

DRILLING AND COMPLETION HISTORY
CONSOLIDATED OIL & GAS, INC.
NAVAJO NO. 2-11
San Juan County, New Mexico
October 9, 1964

LOCATION:	790' FNL, 790' FEL, Section 11 T25N-R10W, NMPM
ELEVATIONS:	6856' GL 6868' KB-all measurements from KB
SPUD:	September 10, 1964
DRILLING COMPLETED:	September 26, 1964
WELL COMPLETED:	October 2, 1964
TOTAL DEPTH:	6780' (Logger's TD 6796')
CASING: Surface	8 5/8" set at 252' KB with 150 sx. regular with 2% CaCl.
Production	4 1/2" 11# casing set at 6795' with 250 sx. 50/50 Pozmix with 4% gel and 100 sx. 40% Diacel D.
TUBING:	2 3/8" EUE landed at 6673'
LOGS:	Welex Induction Electric and Acoustic Velocity
CORES & DRILLSTEM TESTS:	None
FORMATION TOPS: (Log)	Pictured Cliffs 2127' (+4741) Cliffhouse 3591' (+3277) Point Lookout 4617' (+2251) Gallup 5674' (+1194) Greenhorn 6538' (+ 330) Dakota 6686' (+ 182)
PRODUCING PERFORATIONS:	6692' - 6724'
TREATMENT:	Sand water frac with 58,000# 20-40 sand and 67,578 gal. water.
INITIAL POTENTIAL:	Flow volume thru 3/4" choke: 3750 MCFD Calculated Absolute Open Flow Potential: 4660 MCFD.

WELL: NAVAJO NO. 2-11
790' FNL, 790' FEL, Sec. 11-T25N-R10W

FIELD: Basin Dakota

COUNTY: San Juan STATE: New Mexico

ELEVATIONS: 6856' GL
6868' KB

9/10/64

Spudding today.

9/11/64

Drilled rat hole and mouse hole. Depth 255' of 12 1/4" surface hole. Ran 8 joints 8 5/8" set at 252' KB with 150 sx. regular with 2% CaCl. Plug down 6 p.m. 9/10. Nippled up, pressured up to 1000#. Dev. 1 1/4° at 250'. Present operation, making repairs to pump motor.

9/12/64

Depth 2324'. Drilled 1867' of sand and shale. Dev. 1/4° at 750', 1/4° at 1250', 1/2° at 1900'. Drilling with water. Present operation, making trip for Bit 3.

9/13/64

Depth 2785'. Drilled 465' of sand and shale. Drilling with water. 12 1/2 hours down time, while working on pump water. Present operation, drilling with Bit 3.

9/14/64

Depth 3262'. Drilled 373' of sand and shale. Dev. 3/4° at 3100'. Drilling with water. Present operation, drilling with Bit 3.

9/15/64

Depth 3615'. Drilled 353' of sand and shale. Mud 8.9. Vis. 40. Present operation, drilling with Bit 6.

WELL:

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9/16/64

Depth 4037'. Drilled 422' of sand and shale. Mud 9.0. Vis. 44.
Water loss 14. Dev. $1/4^{\circ}$ at 3700'. Present operation, drilling with
Bit 7.

9/17/64

Depth 4710'. Drilled 360' of sand and shale. Mud 9.1. Vis. 44.
Water loss 8.2. Dev. $1/2^{\circ}$ at 4520'. Present operation, tripping
for Bit 10.

9/18/64

Depth 4374'. Drilled 337' of sand and shale. Mud 9.1. Vis. 42.
Water loss 9.2. Present operation, tripping for Bit 9.

9/19/64

Depth 4963'. Drilled 253' of sand and shale. Mud 9.2. Vis. 44.
Water loss 7.2. F.C. 2/32. Ph 9.0. Present operation, tripping
for Bit 11.

9/20/64

Depth 5285'. Drilled 322' of sand and shale. Mud 9.2. Vis. 57.
Water loss 8.4, F.C. 2/32. Ph. 9.5. Oil 4%. Present operation,
drilling with Bit 12.

9/21/64

Depth 5613'. Drilled 328' of sand and shale. Mud 9.2. Vis. 56.
Water loss 7.6. Dev. $3/4$ at 5540'. Present operation, drilling
with Bit 13.

9/22/64

Depth 5931'. Drilled 318' of sand and shale. Mud 9.2. Vis. 54.
Water loss 7.6. Present operation, drilling with Bit 14.

9/23/64

Depth 6198'. Drilled 267' of sand and shale. Mud 9.2. Vis. 51.
Water loss 8. Present operation, drilling with Bit 15.

9/24/64

Depth 6570'. Drilled 327' of sand and shale. Mud 9.2. Vis. 53, Water loss 7.2. 4% oil. Present operation, tripping for Bit 17.

9/25/64

Depth 6734'. Drilled 164' of sand and shale. Mud 9.3. Vis. 80. Water loss 8.0, 4% oil. Top of Dakota 6689'. Present operation, tripping for Bit 19.

9/26/64

TD 6780'. Loggers TD 6796'. Drilled 46 feet of sand and shale. Mud 9.3. Vis. 90. Rigged up Welex. Ran induction electric and acoustic velocity log. Present operation, going in hole.

