8/3/62

8/4/62

8/5/62

DST #18 12,065-12,096

Cored #7 12,096-12,118

DST #19 12,099-12,131

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	SUMMARY OF OPERATIONS
5/8/62	Commenced drilling operations @ 10:00 p.m. (spud date).
5/9/62	Set 358' of 13-3/8" surface casing.
5/11/62	Tested 13-3/8" surface casing.
5/21/6 <b>2</b>	Schlumberger ran GR-Sonic Log 350-4400.
5/22/62	Set 4400' of 9-5/8" casing.
5/24/62	Tested 9-5/8" casing.
5/30/62	Cored #1 5874-5894
6/1/62	Cored #2 6215-6245
6/3/62	DST #1 6170-6245
6/4/62	Cored #3 6402-6452
6/4/62	DST #2 6352-6402
6/5/62	DST #3 6402-6452
6/5/62	DST #4 6463-6513
6/6/62	DST #5 6573-6610
6/7/62	Cored #4 6708-6746
6/7/62	DST #6 6615-6708
6/8/62	DST #7 6704-6746
6/10/62	DST #8 6796-6896
6/13/62	DST #9 7433-7533
6/17/62	DST #10 7854-7908
6/20/62	DST #11 8350-8450
6/20/62	Schlumberger ran Sonic, Induction & proxim. log to 8447'.
6/26/62	Cored #5 9109-9129
6/27/62	DST #12 9074-9129
7/1/62	DST #13 9536-9636
7/4/62	DST #14 9800-9895
7/20/62	Attempt DST #15 11,118-11,159 - packers failed.
7/30/62	Attempt DST #16 12,030-12,060 - packers failed.
7/31/62	DST #17 11,830-12,060
8/1/62	Cored #6 12,060-12,086
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## SUMMARY OF OPERATIONS (CONTINUED)

- 8/7/62 DST #20 12,141-12,166
- 8/9/62 Schlumberger ran GR Sonic, Micro Laterolog & prox. log to 12,255'.
- 8/9/62 Welex ran Frac-Finder & shot log to 12,255'.
- 8/12/62 DST #21 12,185-12,330
- 8/22/62 Attempt DST #22 13,568-13,605 packers failed.
- 8/28/62 Cored #8 13,811-13,816.
- 8/30/62 Schlumberger ran GR-Sonic, caliper & dual induction logs to 13,811. Ran Geophone survey 1637, 2820, 4395, 5840, 7927, 10,000, 11,285, 12,020, 13,782.
- 9/1/62 Set 13,816' of 7" production casing.
- 9/2/62 Tested 7" casing.
- 9/5/62 Released Marcum Drlg. Co. rig @ 10:00 a.m.
- 9/7/62 Rig up Expert derrick unit.
- 9/7/62 Schlumberger ran GR correlation log 4400-13,776'.
- 9/7/62 Schlumberger perf 7" csg. 13,698-700; 13,703-710; 13,714-18; 13.722-726; 13,728-731 w/1 (1/2") jet shot per foot.
- 9/9/62 DST #23 perfs 13,698-13,750 through 2½" tbg.
- 9/12/62 Ran 2½" tbg. to 13,760'. Cardinal Chemical attempt to break down McKee formation and spotted 500 gal. 15% acid over perfs 13,698-13,750.
- 9/13/62 Cardinal Chemical acidized perfs. 13,698-13,750.
- 9/14/62 Cardinal Chemical acidized perfs. 13,698-13,750.
- 9/15/62 Cardinal Chemical acidized perfs. 13,698-13,750.
- 9/17/62 Ran 2½" tbg. open ended to 13,768, Halliburton spotted 50 sx. Trinity Inferno neat cement 13,768-13,478.
- 9/17/62 Schlumberger perf. 7" csg. 12,162-12,164 w/2 1/2" holes (Jet).
  Ran 2½" tbg. to 12,165. Set pkr. @ 12,072. Swab & flowed 25
  BNO + 73 BLW + 127 BSW in 15 hrs.
- 9/18/62 Pulled 2½" tbg. & pkr. Set CI retainer @ 12,135. Ran 2½" tbg. w/stinger. Halliburton squeeze Dev. perfs. 12,162-12,164 w/150 sx. Trinity inferno cement. Max. pr. 4000#. Pulled 2½" tbg.
- 9/19/62 Schlumberger perf. 7" csg. 12,070-090; 12,100-12,105 w/1 (1/2") jet shots per foot. Ran 2½" tbg. to 12,060, pkr. @ 11,967. Swab & flow 263 BNO + 73 BLW in 14 hrs. 18/64" ch. Gty 49.1 @ 60°, TP 1450#.
- 9/20/62 Cardinal Chemical acidized perfs. 12,070-12,105.
- 9/21/62 Dev. perfs. SI. Schlumberger set Baker Model "D" pkr. w/exp. plug @12,060. Ran Baker ret. Bridge plug & set @ 11,300'. Perf. 7" csg. 11,112-11,122 w/1 (1/2") jet shot/ft. Ran 2½" tbg. to 11,123, pkr. @ 11,030. Swab 63 BLW in 8 hrs.

