



H. W. ADDINGTON & ASSOC.

STATE 3053-36-4

NW/NW Sec. 36-30S-53W

Las Animas County, Colorado

JOSEPH R. CLAIR
Geological Consultant
C.P.G. #713

WELL SUMMARY

Operator: H. W. Addington & Assoc.

Well: State 3053-36-4

Location: NW/NW Section 36, Township 30 South, Range 53 West,
Las Animas County, Colorado.

Field: Wildcat.

Elevation: 5337' Ground, 5348' K.B.

Spudded: 11:00 P.M., September 26, 1974.

Completed: Finished drilling at 8:45 P.M., October 9, 1974.

Total Depth: 2900' - Driller
2902' - Schlumberger

Casing: 10 3/4" surface casing set at 282.09'.

Cores: None

Drill Stem Tests: Two. (1) 1285-1556' Packer failed.
(2) 1282-1556'

Testing Co.: Halliburton. Don Noland, Testing engineer.

Logs: Drilling Time Log - 300' to 2900'
Detailed Sample Log - 300' to 2900'

Schlumberger:
Dual Induction-Laterolog - 283' to 2902'
Compensated Neutron-Formation Density Log - 28' to 2902'

Contractor: Signal Oil Field Services, Inc. - Rig #8
Buck Taylor - Tool Pusher

Equipment: Mast: Ideco 96' telescoping derrick - 212,000 lb. capacity
with 8' wide, 15' long, 10' high substructure with
3' folding wings.
Drawworks: Ideco H-37, Drive-in with double drum
Power: One 8V-71 GMC diesel motor - 250 HP through Allison
torque converter
Pump: Gardner-Denver FXK - 14' x 5 1/2"
Power: Two 671 GMC diesel engines
Pits: One 12' x 5' x 50' 500 barrel with desilter and
shale shaker
Drill Collars: 21 - 6 1/8" x 2 1/4" x 30'
Drill Pipe 3 1/2" IF

Status: Well plugged back to 1556' and rotary released October 11, 1974.

WELL CHRONOLOGY

H. W. ADDINGTON & ASSOC.
STATE 3053-36-4
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Las Animas County, Colorado
Elevation: 5348' K.B.

- Sept. 24 Started moving in and rigging up.
- Sept. 25 Finished moving in and rigging up. Geologist on well. Repairing damage to power takeoff.
- Sept. 26 Started digging rat hole at 6:55 P.M. Spudded at 11:00 P.M.
- Sept. 27 Morning tower driller injured shortly after midnight. Drilling 15' surface hole at 45' at 10:08 A.M.
- Sept. 28 Trip for bit check at 227' at 3:00 A.M. Back to drilling at 9:17 A.M. Drilled to 286' at 2:25 P.M. Circulated 30 minutes. Out to run surface casing. Ran 270.84', 40.5#, K55, new 10 3/4" surface casing and set at 282.09 K. B. measurement. Cemented with 125 sacks of Halcolite plus 2% calcium chloride and 150 sacks Class H cement plus 3% calcium chloride. Plug down at 8:00 P.M. and cement circulated.
- Sept. 29 Drilled out from under surface pipe at 6:20 P.M.
- Sept. 30 Drilling @ 542' at 8:45 A.M. Trip @ 726' for Bit #2.
- Oct. 1 Drilling @ 1022' at 7:30 A.M.
- Oct. 2 Drilling @ 1324' at 9:20 A.M.
- Oct. 3 Drilling @ 1663' at 7:00 A.M.
- Oct. 4 Drilling @ 1910' at 7:45 A.M.
- Oct. 5 Tripping from 2062' for Bit #3 at 6:30 A.M. Back to drilling at 12:00 noon.
- Oct. 6 Drilling @ 2222' at 7:02 A.M.
- Oct. 7 Drilling @ 2406' at 7:15 A.M.
- Oct. 8 Drilling @ 2606' at 7:15 A.M.
- Oct. 9 Drilling @ 2805' at 8:15 A.M. Drilled to 2900' TD at 8:45 P.M. Started out to run logs at 11:30 P.M.
- Oct. 10 Started logging at 2:00 A.M. Got logs at 9:10 A.M. Decision made to test Glorietta. Geologist released from well and returned to Denver. Plugged back to 1556'.
- Oct. 11 Ran DST #1 from 1285' to 1556'. Packer failed. Ran DST #2 from 1282' to 1556'. Valid test. Decision made to shut well down and release rig.

GEOLOGICAL REPORT

H. W. ADDINGTON & ASSOC.
STATE 3053-36-4

NW/NW Sec. 36-30S-53W
Las Animas County, Colorado
Elevation: 5348' K.B.

The State 3053-36-4 was spudded at 11:00 P.M., September 26, 1974. Fifteen inch surface hole was drilled to 286'. Than 270.84' of 10 3/4", 40.5#, K55, new surface casing was run and set at 282.09' K.B. measurement. Casing was cemented with 125 sacks of Halcolite plus 2% calcium chloride and 150 sacks of Class H cement plus 3% calcium chloride. Plug was pumped down at 8:00 P.M., September 28, 1974, and cement circulated.

The well drilled out from under surface casing at 6:20 P.M., September 29, 1974.

The following formation tops, corrected to Schlumberger Electric Logs, were picked on the well.

Cretaceous System:		
Dakota		At surface
Jurassic System:		
Morrison	- 242	(+5106) (Behind casing)
Wenakah	- 368	(+4980)
Entrada	- 477	(+4871)
Triassic System:		
Dockum	- 530	(+4818)
Santa Rosa	- 625	(+4723)
Permian System:		
Guadalupian Series	- 814	(+4534)
Day Creek	- 1043	(+4305)
Leonardian Series:		
Blaine	- 1252	(+4096)
Glorietta	- 1336	(+4012)
Yeso	- 1551	(+3797)
Pennsylvanian System:		
Upper Madera ?	- 1689	(+3659)
Lower Madera Arkose ?	- 2072	(+3276)
Morrow ?	- 2312	(+3036)
Mississippian System:		
St. Louis	- 2454	(+2894)
Spergen-Warsaw	- 2548	(+2800)
Osage	- 2653	(+2695)
Kinderhook	- 2749	(+2599)
Arbuckle System (Jeff City ?)	- 2801	(+2547)
Total Depth	- 2900	Driller
	2902	Schlumberger

The State 3053-36-4 was the first of a ten well series of rank wildcat tests, based on subsurface geology, to be drilled in eastern Las Animas and western Baca Counties, Colorado.

Control in the area is meager, to say the least, the closest previous test being ten miles to the northwest. This test, the Phillips #1-B Colorado, NE/NW of Sec. 35-29S-54W, logged the Day Creek at 893' and the Blaine at 1048'. These are the only reliable upper hole markers in the area, and on these markers the State 3053-36-4 was 98' and 156' low (respectively) to the #1-B Colorado.

The test was monitored continuously by the mud logging equipment of Monaco Engineering, Inc. from under surface casing to total depth.

The first potential zone to be encountered was considered to be the Glorietta (Lyons) sandstone of the Permian System. This formation produced high helium-content gas at Model Dome, some 50 miles to the west.

Top of the Glorietta was picked on samples and drilling time at 1341', corrected to 1336' by electric logs. The sand was well developed, but appeared tight, with much intergranular cement in the samples. There was no kick of any kind on the logging equipment throughout this sequence, and there were no shows in the samples.

Below the Glorietta it was impossible to predict what section might be encountered and, consequently, samples and gas detecting equipment were watched very carefully.

I picked the top of the Pennsylvanian System, which I questionably referred to the Upper Madera formation, at 1689'. This is corroborated by electric logs. It is marked by the first appearance of carbonate rocks and its appearance in this test was quite unexpected. There were no shows in this sequence and no indication of any hydrocarbons on the mud logging equipment.

