DRILLING & COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

TRIBAL "C" NO. 6 - 5

Rio Arriba County, New Mexico
October 22, 1962

Location: 990' F/NL, 990' F/WL, Section 5
T26N-R3W, N. M. P. M.

Elevations: 7199' GL
7211' KB - all measurements from KB

Spud: July 20, 1962

Drilling Completed: August 10, 1962
Well Completed: September 22, 1962

Total Depth: 8483' Drilled
8483' PBTD

Casing: Surface: 10 3/4" set at 295' with 250 sx. regular 2% $CaCl_2$ cement.

Production: 7 5/8" 26.40# J-55, S. T. & C. set at 4155' with 75 sx. regular 40% Diacel tailed in with 97 1/2 sx. regular and 97 1/2 sx. Pozmix, 4% gel, 4% $CaCl_2$.

5 1/2" J-55, 17# & 15.5# hung at 8498'. Top of liner at 4063'. Cemented with 155 sx. regular with 175 cu. ft. Diacel "D" tailed in with 50 sx. regular, 50 sx. Pozmix, 4% gel.

Tubing: 1 1/2" VS landed in Baker Model "D" packer set at 8200'.

1" VS landed at 3906'.

Logs: Lane Wells, Induction, Accoustic & Radioactivity

Cores & Drillstem Tests: None

Formation Tops: (Log)

Pictured Cliffs		
Formation	3936'	(+3275)
Sandstone 1	3946'	(+3265)
Sandstone 2	4006'	(+3205)
Mesaverde		
Cliffhouse	5697'	(+1514)
Menefee	5762'	(+1449)
Pt. Lookout	6097'	(+1114)
Mancos	6237'	(+ 974)
Gallup	7104'	(+ 107)
Greenhorn	8144'	(- 933)
Graneros		
Shale	8223'	(-1012)
Sandstone	8272'	(-1061)
Dakota	8367'	(-1156)

Producing Perforations:

DK	PC
8276' - 8298'	3952' - 3990'
8374' - 8388'	4008' - 4022'
8405' - 8414'	
8422' - 8438'	
8456' - 8476'	

Treatment: DK Sand-water frac with 2000 gal. acid, 186,840 gal. water and 192,000 lbs. of sand in four stages.

PC Sand-water frac with 42,000 gal. water and 56,000 lbs. of sand.

Initial Potential: DK Flow volume thru 3/4" choke: 563 MCFD

PC Flow volume thru 3/4" choke: 1723 MCFD
Calculated Absolute Open Flow Potential: 1751 MCFD.

WELL: TRIBAL "C" NO. 6-5

990' F/NL, 990' F/WL, Sec. 5-T26N-R3W

FIELD: Basin Dakota, Tapacito Pictured Cliffs

COUNTY: Rio Arriba STATE: New Mexico

ELEVATIONS: 7199' GL

7211' KB

7/21/62

Drilled 310' of 15" hole. Ran 13 joints 10 3/4" set at 295' with 250 sx. regular 2% $CaCl_2$ cement. Plug down at 3:30 p.m. Good returns. WOC. Nippled up, pressured up 800# for 15 minutes, held OK. Drilling at 645' in shale. Mud 9.1. Vis. 34. Dev. 1/2° at 750'.

7/22/62

Depth 2056', drilled 1211' of sand and shale. Drilling with Bit No. 3. Mud 9.1. Vis. 36. Dev. 1 1/2° at 1400', 1 1/4° at 1900'.

7/23/62

Depth 2681'. Drilled 625' of sand and shale. Mud. 9.1. Vis. 3.9. Present operation, drilling with Bit 4. Dev. 1/2° at 2486'.

7/24/62

Depth 3109'. Drilled 428' of sand and shale. Mud. 9.3. Vis. 44. Dev. 1° at 3013'. Making trip for Bit 6.

7/25/62

TD 3450'. Drilled 341' of sand and shale with Bit No. 17. Mud 9.6. Vis. 46. Water loss 7.2.

7/26/62

Drilling at 3753'.

7/27/62

Depth 4073'. Drilled 320' fo sand and shale. Making trip for Bit 10. Mud 9.4. Vis. 50. Water loss 8. Lost 100 bbls. mud at 3938'.