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## SUMMARY OF OPERATIONS (CONTINUED)

- 9/22/62 Cardinal Chemical acidized perfs. 11,112-11,122.
- 9/25/62 Cardinal Chemical acidized perfs. 11,112-11,122.
- 9/26/62 Pulled 2½" tbg. Fished & rec. bridge plug.
- 9/30/62 Schlumberger ran & set Baker bridge plug @ 10,305'. Perf 7" csg. 9814-9986 (overall) w/1 (1/2") jet shot per foot.
- 10/1/62 Ran 2½" tbg. to 9989, Cardinal Chemical acidized perfs. 9814-9986.
- 10/2/62 Cardinal Chemical acidized perfs. 9814-9986.
- Moved bridge plug from 10,305 to 9785'. Pulled 2½" tbg. & pkr. Schlumberger perf. 7" csg. 9518-9743 w/1 (1/2") jet shot per foot.
- 10/5/62 Cardinal Chemical acidized perfs. 9518-9743.
- 10/7/62 Moved bridge plug from 9785 to 9483. Pulled tbg. & pkr.
- 10/7/62 Schlumberger perf. 7" csg. 9070-9199 (overall) w/1 (1/2") jet shot per foot.
- 10/8/62 Ran 2½" tbg. to 9199 w/Baker pkr. @9000'. Swab 50 BLW in 2½ hrs. Flow 508 BNO + 85 BLW in 50 hrs.
- 10/10/62 Cardinal Chemical acidized perfs. 9070-9199.
- 10/11/62 Pulled tbg., packer and bridge plug.
- 10/12/62 Ran & set Model "D" pkr. @ 12,050, Model "F" @ 10,048, Model FA @ 9503'. Left part of setting tool in pkr.
- 10/14/62 Milled pkr. & rec. Model FA packer. Rec. Model F pkr.
- 10/14 10/18 Milled and pushed Model D pkr. to 12,135'.
- 10/19/62 Set Baker Model D pkr. @ 12,020', Model F @ 10,032', Model FA @ 9485'.

  Ran Dev. tbg. to 12,020, Penn tbg. to 10,032, Wolfcamp tbg. to 9485'

  and Abo tbg. to 9000'. From Dev. perfs. 12,070-12,105 swab & flow 391

  BNO + 645 BLW in 112 hrs., TP 275# 22/64" choke.
- 10/25/62 From Wolfcamp perfs. 9518-9986 swab & flow 419 BNO + 447 BLW in 106 hrs. 21/64" ch. TP 160#. Shut in 144 hrs. Flow 89 BNO in 6 hrs. 18/64" ch. TP 350.
  From Penn perfs. 11,112-11,122 swab 106 BLW in 24 hrs. Swab dry 1 hr. Shut in 54 hrs. Swab 12 BLW in 3 hrs. Swab dry. Shut in 17 hrs. Swab 15 BLW in 2 hrs. Shut in 13 hrs. TP 0. Swab every 4 hrs. Swab dry.
- 10/31/62 Cardinal Chemical acidized Dev. perfs. 12,070-12,105 w/500 gal. 7½% NE acid + 5 RCN ball sealers + 7 ton CO<sub>2</sub>. Swab & flow 104 BNO + 36 BLO + 12 BAW + 7 BLW in 21½ hrs. Shut in 21 hrs. Flow 154 BNO + 15 BLW in 26½ hrs.
- 11/4/62 Cardinal Chemical acidized Dev. pers. 12,070-12,105 w/2000 gal. 15% NE acid + 20 RCN ball sealers + 10 ton CO<sub>2</sub>. Swab & flow 174 BNO + 36 BLO + 48 BAW + 16 BLW in 50 hrs. SI 14 hrs. Flow 20 BNO + 1 BLW in 4 hrs. On NMOCC potential test flowed 172 BNO + 8 BLW in 24 hrs. 26/64" ch. TP 200#. Flow 479 BNO + 43 BLW in 110 hrs.