In the 2080-90' sample an Arkose Conglomerate was found (see Detailed Sample Log), and top of this sequence was placed at 2076' by drilling time, corrected to 2072' by electric logs. This is questionably referred to the Lower Madera Arkosic member and the presence of this sequence so far to the east and north was totally unexpected. Further, the thickness of possible Pennsylvanian rocks at this position on the Sierra Grande Uplift is, for the moment, unexplainable.

In the 2320-30' sample an abundance of varicolored shales of typical Morrow lithology, mixed with coarse quartz wash and thin glauconitic sands, appeared. Top of the Morrow was placed at 3212' by electric logs (see Detailed Sample Log). Despite an obviously massive quartz wash sand near the bottom of this sequence, there were no shows either in the samples or on the mud logging equipment.

Since no Mississippian rocks were expected in the area, it was extremely surprising to find slightly weathered limestone of unquestionable Mississippian lithology in the 2460-70' sample. I thought at first this was detrital material in the shaly sequence that was being drilled, and the appearance of varicolored dolomite in the 2470-80' sample strengthened this belief. However, further drilling encountered more limestone, a part of which was sublithographic and looked like possible St. Joe limestone.

I was still expecting to find the Arbuckle at any time. However, as drilling progressed, it became apparent that something was happening that certainly had not been anticipated. In the 2650-60' sample the presence of slightly glauconitic dolomite and weathered, white chert, with glauconite, indicated typical Osage lithology. At this point it became obvious that we had encountered an almost complete Mississippian section many miles from any such occurrence in the area. The Osage was extremely cherty, particularly in the lower part, but was without any shows and no sign of a kick on the mud logging equipment.

The top of the Kinderhook was picked at 2742' on drilling time and samples. This is corrected to 2749' by electric logs.

Top of the Arbuckle was found in the 2810-20' sample and placed at 2802' by drilling time. This is corrected to 2801' by electric logs. At this point the State 3053-36-4 was 811' low to the Phillips #1-B Colorado, which completely destroyed any chance for the possible structure that had been anticipated.

Because the low structural position precluded any production, it was decided that the test be carried to 2900' and stopped rather than drill to the Pre Cambrian as originally was planned. This was done and the hole conditioned for logging.

Schlumberger Dual-Induction-Laterolog and Compensated Neutron-Formation Density Log were then run. Study of the logs showed positive indication of gas throughout the Glorietta section, but no further indication of hydrocarbons throughout the well.

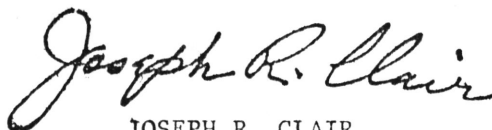
After discussing the reasons why no indication of gas was detected during drilling, it was decided the well should be plugged back and the Glorietta be drill stem tested. I was released from the well and returned to Denver.

The well was plugged back to 1556' by Calseal plug, and DST #1 was run with single packer from 1285' to 1556'. The packer failed immediately so test was pulled. DST #2 was run from 1282' to 1556' with two packers, the upper one at 1276'. Tool was opened for 30 minutes with a weak blow (3" in bucket), which decreased steadily and was dead in 22 minutes. Tool was shut in for 60 minutes and test pulled. Recovery was 8' of heavy drilling mud. Pressures were as follows.

Initial Hydrostatic	- 737#
Final Hydrostatic	- 737#
Initial Flow	- 27#
Final Flow	- 18#
Final Shut in	- 0

The pressure bleed-off during the test indicated possible movement from bore hole to formation.

After the results of the test were known, it was decided to shut the well down and release the rotary rig, and this was done. The well was not plugged inasmuch as further testing through tubing may be done at a later date.



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October 18, 1974

DETAILED SAMPLE LOG

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Las Animas County, Colorado

Elevation: 5348' K.B.

Sample study starts at 300' in Jurassic (Morrison).

- 300- 323 Shale, pale purple-red, gray-green, pale gray-green, pale green, gray-white, hard, talcy, clay; with traces of interbedded Siltstone, gray-white, pyritic; and Sandstone, gray, very very fine to fine, angular, very tight.
- 323- 368 Shale, pale purple-red, gray-white, pale green, hard, clay, some very sandy; with Limestone, gray-white, pale purple, pale gray, very finely crystalline, very dense, some very, very finely sandy, quite argillaceous (probably interbedded as lentils or nodules).
- 368 Top - WENAKAH (+4980)
- 368- 375 Limestone, gray-white, pale purple, very finely crystalline, very dense, very finely sandy and quite argillaceous.
- 375- 385 Shale, pale purple, gray-white, pale green, hard, clay.
- 385- 397 Limestone, gray-white, gray, purple, buff, pale green, very very finely crystalline, very dense; with some interbedded Shale, as above, and little Sandstone, pale gray, gray-white, very fine to fine, angular to sub-angular and slightly subrounded, very tight.
- 397- 407 Shale, pale green, pale purple, hard, clay.
- 407- 413 Limestone, gray, gray-white, brown, pale purple, very finely crystalline to slightly finely crystalline, very dense, some argillaceous and slightly sandy; trace algae.
- 413- 415 Shale, pale green, gray, gray-white, pale purple, fairly hard, clay.
- 415- 430 Limestone, gray, brown, very finely crystalline, very dense, some argillaceous; trace pyrite.
- 430- 432 Shale, as above.
- 432- 452 Limestone, gray, brown, pale purple, very very finely crystalline to very finely crystalline, very dense, some silty and slightly argillaceous; trace microfossils.
- 452- 454 Shale, varicolored, hard, clay.
- 454- 475 Conglomerate, varicolored, with coarse calcite and limey siltstone matrix; some interbedded Siltstone, brown-red, pink-red, limey; and Limestone, gray, brown, buff, very very finely crystalline to finely crystalline, very dense; some argillaceous; trace silty to very finely sandy; trace Chert, gray, red-brown, semiopaque to semitranslucent.

- 475- 477 Shale, gray, pale brown-red, hard.
- 477 Top - ENTRADA (+4871)
- 477- 486 Siltstone to very fine Sandstone, light brown-red, limey.
- 486- 497 Siltstone to Sandstone, light red-brown, brown-red, very very fine to fine, angular, very tight to friable; with abundant Clay and considerable soft, white Gypsum in seams and as intergranular material; very slightly limey; with interbedded Limestone, gray, gray-buff, very finely crystalline, very dense, some argillaceous.
- 497- 498 Shale, brown-red, gray.
- 498- 530 Siltstone to Sandstone, brown-red, gray-buff, gray-white, pink-buff, pink-red, very very fine to fine, angular to slightly subrounded, tight to slightly friable, slightly limey; little white Gypsum.
- 530 Top - TRIASSIC (DOCKUM) (+4818)
- 530- 534 Shale, brown-red, brown, hard, some micromicaceous.
- 534- 549 Siltstone to Sandstone, gray-white, gray, brown-red, very very fine to very fine, angular to subangular, tight to friable, slightly to quite limey; some shaly; trace Chert, tan-gray, semitranslucent.
- 549- 552 Shale, dark brown-red, brown, hard.
- 552- 568 Siltstone to very fine Sandstone, brown-red, gray-white, gray, some micromicaceous, very slightly limey to quite limey, very tight to friable; some with much intergranular Clay; some shaly.
- 568- 585 Shale, varicolored, gray-buff, very hard, nodular, some conglomeratic in appearance; traces of conglomeratic Chert and chert nodules, in part looks baked.
- 585- 609 Siltstone to Sandstone, brown-red, red-brown, gray-white, very very fine to very fine, very tight, some highly clay filled, some argillaceous, some very slightly limey; traces of red, gray, dense, Limestone nodules.
- 609- 613 Shale, varicolored, buff, gray, very hard, nodular.
- 613- 616 Siltstone to very fine Sandstone, gray, brown, brown-red, little slightly limey, very tight.
- 616- 625 Shale, highly varicolored, hard to soft, most bentonitic.
- 625 Top - SANTA ROSA (+4723)
- 625- 668 Sandstone, gray-white, gray, buff, some varicolored, very fine to fine, angular, tight to very tight, trace varicolored grains.
- 668- 672 Shale, dark purple, pale green, buff, gray, hard; some bentonitic; trace white Gypsum.
- 672- 679 Limestone, buff, brown, gray, some varicolored, very finely crystalline, very dense.

