

GEOLOGICAL WELL SUMMARY

- I. Well: L. D. Feldman Oil and Gas & Union Oil Co. of California
No. 1 Federal-Elliott (Wildcat)
- II. Location: Section 27, Township 11 South, Range 38 East; 5
miles north, 2 miles west of Bronco
- III. Commenced: 1/5/56
At Total Depth: Logged 4/15/56
Completed:
Total Depth: 12,201' Schlumberger (12,218' driller)
Elevation: 3898', Kelly bushing (13.60' above ground & reference
point for drilling and log measurements)
- IV. Samples: Two sets saved from 2100'-Total Depth. The Scouts
picked up one set weekly and transported to the Hobbs
Sample Out. One foot core chips were sacked and given
to the Union Geological Department, Roswell, New Mexico.
Drilling time was kept both on pad and by Star Recorder.
All samples and cores were examined and a description is
attached.
- V. Casing: Surface, 13-3/8" at 355' w/265 sacks
Intermediate, 9-5/8" at 4455' w/1600 sacks
Oil String, 5-1/2" at 12,078 w/800 sacks
- VI. Cores: Cut with Hycalog 6-1/8" core head except Core #2 by
Hill-Mac. (For detailed description please refer to
attached sample and core descriptions)
- Core No. 1 (Queen Sand, "Caprock Pay" equivalent) 3840-3890':
Recovered 50' of salt, red shale and anhydrite. No shows
of oil, gas, or water
- Core No. 2 (Basal Wolfcamp? taken after recovery of oil &
gas on DST No. 2) 9485-9505': Recovered 18 1/2' of red
shale and non-porous, fossiliferous limestone. No shows
of oil, gas, or water
- Core No. 3 (Woodford/Devonian contact) 12,084-12,131':
Recovered 47'. Top 1' was Woodford Shale, remainder
was Devonian Dolomite. Core showed slight to good oil
saturation on fracture planes from 12,088-12,096, 12,102-
12,119', 12,121-12,130'. No matrix porosity or satura-
tion was present. Drillstem test #10 of this interval
tested mud cut oil, no water
- Core No. 4 (Devonian) 12,132-12,167': Recovered 35' - all
dolomite with scattered fair to good horizontal and ver-
tical fracturing and slight oil stain on fracture planes.
Drillstem tests #11 and #12 recovered only small amounts

of drilling mud. No shows of oil, gas, or water on test

Core No. 5 (Devonian) 12,168-12,218': Recovered 48' of dolomite with scattered slight porosity and no fracturing or oil shows. Porosity looked wet. No test was run on the presumption that this interval would yield no fluid natural. Core analysis of selected intervals supported this contention.

VII. Drillstem Tests: Twelve, all taken with the Johnson tool (2 packer failures, 1 re-test)

DST #1 (San Andres) 5127-5155': Open 1 hr. 10 min., faint blow air for 5 minutes and died. Recovered 10' mud. FP 0-95#; 30 min. SIP 95#; HSP 2665#

DST #2 (Basal Wolfcamp) 9450-9485': Open 2 hrs. Gas to surface in 40 min. Recovered 210' heavily gas cut mud, 1640' heavily oil and gas cut mud, and 180' mud cut oil. FP 300-750#; 30 min. SIP 3200#

DST #3 (Upper Pennsylvanian) 9809-9830': Open 3½ hrs., medium blow decreasing steadily. Gas to surface 2¼ hrs. Recovered 90' gas cut mud, 8150' salty sulfur water. FP 315-3720#; 1 hr. SIP 3740#; HSP 4955#

DST #4 (Canyon Lime) 10,420-10,470': Open 1 hr., weak blow air for 35 min. and died. Recovered 90' mud. FP 0#; 30 min. SIP 3195#; HSP 5085#

DST #5 (Canyon "Reef" Lime) 10,536-10,562': Open 4-3/4 hrs., medium blow air decreasing slightly to end of test. Recovered 60' mud cut salt water, 1380' slightly gas cut salt water. FP 0-675#; 30 min. SIP 3420#; HSP 5175#

DST #6 (Bend Sand Cgl.) 11,250-11,373': Open 2 hrs., weak blow air 1 hr. 25 min. and died. Recovered 1000' water blanket, 180' mud. FP 450#; 30 min. SIP 1970#; HSP 5570#

DST #7 (Bend Sand Cgl.) 11,370-11,429: Packer failed

DST #8 (Bend Sand Cgl.) 11,256-11,429': Packer failed. A Johnson caliper-Sub Survey was run at this point.

DST #9 (Bend Sand Cgl.) 11,240-11,429': Open 3 hrs. 40 min., weak blow air increasing to fair. Recovered 450' slightly gas cut mud. FP 210-835#; 30 min. SIP 640#; HSP 5730# (Tool partially plugged)

DST #10 (Devonian) 12,092-12,131': Open 5½ hrs., good blow air. Recovered 5248' gas in drillpipe, 330' heavily mud cut oil. FP 0-0#; 45 min. SIP 375#; HSP 5790#

DST #11 (Devonian) 12,135-12,167': Open 50 min. No blow at surface. Recovered 8 feet mud. (Chart showed tool was plugged.)

