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GEOLOGIC REPORT

Aspen Drilling Company
No. 1 Froetschner
NE SW NW Section 18-21s-17w
Pawnee Co., Kansas

CONTRACTOR: Woodman-Iannitti

SURFACE CASING: 8 5/8" @ 372 ft.

SPUD: October 19, 1973

PRODUCTION CASING: 5 1/2" @ 2333 ft.

COMPLETED: October 26, 1973

MEASUREMENT: Kelly Bushing

ELEVATION: 2102 ft. - KB

Geologic Formation Tops

Anhydrite	1109 +993	Towanda	2174 -72
Base Anhydrite	1134 +968	Ft. Riley	2202 -100
Hollenberg	2018 +84	Base Florence	2300 -198
Herington	2052 +50	Rotary Total Depth	2335 -233
Winfield	2104 -2	Log Total Depth	2333 -231

The above electric log measurements are in close agreement with rotary measurements.

Welex, Inc. ran the following logs:

Radiation - Guard - Caliper - Density

A Baroid gas detector unit was operating from 1800 feet to total depth. Four cores were taken from the Herington-Krider, Winfield and Towanda.

The #1 Froetschner was under the geological supervision from 2000 feet to rotary total depth. William Little was well site geologist. Robert D. Dougherty observed operations through core #4 in the Towanda.

I. STRATIGRAPHY and LITHOLOGY

Four cores were taken in the #1 Froetschner.

Core #1 2050-2086 Cored 36 feet - Recovered 34 feet. It was assumed that the core was lost from 2084-2086.

HERINGTON 2052 (+50) (Electric Log)

2050-2053 Shale: Dark gray to black, slightly dolomitic

2053-2057

Dolomite: Light gray to dark gray, very fine grain, crystalline in part, mostly laminated and saturated with "oily-greasy" organic material, argillaceous in part, (thin bed of anhydrite at 2053 3/4 feet to 2054 ft.), mostly dense, scattered poor intergranular porosity, looks mostly tight.

2057-2062

Dolomite: Light gray to gray, very fine crystalline, sucrosic in part, brown saturation ("dark oily luster") ("organic material" = "blue-green algae"?) scattered dark gray siliceous nodules, mostly dense, scattered poor to fair intercrystalline and small vugular porosity, mostly looks tight.

2062-2067

Dolomite: Gray, very fine crystalline, mostly sucrosic, earthy in part, saturated with "oily to greasy" luster, scattered anhydrite nodules fossiliferous (brachiopods and worm borings), poor to fair intercrystalline and small vugular porosity, looks mostly tight.

2067-2069

Shale: Dark gray to black, highly organic, fossiliferous (mostly brachiopods)

2069-2073

Dolomite: Gray, very fine grain, saturated with "oily to greasy" organic material, fossiliferous in part with worm borings, poor to fair intergranular and pinpoint porosity, looks mostly tight

2073-2074

Dolomite: Gray, very fine to fine crystalline, saturated with "oily to greasy" organic material, fossiliferous with caprolites (?) and brachiopod fragments, fair vugular and pinpoint porosity, poor to fair intercrystalline porosity.

2074-2084

Dolomite: Gray to dark gray, very fine to fine crystalline (below 2076) to medium crystalline (below 2080), sucrosic to crystalline, semi-translucent, laminated saturation "oily-greasy", fossiliferous in part, fair to good vugular, pinpoint, fossiliferous and intercrystalline porosity, (core pitted on outside), appears to be good reservoir.

The Herington-Krider was tested further by Drill Stem Test #1 and is considered to be gas productive.

CORE #2: 2096-2138: Cored 42 feet, recovered 34 feet. Core barrel jammed at 2138 feet. Based on gamma-ray correlation it is believed that the core was lost from 2120-2128.

2096-2100

Dolomite: Gray to light brown, very fine grain, "saturated" and laminated (interbedded with gray shale very fine grain dolomitic), argillaceous in part, mostly poor intergranular and scattered pinpoint porosity, looks tight to very tight.

2100-2103

Limestone: White, very fine grain, chalky, mealy in part, slightly dolomitic (interbedded and mottled with gray smooth shale), mostly dense matrix with little or no matrix porosity, scattered, isolated pinpoint and vugular porosity, looks tight.

2103-2105

Limestone: White, very fine to medium grain, earthy to chalky, mostly dense, scattered anhydrite nodules, thin beds of anhydrite at 2104, mottled with gray shale in part, fossiliferous in part, poor to fair intergranular porosity, scattered pinpoint porosity, looks mostly tight.