- 679- 680 Shale, as above.
- 680- 684 Siltstone to Sandstone, gray, brown-red, gray-white, brown, very very fine to very fine, angular, tight, very slightly limey.
- 684- 697 Limestone, buff, brown, gray, very finely crystalline to finely crystalline, dense.
- 697- 701 Shale, purple-red, purple, brown-red, buff mottled, hard.
- 701- 718 Siltstone to Sandstone, red-brown, brown, gray-white, gray, very very fine to fine, tight; some coarse, subrounded grains, floating and loose.
- 718- 736 Shale, purple, purple-red, brown, highly varicolored, hard, some nodular; trace dense Limestone nodules; some sandy; trace Chert nodules.
- 736- 745 Sandstone, gray-white, very fine to little fine, angular, tight to friable; few coarse, subrounded, floating grains.
- 745- 746 Shale, highly varicolored, considerable mottled, most hard, nodular; trace Chert nodules.
- 746- 753 Sandstone, gray-white, buff-white, little varicolored, very fine to little fine, angular to subangular, tight to friable.
- 753- 756 Shale, purple, dark purple-red, much varicolored, hard, considerable nodular, some sandy.
- 756- 782 Sandstone, as above, some medium to coarse, subrounded, tight, aggregates with varicolored grains and considerable intergranular siliceous cement; with interbedded Shale, purple, purple-red and varicolored, hard (770-73).
- 782- 814 Shale, purple, purple-red, varicolored, some mottled, hard, much nodular; with interbedded Sandstone, gray-white and varicolored, very fine to fine, angular to subangular, tight, with some medium, angular to subangular, floating grains.
- 814 Top - PERMIAN (+4534)
- 814- 850 Sandstone, dark orange-red, orange-red, very fine to fine and little medium, angular to subangular, very tight; with abundant intergranular white Clay, some fine to medium subangular to slightly subrounded grains, and some medium to coarse, subrounded, slightly conglomeratic aggregates toward bottom.
- 850- 902 Sandstone, orange-red, dark orange-red, gray-white, trace varicolored, very fine to fine, some medium and few coarse grains, angular to subangular and little rounded, very tightly cemented; abundant intergranular Clay; traces of white Gypsum; becomes slightly shaly at bottom.
- 902- 950 Sandstone, orange-red, orange, orange-buff, dark orange-red, gray-white, very fine to fine, angular to subangular, very tight; with abundant intergranular Clay; traces of medium to coarse, subrounded to rounded aggregates; trace white Gypsum; has some brown-red, very shaly Sandstone 944-50.
- 950- 978 Sandstone, dark orange-red, orange-red, orange, gray-white, very fine to little fine, angular to slightly subangular, very tight; with abundant intergranular Clay, some silty and shaly.

- 978- 995 Sandstone, as above; with some interbedded Shale, very dark brown-red, dark red, hard, some micromicaceous 985-95.
- 995- 997 Shale, dark red, dark brown-red, hard, micromicaceous.
- 997-1010 Sandstone, dark orange-red, orange-red, orange, very fine, angular, tight to slightly friable, little silty; some intergranular Clay; some micromicaceous; with interbedded Shale, as above 1003-04.
- 1010-1011 Shale, dark red, brown-red, hard, micromicaceous.
- 1011-1024 Sandstone, orange, orange-red, very fine, angular, very tight; with considerable intergranular Clay; with interbedded Shale, as above 1016-17.
- 1024-1028 Shale, dark red, brown-red, hard, micromicaceous.
- 1028-1032 Sandstone, dark orange-red, orange-red, little orange-buff, very fine, angular, very tight to slightly friable; with little to abundant intergranular Clay; trace white Gypsum.
- 1032-1034 Shale, as above.
- 1034-1043 Siltstone to Sandstone, dark brown-red, dark orange-red, orange, very fine, angular, very tight.
- 1043 Top - DAY CREEK (+4305)
- 1043-1052 Dolomite, orange-brown, very finely crystalline, very dense, some silty.
- 1052-1054 Shale, dark red, dark brown-red, very hard.
- 1054-1064 Siltstone to Sandstone, dark orange-red, brown-red, orange, very very fine to very fine, angular, very tight.
- 1064-1080 Dolomite, white, buff, pale purple, purple, orange-buff, very very finely crystalline to slightly crystalline and little crystalline, some granular, most dense; slightly anhydritic and Anhydrite, white, massive, dense.
- 1080-1090 Siltstone to very fine Sandstone, pale purple, purple, purple-gray, very tight, micromicaceous, slightly dolomitic.
- 1090-1095 Shale, dark brown-red, brown-red, dark red, hard, some silty and micromicaceous.
- 1095-1110 Siltstone to very, very fine Sandstone, pale purple, brown-red, micromicaceous; with interbedded Anhydrite, white, buff, brown, pink, very finely crystalline, very dense, dolomitic.
- 1110-1112 Shale, brown-red, dark red, hard.
- 1112-1134 Siltstone to very fine Sandstone, pale purple, brown-red, micromicaceous; with interbedded Anhydrite, white, pale purple, buff, tan, massive to finely crystalline, very dense; slightly dolomitic and little Shale, as above.
- 1134-1142 Siltstone to very, very fine Sandstone, orange-red, brown-red, pale purple, micromicaceous; with interbedded Anhydrite, as above.

- 1142-1144 Shale, brown-red, dark red, hard.
- 1144-1160 Siltstone to very fine Sandstone, orange-red, brown-red, pale purple, very tight, micromicaceous; with interbedded Anhydrite, white, buff, tan, pale purple, pink, massive, dense; and some very finely crystalline dolomitic with trace Dolomite.
- 1160-1162 Shale, brown-red, dark red, hard.
- 1162-1191 Siltstone to very fine Sandstone, orange-red, brown-red, pale purple, gray-white, very tight, micromicaceous; with interbedded Anhydrite, white, buff, tan, massive, dense dolomitic; trace Dolomite and Shale, brown-red, dark red, hard, some micromicaceous. (Amount of Anhydrite and Dolomite decreasing toward bottom.)
- 1191-1194 Shale, brown-red, dark red, orange-red, hard.
- 1194-1207 Siltstone to very fine Sandstone, orange-red, brown-red, little gray, micromicaceous, very tight.
- 1207-1208 Shale, brown-red, orange-red, dark red, hard, some silty and micromicaceous.
- 1208-1228 Sandstone, orange, pale purple, very very fine to fine, angular, tight, some micromicaceous; with slightly limey, intergranular Clay.
- 1228-1231 Shale, brown-red, dark red, orange-brown, hard, some silty and micromicaceous.
- 1231-1244 Siltstone to very fine Sandstone, orange-red, brown, micromicaceous, very tight; some with white, intergranular Clay.
- 1244-1245 Shale, dark brown-red, hard; trace white Gypsum.
- 1245-1248 Siltstone to very fine Sandstone, orange-red, orange, brown-red, angular to subangular, with few fine to medium, subrounded floating grains, very tight; with some white, intergranular Clay.
- 1248-1252 Shale, as above; little dark red.
- 1252 Top - BLAINE (+4096)
- 1252-1257 Anhydrite, white, pink, orange, massive to finely granular, dense; some white, soft, and fibrous Gypsum.
- 1257-1258 Shale, brown-red, dark red, hard, some silty; trace white Gypsum.
- 1258-1269 Anhydrite and Gypsum, as above.
- 1269-1270 Shale, as above.
- 1270-1278 Anhydrite, white, buff, pink, tan, massive, dense; with Siltstone to very, very fine Sandstone, dark orange-red, tight, micromicaceous.
- 1278-1280 Shale, bright red, dark red, chocolate, hard, some silty.
- 1280-1309 Anhydrite, white, pink, little red, massive, very dense; with little interbedded Shale, as above, 1293-94.

