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COLO. OIL & GAS CONS. COMM.

FINAL WELL REPORT

PIEDMONT EXPLORATION, INC.

#1 Doll Estate

NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 14, T7N, R58W
Weld County, Colorado

DVR	
FJP	
HHM	✓
JAM	✓
JJD	✓
RLS	
OEM	

Dean L. Cummins
Geologist

✓

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GENERAL INFORMATION

WELL: #1 Doll Estate
OPERATOR: Piedmont Exploration, Inc.
CONTRACTOR: Denton Bros., Rig #3, Casper, Wyo.
LOCATION: 1980' fr SL, 660' fr WL (NW $\frac{1}{4}$ SW $\frac{1}{4}$ 14, 7N, 58W)
COUNTY: Weld
STATE: Colorado
FIELD: Grail
ELEVATIONS: 4798.5 GR; 4810 KB (surveyed by Cecil Osborn)
COMMENCED: August 8, 1980
COMPLETED DRILLING: August 19, 1980
WELLSITE GEOLOGIST: Dean L. Cummins
SURFACE CASING: Ran 5 joints of 8 5/8ths 25# casing, set at 177.8' with 125 sacks regular cement, 3% CaCl
PRODUCTION CASING: Ran 166 joints of new 4 $\frac{1}{2}$ " 10 $\frac{1}{2}$ # casing with Howco Guide Shoe, Howco Differential Fill Float Collar, 5 centralizers. Pipe set at 6441'; plug back TD @ 6401'; cemented with 250 sacks 50-50 Posmix with 2% gel. Bumped plug with 1500#; held for 5 min.; good returns. Set slips in Braden Head and backed off one joint. Released rig @ 8am August 22, 1980.

CORES: None
DRILL STEM TESTS: Two D Sand tests, both misruns. See DST information and charts in appendix
DRILLING MUD: Western Mude Company (Engineer: Crowder); The following properties were observed during the drilling of the D & J Sands: viscosity 59, weight 9.6, ph 8.0, water loss 7.8, mud cake 2/32nds, gel strength 12, viscosity for logging and testing 90.
LOGS: Schl. Induction-SFL log from 6456 to 178; Formation Density Caliper-Gamma Ray from 6456 to 5898, and from 3604 to 3084.
DRILL TIME CHARTS: Martin-Decker one foot penetration rate charts are on file in company offices. See accompanying penetration log.
PERFORATIONS: Schl. Perf 6314-26 and 6332-38 with 36 3 3/8ths Hyperjet II (2 shots per foot).
ACID: Displaced 500 gal of MCA into D Sand; treated fluid with surfactant and KCl; 800# maximum pressure; swabbed hole dry.
FRACTURING: Halliburton 10-1-80, Versafrac; 35,300 gals gel water, 26,500# 20/40 sand, maximum pressure 2000#, injection rate 20 BPM.
STATUS: Put well on pump 10-25-80. IPP 20 BOPD.

DRILLING HISTORY

- 8-8-80: Drilled surface hole with spudder. Drilled 12 3/4ths hole to 177.8 KB. cemented w/125 sacks.
- 8-11-80: Rigged up Denton Bros. Rig #3; drilled out from under surface @ 5pm.
- 8-12-80: Drilling below 1100 @ 7am.
- 8-13-80: Drilling below 3410 @ 7am.
- 8-14-80: Drilling below 4388 @ 7am.
- 8-15-80: Drilling below 5217 @ 7am.
- 8-16-80: Drilling below 5917 @ 7am.
- 8-17-80: Drilling below 6314 @ 7am. Top D Sand 6304.
- 8-18-80: Drilling below 6410 @ 7am. Top J Sand 6384.
- 8-19-80: TD 6456 driller. Ran DST #1 6314-38; misrun.
- 8-20-80: Ran DST #2 6314-35; misrun. Laid down drill pipe. Started to run production casing at 11pm.
- 8-21-80: Plug down at 7am. Released rig.

BIT RECORD

<u>Run</u>	<u>Size</u>	<u>Make</u>	<u>Type</u>	<u>Depth Out</u>	<u>Feet</u>	<u>Hours</u>
1	7 7/8	Security	DT-J	3410	3350	33
2	7 7/8	Reed	Y/2-J	4870	1460	20 3/4
3	7 7/8	Security	FDT	6354	1484	60 1/2
4	7 7/8	Hughes	J-33	6460	106	20

DEVIATION

<u>Depth</u>	<u>Degrees from Vertical</u>
4870	1/2°
6354	1°
6460	1 1/4°

DRILL STEM TESTS

DST #1 - 6314 to 6338. Straddle test. Misrun

Tool opened with a fair blow, increased to bottom of bucket in 4 minutes and remained through flow period.. Pressure gauge run below the straddle indicated the bottom packer seats failed. Fluid in annulus dropped slowly throughout test.

Recovery- 3480' total fluid in 90 minutes. Fluid consisted of 660' mud and 2820' of slightly gas cut muddy water.

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DST #2 _ 6314 to 6335. Straddle test. Misrun.

Tool opened with a fair blow, increased to bottom of bucket in 3 minutes and remained through flow period. Pressure gauge run below the straddle indicated bottom packer seats failed.

Recovery - 3210' total fluid in 90 minutes. Fluid consisted of 240' of mud, 2600' gas cut water, and 370' of highly gas cut mud.