7/28/62

Depth 4175'. Drilled 237', conditioned hole to log. Came out of hole to log, ran ES, Induction and Acoustic logs. Running 7 5/8" casing.

7/29/62

Ran 7 5/8" casing to 3885', lost circulation after 1 1/2 hours. Got 25% returns. Ran pipe on to 4025' with 25% return. Mixed 50 sx. lost circulation after 1 1/2 hours, got 100% returns. Ran pipe on to 4155', hit fillup, could not pump out. Full returns. Ran 116 joints 7 5/8" 26.40# J-55, S.T. & C. casing for a total of 4162.96' less 8' above KB, 7 5/8" set at 4154.96' KB. Float at 4120.11' KB. Cemented with 75 sx. regular 40% Dia-cel tailed in with 97 1/2 sx. regular and 97 1/2 cu. ft. Pozmix, 4% gel, 4% CC. Plug down at 12 noon 7/28/62. Bumped plug with 1800#, released pressure, float held. Good circulation throughout cement job. Cut off, nippled up, pressured up to 1000#. Present operation, blowing hole down at 4120'.

7/30/62

Finished blowing down, drilled float and shoe at 5061'. Drilled 886' Bit No. 11 in hole. Dev. 1° at 4450', 2° at 4930'. Gas pressure 400#, using gas from No. 3-6.

7/31/62

Drilling at 5555'. Drilled 494' of sand and shale. Bit No. 12 in hole. gas pressure, 350#

8/1/62

Depth 5780'. Drilled 225' of sand and shale. Hit moisture at 5770', blew hole six hours, hole dried up. Drilled 10' to 5780', hit moisture. Present operation, blowing hole for six hours at 5780', no solid moisture, well appears to be drying up. Gas flow pressure, 550#.

8/2/62

Depth 6201'. Drilled 421' of sand and shale. Present operation, making trip for Bit No. 14. Gas pressure 500#. Dev. 2 1/4° at 5584', 1/2° at 6193'.

8/3/62

Depth 6234'. Drilled 33'. Rotary hose turned loose inside, plugged [illegible] This happened at 2:30 p.m. 7/2, well was dusting good

8/3/62 Cont'd.

when this happened. Present operation, going in hole with bit to 1500'.

8/4/62

Depth 6284'. Drilled 50', blew well to 6100'. Started hitting moisture. Blew and cleaned well on to 6234'. Blew and worked pipe from this depth (6234') 8 hours. No dust. Drilled 50', 10' at a time, to 6284'. Blew and worked pipe from this depth 10 hours. Pipe getting tight. Came out of hole. Pipe mudded up, cleaned pipe. Present operation, going back in hole, blowing and cleaning at 4000'.

8/5/62

Finished blowing and cleaning hole to 6284'. Well started dusting. Depth 6984', drilling 700'. Dev. 1/2° at 6192'.

8/6/62

Drilling at 7530'. Drilled 546'. Drilling with Bit 15. Dev. 1° at 7260'.

8/7/62

Drilling at 8131'. Drilled 601' of sand and shale. Dev. 6° at 7950', 6° at 8060'. Drilling with Bit No. 15.

8/8/62

Drilling at 8385', drilled 254'. Drilling with bit No. 16. No natural shows.

8/9/62

Drilled to 8410'. Blew hole 1 1/2 hours. Came out of hole, ran short log over Greenhorn. Top of Greenhorn 8147'. Top of Graneros 8274'. Top of first Dakota 8374'. Lacked approximately 66', being through base of Dakota in correlation with No. 4-6. Log T.D. 8404'. Went back in hole with Cobra Bit to 8410'. Blew hole approximately 4 1/2 hours. Well started dusting. No apparent liquids. Present operation at 6:00 A.M., drilling at 8450'. Well dusting good. Proposed T.D. 8500', 6° deviation at 8410'.

8/10/62

TD 8500'. Drilled 50'. Blew hole 1 1/2 hours, well making estimated 3000 to 4000 MCFD with good show of oil. Rigged up Lane Wells, ran logs to 8404', could not get deeper than this depth. Ran logs from this depth. Present operation, going in hole with liner.