- 1309-1320 Shale, dark red, brown-red, hard; with interbedded Siltstone to very fine Sandstone, brown-red, orange-red, very tight; with some intergranular Clay.
- 1320-1336 Shale, dark red, brown-red, chocolate, purple-red, hard; with interbedded Siltstone, brown-red, dark red, dolomitic.
- 1336 Top - GLORIETTA (+4012)
- 1336-1350 Sandstone, gray-white, very fine to slightly medium, angular to subangular, very tight; with abundant, intergranular, limey clay cement, and little interbedded, dark red, very very fine, very tight, very argillaceous, slightly limey.
- 1350-1375 Sandstone, gray-white, very fine to fine, with some medium floating grains, angular to subangular and little subrounded, very tight, limey; with abundant intergranular cement.
- 1375-1384 Shale, dark red, brown-red, chocolate, hard; with interbedded Anhydrite, white, trace red, massive, dense; and little soft, white Gypsum.
- 1384-1447 Sandstone, gray-white, buff, orange-red, red, very fine to some medium, angular to subangular and some subrounded to rounded, floating grains, very tight to slightly friable; little to abundant intergranular cement. (Note: Much of the shale throughout the samples, I do not believe to be in place.)
- 1447-1456 Shale, red, brown-red, chocolate, fairly hard; little white Anhydrite; and trace white, soft Gypsum.
- 1456-1468 Sandstone, gray-white, orange, very fine to fine, little medium, angular to subangular and some subrounded, very tight, limey; few very coarse, loose quartz grains; some interbedded Shale, as above.
- 1468-1469 Shale, red, chocolate, brown-red; trace white Anhydrite.
- 1469-1477 Sandstone, orange, orange-red, gray-white, very very fine to fine, little slightly medium, angular to subangular, very tight to slightly friable, slightly limey.
- 1477-1486 Shale, brown-red, chocolate, red, some hard; trace Anhydrite.
- 1486-1490 Siltstone to Sandstone, orange, orange-red, brown-red, gray-white, very very fine to fine and little medium, angular to subangular and little subrounded, very tight, slightly limey.
- 1490-1491 Shale, as above.
- 1491-1520 Sandstone, orange, orange-red, brown-red, gray-white, very very fine to fine and little medium, angular to subangular, very tight to little friable, slightly limey, some silty.
- 1520-1551 Sandstone, orange-red, orange, gray-white, orange, buff, very very fine to fine and little medium, angular to subangular, trace subrounded, very tight to slightly friable; slightly friable, considerable medium to coarse, subangular to subrounded, loose grains.

- 1551 Top - YESO (+3797)
- 1551-1554 Shale, red, chocolate, brown-red, purple, hard, little silty; little Anhydrite.
- 1554-1562 Sandstone, orange, orange-red, brown-red, trace gray-white, very very fine to fine and little medium, angular to subangular and some sub-rounded, very tight, slightly limey.
- 1562-1563 Shale, red, chocolate, brown-red, hard; trace white Gypsum and Anhydrite.
- 1563-1579 Sandstone, orange, orange-red, brown-red, trace gray-white, very very fine to medium; with some coarse floating grains, angular to subangular and some subrounded to rounded, very tight, very slightly limey; considerable intergranular Clay; with some interbedded Shale, red, brown-red, chocolate, hard; and traces of Anhydrite and Gypsum.
- 1579-1600 Sandstone, orange, orange-red, fine to slightly medium, angular to sub-angular, very tight to slightly friable; with much intergranular Clay; few coarse, subangular, floating grains.
- 1600-1624 Sandstone, orange, orange-red, little brown-red, fine to medium, some coarse, angular to subangular and little subrounded, very tight; with abundant intergranular Clay.
- 1624-1625 Shale, red, brown-red, little chocolate, hard to soft; trace white Gypsum and Anhydrite.
- 1625-1643 Sandstone, orange, orange-red, dark red, fine to medium and some coarse, angular to subangular and some subrounded to rounded floating grains, very tight; much intergranular Clay; with some interbedded Shale, red, brown-red, chocolate, purple, maroon, hard to soft.
- 1643-1644 Shale, red, chocolate, brown-red, hard to soft; trace white Gypsum.
- 1644-1670 Sandstone, orange, orange-red, brown-red, fine to medium and some coarse, angular to subangular with few subrounded to rounded grains, very tight, abundant intergranular Clay; little interbedded Shale, as above.
- 1670-1689 Siltstone to Sandstone, orange, orange-red, brown-red, very fine to medium and some coarse, angular to subangular, micromicaceous, very tight to slightly friable; with interbedded Shale, red, chocolate, fairly hard.
- 1689 Top - PENNSYLVANIAN (UPPER MADERA ?) (+3659)
- 1689-1692 Dolomite, buff, pale orange-buff, tan, some red, very finely crystalline, very dense.
- 1692-1694 Shale, red, chocolate, hard.
- 1694-1701 Sandstone, orange, orange-red, dark red, red, very fine to fine, angular, micromicaceous, very tight, dolomitic.
- 1701-1704 Shale, as above.

- 1704-1719 Siltstone to Sandstone, orange-red, dark red, orange, very very fine to fine, angular, little subangular; few medium to coarse, subrounded, floating grains; micromicaceous, dolomitic, tight; with Dolomite, buff, orange-buff, pink-red, red, some mottled, very finely crystalline to finely crystalline, dense, some nodular (possibly as lentils or stringers); with little Shale, brown-red, chocolate, hard.
- 1719-1721 Shale, brown-red, chocolate, hard.
- 1721-1739 Siltstone to Sandstone, orange-red, dark red, orange, trace gray-white, very very fine to little fine, angular, micromicaceous, very tight, dolomitic; with little Dolomite, pink-red, red, orange-buff, buff, very finely crystalline, very dense.
- 1739-1764 Siltstone to very fine Sandstone, orange-red, brown-red, trace purple-red, orange, very tight, micromicaceous, dolomitic; with little Dolomite, as above; and Shale, brown-red, chocolate, hard, some micromicaceous.
- 1764-1793 Siltstone to Sandstone, orange, orange-red, brown-red, dark red, very very fine to little fine grained, most angular and little subangular, very tight, dolomitic; some coarse, subrounded to rounded, loose, floating grains; traces of Dolomite, buff and varicolored, very finely crystalline to finely crystalline, dense; with some interbedded Shale, chocolate, brown-red, red, dark red, trace green, hard.
- 1793-1795 Shale, chocolate, brown-red, dark red, red, hard and soft.
- 1795-1822 Siltstone to Sandstone, orange-red, brown-red, dark red, very very fine to fine, angular, very tight to slightly friable, dolomitic, some shaly.
- 1822-1824 Shale, chocolate, brown-red, fairly hard.
- 1824-1838 Siltstone to Sandstone, orange-red, brown-red, dark red, trace gray-white, very very fine to very fine, very tight to slightly friable, dolomitic, some shaly.
- 1838-1841 Shale, chocolate, brown-red, trace purple, hard.
- 1841-1866 Siltstone to Sandstone, orange-red, brown-red, orange, trace gray-white, very very fine to very fine, angular, very tight, dolomitic, some shaly; trace Dolomite, red, very finely crystalline, dense (? nodule).
- 1866-1868 Shale, chocolate, brown-red, dark red, trace green, fairly hard.
- 1868-1892 Siltstone to Sandstone, orange-red, brown-red, dark red, pink-red, gray-white, trace pale green-gray, very very fine to little fine, angular, micromicaceous, very tight, slightly dolomitic to dolomitic; with little Dolomite, red, pink-red, slightly crystalline, dense.
- 1892-1894 Shale, chocolate, brown-red, red, slightly crystalline, dense, silty to very, very finely sandy.
- 1894-1908 Siltstone to Sandstone, orange-red, brown-red, orange, traces gray-white, buff, pink-red, very very fine to very fine, angular to slightly subangular, micromicaceous, very tight, dolomitic, some argillaceous; with

little Dolomite, red, orange-red, orange-gray, buff, very finely crystalline to slightly crystalline, dense, little nodular, some very finely sandy (possibly as lentils or nodules).