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# SUMMARY OF OPERATIONS (CONTINUED)

## 11/4/62 (Continued)

Cardinal Chemical pumped into Penn perfs 11,112-11,122, 10 BLO + 1/2 ton CO<sub>2</sub>. Max. pr. 2000#, flow back 13 BF, swab 13 BLW in 4 hrs. Swab dry. Cardinal Chem. load tbg. w/26 BLO + 1/2 ton CO<sub>2</sub>. Max pr. 2000#. Swab & flow 26 BLO + 10 BLW in 5 hrs. Swab 43 BNO + 27 BLW in 35 hrs. Shut in 12 hrs. Swab 29 BNO + 10 BLW in 9 hrs. Shut in 13 hrs. Flow 12 BNO in 3 hrs. Swab 144 BNO + 36 BLW in 20 hrs. Swab dry 3 hrs.

- 11/7/62 From Abo perfs 9070-9199 flow 68 BNO in 6 hrs. 18/64" choke, TP 275, CP 1500.
- Cardinal Chemical pumped into Penn perfs 11,112-11,122 23 BLO w/CO<sub>2</sub>. Max. pr. 2000#, swab & flow 23 BLO + 2 BNO in  $4\frac{1}{2}$  hrs. Pumped in  $12\frac{1}{2}$  bbl. CO<sub>2</sub> + 5 BLO. Max. pr. 2000#. Swab & flow 35 BNO + 6 BLW in 23 hrs. Shut in 15 hrs. Flow 21 BNO + 5 BLW in 26 hrs. TP 100#.
- 11/16/62 Pulled 4 strings of tubing.
- 11/18/62 Ran Dev. 2½" tbg., set in Baker pkr. @ 12,050'. Flow 169 BNO in 15 hrs.
- 11/19/62 Cardinal Chemical acidized Dev. perfs. 12,070-12,105 w/4000 gal. acid kerosene emulsion (85% + 15%) + 15 RCN ball sealers. Swab and flow 72 BLO + 229 BNO + 12 BAW in 23 hrs. Pulled tbg.
- Ran 2½" tbg. w/4' perf. Sub @ 11,117-11,121'. Swab 44 bbl. mud in 5 hrs. Swab 35 bbl. heavy oil cut mud in 4 hrs. Swab dry 3 hrs. Cardinal Chemical acidized Penn perfs. 11,112-11,122 w/500 gals. mud acid. Swab 51 BLO in 12 hrs. Swab dry 12 hrs. Shut in 18 hrs.
- 11/25/62 Cardinal Chemical pumped in 70 BLO treated w/10 gal. Permian Block Buster per 1000 gal. of oil. SI 24 hrs. Swab 54 BLO + 9 bbl. mud in 16 hrs. Swab 26 bbl. mud in 24 hrs. Swab dry 6 hrs.
- 11/27/62 Cardinal Chemical pumped in Penn perfs. 11,112-11,122 37 bbl. oil treated w/Permian Block Buster, disp. into form. w/64 BLO. SI 24 hrs. Swab 75 BLO + 10 bbl. mud in 12 hrs. Swab dry 9 hrs.
- 11/29/62 Cardinal Chemical acidized Penn perfs. 11,112-11,122 w/3000 gal. 15% LST. Swab 66 BLO + 16 BAW in 12 hrs. Pulled tubing.
- 12/4/62 Dumped 20' sand on DR plug in pkr. @ 12,020'. Set Baker full bore pkr. @ 10,996'.
- 12/6/62 Halliburton squeezed perfs. 11,112-11,122 w/50 sx. Trinity inferno cement. Max. pr. 8000#.
- 12/9/62 Drilled cement 10,960-11,012. Ran Baker DM ret. to 11,100'. Squeezed Penn perfs. 11,112-11,122 w/50 sx. TI neat cement. Max. pr. 7800#. Rev. 7 sx. cement. WOC 18 hrs. Drilled cement 11,099-11,100, retainer 11,100-11,103 & cement 11,103-11,122. Tested Penn perfs. w/2000#. O.K.
- 12/17/62 Ran 2-3/8" EUE tbg. w/Baker seal assembly to 12,022'. Baker Model J dual pkr. set @ 9475'. Ran 2" tbg. & set in pkr. @ 9475'. Ran 2" tbg. to 9183'.