8/11/62

Ran 113 joints 5 1/2" 8-round J-55 17# casing for 4321.37'. Ran 3 joints 5 1/2" 8-round J-55 15.5# casing for 114.38'. Total pipe 4435.74'. 5 1/2" liner with Burns Hanger (plain) at 8498.42' KB. Top of liner at 4062.68' KB, overlap on liner 92.32'. Float collar at 8457.41' KB. Pumped 20 bbls. gel water ahead of cement. Cemented with 155 sx. regular with 175 cu. ft. Diacel "D" (20%), tailed in with 50 sx. regular, 50 sx. Pozmix, 4% gel. Plug down at 11:20 a.m. 8/10. Bumped plug with 1000#, held OK.

8/12/62

Moving off rotary rig.

8/13/62

Waiting on completion rig.

8/14/62

Waiting on completion rig.

8/15/62

Waiting on completion rig.

8/16/62

Waiting on completion rig.

8/17/62

Waiting on completion rig.

8/18/62

Waiting on completion rig.

WELL: TRIBAL "C" NO. 6-5

9/6/62

Moving in completion rig.

9/7/62

Moving in completion rig.

9/8/62

Completion rig on location, finished rigging up at midnight. Shut down to wait on new 2 7/8" completion tubing to arrive from Mid-Continent.

9/9/62

2 7/8" tubing arrived on location at 12:00 noon. Unloaded 268 joints 2 7/8", total 8507' over all tally. Finished nippling up. Picked up tubing, ran 6 3/4" bit to 3187', hit cement bridge. Pressure up to 1500# for 15 minutes, pressure held. Reamed 189' of cement stringers to 3376', fell through cement, pressure up to 1800#, pumped 5 bbls. into hole in 2 minuts. Present operation, running tubing at 3450'.

9/10/62

Finished cleaning out to 4062', top of liner, with 6 3/4" bit. Pressured up, well taking 2 1/2 bbls. water per minute at 1500#. Came out of hole, ran Baker full bore packer set a t 3930'. 132' above top of liner. Rigged up Halliburton, pressured up to 1600# on back side. Pumped down tubing 4 BPM at 1700#, squeezed top of liner with 150 x. regular 2% $CaCl_2$, maximum pressure 2200#, standing pressure 2300#. Squeezed 145 sx. around liner, 5 sx. left in 7 5/8" casing above top of liner. Job completed at 4:20 p. m. 9/9/62. WOC 12 hours, started drilling cement at 4:30 a. m. 9/10/62. Top of cement at 3965'. Present operation, drilling hard firm cement at 3992', drilled 27' of cement in 1 1/2 hours.

9/11/62

Present operation, coming out of hole to log and perforate. Cleaned out to 8487', pressured up to 3000#, held OK. Spotted 1000 gal. of spearhead acid. Finished drilling cement and cleaned out to 4062', pressured up to 2000# for 15 minutes. Came out of hole with 6 3/4" bit. Ran 4 3/4" bit to 4062' KB (top of liner). Hit cement top of

WELL: TRIBAL "C" NO. 6-5

9/11/62 Cont'd.

liner, drilled cement from 4062' to 4075', 13'. Hit stringers to 4100'. Pressured up to 2000# for 15 minutes. Ran bit on to 8442'. Drilled 15' of cement to 8457' (float collar). Pressured up to 2000# for 15 minutes. Drilled float collar at 8457 1/2', cleaned out and drilled cement to 8487' KB. Circulated and cleaned hole up. Pressured up with Western on casing to 3000# for 15 minutes. Spotted 1000 gal. 15% acid. Present operation, pulling 2 7/8" tubing to log and perf.

9/12/62

Finished pulling 2 7/8" tubing. Rigged up Lane Wells start logging at 11:15 a. m. 9/12/62. Log TD 8483' KB. Finished logging DK & PC at 1:15 p. m. 9/12/62. Perforated 8456' - 8476' four per foot, 8462' - 8468' three per foot, 55 gram charges. Rigged Western. Staged 1000 gal. 15% acid in.

First Stage - 3 bbls. from 0 to 1200#, 5 min. pressure 500#
Second Stage - 3 bbls. from 500 to 1500#, 5 min. pressure 750#
Third Stage - 4 bbls. from 750 to 1500#, 5 min. pressure 800#
Fourth Stage - 10 bbls. from 800 to 1400#, 5 min. pressure 1000#
Last four barrels pumped ahead of frac.