- 1908-1910 Shale, chocolate, dark brown-red, dark red, hard.
- 1910-1938 Siltstone to Sandstone, orange-red, orange, dark red, brown-red, very fine to fine, angular, micromicaceous, very tight, dolomitic, little shaly; with some Dolomite, red, buff, orange-buff, very finely crystalline to slightly crystalline, very dense, little very finely sandy; and interbedded Shale, chocolate, dark red, brown-red, hard, some slightly dolomitic.
- 1938-1952 Sandstone, dark red, orange-red, brown-red, very very fine to very fine, angular, some micromicaceous, dolomitic, some argillaceous; with little Dolomite, red, buff, very finely crystalline to crystalline, dense, little very finely sandy.
- 1952-1963 Sandstone, as above; with trace Dolomite, as above.
Note: Section from 1908-1964 is quite radioactive and looks shaly on log but amount of shale in samples is very small.
- 1963-1964 Shale, chocolate, brown-red, hard to soft.
- 1964-1993 Sandstone, red, orange-red, brown-red, very very fine to some fine, angular, micromicaceous, very tight, slightly dolomitic; with little Dolomite, red, red-gray, finely crystalline to slightly crystalline, dense; slightly more Dolomite toward bottom.
- 1993-1995 Shale, dark red, brown-red.
- 1995-2006 Sandstone, as above; with less dolomite, as above; trace dark red, dense, dolomite nodules.
- 2006-2009 Shale, dark red, chocolate, red, brown-red, trace green, soft.
- 2009-2022 Sandstone, dark red, orange-red, brown-red, very very fine to fine, with few coarse, floating grains, angular to subrounded, tight to friable, some micromicaceous, dolomitic, considerable shaly; with dark red, dense, Dolomite nodules.
- 2022-2027 Shale, dark red, chocolate, brown-red, fairly, hard to soft, some silty.
- 2027-2047 Sandstone, red, brown-red, orange-red, little purple-red, very very fine to fine, angular, tight to friable, dolomitic, some silty and shaly; with little dark red, finely crystalline, dense, Dolomite as nodules or ? lentils.
- 2047-2068 Sandstone, red, brown-red, dark red, very very fine to fine, angular, micromicaceous, tight to friable, dolomitic; with some dark red Dolomite nodules.
- 2068-2072 Shale, dark red, chocolate, brown-red, brown, soft, some silty to very finely sandy.

- 2072 Top - LOWER MADERA ARKOSE CONGLOMERATE (+3276)
- 2072-2093 Conglomerate, red and varicolored, very coarse, angular to subangular; with Chert, coarse Quartz grains, fine to coarsely crystalline Dolomite and dolomite cement; with interbedded Shale, chocolate, brown, brown-red, soft to hard. (Note: Looks Arkose derived.)
- 2093-2095 Shale, dark red, chocolate, red, brown, soft to hard.
- 2095-2109 Conglomerate, red and varicolored; with angular to subrounded Quartz, varicolored, angular Chert and Dolomite, varicolored, crystalline; with dolomitic cement; some quite argillaceous, some dense, dark red, dolomite nodules; trace orange Feldspar.
- 2109-2115 Shale, red, dark red, chocolate, brown, soft.
- 2115-2138 Conglomerate, red and varicolored; and Arkose, coarse to very very coarse, angular to subangular and some subrounded grains, most loose; most is Quartz and Chert with some Feldspar; Feldspar is fresh to slightly weathered; some Dolomite, dark red, finely crystalline to slightly crystalline, very dense; some interbedded Shale, as above.
- 2138-2150 Arkose Conglomerate, varicolored, coarse to very coarse; Feldspar; Quartz and Chert, most loose; some loose, subrounded Quartz; Quartz grains; little Shale, red, dark red, chocolate; with Dolomite, red, dark red, orange, gray-white, pink, finely crystalline to slightly coarsely crystalline, little rhombic, most very dense.
- 2150-2168 Arkose, orange, pink, red, coarse to very very coarse; and Arkose Conglomerate, red, varicolored, some with dolomitic cement; abundant Chert, varicolored, opaque to semiopaque; little Dolomite, pink, white, buff, red, dark red, finely crystalline to slightly crystalline, dense.
- 2168-2170 Shale, red, dark red, chocolate.
- 2170-2196 Arkose and Arkose Conglomerate, highly varicolored, coarse to very very coarse, with dolomitic cement; abundant Chert, opaque and semiopaque; little Dolomite, red, orange, pink-gray, finely crystalline to crystalline, dense; trace weathered Granite.
- 2196-2202 Shale, purple, red; with little Sandstone, pale purple, purple-gray, very fine to medium, with coarse grains, angular to subrounded, very tight, dolomitic.
- 2202-2224 Arkose and Arkose Conglomerate, coarse to very very coarse, highly varicolored; with abundant Quartz, Chert, Feldspar, Dolomite.
- 2224-2226 Shale, chocolate, dark red, purple, soft, some mottled.
- 2226-2236 Arkose and Arkose Conglomerate, as above; abundant Quartz, Chert, varicolored, semiopaque and opaque; little Dolomite.
- 2236-2237 Shale, as above.
- 2237-2247 Quartz Wash, red and varicolored, coarse to very very coarse, angular to subangular and slightly subrounded, most loose.

- 2247-2250 Shale, chocolate, purple, dark red, brown-red, little micromicaceous.
- 2250-2258 Quartz Wash, as above; most loose, few aggregates are dirty, with some dolomitic cement.
- 2258-2272 Shale, dark purple-gray, dark red; with interbedded Quartz Wash, red, yellow, coarse to very very coarse, most angular to subangular, most loose.
- 2272-2289 Arkose Conglomerate and Quartz Wash, varicolored, Feldspar, Quartz, coarse to very very coarse, angular to subangular, most loose; Chert, varicolored, opaque to semiopaque; with some interbedded Shale, dark red, chocolate, purple, soft to fairly hard.
- 2289-2312 Quartz Wash, gray-white, little varicolored, coarse to very very coarse, angular to subangular, most loose; few pieces of Feldspar, trace slightly weathered Granite Wash; with interbedded Shale, chocolate, brown-red, purple, gray, green-gray, dark gray, some micromicaceous, some very fissile; trace red, oolitic Chert.
- 2312 Top - LOWER PENNSYLVANIAN (? MORROW) (+3036)
- 2312-2333 Shale, chocolate, purple, brown-red, red, gray, green-gray, pale green, pale purple, mottled, waxy; with imbedded, loose, Quartz Wash, Feldspar, Chert, and traces of Arkosic Conglomerate; with some interbedded Sandstone, gray, red-gray, gray-white, gray-buff, very fine to fine, angular, micromicaceous, tight, slightly dolomitic, dirty, glauconitic, weathered.
- 2333-2346 Shale, highly varicolored, partially waxy and talcy to micromicaceous; with interbedded glauconitic Sandstone, as above; and coarse to very very coarse Quartz Wash, Feldspar and Arkose Conglomerate fragments.
- 2346-2349 Shale, chocolate, purple, purple-red, gray, dark gray, green-gray, pale purple-green, waxy, talcy to micromicaceous, some sandy, trace Glauconite.
- 2349-2354 Quartz Wash, varicolored, coarse to very very coarse; with some interbedded Sandstone, pale purple-gray, gray-white, very very fine to fine, angular, micromicaceous, tight, dirty, glauconitic, dolomitic; and Sandstone, red-gray, fine to coarse, angular to subangular, very tight, with dolomitic cement.
- 2354-2372 Shale, highly varicolored, waxy to talcy, trace black waxy; with interbedded Quartz Wash grains and little Sandstone, as above.
- 2372-2375 Shale, as above.
- 2375-2414 Quartz Wash, varicolored, coarse to very very coarse, angular to subangular, most loose; with traces of red, orange-buff Feldspar; red, gray-white, tan, opaque and semiopaque Chert, slightly weathered granite wash fragments; also traces of varicolored, tight, dirty, glauconitic Sandstone; and some varicolored Shale.
- 2414-2440 Shale, purple, brown-red, gray, pale green, pale purple, yellow, gray-green, subwaxy, considerable splintery; with little interbedded Quartz Wash, Arkose Conglomerate and Sandstone, as above.