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#### SUMMARY OF OPERATIONS (CONTINUED)

- 12/19/62 From Dev. perfs. 12,070-12,105 swab & flow 48 bb1. mud + 107 BNO in 10 hrs. From Wolfcamp perfs. 9518-9986 swab 100 bb1. inver. mud in 13 hrs.
- 12/20/62 Pulled Abo & Wolfcamp tubing. From Dev. perfs. 12,070-12,105 flowed 72 BNO + 8 bbl. mud in 8 hrs. 10/64" choke.
- 12/21/62 Pulled Dev. tbg. & Model J pkr. Ran Baker BP to 10,200, Baker pkr. to 9400'. Circ. through Wolfcamp perf. out Abo perfs.
- 12/23/62 Pulled tbg. & pkr. Schlumberger spotted 15' sand on BP @ 10,200'. Set ret. @ 9220. Ran 2" tbg., set in ret. Cem w/160 sx. Trinity Inferno cement through Wolfcamp perfs out Abo perfs. Pulled tbg. to 8920', rev. trace of cement. Squeezed 3 bbl. cement into Abo perf. TP 0-2000#. WOC 2 hrs. Pulled tbg. Ran 5-7/8" bit, top cement 9195'.
- 12/25/62 Drld. ret. 9220-9222, drld. cement to 9518'. Pulled tbg. & bit.
- 12/26/62 Ran & set Baker full bore pkr. @ 9415. From Wolfcamp perfs. 9518-9986 swab & flow 106 bbl. mud + 56 BNO in 12 hrs. Pulled tubing.
- 12/27/62 Ran 6" bit to 9765', drilled cement 9765-9796, 9885-10,005. Circ. 20' sand off BP @ 10,230'. Pulled tbg. & bit. Reset BP @ 9371'. Set pkr. @ 9056'. From Abo perfs 9070-9199 swab & flow 281 bbl. mud + 93 BNO in 30 hrs.
- 12/30/62 Retrieved Baker bridge plug. Schlumberger set Baker Model FA pkr. @ 9429'.
- 1/1/63 Ran Dev. tbg. & set in Model D pkr. @ 12,015' & Model FA pkr. @ 9429'. Ran 2" Wolf. tbg. to 9429, latched into Model FA pkr. Ran 2" Abo tbg. to 9183'.
- 1/6/63 From Dev. perfs. 12,070-12,105 swab & flow 200 bb1. mud + 550 BNO in 67 hrs. 17/64" ch. TP 600#.

From Wolfcamp perfs. 9518-9986 swab & flow 299 bbl. mud + 269 BNO in 63 hrs. 24/64" ch. TP 500#. Shut in 10 hrs. Flow 84 BNO in 9 hrs.

From Abo perfs 9070-9199 swab 59 BLO in 4 hrs.

