JENNINGS DRILLING COMPANY

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Oil and Gas Production

February 14, 1983

GEOLOGIC REPORT

Jennings Drilling Company
#1 Shannon
NE SW NE 20-9S-22E
Leavenworth County, Kansas

Daily Progress:

2-7 Moved on, spud at 9:00 pm
2-8 WOC, 7" at 172' with 90 sacks, plug down 5:15 am
2-9 1097', drilling
2-10 1340', drilling
2-11 RTD 1532' (LTD 1530'), going in hole to plug, D & A

Service Companies:

Contractor: EDCO Drilling, Rig 2
Drilling Mud: Hughes Drilling Fluids
E-Logs: Great Guns
Gas Detector: Gould's Logging
Drill Stem Tests: Cheney Testing

Formation Tops:

Formation	#1 Shannon NE SW NE 20-9S-22E	Relation to #1 Wake Appx. C NE 25-9S-21E	Relation to #1 Sloan SW SW NE 16-9S-22E
Haskel	82 (+922)		+8
Lansing	203 (+801)	+11	+17
B. Kansas City	541 (+463)	+11	+4
Cherokee	800 (+204)	+7	flat
Bartlesville SS	1064 (-60)	-	+3
Coal Marker	1096 (-92)	-1	-
U. McLouth SS	1265 (-261)	-9	-
Burgess SS	1314 (-310)	-1	-7
Miss. Spergen	1337 (-333)	-11	-2
Warsaw	1365 (-361)	-16	-
Osage Porosity	1490 (-486)	DNP	-
LTD	1530 (-526)	-	-

Shows and DST's:

E-Log Depths

1065-83 Bartlesville Sandstone
Sandstone, quartzose, medium grained, well sorted, micaceous, good porosity, few bubbles in samples, gas kicks: hot wire, 10 units; chromatograph, 90 units.

DST #1 1069-1079 (1067-77 E-Log depth), straddle test, TD at 1109, 30' of tail pipe
30-30-30-30
Recovered: 150' gas cut muddy water 650' gas cut saltwater (16,000 ppm, Rw = .23 @ 80 degrees)
Flow Pressures: 147-314, 354-383
Shutin Pressures: 393-393
Hydrostatic Pressures: 521-511
Bottom Hole Temperature: 74 degrees

1158-67 Lower Bartlesville Sandstone
Sandstone, quartzose, coarse grained, subrounded, well sorted, some brown cement, few gas bubbles, gas kicks: hot wire, 5 units; chromatograph, 36 units.

1316-36 Burgess Sandstone
1316-26 Sandstone, fine to medium grained, quartzose, subrounded, well sorted, fair intergranular porosity, silica cement, show dead oil, trace of tar, no flourescence, slight cut, gas kicks: hotwire, 2 units; chromatograph, 20 units.
1326-36 Sandstone, medium grained, quartzose, subrounded, well sorted, good porosity, good show of tar (lighter than above), slight odor, slight flourescence, fair cut, gas kicks: hotwire, 4 units; chromatograph, 35 units.

DST #2 1319-32 (E-Log depths), straddle test, TD at 1530', 198' of tail pipe
30-30-30-30
Recovered: 365' gas cut muddy water (9,000 ppm)
Flow pressures: 19-108, 157-177
Shutin pressures: 442-442
Hydrostatic Pressures: 648-648
Bottom Hole Temperature: 86 degrees

Log Analysis:

Depth	Porosity	Rt	Sw	Remarks
Bartlesville SS				
1066-78	21	2.5	100	Rw = .23, M = 1.8
1078-80	19	2.5	100	
1080-82	18	3	100	
Bartlesville SS				
1060-62	14	5	100	Rw = .23, M = 1.8
1062-64	16	4	100	
1064-66	12	4	100	
Burgess SS				
1316-18	18	7	79	Rw = .21, M = 1.8
1318-20	20	7	70	
1320-22	20	8	66	
1322-24	19	10	65	
1324-26	20	13	51	
1326-28	20	14	49	
1328-30	21	15	46	
1330-32	21	14	48	
1332-34	18	12	60	
Miss. Warsaw				
1384-86	15	28	53	Rw = .2, M = 2.0
1386-88	15	22	65	No show in samples
1388-90	19	30	43	

Recommendations and Summary:

Due to lack of commercial shows of hydrocarbons, it was recommended that the Jennings Drilling Company #1 Shannon be plugged and abandoned. The hydrocarbon shows were significant, especially those in the Burgess, and may indicate that commercial hydrocarbons are trapped in the vicinity.

The shallow beds conformed well with the surface structure map and confirmed the prospect was drilled on a viable surface structure. The Lansing top was +11 to the #1 Wake Well, two miles southeast, and +17 to the #1 Sloan Well, one mile northeast. From that level and deeper, the structural advantage of the #1 Shannon deteriorated, expecially below the top of the Cherokee Shale. The Shannon Well was -11 and -2 to the Wake and Sloan Wells, respectively, on the top of the Mississippian.

The sample shows of the Bartlesville sands at 1066-82 and 1060-66 were similar. The upper one tested gas cut saltwater, while no DST was run on the lower sand. Either might be productive if found in a more favorable structural position.

Hydrocarbon shows in the 22 foot Burgess Sandstone (1314-36) deserve some discussion. The upper half contained dead oil and a trace of tar while the lower half contained a good show of tar which appeared of lighter gravity. A 20 unit gas kick was recorded in the upper part while 35 units was recorded on the chromatograph over the lower part. Log calculations confirmed the apparent anomolous condition of the lower portion of a relatively homogeneous sand having higher saturation. The upper part averaged 70% SW while the lower part averaged about 50% SW. Only gas cut saltwater was recovered in a test that covered most of the sand.

The good show of tar, which I estimate having a 8-10 degree API gravity, may indicate a commercial hydrocarbon reservoir is nearby. A similar show of tar was documented in the McLouth Sandstone downdip from commercial gas production in the McLouth Pool eleven miles west of the Shannon Well. A few wells in the Easton Pool produce 17 degree API gravity oil while most of the oil is 23 gravity. I suspect the 17 gravity oil is downdip to the lighter oil.

The anomolous inverted hydrocarbon saturation in the Burgess sand in the Shannon well may indicate the sand may have at one time contained a 10 foot gas column overlying a 12 foot oil column. Regional tilting later in Pennsylvanian and continuing into the Permian may have caused the lighter hydrocarbons to migrate updip to the southeast. Water replaced most of the more mobile gas in the upper part of the reservoir and also replaced much of the less mobile oil in the lower part of the reservoir. It is also possible the upper part of the reservoir contained lighter, more mobile, oil and the lower part contained heavier, less mobile, oil and tar. With tilting, more of the hydrocarbon in the upper part would have been displaced by water. The quantity of tar which remained behind probably represents residual saturation.

A likely area for future consideration is the S/2 of section 21 and section 28-9S-22E, southeast of the #1 Shannon. A surface Haskel point in the SW SW SE of 21 was +936, 14 feet higher than in the Shannon Well, and a core point in the NE SE SE of 29 encountered the Haskel at +929, 7 feet higher than in the Shannon Well. The area most definitely merits another test well.

Respectfully submitted,

Martin K. Dubois

MKD:td