FORMATION TOPS

<u>Formation</u>	<u>Depth</u>	<u>Sea Level Datum</u>
Hygiene Group	3127	
Niobrara	5545	
Fort Hayes	5822	
Carlile	5846	
Greenhorn	5935	
"X" Bentonite	6193	
D Sand	6303	-1493
Huntsman	6345	
J Silt	6366	
J Sand	6384	-1574
Total Depth	6454	



SAMPLE DESCRIPTION

--The following description has been corrected to log tops:

- 6275 to 6302 Shale, gray to dark gray, soft bentonitic.
- 6302 to 6344 D Sand - Sandstone, gray to tan, medium to fine grained, silty and tight at top, fair P & P in middle and base of interval, fairly clean and friable, sub angular, some visible staining, fair dull yellow florescence, no odor. Samples quite poor throughout the interval.
- 6344 to 6367 Shale, gray to black, soft, fissile, bentonitic, slightly pyritic.
- 6367 to 6383 Siltstone, gray to brown, hard, sandy, interbedded with shale.
- 6383 to 6394 J Sand - Sandstone, gray to white, medium grained, sub rounded, medium hard, fairly well sorted, good P & P, faint florescence, faint gassy odor.
- 6394 to 6401 Sandstone as above, with shale partings, silty, hard and tight.
- 6401 to 6454 Sandstone, white, fine to medium grained, fair to good P & P, soft, friable, appears wet, no odor or florescence.

CHRONOLOGICAL HISTORY OF COMPLETION

- 9-25-80 2pm - Planting anchors.
3:30pm - Rigging up Baney service rig. (Jim McClannahan, pusher).
4:30pm - Swabbing water out hole.
6:00pm - Tagged bottom at 6400.
- 9-26-80 7:00am - Cutting off casing and welding bell nipple.
8:00am - Rigging up Schlumberger to perforate.
8:15am - Run in hole with PDC and perf gun. Ran PDC log and perforated 6314-26 and 6332-38. Out of hole at 9:30am.
9:30am - Ran into hole with casing swab. Swabbed hole to perfs by 10:15. Swabbed oil and gas, some drilling mud.
10:45am - Ran swab--rec 300-400 gas and 2 to 3 gals very sl o/c water.
12 noon - Ran swab to 6300--some gas--no fluid rec.
1:30pm - aa
2:45pm - Picked up 80 bbl water--rig up Halliburton to acidize.
4:00pm - Displaced 500 gal MCA into formation.
4:15pm - Shutin well.
- 9-27-80 7:00am - Commenced swabbing hole down.
10:00am - Hole swabbed to perfs--rec all but 14 bbl MCA and 100' of load water. Some gas during swabbing, with slight show of oil. Shutin for 60 min.
11:00am - No fluid.
1:00pm - No fluid.--shutin in for weekend.
- 9-29-80 7:30am - Ran in w/swab--found 120' fluid in hole. Rec. 6000' gas, 120' of acid water and oil emulsion.
9:00am - No fluid.
11:00am - No fluid.--shutin well.
- 9-30-80 7:00am - Swabbed down--rec 700' gas, no fluid.
1:00pm - unloaded 2 500 bbl frac tanks from Z & S Construction.
5:00pm - Filling tanks (Jim's Water Service).
- 10-1-80 7:00am - Swabbed down--rec 700' gas, 50' oil cut acid water.
8:00am - Rigging up Halliburton for Versafrac.
9:30am - Pressuring up.
9:45am - Begin fram--7000 pad, 23,000 treatment, 5300 flush, 26,500# 20/40 sand. Max press 2300#, average press 1800#, average injection rate 20 bbl/min.
10:15am - Completed frac--ISIP 1800, in 5 min 1540. Unrigged Howco and released.
12 noon - Well on vacuum.
3:00pm - Commenced swabbing--fluid level @ 4000'.
5:00pm - Shut down--rec total of 88 bbls, fluid level coming back to 5000', last two pulls gassy and sl oil cut.
- 10-2-80 8:00am - Found fluid @ 3800'--swabbed 90 bbl to get to bottom-- 30' of free oil on top--oil cut increasing--gassing rather heavily. Went to bottom 6401' without swab cup, found 30" of sand in bottom of hole. Shut down at 11:45.
12:45pm - Found 1100' fluid in hole, oil cut frac fluid--gassy.
1:30pm - 700' fluid in hole, approx 20% oil cut, very gassy.
2:00pm - 600', aa.
2:30pm - 500', aa.
3:00pm - 500', aa.
3:30pm - 500', aa.

4:00pm - 500', aa.
4:30pm - 500', aa.
5:00pm - 500', aa.

10-3-80

8:00am - Found 3400' fluid in hole--2000' frac water, 1000' clean oil, 400' water and emulsion (25% oil).
11:00am - 500' fluid--25% oil, very gassy.
12 noon - 600', aa.
1:00am - 500', aa, 45-50% oil.
2:00pm - Unloaded tubing.
5:00pm - Swabbed to bottom--3000' fluid, 50% oil.

10-4-80

8:00am - Ran sand pump--rec 30' sand and cement.
9:45am - Started tubing in hole.
11:15am - Unloaded rods.
1:00pm - Running tubing.
2:30pm - Completed running tubing to 6361.65--set anchor.
3:00pm - Started pump and rods in hole.

10-5-80

8:00am - finished running rods.
10.00am - Released rig.