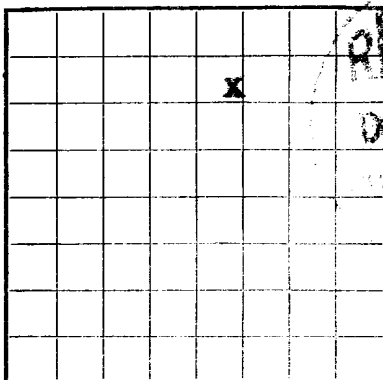


New Mexico

U. S. LAND OFFICE 02901

SERIAL NUMBER

LEASE OR PERMIT TO PROSPECT



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company **H. D. HALE** Address **Denver 2, Colorado**
Lessor or Trust **CONSOLIDATED-HALE** Field **Basin-Dakota** State **New Mexico**
Well No **1-24** Sec **24** T **26N** R **8W** Meridian **N. M. P. M.** County **San Juan**
Location **795** ft. **N** of **N** Line and **1700** ft. **E** of **E** Line of **Section 24** Elevation **6820' KB**
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed

Title **Agent**Date **December 1, 1960**

The summary on this page is for the condition of the well at above date.

Commenced drilling **September 11**, 19**60** Finished drilling **November 15**, 19**60**

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

G No. 1, from **2683** to **2723** No. 4, from _____ to _____
G No. 2, from **6988** to **7207** No. 5, from _____ to _____
No. 3, from _____ to _____ No. 6, from _____ to _____

IMPORTANT WATER SANDS

No. 1, from _____ to _____ No. 3, from _____ to _____
No. 2, from _____ to _____ No. 4, from _____ to _____

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
							From—	To—	
9-5/8	32	3	H. 40	101.378	Coke	2709	2709	2709	Surface
5-1/2	14.5	3	H. 40	7240	Plug	2723	2723	2723	Production
						6994	6994	7013	Production
						7053	7072		
						7142	Slot		
						7165	Slot		

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9-5/8	358	300	Pump & Plug		
5-1/2	7240	398	" "		

PLUGS AND ADAPTERS

Heaving plug—Material **Dual Comp.** Length **Baker Model D** Depth set **6950**
Adapters—Material _____ Size _____

SAND-WATER FRAC RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
47,000# sand, 37,000 gal. water					2709-2724	
62,000# sand, 60,000 gal. water					6994-7013	
60,000# sand, 55,000 gal. water					7142-7165	

TOOLS USED

Rotary tools were used from **0** feet to **7242** feet, and from _____ feet to _____ feet
Cable tools were used from _____ feet to _____ feet, and from _____ feet to _____ feet

DATES

_____, 19____ Put to producing ***** _____, 19____

The production for the first 24 hours was _____ barrels of fluid of which _____% was oil; _____% emulsion; _____% water; and _____% sediment. Gravity, °Bé. _____

If gas well, cu. ft. per 24 hours _____

Gallons gasoline per 1,000 cu. ft. of gas _____

Wellhead Rock pressure, lbs. per sq. in. **2382-DK 757 PC**

EMPLOYEES

_____, Driller _____, Driller
_____, Driller _____, Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
			* 3-hr. Potential Tests:
			Dakota 11/23/60
			Flow after 3-hrs. thru 3/4" choke
			3090 MCFD.
			Pictured Cliffs 11/30/60
			Flow after 3 hrs. thru 3/4" choke
			772 MCFD.
		Log Tops:	Pictured Cliffs 2683' (- 4137)
			Cliffhouse 4266' (- 2554)
			Menashee 4480' (- 2340)
			Pt. Lookout 4946' (- 1874)
			Mancos 5128' (- 1692)
			Gallup 6061' (- 759)
			Greenhorn 6906' (- 86)
			Dakota 6988' (- 168)
FEET—	19	LOLYN FEET	FORMATION

(OVER)

LOGWELLION RECORD-Continued

19-48094-4

LOG OF OIL OR GAS WELL

Company: H. D. Hays
Location: T. 24N. R. 10E. S. 10E. Sec. 24
Well No.: 24-24
Location: T. 24N. R. 10E. S. 10E. Sec. 24
Elevation: 5200 ft.
The information given herewith is a complete and correct record of the well and all work done thereon.
Signed: _____
Title: _____

The summary on this page is for the condition of the well as above data.
Completed drilling: September 11, 1920
November 12, 1920

OIL OR GAS SANDS OR CONES

No. 1 from	5243	to	5152	No. 1 from	5152
No. 2 from	5152	to	5107	No. 2 from	5107
No. 3 from	5107	to	5052	No. 3 from	5052

IMPORTANT WATER SANDS

No. 1 from	5052	to	5007	No. 1 from	5007
No. 2 from	5007	to	4952	No. 2 from	4952

See Attached

It is of the greatest importance to have a complete history of the well. Please state in detail the nature of the work and its results. If there were any changes made in the casing, state fully, and if any casing was attached, of the well, give its size and location. If the well has been dynamited, give date, size, position, and nature of the plug or bridge. If there were any changes made in the casing, state fully, and if any casing was attached, of the well, give its size and location. If the well has been dynamited, give date, size, position, and nature of the plug or bridge.

