Sangre de Cristo formation red beds next to the Cretaceous section typical of the Raton basin. The second main thrust bounds the Oakdale anticline on the east. The easternmost thrust bounds an untested deeper fault block. East of this last thrust fault is the relatively undisturbed section of the Raton basin. Within the folded thrust belt also are several more minor faults detected by seismic data shown on the map.

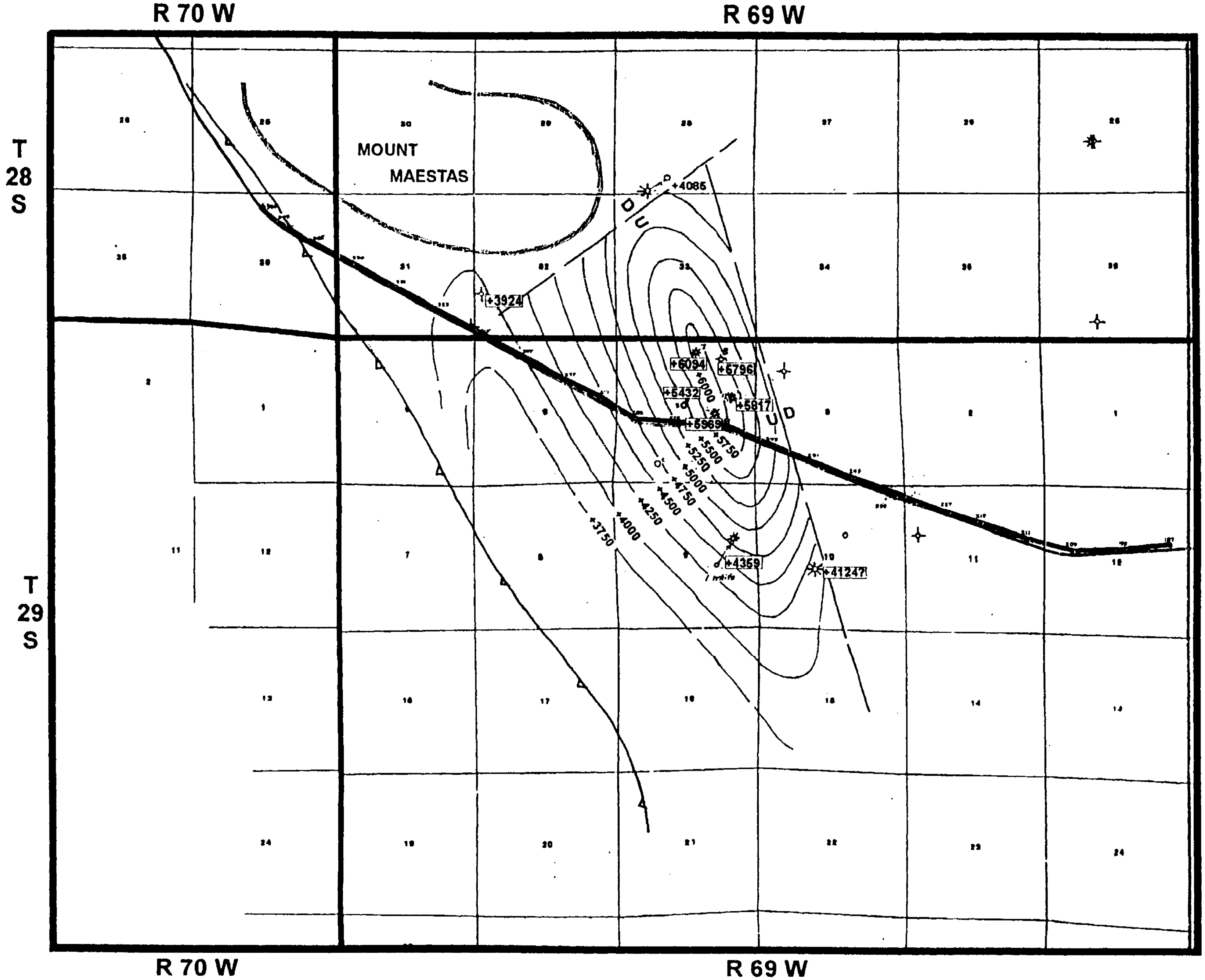
Analysis and Test Information: As further discussed below, Table 2 shows the varying composition of the produced gas from the felsite sill, the Dakota sandstone and the Entrada sandstone.