2105-2120

Limestone: Light gray to gray, very fine to fine grain, "mealy" and granular, crystalline in part, dolomitic in part, cherty at top (2105-2110) light "oily" saturation at top becomes darker "greasy" toward bottom, scattered anhydrite nodules (2116-2120), fair intergranular and small pinpoint porosity, pore space is very fine to fine, possibly tight.

Gamma-ray correlation indicates that core was lost from 2120 feet to 2128 feet. The oolitic and oolitic zone described below was partially lost. The missing footage is interpreted below.

2120-2125

Limestone: Gray, very fine grain, crystalline in part, saturated with dark "greasy" organic material, poor intergranular porosity, looks tight.

2125-2130

Limestone: Light gray, very fine crystalline, highly oolitic with small oolites, fairly oolitic, good oolitic and small vugular porosity, poor to fair intercrystalline porosity, looks like good reservoir, possibly tight in part due to poor intercrystalline porosity.

2130-2138

Limestone: Gray, fine grain, fossiliferous, saturated with "oily to greasy" organic material, fair intergranular pinpoint, fossil cast and small vugular porosity, appears to be fair reservoir, tight in part.

The core barrel jammed at 2138, core pulled, hole reamed and drilled to 2140.

CORE #3: 2140-2150: Cored 10 feet, recovered 10 feet.

2140-2142

Limestone: As Above, poor to fair intergranular and small vugular porosity, possibly tight - with interbedded shale: dark gray, dolomitic very fine granular texture, trace of bleeding gas (under microscope), very poor intergranular porosity, looks very tight.

2142-4150

Limestone: Gray, very fine grain, hard, dense, laminated saturation with "greasy" luster, very poor intergranular porosity, some bleeding gas under microscope, mostly looks very tight.

The Winfield was tested by Drill Stem Test #2 and is considered to be gas productive.

CORE #4: 2175-2203: Cored 28 feet, recovered 27 feet.

TOWANDA 2174 (-72) - Electric Log

2175-2188

Limestone: Light gray to gray, very fine grain, dolomitic, earthy, crystalline in part, cherty with various size chert nodules, fair to good intergranular and intercrystalline and scattered pinpoint porosity, porosity is very fine to fine and appears mostly tight.

Note: 2179'2" to 2179'3" - thin bed of black waxy shale. A slight show of gas (13 units) was recorded from 2176-2183.

2188-2199

Limestone: Gray to dark gray, very fine to fine grain, saturated with dark "greasy" organic material, mostly hard, dense poor to fair (very fine) intergranular porosity, looks mostly tight.

2199-2203

Limestone: Gray, very fine to fine grain, cherty with scattered chert nodules, mostly dense, fair intergranular (fine) porosity, looks tight.

The Towanda was not tested further by drill stem test and the core was not analyzed further. Visual examination of the core indicates that the Towanda is "tight" due mostly to the fine to very fine pore spaces. The density log indicates high porosities from 2174-2188. It is considered that the Towanda is potentially productive after proper formation treatment.

The cores were analyzed in part by Core Laboratories. A copy of the core analysis is included. Several core samples were submitted to Halliburton for analysis at their laboratory in Duncan, Oklahoma. A copy of Halliburton report is included.

FT. RILEY 2202 (-100)

2202-2211

Limestone: White to gray, very fine to fine grain, earthy, slightly cherty, poor to fair intergranular porosity, no show of gas.

2211-2216

Limestone: White, very fine crystalline, oolitic and oolitic, good oolitic porosity, poor intercrystalline porosity, looks tight due to poor intercrystalline porosity.

2222-2238

Limestone: White, very fine to fine grain, earthy to chalky, fossiliferous in part, fair to good intergranular porosity, possibly tight. A slight show of gas (11 units) was recorded from 2227-2233.

2238-2262

Limestone: White, fine to medium grain, earthy to chalky, crystalline in part, fossiliferous, fair to good intergranular, vugular, pinpoint and fossil cast porosity, slight show of gas (11 units) from 2248-2252.

The Ft. Riley was tested by Drill Stem Test #3 and is considered to be potentially gas productive.

2280-2298

Limestone: White to light gray, fine to medium grain, fossiliferous with fusilinids, cherty, good intergranular, pinpoint and intrafossil porosity. Shows of gas were recorded throughout this interval ranging from 7 to 36 units.

This interval was included in Drill Stem Test #4 and is considered to be potentially gas productive with a good possibility of considerable water production.