DST #12 (Devonian) 12,129-12,167': Open 1½ hrs., very weak blow air dead in one hour. Recovered 5 feet mud. Pressures 0-0#; HSP 5790#

VIII. Electrical Surveys:

- (1) Halliburton Caliper Log, 355-4457'
- (2) Johnson Caliper Sub, 9400-11,429'
- (3) Schlumberger ES, 4454-12,201' (TD).
Microlog & Micro-caliper - selected zones
Gamma Ray, Surface-12,201'

IX. Mud Program:

- (1) Mudded up for Core No. 1 (Caprock Sand) with weight 11#, viscosity 39 secs, and water loss 21 cc's.
- (2) Increased viscosity before setting intermediate in San Andres at 4455. Maintained good quality mud properties in order to assure good samples and a clean hole to 5350'. At this point contractor jetted pits and drilled with clear water to 8850'.
- (3) At 8850' mudded-up again for Wolfcamp section. Diesel oil was added to the mud. At 9175' mud properties were: (1) Weight 9.1#, (2) Viscosity 39 secs., (3) Water Loss 40 ccs.
- (4) Water loss was reduced for DST No. 2 and maintained below 12 ccs. to total depth after testing oil in this zone. Viscosity was increased at 11,000' for the Bend Shale.
- (5) At 11,800' weight was reduced to 8.9# in order to prevent excessive hydrostatic weight on the Devonian when it was penetrated. Weight was maintained at 8.8# through the Devonian with an average viscosity of 88 secs, and an average water loss of 4 ccs.

The above mud program was successful in providing good samples and ideal coring and testing conditions. The electric log sondes had no difficulty in going to bottom during that operation.

X. Formation Records: (Gamma Ray depths)

Elevation 3898' Kelly bushing (13.6' above ground)

<u>Formation</u>	<u>Depth</u>	<u>Datum</u>	<u>Relative to Los Nietos</u>
Rustler Anhydrite	2325	+1573	21' high
Yates	3080	+ 818	9' high
Caprock Sand	3844	+ 54	4' low
Penrose Sand	4000	- 102	3' low
San Andres	4443	- 545	1' low
Glorieta	5887	-1989	4' high

<u>Formation</u>	<u>Depth</u>	<u>Datum</u>	<u>Relative to Los Nietos</u>
Clearfork	6547	-2649	2' high
Fullerton	7140	-3242	Flat
Abo	7821	-3923	4' low
Huesco (Wolfcamp)	9065	-5167	1' high
Pennsylvanian (?)	9482	-5584	Flat
Mississippian	11,435	-7537	29' low
Woodford	12,000	-8102	5' low
Devonian	12,070	-8172	Flat

XI. Significant Oil Shows:

- A. San Andres: Cuttings showed fair to good oil saturation and slight porosity from 5145-5180' which would correspond with a depth of approximately 5130-5170' by electric log. The microlog shows no effective porosity through this section. This zone does not produce in the vicinity. However, it is the writer's impression that having a good quality of saturation the zone would have definite oil-producing possibilities should it develop better porosity of fracturing. The first good porosity in the San Andres at 5190' carried dead asphaltic oil stain and was definitely water bearing.
- B. Glorieta and Clearfork: Scattered very tight oil shows of little importance. All porosity zones were water-bearing.
- C. Basal Wolfcamp: Samples indicated fair oil stain and good porosity in an oolitic limestone from 9472-9485'; this corresponds with the zone from 9460-80' on the electric log which shows 9 feet of net permeable section through that interval. DST No. 2 indicated possible production in this zone. It produces in the Gladiola and Bronco Fields.
- D. Pennsylvanian Lime: (Canyon)
 - (1) A slight show of oil and good porosity was noted in a drilling break 9817-9824'. DST No. 3 in this interval recovered gas to surface and salty sulfur water. Microlog shows slight porosity 9816-20' and good porosity 9820-24'.
 - (2) A slight show and fair porosity 10,450-10,470' was tested in DST No. 4. The test recovered only drilling mud. Microlog indicates no effective porosity.
 - (3) A coral reef section was drilled from 10,540-10,550' and had excellent cellular porosity, good fluorescence and good light oil stain. DST No. 5 recovered gas cut salt water. It is apparent that an error in depth existed at this time, and the corresponding electric log depth of the zone carrying the show was from 10,555-10,567'. This zone was very porous and should be checked in higher wells.

E. Pennsylvanian Sand (Bend)

- (1) Slight oil stain and fluorescence from 11,300-11,320', 11,345-11,355', and 11,360-11,370' was tested in DST No. 6, for a recovery of drilling mud. Microlog shows very scattered thin porosity zones in sand stringers through this section. A depth error of approximately 15 feet necessitates subtracting that amount from drilling depths in order to reconcile the electric log depths. Best porosity by Microlog was 11,345-11,352'.
- (2) A good show of oil was encountered in a quartzitic conglomeratic sand from 11,395-11,420' by samples. Allowing for sample log and hole correction, this show originated from a depth of 11,358-11,374' and 11,390-11,396'. Drillstem testing (nos. 7, 8, and 9) was unsuccessful in recovering fluid from the formation and only showed for slightly gas cut mud. Fair porosity is developed from 11,365-11,373 by microlog. It is believed that this zone would produce oil if fracture treatment were successful.
- (3) Devonian: This zone was cored and was found to have many vertical fractures with oil saturation on the fracture planes in the upper 76 feet of Devonian. No saturation was found in the matrix of the rock. The last core from 12,160-12,218' (subtract 15 feet to correct to electric log) had indications of water in slight porosity and was entirely void of oil shows. The only hope for production from this zone would be an extremely successful fracture treatment thereby creating communication between the well bore and the associated reservoir, which may be feeding the oil to the fractures.

XII. Conclusions:

- (A) Structure: This test was essentially flat to the Los Nietos well, one location to the east.
- (B) Possible Zones of Production:
 - (1) Devonian, from 12,075-12,130'
 - (2) Bend Sand, from 11,345-11,350' and 11,365-11,373'
 - (3) Wolfcamp Lime, from 9467-9476'

XIII. Contractor: Coroco Drilling Company (H. R. Holder - Pusher)

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