The felsite sill has produced with an instantaneous rate as high as 1400 MCFPD (CAOF 365 MCFGPD) in testing of the Kimbark Stauder #2, SW NE Section 4-T29S-R69W. This well showed the felsite primarily contains hydrocarbons (73.9%) with CO_2 (24.7%), and nitrogen (1.4%). Testing of three other felsite wells, the Harry Willis #2-4, #7-4 and #1, all located in the Ne/4 of Section 4-T29S-R69W have shown similar compositions across a structural elevation of over 400 hundred feet (+6192 to +5721 feet above sea level for the top of the sill). Significantly, a downdip well, the White et al also encountered significant mudlog gas shows in a 270 foot-thick felsite at a top of +3834 feet, over a mile to the SW of these wells. No water has been observed to date in this reservoir. The two shut-in wells, Harry Willis #2-4 and #7-4, appear capable of producing the felsite at a rate of 250 to 500 MCFGPD per well.

Test data shows the Dakota sandstone contains 70 to 74% CO_2, 25 to 29% hydrocarbons, and 1% nitrogen (Table 2). The structurally highest well, the Harry Willis #1 encountered the Dakota at +2714 feet, and tested 28.90% hydrocarbons with a hexane plus heavy component of .1%. This well was tested through 2 7/8" tubing and flowed 3.4 MMCFPD from the Lower-Dakota. A test of the Upper Dakota flowed 6.2 MMCFPD, but the test was restricted by the size of the tubing. By lining the well with 5 ½" polybore plastic, RMGS hopes to combine the

Table 2. Gas Analyses and Test Information

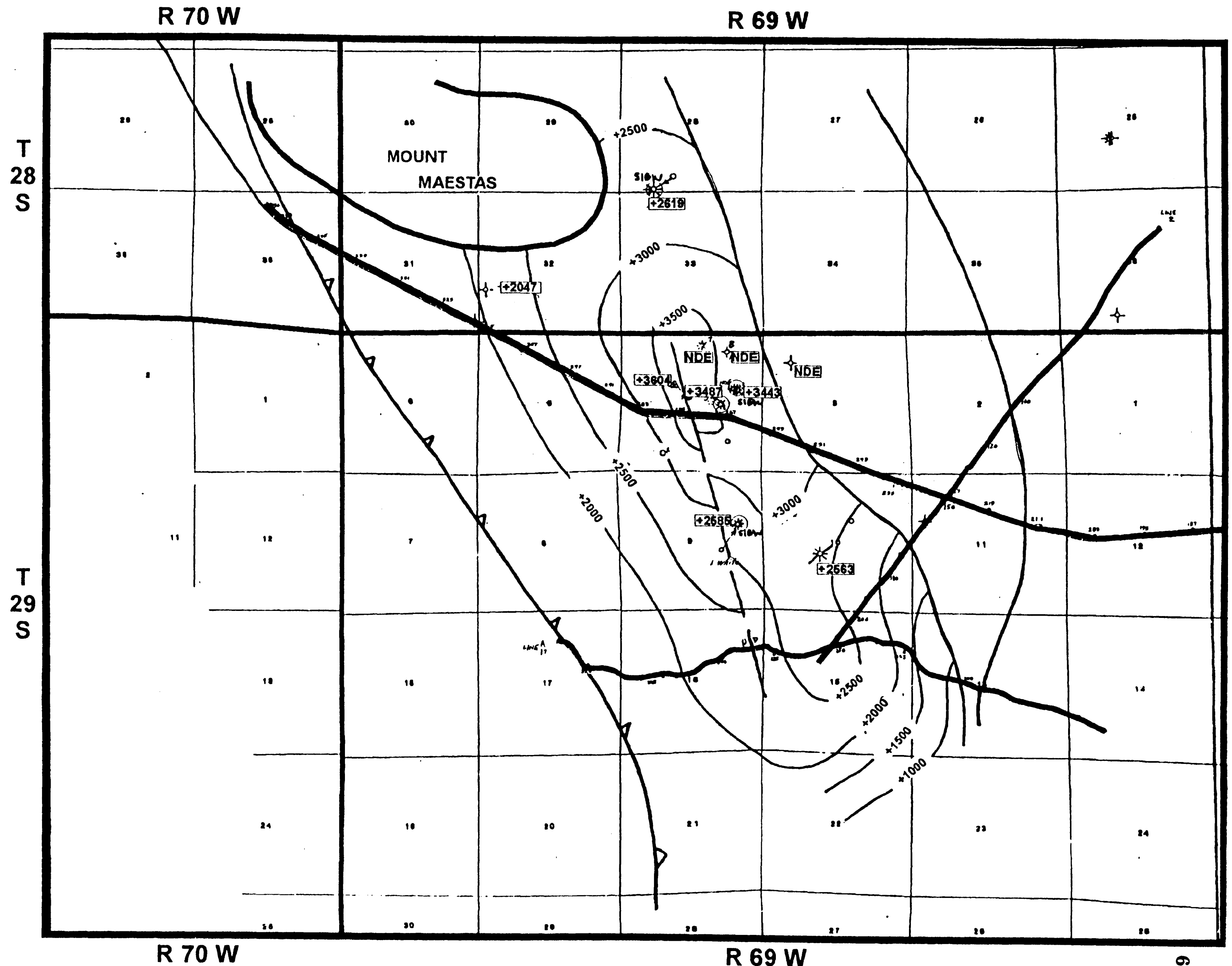
Well:	Harry Willis #1	White et al #1	Arco Fee #1	Stauder #1	Harry Willis #1
Location:	SENE 4-T29S-R69W	SENE 9-T29S-R69W	SESW 28-T29S-R69W	SWNE 4-T29S-R69W	SENE 4-T29S-R69W
Zone:	Dakota	Dakota	Dakota	Felsite	Entrada
Depth:	5248 - 5388	6224 – 6278	6874 - 7065	2321- 2464	5778 - 5840
Test form:	DST	Produced gas	Produced gas	Produced gas	Produced gas
Date:	2-14-1997	4-13-2000	1977		4-02-1999
% CO_2	70.12	73.708	97.03	24.708	97.016
%Hydrocarbons	28.90	25.191	2.22	73.927	1.952
% Nitrogen	.98	1.101	.75	1.365	1.032
Perf Interval	5306 - 5388	6224 – 78	6874 - 7065	2321 - 2464	5778 - 5840
Holes	272	20	-	-	278
Flowrate	3.4 MMPD	2.722 MMPD	1.2 MMPD	365 MPD	5.9 MMPD*
FTP, ps:	1100	640	135	-	775
BHP, ps:	1715	1742	30" ISIP 1700# building	2' FSIP 679#	-
Notes:				(From H. Willis #1)	*Tubing restricted
Perf Interval	5248 - 74				
Holes:	102				
Flow rate:	6.2 MMPD*				
Notes:	*Tubing restricted				