- 1/7/63 Dev. perfs. 12,070-12,105 shut in 70 hrs. Flow 84 BNO + 10 bbl. mud in 6 hrs. 14/64" ch. TP 900-800#.
  - Wolfcamp perfs. 9518-9986 shut in 12 hrs. Flow 77 BNO + 9 bbl. mud in 6 hrs. 24/64" choke. TP 160#. Gty 38.2 @ 60, GOR 935.
  - Abo perfs 9070-9199 shut in 20 hrs. Flow 51 BNO + 4 bb1. mud in 6 hrs. 24/64" choke. TP 50#. Gty 41.8 @ 60°, GOR 569.
- 1/8/63 All zones shut in to take packer leakage test.
- 1/11/63 Ran Worth Well Delta temp. log, indicated flow between Abo and

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## SUMMARY OF OPERATIONS (CONTINUED)

- 1/15/63 Pulled all strings of tubing.
- 1/16/63 Set ret. BP @ 9350'. Dump 20' sand on BP. Perf 7" csg. w/4 holes @ 9294'. Set DM ret. @ 9215'. Ran 2" tbg. to 9215'. Pump through ret. 2½ BPM @ 3800#. Pump in 50 sx. Incor neat cement. Pr. 3800-5300#. CP 200-2500#. Rev. 22 sx. cement.
- WOC 5 hrs. Halliburton pump 50 sx. Trinity Inferno cement through ret. & perfs. @ 9294'. Pull tbg. to 9060. Rev. 15 sx. cement. Pump 7½ bbl. mud. Pr. 3000#. Held 3000# for 3 hrs. Released pr. check for flow back. Pr. back to 3000# in 10 mins. Rel. pr. pulled tbg. WOC 6 add. hrs. Top cement @ 9200'. Drld. cement & ret. 9200-9294'. Ran bit to sand on BP. Pulled tbg. & bit.
- 1/20/63 Ran RTTS to 9230'. Pumped into perfs. @ 9294 2 BPM @ 3400#. Circ. to annulus. Pulled tbg. & RTTS. Schlumberger set ret. @ 9230'. Cemented w/50 sx. Trinity Inferno neat cement. Max. pr. 2800#. Pulled tbg. to 8890, rev. 7 sx. cement. Pulled tbg.
- 1/21/63 Drilled cement & ret. 9200-9294. Pulled tbg. & bit. Ran RTTS to 9245. Pr. to 4000# for 45 min. O.K. Reset tool @ 9035'. Swab 16 bbl. mud in 3 hrs. Ran tbg. to 9125 w/RTTS @ 9035'. SN @ 9034'. Swab 245 bbl. mud in 36 hrs.
- 1/24/63 Pulled RTTS tool. Ran retrievable head circ. Sand 9310-9350 Retrieved BP.
- 1/27/63 Pulled & rec. Model FA packer @ 9429'.
- 1/27/63 Drilled cement 9522-9629, 9733-9738, 9896-9916, 10,410-10,420 and 10,924-10,929. Rev. circ. Ran bit to 11,960, circ. Pulled bit & tbg.
- Ran DR plug to Model D pkr. @ 12,015'. Spotted 5 sx. sand on plug. Pull tbg. to 10,002'. Spotted 175 sx. Trinity Inferno cement, pulled tbg. to 9204', Rev. 20 sx. Pulled tbg. Ran RTTS pkr. Tagged cement 9189', set pkr. @ 8889'. Pump in Abo 1 BPM @ 6000#.
- Pumped in perf. 1 BPM @ 6400#. Cemented w/200 sx. Trinity Inferno cement. Tool leaked, rev. 150 sx. Pulled RTTS. Ran 5-7/8" bit & csg. scraper, drilled cement 8410-8810, 9125-9220'. Pulled tbg. & bit. Ran RTTS to 8900', pump in 2 BPM @ 5400#.
- 1/31/63 Moved RTTS to 9130 pump in Abo below pkr. 1 BPM @ 5400#. Reset @ 8900'. Halliburton squeeze Abo perfs. w/400 sx. Trinity Inferno cement. Max. pr. 7000#. Rev. 165 sx. cement.
- 2/1/63 Drilled cement 8800-9280', 9245-9278'.
- 2/2/63 Schlumberger re-perf Abo 9070-9199 w/l jet shot/ft. (re-perf'd in the orig. holes)
- 2/3/63 Ran 2-3/8" tbg. to 9199', seating nipple @ 9199, pkr. @ 9005'. Swab 42 bbl. mud + 30 BNO in 14 hrs. Knox Services, Inc. acidized Abo perfs. 9070-9199 w/500 gals. 15% NE acid. Breakdown pr. 4000#. Trt. pr. 4000#. Rate 1/2 BPM, 5 min. SIP 1700#. Swab & flow 42 BLO + 105 BNO + 12 BAW in 19 hrs.

