



00255354

OPERATOR: A. T. Skaer
924 Patterson Building
Denver, Colorado 80202

LEASE: Whittier D-1

LOCATION: C NW NW Section 25, T9N, R53W,
Logan County, Colorado

ELEVATION: G.L. - 4155'
K. B. - 4164'

SPUD DATE: 18 February 1967

COMPLETED: 23 February 1967

TOTAL DEPTH: 4948'

SURFACE CASING: 8-5/8" at 118' with 25 sack cement.

CORE DATA: Core No. 1 - 4853-4888' "J"

DRILL STEM TEST: Test No. 1 - 4862-4870' "J"

ELECTRIC LOGS: Schlumberger - IES from 4916 to 134'.
Schlumberger - Micro Log from 4908 to 4000'.

CONTRACTOR: EXETER DRILLING COMPANY

MUD: Chemical-gel with oil.

STATUS: Ran 5 1/2" production casing to attempt completion.

ELECTRIC LOG FORMATION TOPS:

<u>Formation</u>	<u>Depth</u>	<u>Datum</u>
Niobrara	3900'	+264
Bentonite	4646'	-491
"D" Sand	4742'	-587
"J" Sand	4854'	-699
Top of pay	4862'	-707
Log T. D.	4916'	-761

Drilled from 4916' to 4948' after running logs and taking drill stem test.

ELECTRIC LOG ANALYSIS:

<u>Formation</u>	<u>Zone</u>	<u>Effective Porosity</u>	<u>Water Saturation</u>
"D" Sand	4760-4764	19.5	100
"D" Sand	4765-4783	21.0	95
"J" Sand	4862-4870	19.0	43
"J" Sand	4883-4890	20.0	65

CORE DATA:

Core No. 1 4853-4888'
 Cut 35' - Recovered 35'.
 2' Shale.
 7' Sand.
 4' Shale and sand reworked.
 8' Sandstone, fine grained, highly fractured.
 12' Shale, gray.
 2' Sand, wet.

CORE ANALYSIS:

Sample Number	Depth-Ft.	Permeability		Porosity Per Cent	Saturation	
		Millidarcys H	V.		Oil	Water
1	4855-56	0.1	0.1	10.3	4.9	71.9
2	4856-57	0.1	0.1	8.7	2.3	87.3
3	4857-58	0.1	0.1	13.3	1.5	84.2
4	4858-59	0.1	0.1	14.6	1.4	80.8
5	4859-60	0.1	0.1	13.3	1.5	81.2
6	4860-61	0.2	0.1	14.1	1.4	81.5
7	4861-62	1.0	0.2	15.2	1.3	79.5
8	4862-63	21.	19.	15.2	20.4	41.5
9	4863-64	123.	93.	15.3	18.3	49.0
10	4864-65	30.	8.6	16.1	18.6	50.3
11	4865-66	53.	29.	17.1	18.7	52.0
12	4866-67	79.	34.	17.0	17.6	53.5
13	4867-68	52.	25.	18.1	18.2	44.7
14	4868-69	5.5	0.9	17.7	16.9	50.3
15	4869-70	16.	11.	17.3	17.3	48.0

DRILL STEM TEST DATA:

Test No. 1 - 4862-70'
 Tool open 2 hours. Shut in 30 minutes for final shut in.
 Recovered:
 2130' gas in drill pipe.
 30' gas cut mud - .18 barrel.
 Initial Flow Pressure 58#
 Final Flow Pressure 60#
 Final Shut In Pressure 385#
 Initial Hydrostatic 2609#
 Final Hydrostatic 2598#

CONCLUSION:

Due to show of oil in core and structural position with Whittier C-1 in the NE NW of Section 25, as well as loss of mud while coring, it was recommended that 5 1/2" casing be set to attempt completion in the "J" sand from 4862-70'.

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WHITTIER D-1
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- February 21, 1967 Drilled to 4948' - conditioned hole and laid down drill pipe.
- February 22 and 23, 1967 Ran 5½" O.D. 15.5# casing - 112 joints - 4947'.
Centralizers at 4936, 4886, 4847, 4814, 4782 and 4738'.
Scratchers - 4886-4846'.
Cemented with 150 sax 50-50 Posmix 3% salt by weight of water.
Bumped plug with 1600# - released - float held.
Set pipe in slips - released rig.
Moved in completion rig.
Swabbed hole to 4450'.
Ran GammaRay log 4924-4450'.
Perforated with 3 - 90 gram jets per foot at 4862-67'.
Swabbed hole dry.
- February 24, 1967 Well making slight amount of gas. Overnight fillup 1 barrel oil and drilling mud.
Mixed 50 gallons Controlflow in 24 barrels oil. Spotted on bottom. Filled hole and put 3 barrels away.
Unable to pump the remainder away with 3300#.
Left well shut in.
- February 27, 1967 Fluid 15' from surface.
Swabbed hole dry.
- February 28, 1967 Overnight fillup - 1 barrel oil.
Treated with 500 gallons 28% acid.
Breakdown pressure -2100#.
Pumped in 8 barrels at .3 BPM at 1200#; then 4 barrels at .7BPM at 1400#. 200# break on last barrel.
Casing capacity - 117 barrels.
Swabbed back - 120 barrels.
- March 1, 1967 Overnight fillup - 1 barrel.
Pumped into formation at 2 BPM at 1200#.
Total into formation - 67 barrels.
Load to recover - 182 barrels.
Swabbed hole down - recovered 120 barrels.
Swabbed 3 hours - recovered 2 barrels.
- March 2, 1967 Overnight fillup - 1½ barrels oil.
Hooked up to frac.
Filled hole - pumping at 3300# at 6 BPM. Broke to 2600# at 22 BPM.
After 23 barrels with 500# sand in formation it screened out.
Unable to displace.
Moved rig to Whittier A-2 while waiting on 2½" tubing.