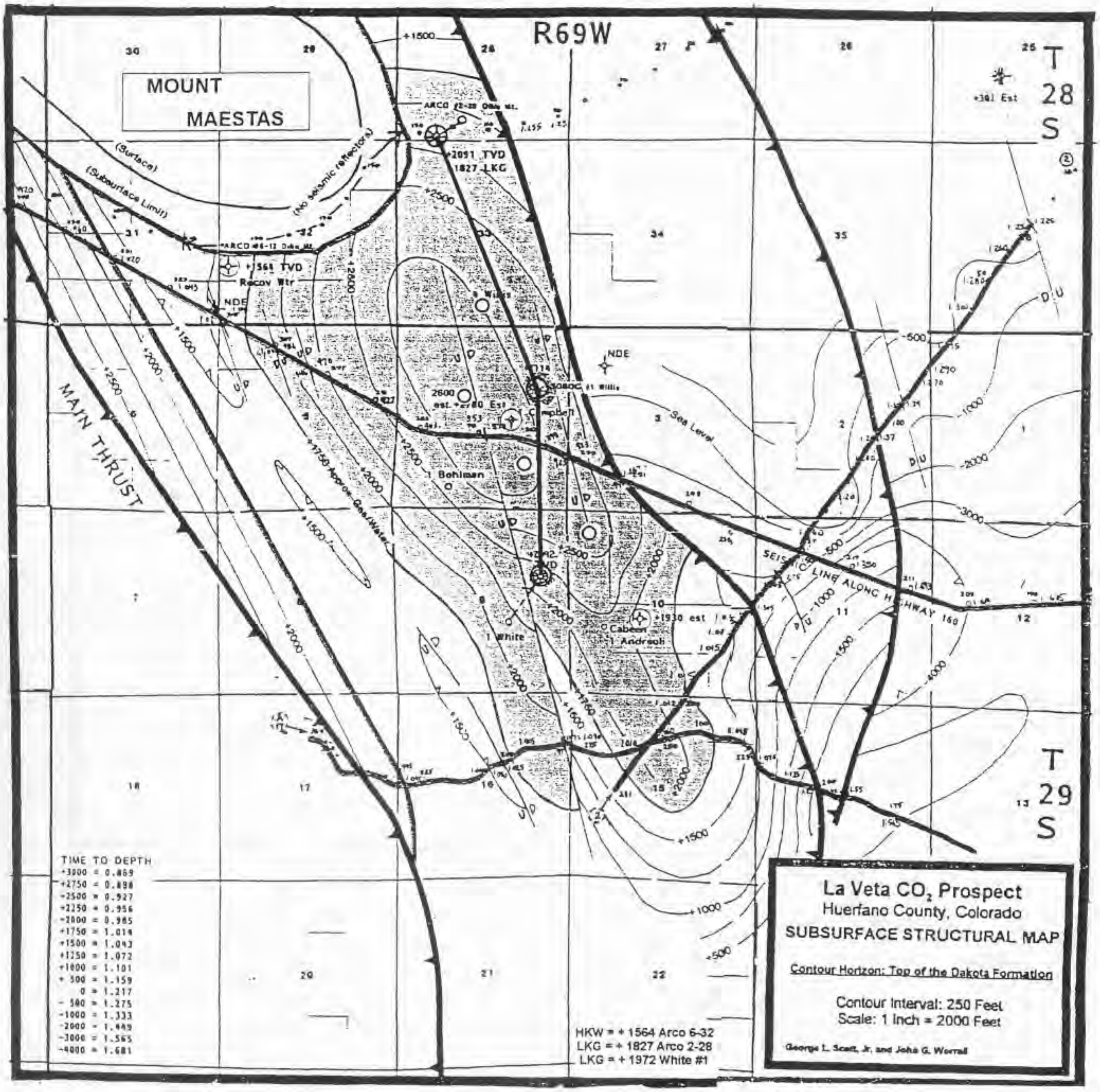
STRUCTURE MAP : TOP OF SHARON SPRINGS

Figure 5. Structure map or top of the "Sharon Springs" bentonite marker observed at 2146 to 2166 feet in the Harry Willis #1 well. Contour interval is 250 feet.

Figure 6. Structure map on top of the Fort Hayes limestone, the basal member of the Niobrara formation. The contour interval is 500 feet.