First Stage Frac:

Breakdown, 1 pump	2000#	Breakdown & fill	100 bbls.
Breakdown, 5 pumps	2900#	Treating fluid	33,000 gal.
Maximum Pressure	3050#	Sand	33,000 lbs.
Minimum pressure	2700#	Overflush	30 bbls.
Maximum treat. press.	3050#	Rubber balls	0
Min. treat. press.	2700#	Injection rate (treat.)	36.3 BPM
Average treat. press.	2900#	Injection rate (flush)	23.6 BPM
Instant shut in	2500#	Overall injection rate	31.6 BPM
5 minute shut in	2300#		
Final treat. press. (4 pumps)			

Set Baker model NC plug, 8444' KB. Perforated 8388'-8374', 8414'-8405', 8438'-8422', four per foot. No communication when above perf. were shot. Attempted to frac above perf. could not break down. Pumped in 7 BPM at 3000#. Rigged up Lane Wells, reperforated zone four per foot 8388'-8374'. Pressured up to 3000#, pumped in at 5 BPM. Could not break down. Order 1000 gal. BDA at 10 p. m. 9/12/62. Started in hole with tubing at 10:45 p. m. Ran tubing to 8424'. Spot 1000 gal. acid 15% spearhead. Out of hole with 2 7/8" tubing at 8 a. m. 9/13/62.

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9/13/62

Rigged up Western, cleaned out, staged acid in perf. at 8388'-8374'-8414'-8406'-8438'-8422'.

First Stage - from 0 to 2800#, 5 min. pressure 1300#
Second Stage - from 1300 to 2700#, 7 min. pressure 1100#
Third Stage - from 1100 to 2700#, 5 min. pressure 1500#
Fourth Stage - from 1500 to 3000#
Instant shut in 3000 to 2100#, 8 min. pressure 800#.

Second Stage Frac:

Breakdown 1 pump	2300#	Breakdown and fill	100 bbls.
Breakdown all pumps	2500#	Treating fluid	61,000 gal.
Maximum pressure	2900#	Sand	50,000 lbs.
Minimum pressure	2500#	Oversflush	30 bbls.
Max. treating press.	2900#	Rubber Balls	0
Min. treating press.	2500#	Injection rate (treat.)	38.4 BPM
Average treating press.	2700#	Injection rate (flush)	25.4 BPM
Instant shut in press.	2700#	Overall inj. rate	36.6 BPM
Final treating press.	2900#		
5 minute shut in press.	2400#		

Finished frac at 10:15 a. m. 9/13/62. Rigged up Lane Wells at 10:30 a. m. Set bridge plug at 8320' KB.

Third Stage Frac:

Perforated from 8276'-8298', four per foot.

Breakdown 1 pump	2400#	Breakdown & fill	60 bbls.
Breakdown 5 pumps	3000#	Treating fluid	29,500 gal.
Maximum pressure	3200#	Sand (in form)	19,000 lbs.
Minimum pressure	2400#	Sand (in pipe)	3,000 lbs.
Maximum treat. press.	3200#	Overflush screened out	
Minimum treat. press.	2900#	Rubber balls	0
Average treat. press.	3000#	Injection rate (treat.)	31.1 BPM
Instant shut in press.	2600#	Injection rate (flush)	15.4 BPM
Final teat. press.	3200#	Overall inj. rate	28.0 BPM
23 minute shut in press.	1900#		

Rigged up Lane Wells, set plug at 4080', mag. top drill able. Perf. from 4008'-4022', 3952'-3990', two per foot.

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9/13/62 Cont'd.

Fourth Stage Frac:

Breakdown 1 pump	800#	Breakdown & fill	100 bbls.
Breakdown 5 pumps	850#	Treating fluid	63,340 gal.
Maximum pressure	900#	Sand	100,000 lbs.
Minimum pressure	600#	Overflush	None
Max. treating press.	900#	Rubber balls	60
Min. treating press.	600#	Injection rate (treat.)	43.7 BPM
Average treating press.	800#	Injection rate (flush)	43.7 BPM
Instant shut in	300#	Overall inj. rate	49.3 BPM
Final treating press.	900#		
5 minute shut in	200#		

Note: After having 75,000# sand in, wing valve on tubing spool blew off, down 1 1/2 hours, repaired valve, finished frac with additional 25,000# sand. Job completed at 6:45 p. m.