9/27/64

Started laying down drill pipe. Torque converter went out. Down for 6 hours. Ran 214 joints of 4 1/2" 11# casing, total of 6815.73', float collar, guide shoe and Baker TC collar, total of 6820.48', set at 6795' KB. Float collar at 6766', TC collar at 2386.88' KB. Cement basket at 2451.34' KB. Pretreated mud and treated with 0.06 gal./bbl. of Hydrazine and 0.1 gal./bbl. of Bactrine. Preflushed with 20 bbl. of GP-100. Cemented with 250 sx. 50/50 Poxmix with 4% gel. Plug down at 12:10 a.m. Bumped plug with 2500 lb., held OK. Opened TC collar at 2386.88' KB. Cemented with 100 sx. 40% Diacel D. Good circulation throughout. Job complete at 2:15 a.m., had trouble getting TC collar closed.

9/29/64

Present operation, picking up 2 3/8" completion string.

9/30/64

Picked up 2 3/8" completion string, found top of cement at 6574'. Drilled firm cement to float collar at 6766'. Pressured up to 3250#, held OK. Pulled out of hole, rigged up Welex, ran correlation log. Present operation, preparing to perforate. Spotted 1000 gal. acid before coming out of hole to log.

WELL:

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10/1/64

Rigged up Welex, ran Gamma Ray correlation log. Perforated six per foot from 6692'-6724'. Hooked up Western Co. five FM 600's. Broke at 900#, put 1000 gal. acid away in three stages, treated with 58,000# 20-40. Sanded off with 2000# sand in casing, pumping at 1 1/2 lb./gal. Dropped 205 balls. Average treating pressure 3000 psi, average injection rate 33.8 BPM. Job complete at 10:14 a.m. Flowed back for 2 hours, started blowing down, well making 2" stream of water and sand. Well unloaded gauged at 5000 MCFD. Ran 216 joints of 2 3/8" EUE for total of 6661.09', landed at 6673.09' KB. Gauged well at 5500 MCFD, pumped out expendable plug. Released rig at 12 midnight, 1385/1760 psi this a.m.

Perforations 6692'-6724', 6/ft., 192 holes. Western Company used five FM 600's. 1000 gal. regular acid put away in three stages: 1. 1400 psi to 300 psi; 2. 900 psi to 400 psi; 3. 800 psi to 500 psi.

Broke	900 psi	Initial injection rate	38 BPM
Initial treating pres.	2700 psi	Max. injection rate	38 BPM
Max. treating pres.	3500 psi	Min. injection rate	0 BPM
Min. treating pres.	2700 psi	Final injection rate	0 BPM
Final treating pres.	3500 psi	Avg. injection rate	33.8 BPM
Avg. treating pres.	3000 psi	Sand	58,000# 20-40
Initial SIP	3500 psi	Total Fluid	67,578 gal.
		Treat. fluid	62,538 gal.
		Additives	J-2 7 lb./1000 gal.
		Balls	205
		Avg. sand Conc.	0.97 lb./gal.
		Flush	None

Went from 1 lb./gal. to 1 1/2 lb./gal. at end. Sanded off on flush with 2000 lb. sand in pipe.

10/2/64

Running 3 hour test. Shut in pressure this a.m. 1887/1900.

OPEN FLOW TEST DATA

DATE October 2, 1964

Operator <u>Consolidated Oil & Gas Inc.</u>		Lease <u>Navajo # 2-11</u>	
Location <u>Section 11, Twn. 25 N., Range 10 W.,</u>		County <u>San Juan</u>	State <u>New Mexico</u>
Formation <u>Basin</u>		Pool <u>Dakota</u>	
Casing: Diameter <u>4 1/2"</u>	Set At: Feet <u>6692</u>	Tubing: Diameter <u>2 3/8"</u>	Set At: Feet <u>6674'</u>
Pay Zone: From <u>6692</u>	To <u>6724</u>	Total Depth: <u>6796</u>	
Stimulation Method <u>Sand and Water Frac.</u>		Flow Through Casing	Flow Through Tubing <u>XX</u>

Choke Size, Inches <u>3/4"</u>		Choke Constant: C <u>14.1605</u>			
Shut-In Pressure, Casing, PSIG <u>1900</u>	+ 12 = PSIA <u>1912</u>	Days Shut-In <u>275</u>	Shut-In Pressure, Tubing PSIG <u>1887</u>	+ 12 = PSIA <u>1899</u>	
Flowing Pressure: P PSIG <u>253</u>	- 12 = PSIA <u>275</u>		Working Pressure: Pw PSIG <u>959</u>	+ 12 = PSIA <u>971</u>	
Temperature: T °F <u>55</u>	n = <u>75</u>		Fpv (From Tables) <u>1.035</u>	Gravity <u>0.70</u>	

$$\text{CHOKE VOLUME} = Q = C \times P_r \times F_r \times F_g \times F_{pv}$$

$$Q = 14.1605 \times 275 \times 1.0048 \times .9258 \times 1.035 = \underline{3,750} \text{ MCF/D}$$

$$\text{OPEN FLOW} = Aof = Q \left(\frac{P_c^2}{P_c^2 - P_w^2} \right)^n$$

$$Aof = \left(\frac{1912^2}{1912^2 - 959^2} \right)^{75} = (1.336)^{75} = 1.2426$$

$$Aof = \underline{4,660} \text{ MCF/D}$$

TESTED BY A.A. Prater

WITNESSED BY Clyde Phillips

Thomas D. T. Bayl. Jr.