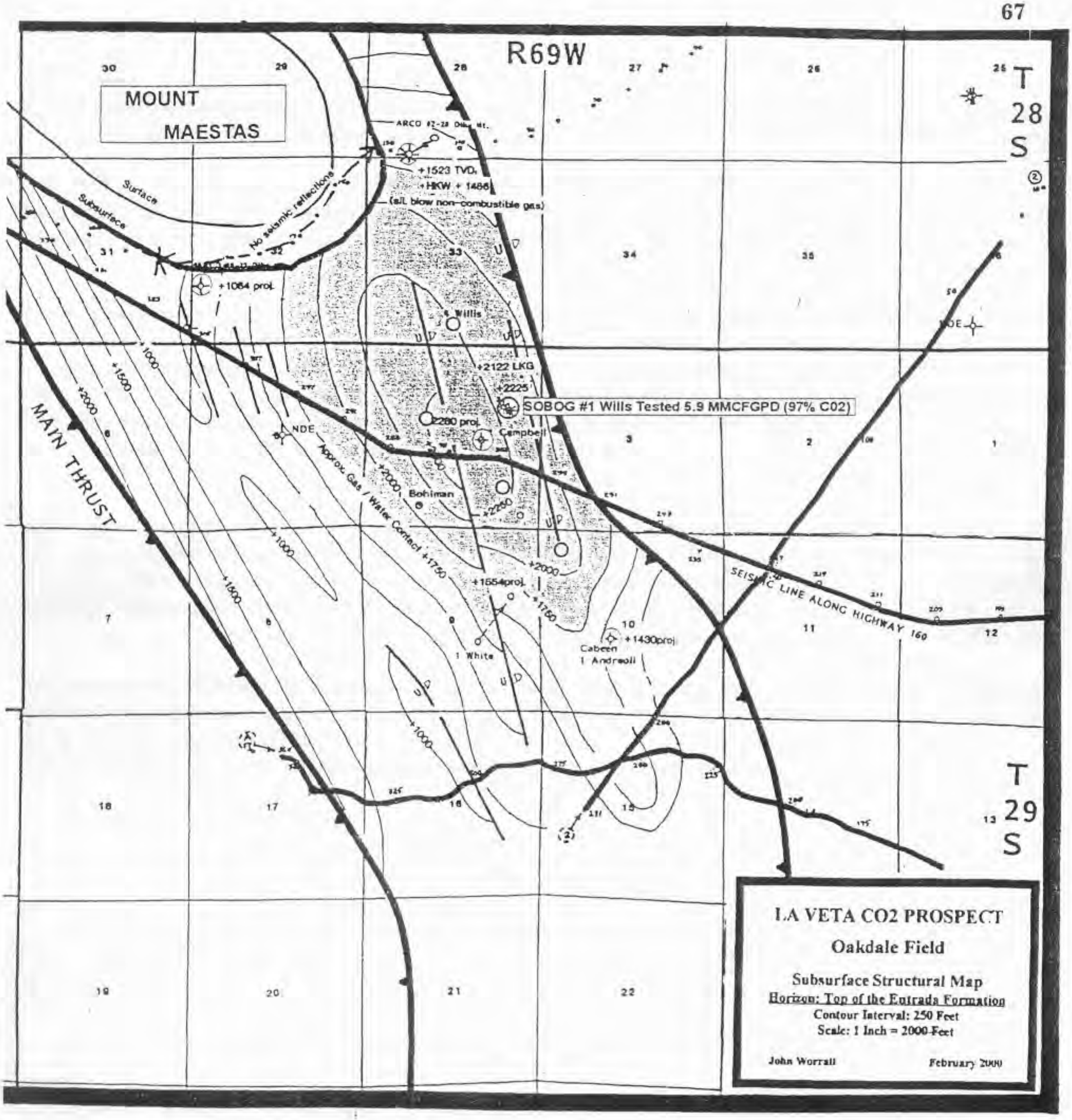


STRUCTURE MAP : TOP OF FORT HAYES



STRUCTURE MAP : TOP OF DAKOTA

Figure 7. Structure map on top of the Cretaceous Dakota sandstone with a contour interval of 250 feet. Shaded area shows potential gas-productive area in main anticline above gas/water contact of +1750 feet. Shows location of three seismic lines and the well control.



STRUCTURE MAP : TOP OF ENTRADA

Figure 8. Structure map on top of the Jurassic Entrada sandstone with a contour interval of 250 feet. Shaded area shows potential gas-productive area above +1750 feet above sea level.

upper and lower Dakota perfs to produce a minimum of 9.4 MMCFPD and hopefully significantly more. For example, the Sheep Mountain field was completed in 1983 with thirteen Dakota wells that produced at an average rate of 18 MMCFPD up 4 ½" tubing. Most of these wells have produced in excess of 70 BCF per well.

The second highest well, the White et al tested 25.2% hydrocarbons with a hexane plus heavy content of .9%. This well encountered the Dakota at +2092 feet, 622 feet low to the Harry Willis #1 well. The relatively minor change in composition across 622 feet of structure suggests the Dakota sandstone will contain a gas composition that could be approximated by the average composition in these two wells.

The highest water tested in the Dakota is established by Arco #6-32 well which encountered the Dakota at +1564 TVD. The lowest known gas is established in the Arco fee #1 at a TVD of +1827 feet. For estimations of reserves, RMGS has assumed a gas/water contact of +1750 feet (Figure 7). RMGS calculates potential reserves of 377 BCFG in place across a gas column of approximately 1000 feet. These reserves include 287 BCFG in the main thrust sheet covering 3416 acres, with a potential 90 BCFG in the Dakota in an untested subthrust sheet west of the syncline. The main anticline is believed to contain recoverable reserves of 165 BCF of CO_2 and 64 BCF of hydrocarbons.

Through 2 7/8" tubing the Entrada tested 5.9 MMCFPD of pipeline pure 97% CO_2 in the discovery well. The flow test was tubing restricted and RMGS hopes to produce at a higher rate up 5 1/2" polybore-lined casing. By example, Arco tested the initial Sheep Mountain Entrada wells at an average rate of 9 MMCFPD, with a range of 5 to 16 MMPD, up 4 ½" tubing. RMGS believes the gas water contact for the Entrada is approximately at +1750 feet, and that the Entrada sandstone in the main thrust sheet contain 64 BCF of recoverable CO_2,.

Development Plans: Pending the success of three planned wells in the summer of 2002, RMGS has contracted for the construction of a processing facility to process 40 MMCFPD of Dakota gas over fifteen years into 29 MMCFPD CO_2, 616 barrels per day of natural gas liquids, and 9810 MCFGPD with a 1017 MBTU content. Both the plant and a natural gas pipeline have been permitted. Hopefully, a future update of this paper will document the success of this venture.

Acknowledgments

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