- 2440-2446 Quartz Wash, varicolored, coarse to very very coarse; with some interbedded Sandstone, pale purple-gray, gray-white, very very fine to fine, angular, micromicaceous, tight, dirty, glauconitic, dolomitic; and Sandstone, red-gray, fine to coarse, angular to subangular, very tight, with dolomitic cement.
- 2354-2372 Shale, highly varicolored, waxy to talcy, trace black waxy; with interbedded Quartz Wash grains and little Sandstone, as above.
- 2372-2375 Shale, as above.
- 2375-2414 Quartz Wash, varicolored, coarse to very very coarse, angular to subangular, most loose; with traces of red, orange-buff Feldspar; red, gray-white, tan, opaque and semiopaque Chert; slightly weathered Granite Wash fragments; also traces of varicolored, tight, dirty, glauconitic Sandstone; and some varicolored Shale.
- 2414-2440 Shale, purple, brown-red, gray, pale green, pale purple, yellow, gray-green, subwaxy, considerable splintery; with little interbedded Quartz Wash, Arkose Conglomerate and Sandstone, as above.
- 2440-2446 Quartz Wash, varicolored, medium to coarse, with some very coarse and very, very coarse grains, angular to subangular, most loose; trace Feldspar.
- 2446-2454 Shale, highly varicolored, waxy to subwaxy.
- 2454 Top - MISSISSIPPIAN (ST. LOUIS) (+2894)
- 2454-2464 Limestone, pink-red-buff, yellow-buff, pink-gray, buff, red, finely crystalline, dense, some very finely oolitic to medium oolitic, some silty to very very finely sandy, some chalky.
- 2464-2478 Dolomite, white, buff, varicolored, crystalline to coarsely crystalline, considerable rhombic, dense to slightly crystalline vug porosity; trace red-tan, red-gray, opaque Chert.
- 2478-2506 Limestone, brown, tan, gray, buff, some varicolored, slightly sublithographic to slightly crystalline, very dense, little dense oolitic; traces of Chert, brown, brown-red, tan, semiopaque.
- 2506-2512 Dolomite, light brown, buff, varicolored, very finely crystalline to crystalline, considerable succrosic, most very dense, trace slight intercrystalline porosity.
- 2512-2538 Limestone, buff, tan, brown, gray-white, and little varicolored, very finely crystalline to crystalline, dense, considerable chalky, trace sublithographic, considerable fine to slightly medium, dense oolitic; trace microfossils.
- 2538-2544 Dolomite, red-buff, pink-buff, buff, very finely succrosic to slightly coarsely crystalline, very dense.
- 2544-2548 Limestone, white to buff, light brown, finely crystalline to slightly crystalline, dense, most medium oolitic; and trace microfossils.

- 2548 Top - SPERGEN-WARSAW (+2800)
- 2548-2582 Dolomite, pink, buff, white, very finely crystalline to crystalline, some succrosic, very tight to trace intercrystalline and scattered minute vig porosity.
- 2582-2601 Dolomite, buff, pink, brown, and little varicolored, very finely crystalline to finely crystalline, most dense, considerable succrosic with scattered minute vugs; trace Chert, orange-gray, red, pink, semiopaque.
- 2601-2632 Dolomite, buff, pink, brown, gray-white, red, little varicolored, very finely crystalline to slightly crystalline, considerable succrosic to little rhombic, very tight to slight vug porosity, some red and black, argillaceous inclusions, some silty; trace Chert, yellow-gray, semiopaque.
- 2632-2653 Dolomite, buff to light brown, little pink and varicolored, very finely crystalline to crystalline, dense to slight vug porosity; with interbedded Limestone, varicolored, finely crystalline to slightly crystalline, dense, pseudo-oolitic (microfossiliferous); little Chert, white, opaque, slightly fossiliferous, some weathered; trace glauconite; trace ? native copper in tiny vugs.
- 2653 Top - OSAGE (+2695)
- 2653-2675 Dolomite, pale purple, purple-gray, pink, buff, brown, very finely crystalline to slightly crystalline, dense, glauconitic; and Chert, white, buff, pink, red, mottled, most opaque, traces semiopaque and semitranslucent, much weathered and some tripolitic, some glauconitic.
- 2675-2690 Dolomite, buff, gray, some varicolored, very very finely crystalline to slightly crystalline, dense, some glauconitic; Chert, white, gray-brown mottled, trace brown, tan, opaque and semiopaque, little to considerable slightly weathered, some glauconitic.
- 2690-2710 Dolomite, buff, brown, pink, red, some mottled, very finely crystalline to coarsely crystalline, some rhombic, with crystalline vug porosity, considerable glauconitic; Chert, white, buff, gray, tan, red, red-brown mottled, opaque, trace weathered.
- 2710-2749 Dolomite, buff, brown, gray, varicolored, very finely crystalline to coarsely crystalline, dense to slight crystalline vug porosity, glauconitic; Chert, white and much varicolored, opaque and semiopaque, rough to smooth, considerable weathered and some tripolitic; from 2720-42 Chert is 90% to 98% of sample; few loose, coarse, subrounded to rounded, sand grains.
- Note: Zone from 2710-19 looks like Shale, and I believe this is the so-called Harrison Shale of the Las Animas Arch. However, none of the characteristic lithology of this zone was found in the samples.
- 2749 Top - KINDERHOOK (+2599)
- 2749-2781 Dolomite, brown, buff-brown, finely crystalline to slightly crystalline, dense; little Chert, white, brown-red, salmon, opaque, trace weathered; trace fossiliferous Chert.
- 2781-2801 Dolomite, brown, buff, gray, very finely crystalline to crystalline and little coarsely crystalline, dense to trace crystalline vug porosity; little Chert, white, gray, tan, yellow, opaque, trace weathered.

- 2801 Top - ARBUCKLE (JEFF CITY ?) (+2547)
- 2801-2832 Dolomite, brown to buff, little gray, red, pink, very finely crystalline to crystalline, dense to trace minute vug porosity; little Chert, white, tan, gray, pink, opaque and semiopaque; little dolomite is slightly silty.
- 2832-2850 Dolomite, buff, cream-buff, brown, little varicolored, very finely crystalline to slightly crystalline, dense; Chert, white, light gray, trace red, opaque and semiopaque.
- 2850-2886 Dolomite, buff to brown, little pink and red, very finely crystalline to finely crystalline and little slightly crystalline, dense; trace coarse, subrounded sand grains imbedded in dolomite; Chert, white, buff, light gray, opaque and semiopaque, trace medium oolitic; trace red, tan, orange, semiopaque Chert (Chert ranges from less than 1% to 5% of sample.)
- 2886-2900 Dolomite, buff, little brown, some pink and red, very finely crystalline to finely crystalline and little slightly crystalline, dense; Chert, white to light gray, opaque and semiopaque, and red, tan, yellow, orange, semi-translucent to opaque (1% to 2% Chert).
- 2900 Total depth - Driller.
- 2902 Total depth - Schlumberger.

Samples described:

Joseph R. Clair

JOSEPH R. CLAIR
(on well)

DRILLING TIME LOG

H. W. ADDINGTON & ASSOC.

STATE 3053-37-4

NW/NW Sec. 36-30S-53W

Las Animas County, Colorado

Elevation: 5348' K.B.

One foot drilling time from 300'.

