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CHANDLER & ASSOCIATES, INC.
SOUTHWEST RANGELY FEDERAL 13-30-1N-2
SW SW SEC. 30-T1N-R102W
RIO BLANCO COUNTY, COLORADO

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ELEVATIONS: KB 5709', GL 5697'

SURVEY: 758' FWL, 554' FSL

SPUD DATE: September 4, 1991

SURFACE CASING: Set 8-5/8" at 355' KB with 225 sacks of cement followed with 55 sacks from the top.

DRILLING FLUID: Air/mist with 3% KCL water.

CORES: None

FLARE TESTS: Top of the Castlegate ss.

LOG SURVEYS: Atlas Dual Induction Focused Log, Compensated Z-Densilog and BHC Acoustilog; and dipmeter.

TOTAL DEPTH: 3939' Driller, 3869' Logger.

STATUS: Plugged and abandoned September 11, 1991.

CONTRACTOR: Chandler Drilling Corp., Rig 7;
TP Darrel Fladeland and relief
TP Leon Schultz.

GEOLOGIST: Pleas Stringer

LOG TOPS:

	<u>DEPTH</u>
Rimrock ss	2139'
Mancos sh	2212'
Castlegate ss	2488' (+3221')
Mancos "B"	
Transition zone	3542'
Upper Sand zone	3684'
Main Porosity zone	3710'
Base of Mancos "B"	3750'

SAMPLES: Bulk samples of the Castlegate and Main Porosity sands were delivered to the Chandler office in Denver, Colorado.



SAMPLE LITHOLOGIC DESCRIPTION

Depths below 1870' are adjusted to the electric logs.

MESAVERDE FM

- 430- 460' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals, firm - friable, fair - good porosity, no shows.
Lignite: brown, soft;
Shale: dark gray, firm, fissile.
- 460- 490' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, fragments and laminations of coal, pyritic in part, friable, good porosity, no shows.
- 490- 520' Siltstone: medium gray, sandy, firm;
Siltstone: dark gray, shaly, firm.
- 520- 580' Sandstone: light gray, very fine - fine grained, poorly sorted, angular - subangular, scattered coal fragments, unconsolidated, good porosity, no shows.
- 580- 640' Shale: black, hard, silty in part;
Siltstone: dark gray, firm, shaly.
- 640- 670' Siltstone: brown, lignitic?, soft;
Shale: dark gray brown, lignitic?, firm.
- 670- 700' Limestone: brown, crypocrystalline, hard, tight, no shows;
Siltstone: dark gray, shaly, firm.
- 700- 730' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals, friable, good porosity, no shows;
Siltstone: dark gray brown, firm.
- 730- 760' Shale: dark gray, soft - firm.
- 760- 790' Siltstone: dark gray, hard.
- 790- 820' Siltstone: light gray, soft, poor porosity;
Shale: medium gray, soft.

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- 820- 850' Sandstone: light gray, very fine grained, fairly well sorted, angular, clay filled, scattered black minerals and some coal fragments, friable - firm, fair porosity, no shows.
- 850- 880' Shale: dark gray, soft, carbonaceous, partly fissile;
Limestone: brown, cryptocrystalline, hard, tight, no shows.
- 880-910' Sandstone: light gray, very fine grained, fairly well sorted, angular, clay filled, scattered black minerals and coal fragments, friable - unconsolidated, good porosity, no shows;
Limestone: brown, dense, hard, tight, no shows.
- 910- 940' Sandstone: light gray, very fine grained, fairly well sorted, angular, scattered black minerals and coal fragments, unconsolidated, good porosity, no shows;
Limestone: brown, dense, hard, tight, no shows.
- 940- 970' Limestone: buff, dense, hard, tight, no shows;
Shale: dark gray, firm, fissile.
- 970-1000' Sandstone: light gray, very fine grained, poorly sorted, angular - subangular, scattered coal and limestone fragments, unconsolidated, good porosity, no shows.
- 1000-1030' Sandstone: light gray, very fine grained, well sorted, angular, some clay filling, scattered black minerals, friable - firm, good porosity, no shows.
- 1030-1060' Shale: dark gray, firm, fissile.
- 1060-1090' Limestone: medium gray, microcrystalline, hard, tight, no shows.
- 1090-1120' Coal: black.
- 1120-1150' Sandstone: light gray, very fine grained, well sorted, angular, some clay filling, hard, poor porosity, no shows;
Shale: dark gray, firm, fissile.
- 1150-1210' Coal: black;
Limestone: gray brown, microcrystalline, firm, tight no shows.