BASE of the FLORENCE 2300 (-198)

ROTARY TOTAL DEPTH 2335 (-233)

II. DRILL STEM TESTS

Drill Stem Test #1 2028-2096 (Herington-Krider)

Tool Open: Initial 60 minutes + Final 60 minutes = 2 hours
Strong blow with gas to surface in 25 minutes

Gauged:	Initial Open	Final Open
	40 mcf/30 min.	145 mcf/70 min.
	55 mcf/45 min.	152 mcf/75 min.
	76 mcf/60 min.	158 mcf/90 min.
		164 mcf/105 min.
		167 mcf/115 min.

Gas burns with blue to yellow flame. Gas sample taken 90 minutes after gas to surface at end of test.

Recovered: 270 feet of mud
Chlorides: 175,000 ppm - mud before drill stem test
175,000 ppm - top drill stem test fluid
175,000 ppm - middle drill stem test fluid
175,000 ppm - bottom drill stem test fluid

IBHP: 589#/60 min.	IFP: 71-125#
FBHP: 598#/120 min.	FFP: 89-125#
HP: 1126-1054#	BHT: 78°F. (98°F?)

Drill Stem Test #2 2100-2175 (Winfield)

Tool Open: Initial 60 minutes + Final 105 minutes = 165 minutes
weak blow increased to strong, gas to surface in 85 minutes.

Gauged: 3,710 mcf/90 min.
3,950 mcf/105 min.
4,300 mcf/120 min.

Gas sample taken 36 minutes after gas to surface

Recovered: 285 feet of mud

IBHP: 589#/60 min.	IFP: 53/98#
FBHP: 625#/120 min.	FFP: 107/196#
HP: 1126-1108#	BHT: 78°F.

Drill Stem Test #3 2220-2265 (Ft. Riley)

Tool Open: Initial 60 minutes + Final 95 minutes = 155 minutes
Weak blow and died, flush tools, open with weak blow throughout on initial open. Strong blow on second opening, gas to surface in 145 minutes (G.T.S. 85 minutes after second open)

Gauged and stablized at 3,710 mcf. No gas sample was taken.

Recovered: 150 feet of mud

IBHP: 535#/60 min.	IFP: 53/89#
FBHP: 660#/120 min.	FFP: 80/107#
HP: 1171/1162#	BHT: 78°F.

Drill Stem Test #4 2274-2335 Florence

Tool Open: Initial 60 minutes + Final 60 minutes = 2 hours
 Strong blow on first open, fair blow on second open.
 (No G.T.S.)

Recovered: 410 feet of mud

IBHP: 625#/60 min.	IFP: 62/160#
FBHP: 642#/120 min.	FFP: 178/250#
HP: 1225/1198#	BHT: 78°F.

III. STRUCTURAL GEOLOGY

Detailed structural comparisons with other wells in section 18-21s-17w are tabulated below.

Formation	Aspen #1 Froetschner	M & R C SW NW	Pickrell NE NW NW	CSO NE SE SW
Elevation KB	2102	2094	2113	2081
Anhydrite	+993	+989	+981	+986
Base Anhydrite	+968	+964	+956	
Hollenberg	+84	+78	+71	
Herington	+50	+46	+34	
Winfield	-2	-4	-17	
Towanda	-72	-74	-87	-69 (?)
Ft. Riley	-100	-102	-115	
Total Depth	-231	-1211	-1867	-1957
Anhydrite-Hollenberg	909	911	910	
Anhydrite-Herington	943	943	947	
Anhydrite-Winfield	995	993	998	
Anhydrite-Towanda	1065	1063	1068	1055 (?)
Anhydrite-Ft. Riley	1093	1091	1096	

IV. REMARKS and RECOMMENDATIONS

Production casing was set to further test the productive capacity of the Chase Group.

Based on all the available data it is considered that the #1 Froetschner is gas productive. It is recommended that the following zones be tested further through perforations.

Krider : 2074 ft. to 2084 ft.

Winfield: 2105 ft. to 2118 ft.
2126 ft. to 2140 ft.

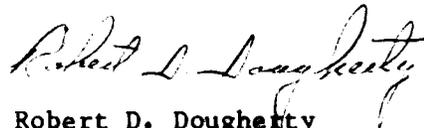
Towanda : 2176 ft. to 2188 ft.

Ft. Riley: 2223 ft. to 2253 ft.

Florence : 2282 ft. to 2298 ft.

Drill Stem Test #1 indicates possible water production from the Florence.

Respectfully submitted,



Robert D. Dougherty
Geologist