300- 320	1-2-2-1-2-5-1-2-2-1/2	1/2-2-1-1-2-2-3-3-2-2	Bit #1. Sec.
320- 340	x-x-x-x-1-1-2-2-2 1/2-2	2-3-3-3-4-3-2-3-3-3	M4NG in @ 286'.
340- 360	2-2-2-1 1/2-1-1 1/2-2-2-3-2	3-2-3-2-1-1/2-1/2-1/2-1-1	X = No time.
360- 380	1-1-1-1/2-1/2-1-2-1-1-1	1-3-4-6-8-10-5-2-1-2	
380- 400	4-x-x-3-5-4-5-3-4-4	3-3-1/2-2-5-3-2-1-1-3	x = No time.
400- 420	1-2-1/2-3-2-1/2-1-2-4-2	1/2-1/2-3-3-1-2-1-3-1-1	
420- 440	3-4-4-3-2-2-5-3-2-3	2-2-2-5-4-4-2-3-2-2	
440- 460	3-3-2-1-2-1-2-2-3-1	2-3-3-1-1-1-2-2-2-2	
460- 480	2-4-2-3-2-3-3-4-3-3	5-3-4-3-2-3-3-2-2-2	
480- 500	2-2-3-2-3-2-1-2-3-3	2-1-3-3-2-2-2-2-2-2	
500- 520	2-2-2-3-2-3-2-2-2-2	1 1/2-2-3-3-2-3-2-2-2-2	
520- 540	2-1-1-2-4-3-4-4-4-5	x-x-4-2-4-3-3-3-3-4	x = No time.
540- 560	4-3-2-2-3-3-2-3-2-1	2-2-2-3-2-2-2-1-2-2	
560- 580	2-3-2-2-2-3-2-2-3-2	2-3-2-3-3-3-4-3-3-3	
580- 600	3-1-1-2-2-1-1-2-3-2	3-3-2-2-3-4-3-3-3-3	
600- 620	4-5-3-4-4-3-3-4-3-3	3-3-3-4-3-3-4-3-2-3	
620- 640	3-4-3-2-3-4-3-3-2-2	2-1-1-1-3-1-1-1-1-1	
640- 660	2-1-1-1-1-2-1-2-2-2	1-2-2-2-2-2-2-2-2-2	
660- 680	4-3-4-4-2-3-2-3-3-2	4-3-4-4-3-4-4-4-5-5	
680- 700	5-4-3-2-2-3-3-3-3-3	3-3-4-4-6-5-3-4-4-5	
700- 720	4-4-4-4-4-4-4-5-2-2	1-1-1-1-2-2-2-1-3-5	
720- 740	5-5-5-5-2-2-2-2-2-2	3-2-2-2-2-2-3-2-2-2	
740- 760	2-2-2-2-2-2-2-2-2-2	3-3-3-2-2-2-2-2-3-2	
760- 780	2-2-2-2-2-2-2-2-2-2	2-2-2-2-2-2-2-2-2-2	
780- 800	2-2-2-2-2-2-2-3-3-3	3-3-3-3-3-3-3-3-2-2	
800- 820	2-2-2-2-2-2-1-1-1-2	2-2-2-2-2-2-2-2-2-2	
820- 840	2-2-1-1-2-2-2-1-1-1	1-1-1-1-1-1-1-2-2-2	
840- 860	2-2-2-2-2-2-1-2-2-2	1-2-2-1-2-1-2-2-1-2	
860- 880	1-2-2-2-1-2-2-2-1-1	2-1-2-2-2-1-2-1-2-2	
880- 900	2-2-2-1-1-2-2-2-2-1	2-2-3-2-2-2-1-2-2-1	
900- 920	2-1-1-2-1-2-2-1-2-2	1-1-2-1-1-2-1-2-2-1	
920- 940	2-1-1-2-2-1-2-2-2-2	1-1-2-2-2-1-2-1-2-2	
940- 960	2-2-1-2-2-1-2-2-2-2	2-2-2-3-2-2-2-2-1-1	
960- 980	2-2-2-2-2-2-2-2-2-2	2-1-3-2-2-2-2-2-1-2	
980-1000	1-1-2-2-1-2-1-2-2-1	1-1-1-1-1-1-1-1-1-2	

Trip for Bit #2
@ 726'. Sec.
S88F.

1000-1020	3-3-2-3-2-3-2-1-2-3	2-2-2-1-2-2-3-2-3-3
1020-1040	3-3-4-3-3-4-3-3-4-3	2-3-3-5-6-6-6-5-5-5
1040-1060	4-4-8-4-5-3-9-4-5-5	5-6-5-4-4-5-5-4-5-4
1060-1080	6-5-5-6-6-5-5-4-7-5	5-5-3-3-5-5-7-5-5-6
1080-1100	4-5-7-6-5-5-5-6-5-5	5-5-5-6-4-4-4-5-5-6
1100-1120	5-6-6-5-8-6-5-5-5-4	4-4-3-5-3-2-2-2-2-1
1120-1140	2-1-2-3-2-2-1-1-1-3	2-1-2-3-3-2-4-1-3-2
1140-1160	2-1-1-3-3-3-2-4-3-2	1-1-1-1-2-1-2-1-2-3
1160-1180	2-3-3-4-4-4-4-4-3-3	4-4-4-2-2-3-2-3-2-2
1180-1200	3-2-3-3-3-3-2-2-2-2	3-3-2-3-2-2-2-2-2-3
1200-1220	2-3-2-2-3-2-2-2-2-2	3-3-3-3-3-3-3-3-2-3
1220-1240	4-2-3-2-3-3-3-2-3-4	2-3-4-3-3-3-2-2-3-2
1240-1260	2-3-2-3-3-2-2-3-3-2	3-2-3-2-3-2-4-2-2-3
1260-1280	4-3-5-5-5-5-4-4-5-6	6-5-6-6-8-9-4-3-3-2
1280-1300	2-3-4-4-5-4-4-4-4-5	5-4-5-4-5-5-5-5-5-6
1300-1320	6-4-5-8-10-11-9-4-4-4	5-4-5-4-6-7-6-4-3-3
1320-1340	3-3-4-3-2-3-2-3-3-4	4-4-4-5-5-3-4-4-3-4
1340-1360	4-3-3-2-4-2-3-5-3-3	3-4-3-3-3-4-x-x-x-x
1360-1380	3-3-2-3-3-3-4-3-3-4	4-4-5-5-6-5-4-7-4-6
1380-1400	5-11-6-5-5-6-5-6-3-3	3-2-3-3-3-3-3-4-4-5
1400-1420	4-5-4-7-5-6-7-7-4-4	4-2-2-2-2-2-2-2-3-2
1420-1440	2-2-2-2-2-2-3-2-2-2	1-2-2-2-2-2-2-2-2-2
1440-1460	2-2-6-8-2-2-2-2-2-1	1-2-3-3-3-3-3-2-2-2
1460-1480	3-3-3-3-4-4-4-3-3-3	2-3-3-2-2-8-5-4-4-3
1480-1500	3-3-3-3-3-3-3-4-2-2	2-3-9-6-5-4-4-3-3-2
1500-1520	3-3-3-4-3-3-3-2-2-2	2-2-3-2-2-3-2-2-2-2
1520-1540	2-2-3-5-5-2-3-3-3-3	3-3-4-2-4-3-3-2-5-2
1540-1560	2-3-2-3-3-3-2-2-3-2	2-4-4-4-4-4-4-3-5-5
1560-1580	4-3-3-8-4-4-4-5-3-4	1-2-4-4-4-2-2-2-2-3
1580-1600	1/2-1/2-1-4-3-2-2-2-3-2	3-2-2-3-3-2-2-5-4-3
1600-1620	2-2-1-1-1-2-3-2-3-2	3-3-2-3-1-1-2-1-1-2
1620-1640	2-1-2-1-4-3-5-7-11-3	2-2-3-3-2-3-5-2-2-2
1640-1660	4-1-2-2-4-3-3-3-2-1	2-2-5-5-9-5-4-7-3-4
1660-1680	3-1-1-1-1-1-1-2-3-2	3-4-5-4-2-2-2-6-3-4
1680-1700	2-3-4-4-3-3-4-3-2-6	5-5-5-5-6-5-4-5-5-5
1700-1720	6-4-1-1-2-2-3-2-2-2	5-5-5-5-6-5-6-9-8-8
1720-1740	6-6-16-15-4-5-4-4-4-5	4-3-5-3-3-2-2-4-4-4
1740-1760	8-12-4-2-2-4-4-5-3-4	3-4-4-4-5-4-4-4-4-4
1760-1780	5-5-5-5-5-5-5-5-5-5	5-5-5-5-5-5-5-5-5-5
1780-1800	5-5-5-5-5-5-7-5-5-5	7-6-6-4-5-5-6-6-5-5
1800-1820	5-5-5-5-3-4-4-3-4-5	3-3-5-4-6-4-2-4-5-5
1820-1840	8-8-11-4-9-5-5-6-5-4	5-4-5-10-6-8-7-9-6-5
1840-1860	6-7-6-8-5-7-5-5-5-3	3-3-4-2-3-3-4-4-5-5
1860-1880	6-9-11-12-18-21-7-5-5-5	7-16-7-8-27-4-2-4-5-3
1880-1900	5-7-7-5-8-9-7-7-6-7	9-9-7-8-7-8-11-12-13-8

x = No time.
Correct geolo-
graph.