9/14/62

Blew well down to top of liner (4062'). On top of liner at 4:30 9/13/62. Gauged well, well making 540 MCFD with lot of water and sand. Water and sand started diminishing at 6 p. m. 9/13. Blew well until 8 a. m. this morning. Well making very little sand and water, well gauged 120 MCFD, shut well in at 8 a. m. for pressure build up.

9/15/62

Shut well in one hour and 45 minutes. Well built up to 375#. Pulled tubing out of hole. Moved water tanks back on location, rigged up McCullough, notch casing with frac notch at 4015', one at 3966' KB. Rigged up Western to frac.

Breakdown 1 pump	800#	Breakdown & fill	120 bbls.
Breakdown all pumps	1000-800#	Treating fluid	42,000 gal.
Maximum treat.	1450#	Sand	56,000 lbs.
Minimum treat.	800#	Sand (left in pipe)	14,000 lbs.
Maximum press.	2950#	Overflush	None
Minimum press.	800#	Robber balls	140
Average treat. press.	1000#	Injection rate	53.5 BPM
Instant shut in	1400#		
Final treat. press.	1400#		

Job completed at 1:15 a. m. 9/15/62.

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9/16/62

Blew well to depth of 3500'. Well blew hard for two hours. Blew and cleaned well on to 4062' (top of liner). Blew from this depth for five hours. Well making very little sand and water, 100 MCFD of gas. Started drilling and cleaning out on to plug 4080' at 10 p. m. Chunks of debris from frac-notch giving a lot of trouble. Present operation, drilling and cleaning out at top of liner (4062'). Gauged well, well making 887 MCFD.

9/17/62

Cleaned out to 4075', 13' below top of liner, bit running rought. Still getting lot of mag. and sand at this depth. Came out of hole with 4 3/4" bit Left cone in hole. Ran magnet with skirt on. Came out of hole, had some fine cuttings, no cone. Present operation, going back in hole with magnet with drag teeth skirt on bottom of magnet.

9/18/62

Ran magnet to 4075', milled on to 4079' (top of bridge plug). Came out of hole, recovered cone. Tested well. Pictured Cliffs making 1000 MCFD. Drilled bridge plug at 4080'. Water from Graneros came in. Blew well from 4 p. m. to 7:30 p. m. Cleaned and blew well of sand and water on to 8320' bridge plug. Gauged well, well making 1500 MCFD. Present operation, in preparation to drill plug at 8320'. (no indication of oil out of Graneros).

9/19/62

Finished drilling up bridge plug that was pushed down hole from 4080'. Drilled up top of plug at 8320'. Water and sand came in. Blew well from 1 p. m. to 7 p. m. 9/18/62. Bit stopped drilling. Shut supply gas off. Let well blow down. Turned well gas through 2" for 15 minutes. Well gauged 2318 MCFD with some water and sand. Made trip for new bit. Started blowing water and sand at 6528' at 4 a. m. 9/19/62. Present operation on plug at 8320', drilling at 7:30 a. m. 9/19/62.

9/20/62

Finished drilling plug at 8320'. Pushed plug on to 8444' (brige plug). Finished drilling up plug that was pushed from 8320'. Drilled plug at 8444' at 3 a. m. 9/20. Blew and cleaned well until 7 a. m. 9/20. Well still making heavy spray of water, very slight show of oil in flame. Gauged well at 7 a. m., making 1254 MCFD. Present operation, laying down 2 7/8" completion string. Note: Well has gauged from 2318 MCFD down to 1254 MCFD from time first plug was drilled to clean out depth of 8487'.

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9/21/62

Laid down 2 7/8" tubing, rigged up Lane Wells and set Baker Model "D" production packer at 8200' KB. Present operation is running 1 1/2" tubing. The well is logging oil, gauged 1254 MCFD at 6 a. m. 9/21/62.