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## SUMMARY OF OPERATIONS (CONTINUED)

- 2/4/63 Cardinal Chemical acidized perfs. 9070-9199 w/1000 gal. 15% NE acid. Trt. pr. 5600#, rate 1.7 BPM, 5 min. SIP 2000#. Swab & flow 39 BLO + 22 BNO + 24 BAW in  $8\frac{1}{2}$  hrs. Flow 45 BNO in 6 hrs.
- 2/5/63 Worth Well ran Delta Log to 9280, indicated flow from perfs 9140-9199 @ rate of 13 BPH. No communications.
- 2/5/63 Cardinal Chemical re-acidized perfs. 9070-9199 w/3000 gals. 15% NE acid + 40 RCN ball sealers. Rate 5.1 BPM, trt. pr. 5800-6500#. Swab & flow 39 BLO + 246 BNO + 49 BAW in 34 hrs.
- 2/7/63 Ran Worth Well Delta log to 9280', no communications. Drilled cement 9280-9980'. Ran bit to 11,000'.
- 2/12/63 Ran 2-3/8" tbg. to 9965'. Cardinal Chemical spotted 500 gal. 15% NE acid 9965-9600'. Pulled pkr. to 9565'. Re-set @ 9500'. Acidized Wolfcamp perfs. 9518-9986. Break down pr. 4000#. Trt. pr. 5000#. Rate 2 BPM. Swab & flow 55 bbl. mud + 130 BNO in 25 hrs.
- 2/17/63 Fished & recovered 5-7/8" bit, 2-3/8" tbg. & pkr. in 72 hrs.
- 2/20/63 Schlumberger set Model D pkr. @ 12,010'. Ran 2-3/8" Dev. tbg. to 12,010' w/model J pkr. @ 9326'. Ran 2" Wolfcamp tbg. to 9326'. Ran Abo 2" tbg. to 9160'.
- 2/22/63 From Wolfcamp perfs. 9518-9986 swab & flow 217 bb1. mud + 165 BNO in 55 hrs. TP 800. Shut in 17 hrs. TP 1025#.

From Dev. perfs. 12,070-12,105 shut in 48 hrs. Swab & flow 45 bbl. mud + 96 BNO in 12 hrs. TP 800#. Shut in 24 hrs. TP 1900#.

From Abo perfs. 9070-9199 swab & flow 270 BLO + 10 BNO in 36 hrs. Shut in 24 hrs. Swab & flow 192 BLO in 17 hrs.

3/2/63 All zones shut in for stab. build-up. No communications indicated.

#### ACIDIZING RECORD

- 9/12/62 Cardinal Chemical attempt to break down McKee formation w/6000# w/crude oil, no break. Spotted 500 gal. 15% acid over perfs. 13,698-13,750. Washed & soaked 4 hrs. 6000#, no break. Rev. out acid. Spotted 500 gal. Hydrofloric mud acid over perfs. 13,698-13,750 for 1½ hrs. 6000#, no break. Rev. out acid. Pulled and re-ran 2½" tbg. to 13,765'.
- 9/13/62 Cardinal Chemical spotted 500 gals. 15% NE acid over perfs. 13,698-13,750. Set full bore pkr. @ 13,675. Press to 4700#, tbg. parted. Fished & rec. tbg. & pkr.
- 9/14/62 Reran tbg. & pkr. to 13,765. Cardinal Chemical rev. spent acid & water. Attempted to re-acidize w/500 gal. mud acid. Tbg. parted w/5300#. Fished & rec. tbg.
- 9/15/62 Ran 2½" tbg. to 13,760'. Rev. out acid. Set full bore pkr.
  @ 13,675. Cardinal Chemical acidized McKee perfs. 13,698-13,750
  w/500 gal. mud acid. Break down pr. 7000#. Treating pr. 7400#
  @ 1.8 BPM. 5 Min. SIP 4400#. Swab 75 BLW + 5 BLO in 9 hrs.
  Swab dry 4 hrs. Pulled tbg. & pkr.