March 3, 1967 Ran 2½" tubing with saw-tooth collar to wash sand out of hole.
Found top of sand at 4709'.
Sand in hole -214'.

March 4, 1967 Circulated sand out of hole.
Fluid down 1200' - lost 8 barrels while circulating.
Pulled tubing - swabbed hole down.

March 5, 1967 Overnight fillup - 5 barrels oil.
Ran Baker packer on 2½" tubing.
Set packer at 4836'.
Tubing capacity - 28 barrels.
Filled hole with 89 barrels.
Put 2300# on annulus.
Breakdown pressure - 5500#.
Average pressure - 5200#.
Maximum pressure - 5800#.
Average rate - 12.5 BPM.
Final pressure - 4900#.
Mixed 3000# sand (20-40) in 6000 gallons. Mixed 330# 8-12 beads
with 1000# sand (20-40) at 1/2# per gallon.
Mixed 120# 8-12 beads with 300# (10-20) sand.
Flushed with 40 barrels (12 over tubing capacity).
Total load - 370 barrels.
Instant shut in pressure - 1100#.
Vacuum - 3 minutes.
Pulled 2½" tubing and packer.
Found top of fluid 1450' below surface - swabbed hole down.
Recovered 82 barrels - there was 72 barrels in casing when
swabbing started.
30 minute fillup - 6 barrels.
Total recovered - 98 barrels.
282 barrels to recover out of last frac job.

March 6, 1967 Overnight fillup - 1100'.
Swab down 26 barrels.
Next 10 hours recovered 44 barrels.
Total recovered 168 barrels.

March 7, 1967 Overnight fillup - 1100'.
Swab down 23.52 barrels.
9 hours recovered 28 barrels.
Total recovered - 221 barrels.

March 8, 1967 Overnight fillup - 1100'.
Swab down 18 barrels.
Total recovered - 239 barrels out of 370 barrels.
No water had been recovered.
Ran 2" tubing as follows:

Perforated Nipple	3.12'
Seating Nipple	.95'
Baker anchor	3.75'
164 joints 2" tubing	4893.49'
Total	4901.31'

March 8, 1967
(Continued)

Anchor is 4 joints above seating nipple.

Ran pump and rods.

2"x1 $\frac{1}{2}$ "x16' BHD Pump	16.00'
194 - 3/4" rods	4850.00'
3/4" x8' pony rod	8.00'
Polish rod in hole	15.00'
Total	<u>4889.00'</u>

Put 2' stretch in tubing and also spaced pump 2'.

Clamped off.

Setting surface equipment.



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April 11, 1967 Pulled rods, pump and 2" tubing.
Ran sand pump prior to water frac.
Fraced with 13000# 20-40 sand and 3000# 6-8 beads.
Breakdown pressure 2600#
Minimum pressure 1750#
Final Pressure 1900#
Maximum rate 41 BPM
Average rate 37.5 BPM
Vacuum 8 minutes
Mixed sand 1# per gallon and beads 1/2# per gallon.
Shut in.
Load to recover - 702 barrels.

April 12, 1967 Top of fluid 4100' below surface.
Swabbed back 346 barrels - Average of 26 barrels per hour last 4 hours.
Cleaned sand out of hole.

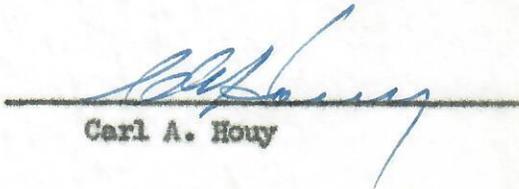
April 13, 1967 Top of fluid 4100' below surface.
Checked sand fillup - hole clean.
Ran 2" tubing, rods and pump as follows:

Perforated nipple	3.12'
Seating nipple	.95'
Baker anchor	3.75'
163 joints 2" tubing	4869.49'
Subs (8', 6', and 4')	18.00'
Total	<u>4895.31</u>

Anchor 4 joints above seating nipple.

2"x1 $\frac{1}{2}$ "x16 BHD pump	16.00'
194 - 3/4" rods	4850.00'
3/4" ponys (2', 4' 6')	12.00'
Polish rod in hole	16.00'
Total	<u>4894.00'</u>

Spaced pump and put well to pump.
Have 356 barrels of frac water to recover.


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