9/22/62

Ran 252 joint 1 1/2" VS tubing for 8191. 83' plus one pup joint 2. 00', plus KB of 10', tubing landed at 8203. 83' KB. Pictured Cliffs, ran 124 joints 1" VS tubing for 3896. 42' plus KB of 10', tubing landed at 3906. 42' KB. One jet collar at 3686' KB and One jet collar at 3215' KB. Finished job at 5:00 p. m. 9/21/62. Shut in both zones.

9/23/62

18 hour shut in pressure, DK 1300#, PC 850# tubing, 850# casing. Open DK through tubing making slugs of water, will gauged later today.

9/24/62

Well tested 887 MCFD with good spray of oil 16 hours flowing time. PC 960# shut in pressure.

9/25 62

Well shut in for 1 day test

9/26/62

Shut in Dakota pressure 2000#, PC shut in pressure 1050#

9/27/62

DK shut in pressure 2020#, PC 1060 tubing, 1060 casing.

9/28/62

Ran 3 hour test on PC, final flow pressure 115# through casing.

9/29/62

Shut in for test.

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10/7/62

DK well tested, 574 MCFD with heavy spray of oil throughout test.

OPEN FLOW TEST DATA

DATE October 5, 1962

Operator		Lease	
Consolidated Oil & Gas, Inc.		Tribal "C" No. 6-5	
Location: 990' FNL, 990'FWL, Sec. 5, T26N, R3W		County: Rio Arriba	State: New Mexico
Formation: Dakota		Pool: Basin Dakota	
Casing: Diameter: 5-1/2" liner	Set At: Feet: 4062-8498	Tubing: Diameter: 1-1/2" EUE	Set At: Feet
Pay Zone: From: 8276	To: 8648	Total Depth: 8500	
Stimulation Method: Sand Water Frac		Flow Through Casing	Flow Through Tubing: X

Choke Size, Inches: 0.75	Choke Constant: C: 14.1605			
Shut-in Pressure, Casing, PSIG	+ 12 = PSIA	Days Shut-in	Shut-in Pressure, Tubing PSIG	+ 12 = PSIA
	14		2122	2134
Flowing Pressure: P PSIG: 29	+ 12 = PSIA: 42		Working Pressure: Pw PSIG	+ 12 = PSIA
Temperature: T °F: 49	n = 0.75		Fpv (From Tables): 1.012	Gravity: 0.70

CHOKE VOLUME = Q = C x P_t x F_t x F_g x F_{pv}

Q = 14.1605 x 42 x 1.0108 x .9258 x 1.012 = 563 MCF/D

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

Aof = $\left(\quad \right)^n$ =

Aof _____ MCF D

TESTED BY Clyde Phillips

WITNESSED BY _____

W. H. Williams, Chief Engineer

OPEN FLOW TEST DATA

DATE September 28, 1962

Operator		Lease	
Consolidated Oil & Gas, Inc.		Tribal "C" No. 6-5	
Location: 990' FNL, 990' FWL, Sec. 5, T26N, R3W		County: Rio Arriba	State: New Mexico
Formation: Pictured Cliffs		Pool: Tapicito	
Casing: Diameter: 7-5/8	Set At: Feet: 4155	Tubing: Diameter: 1"	Set At: Feet: 3906
Pay Zone: From: 3952	To: 4022	Total Depth: 8500	
Stimulation Method: Sand Water Frac		Flow Through Casing: X	Flow Through Tubing

Choke Size, Inches: 0.75	Choke Constant: C: 14.1605			
Shut-in Pressure, Casing, PSIG: 1012	+ 12 = PSIA: 1024	Days Shut-in: 7	Shut-in Pressure, Tubing PSIG: 1014	+ 12 = PSIA: 1026
Flowing Pressure: P PSIG: 115	+ 12 = PSIA: 127		Working Pressure: Pw PSIG: 118	+ 12 = PSIA: 130
Temperature: T °F: 43	n = .85		Fpv (From Tables): 1.018	Gravity: 0.70

CHOKE VOLUME = Q = C x P_t x F_t x F_g x F_{pv}

Q = 14.1605 x 127 x 1.0168 x .9258 x 1.018 = 1723 MCF/D

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

Aof = $\left(\frac{1,052,676}{1,035,776} \right)^n$ =

Aof = 1751 MCF D

TESTED BY John Walker

WITNESSED BY Clyde Phillips

W. H. Williams, Chief Engineer