1900-1920	9-8-10-11-10-9-5-5-6-6	6-6-6-5-5-5-6-6-6-5	
1920-1940	7-5-6-6-6-7-6-9-10-6	8-8-8-8-8-7-8-7-10-11	
1940-1960	8-8-7-5-6-6-5-6-6-5	6-5-7-6-6-7-6-7-8-6	
1960-1980	7-6-8-6-8-7-6-9-12-22	21-13-5-3-3-3-3-3-3-3	
1980-2000	4-3-4-4-4-4-4-4-4-5	5-5-6-6-6-7-6-7-6-6	
2000-2020	6-7-7-7-6-10-8-7-7-10	8-6-6-7-8-7-5-6-6-6	
2020-2040	6-7-9-10-8-11-11-17-11-16	17-14-13-15-12-10-8-10-8-9	
2040-2060	8-9-9-9-9-8-10-10-10-10	10-10-10-11-11-12-11-11-13-26	
2060-2080	30-35-32*-7-9-6-7-7-7-7	7-7-7-7-7-8-5-6-7-7	Trip for Bit #3
2080-2100	6-7-6-5-6-6-5-5-6-5	8-8-7-10-6-12-9-6-4-6	@ 2062'. J-44.
			* Note: Drilled
2100-2120	3-3-2-3-2-2-3-3-3-3	6-6-8-7-9-7-8-5-9-11	30" on foot
2120-2140	7-10-10-8-10-6-9-5-5-5	10-7-8-8-7-8-9-9-7-9	before trip.
2140-2160	5-5-5-5-7-10-10-10-11-19	9-14-8-9-10-10-11-18-7-8	
2160-2180	8-7-6-7-6-6-5-x-4-5	6-6-3-3-3-1-1-3-6-4	x = No time.
2180-2200	6-6-9-10-8-5-7-7-8-6	8-7-6-4-7-6-5-6-6-6	Geograph corr.
2200-2220	6-6-3-5-4-5-5-8-5-6	8-12-6-7-4-3-3-7-6-8	
2220-2240	4-6-5-5-5-5-5-3-1-2	1-1-1-1/2-1/2-1/2-1/2-4-3-4	
2240-2260	4-5-5-5-6-4-3-2-7-5	5-5-1-1-2-1-3-2-3-4	
2260-2280	3-6-5-3-4-5-4-5-5-7	7-7-7-7-5-6-1-1/2-1/2-1/2	
2280-2300	1/2-4-4-5-5-7-7-6-5-6	4-6-4-3-6-6-6-5-5-6	
2300-2320	4-4-3-3-3-4-4-5-5-5	5-6-6-6-5-5-8-11-9-8	
2320-2340	9-7-3-5-8-9-7-7-7-7	8-8-7-6-7-9-6-9-9-8	
2340-2360	9-5-5-11-7-9-8-6-10-7	6-7-8-7-5-5-5-6-5-8	
2360-2380	11-15-15-18-12-8-7-7-8-8	11-11-8-9-8-7-8-10-9-9	
2380-2400	5-8-11-9-9-9-11-11-5-5	5-5-5-7-12-7-8-8-4-6	
2400-2420	7-8-10-8-7-8-6-6-4-4	5-3-4-3-4-3-2-2-2-6	
2420-2440	6-5-5-5-5-5-5-5-5-4	6-7-8-6-6-7-7-6-6-7	
2440-2460	5-4-5-6-5-5-5-7-5-4	6-4-5-6-6-6-6-4-6-7	
2460-2480	6-7-7-8-6-7-4-5-5-2	3-3-2-3-4-5-4-3-3-4	
2480-2500	6-6-6-5-4-5-6-6-6-7	6-5-6-6-6-7-4-6-6-7	
2500-2520	9-6-7-7-7-7-6-5-5-5	6-6-3-6-5-8-6-7-7-7	
2520-2540	7-7-8-8-8-9-8-8-9-8	7-8-8-9-8-8-8-8-8-9	
2540-2560	8-8-8-9-9-8-10-9-9-9	8-6-8-7-7-7-7-10-10-9	
2560-2580	8-8-7-7-7-9-9-9-7-5	5-6-7-6-7-7-7-8-6-6	
2580-2600	6-9-10-11-11-10-8-7-10-9	7-7-10-11-11-11-10-11-12-12	
2600-2620	11-8-8-7-7-9-8-6-6-9	7-7-6-7-7-6-4-7-5-7	
2620-2640	8-8-7-7-6-7-8-6-6-6	5-6-8-7-7-6-7-7-5-6	
2640-2660	5-5-5-5-5-8-2-7-4-7	5-6-7-6-5-6-3-4-4-4	
2660-2680	4-6-8-10-7-6-5-9-6-6	7-7-7-6-7-7-8-7-8-9	
2680-2700	9-8-9-8-8-8-6-8-8-8	7-5-5-5-3-2-6-5-5-7	
2700-2720	5-5-7-9-10-10-9-10-10-10	19-15-14-14-14-10-9-11-14-6	
2720-2740	5-4-5-4-3-3-3-3-3-4	3-3-4-3-4-5-4-5-4-4	
2740-2760	7-4-11-10-8-8-9-8-9-8	9-8-8-7-8-8-8-8-7-7	
2760-2780	7-8-7-7-6-7-7-8-8-6	8-7-6-9-9-8-7-7-9-9	
2780-2800	9-7-9-7-8-8-8-7-6-6	7-6-8-6-6-6-6-6-6-7	

2800-2820	5-6-7-7-7-6-6-8-6-7	7-7-6-6-4-5-5-6-5-6
2820-2840	9-8-7-6-10-7-7-7-8-8	8-8-5-5-4-5-5-7-4-5
2840-2860	6-6-6-6-7-8-9-8-6-5	6-7-7-5-5-6-6-5-6-6
2860-2880	7-6-6-5-8-8-5-8-8-8	8-8-5-8-6-7-9-8-6-6
2880-2900	8-6-6-10-9-7-8-6-7-4	7-8-6-10-5-8-7-4-4-7
2900	Total depth - Driller	
2902	Total depth - Schlumberger	

BIT RECORD

H. W. ADDINGTON & ASSOC.
STATE 3053-36-4
NW/NW Sec. 36-30S-53W
Las Animas County, Colorado
Elevation: 5348' K.B.

<u>Run No.</u>	<u>Size</u>	<u>Make</u>	<u>Type</u>	<u>Jet Size</u>			<u>Depth out</u>	<u>Feet</u>	<u>Hours</u>
				<u>1</u>	<u>2</u>	<u>3</u>			
1	15"	Sec.	M4N		Open		286	286	25 1/4
1	7 7/8	Sec.	M4NG	18/32	18/32	18/32	726	440	23 1/4
2	7 7/8	Sec.	S88F	18/32	18/32	18/32	2062	1336	94
3	7 7/8	HTC	J-44	14/32	14/32	14/32	2900	838	94 1/2