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- 1210-1270' Coal: black;
Limestone: brown, dense, hard, tight, no shows.
- 1270-1300' Shale: dark gray, firm, fissile;
Limestone: brown, dense, hard, tight, no shows.
- 1300-1330' Sandstone: light gray, very fine grained, well sorted,
angular, clay filled, shale laminations, hard - firm,
tight, no shows;
Shale: dark gray, firm, fissile.
- 1330-1360' Sandstone: light gray, very fine grained, well sorted,
angular, clay filled, scattered carbonaceous material,
firm, tight, no shows;
Shale: dark gray, firm, fissile.
- 1360-1390' Sandstone: light gray, very fine - fine grained, poorly
sorted, angular - subangular, unconsolidated, good porosity,
no shows.
- 1390-1420' Shale: medium gray, firm, fissile;
Coal: black.
- 1420-1450' Shale: brown, lignitic?, firm.
- 1450-1480' Limestone: brown, cryptocrystalline, hard, tight, no shows;
Shale: dark gray - gray brown, firm, fissile.
- 1480-1510' Sandstone: light gray, very fine grained, well sorted,
angular, clay filled, scattered carbonaceous material,
firm, poor porosity, no shows;
Shale: dark gray, firm, fissile.
- 1510-1540' Limestone: light gray, microcrystalline, hard, tight, no
shows;
Shale: dark gray, firm, fissile.
- 1540-1600' Sandstone: light gray, very fine grained, well sorted,
angular, clay filled, scattered dark minerals, firm,
poor porosity, no shows;
Shale: dark gray, firm, fissile.

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- 1600-1660' Sandstone: medium gray and buff, very fine grained, well sorted, angular, clay filled, scattered black minerals, hard, tight, even bright yellow mineral fluorescence, no cut;
Shale: dark gray, firm, fissile.
- 1660-1690' Sandstone: light gray, very fine grained, fairly well sorted, angular, some clay filling, scattered black minerals, friable, good porosity, no shows.
- 1690-1720' Sandstone: light gray, very fine grained, well sorted, angular, unconsolidated, good porosity, no shows.
- 1720-1750' Sandstone: light gray, very fine - fine grained, poorly sorted, angular - subangular, unconsolidated, good porosity, no shows.
- 1750-1780' Siltstone: dark gray, firm;
Shale: dark gray, firm, partly fissile.
- 1780-1840' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, hard, tight, no shows;
Shale: dark gray, firm, fissile.
- 1840-1870' Coal: black;
Shale: dark gray, firm, fissile.
- 1870-1910' Siltstone: dark gray, firm - hard;
Shale: dark gray, firm, fissile.
- 1910-1960' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals and some carbonaceous material, firm, poor porosity, no shows.
- 1960-1990' Sandstone: white, very fine - fine grained, poorly sorted, angular - subangular, some clay filling, scattered carbonaceous material, friable, good porosity, no shows.
- 1990-2035' Sandstone: white, very fine - fine grained, poorly sorted, angular - subangular, some clay filling, scattered carbonaceous material, friable, good porosity, no shows;
Coal: black

- 2035-2048' Sandstone: buff, very fine grained, well sorted, angular, some clay filling, scattered carbonaceous material, hard, tight, even bright gold mineral fluorescence, no cut.
- 2048-2098' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, dirty, scattered carbonaceous material, hard - friable, poor porosity, no shows;
Siltstone: dark gray, hard.
- 2098-2118' Sandstone: light gray, very fine grained, well sorted, angular, some clay filling, scattered carbonaceous material, firm, fair porosity, no shows.
- 2130-2139' Shale: medium gray, waxy, firm, fissile.

RIMROCK SS

- 2139-2144' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals, firm - hard, poor porosity, 60% had no shows, 40% had no stain, even bright blue white fluorescence, good cut.
- 2146-2200' Sandstone: light gray, very fine - fine grained, poorly sorted, angular - subangular, some clay filling, scattered carbonaceous material, friable, good porosity, no shows.

MANCOS SH

- 2212-2367' Shale: dark gray, firm, fissile.
- 2367-2383' Siltstone: dark gray, hard.
- 2383-2488' Shale: dark gray, firm fissile.

CASTLEGATE SS

- 2488-2490' Sandstone (tr): buff, very fine - fine grained, poorly sorted, angular - subangular, some clay filling, friable, good porosity, even light stain, even bright blue white fluorescence, good cut.

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- 2490-2495' Sandstone: buff - white, very fine - fine grained, poorly sorted, angular - subangular, some clay filling, scattered black minerals, friable, good porosity, no stain - even very light - even brown stain, even weak - bright blue white fluorescence, weak - strong cut.
- 2495-2517' Sandstone: light gray, very fine grained, fairly well sorted, angular - subangular, some clay filling, scattered black minerals and some carbonaceous material, rare glauconite, friable, good porosity, no shows.
- 2517-2537' Sandstone: light gray, very fine - medium grained, poorly sorted, angular, some carbonaceous material and black minerals, friable - unconsolidated, good porosity, no shows.
- 2537-2580' Siltstone: light gray, firm.
- 2580-2603' Siltstone: dark gray, hard.
- 2603-2702' Shale: dark gray, firm, fissile.
- 2702-2730' Siltstone: dark gray, firm - hard.

MANCOS SH

- 3400-3542' Shale: dark gray, firm, fissile;
Siltstone: dark - medium gray, hard.

MANCOS "B" TRANSITION ZONE

- 3542-3630' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals and carbonaceous material, some shale laminations, hard, tight, no shows.
- 3630-3670' No samples.

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UPPER SAND ZONE

3684-3706' Sandstone: light gray, very fine grained, well sorted, angular, clay filled, scattered black minerals and carbonaceous material, some shale laminations, rare glauconite, hard - firm, tight, no shows.

MAIN POROSITY ZONE

3710-3732' Sandstone: light gray, very fine grained, well sorted, angular, partly clay filled, scattered black minerals and carbonaceous material, some shale laminations, hard, tight, 95% had no shows, 5% had no stain, even blue white fluorescence, very weak - no cut;
Siltstone: light gray, some shale laminations, hard, fluorescence as above.

3732-3750' Sandstone: light gray, very fine grained, well sorted, angular, partly clay filled, scattered black minerals and carbonaceous material, some shale laminations, hard, tight, no shows.

3750-3939' Shale: dark gray, firm, fissile.

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SUMMARY OF FLARE AND FLUID DATA

<u>DEPTH</u>	<u>OPERATION</u>	<u>FLARE AND WATER FLOWS (6" Flow Line)</u>
1300'	Drilling	First water flow at est. 15 BPH.
1339'	Survey (30 min.)	Two foot flare for 8 sec. following survey
1437'	Connection	Increase in water flow following connection.
1890'	Survey (30 min.)	Six foot flare for 1-1/2 min. following survey.
2347'	Survey (30 min.)	One foot flare for 8 sec. following survey.
2501'	Blew the hole (2 hrs.)	No flare while blowing the hole or afterwards.
2590'	Drilling	Water flow increased an additional est. 40-50 BPH.
2653'	Shut down 1-1/2 hrs. for repairs.	10 foot flare for 2 min. while unloading the hole.
3538'	Connection	Three momentary flare pops following connection.
3568'	Connection	Water flow est. 150 BPH.
3846'	Connection	One and one-half foot flare for three sec. following connection.

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DRILLING PROGRESS SUMMARY

9- 4-91		Spudded 9:30 P.M.
9- 5-91	φ 240'	Ran surface casing.
9- 6-91	φ cement	
9- 7-91	φ 1318'	
9- 8-91	Blowing the hole at 2501' to test the top of the Castlegate ss.	
9- 9-91	φ 3477'	
9-10-91	TD 3939'. Running logs.	Set three plugs.
9-11-91	TD 3939'. Setting plugs.	Plugged and abandoned.

BIT RECORD

<u>BIT NO.</u>	<u>SIZE</u>	<u>MAKE</u>	<u>TYPE</u>	<u>DEPTH OUT</u>	<u>FEET</u>	<u>HOURS</u>
1	12 $\frac{1}{4}$ "	Reed	Y12J	370'	358'	10-1/2
2	7-7/8"	Reed	HP12	340'	328'	8
3	7-7/8"	Hughes	A-77	3939'	3569'	69

SURVEY RECORD

<u>DEPTH</u>	<u>DEVIATION</u>
122'	1/2°
212'	1/2°
330'	3/4°
823'	3/4°
1339'	3/4°
1850'	1-1/4°
2337'	1-1/4°

PLUGGING RECORD

3750-3660' with 80 sacks of cement
 2600-2550' with 60 sacks of cement (tagged at 2490')
 2150-2050' with 60 sacks of cement
 2050-2011' with 19 sacks of cement
 430- 330' with 60 sacks of cement
 At the surface with 12-14 sacks of cement

Respectfully submitted,

Pleas Stringer

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