HISTORY OF OIL OR GAS WELL

FROM	TO	TOTAL FEET	FORMATION
5200	5152	48	Chalk
5152	5107	45	Chalk
5107	5052	55	Chalk
5052	5007	45	Chalk
5007	4952	55	Chalk
4952	4907	45	Chalk
4907	4852	55	Chalk
4852	4807	45	Chalk
4807	4752	55	Chalk
4752	4707	45	Chalk
4707	4652	55	Chalk
4652	4607	45	Chalk
4607	4552	55	Chalk
4552	4507	45	Chalk
4507	4452	55	Chalk
4452	4407	45	Chalk
4407	4352	55	Chalk
4352	4307	45	Chalk
4307	4252	55	Chalk
4252	4207	45	Chalk
4207	4152	55	Chalk
4152	4107	45	Chalk
4107	4052	55	Chalk
4052	4007	45	Chalk
4007	3952	55	Chalk
3952	3907	45	Chalk
3907	3852	55	Chalk
3852	3807	45	Chalk
3807	3752	55	Chalk
3752	3707	45	Chalk
3707	3652	55	Chalk
3652	3607	45	Chalk
3607	3552	55	Chalk
3552	3507	45	Chalk
3507	3452	55	Chalk
3452	3407	45	Chalk
3407	3352	55	Chalk
3352	3307	45	Chalk
3307	3252	55	Chalk
3252	3207	45	Chalk
3207	3152	55	Chalk
3152	3107	45	Chalk
3107	3052	55	Chalk
3052	3007	45	Chalk
3007	2952	55	Chalk
2952	2907	45	Chalk
2907	2852	55	Chalk
2852	2807	45	Chalk
2807	2752	55	Chalk
2752	2707	45	Chalk
2707	2652	55	Chalk
2652	2607	45	Chalk
2607	2552	55	Chalk
2552	2507	45	Chalk
2507	2452	55	Chalk
2452	2407	45	Chalk
2407	2352	55	Chalk
2352	2307	45	Chalk
2307	2252	55	Chalk
2252	2207	45	Chalk
2207	2152	55	Chalk
2152	2107	45	Chalk
2107	2052	55	Chalk
2052	2007	45	Chalk
2007	1952	55	Chalk
1952	1907	45	Chalk
1907	1852	55	Chalk
1852	1807	45	Chalk
1807	1752	55	Chalk
1752	1707	45	Chalk
1707	1652	55	Chalk
1652	1607	45	Chalk
1607	1552	55	Chalk
1552	1507	45	Chalk
1507	1452	55	Chalk
1452	1407	45	Chalk
1407	1352	55	Chalk
1352	1307	45	Chalk
1307	1252	55	Chalk
1252	1207	45	Chalk
1207	1152	55	Chalk
1152	1107	45	Chalk
1107	1052	55	Chalk
1052	1007	45	Chalk
1007	952	55	Chalk
952	907	45	Chalk
907	852	55	Chalk
852	807	45	Chalk
807	752	55	Chalk
752	707	45	Chalk
707	652	55	Chalk
652	607	45	Chalk
607	552	55	Chalk
552	507	45	Chalk
507	452	55	Chalk
452	407	45	Chalk
407	352	55	Chalk
352	307	45	Chalk
307	252	55	Chalk
252	207	45	Chalk
207	152	55	Chalk
152	107	45	Chalk
107	52	55	Chalk

DRILLING AND COMPLETION HISTORY

CONSOLIDATED OIL & GAS, INC.

CONSOLIDATED-HALE NO. 1 - 24

San Juan County, New Mexico

December 1, 1960

Location: 795' F/NL & 1700' F/EL Section 24 - T26N-R8W,
N. M. P. M.

Elevation: 6807' Ground
6820' K. B. - all measurements from K. B.

Spud: September 11, 1960

Drilling Completed: October 10, 1960
Well Completed: November 15, 1960

Total Depth: 7242' Drilled
7210' Plug Back

Casing:

Surface - 9-5/8", 32# H-40 cemented at 358' w/300 sx 2%
CaCl₂ cement.

Production - 5-1/2", 14# & 15.5# J-55 cemented at 7240' w/398
sx 6% gel cement thru shoe and 150 sx 6% gel
cement thru stage collar at 2806'.

Tubing - 1-1/2" EUE J-55 hung at 6355'.

Logs: Lane Wells Radioactivity & Cemotron
Schlumberger Induction-Electric

Cores and Drillstem Tests: None

Formation Tops: (Log)

Pictured Cliffs	2683'	(- 4137')
Mesaverde -		
Cliffhouse	4266'	(- 2554')
Menefee	4480'	(- 2340')
Pt. Lookout	4946'	(- 1874')
Mancos	5128'	(- 1692')
Gallup	6061'	(- 759')
Greenhorn	6906'	(- 86')
Dakota	6988'	(- 168')

Producing Perforations:

Dakota -	6994' - 7013'	7142' - Slot
	7053' - 7072'	7165' - Slot
Pictured Cliffs -		2700' - 2709'
		2713' - 2724'

Treatment:

Dakota - Sand-Water Frac w/122,000# (20-40 mesh)
sand, 123,000 gal. water, 500 gal. acid
in two stages.

Pictured Cliffs - 47,000# (10-20 mesh) sand and
37,000 gal. water.

Initial Potential:

Flow Volume thru 3/4" choke:
Dakota - 3090 MCFD
Pictured Cliffs - 772 MCFD

WELL: CONSOLIDATED-HALE NO. 1-24
(795' F/NL & 1700' F/EL of Sec. 24 - T26N - R8W, N.M.P.M.)
FIELD: Undesignated Dakota
COUNTY: San Juan STATE: New Mexico
ELEVATIONS: 6807' GD
6818' KB

9/10/60

Drilling rat hole.

9/11/60

Drilling at 275'. Drilled 275', sand and sandrock, 9-7/8" hole. Mud 8.9 - 100.

9/12/60

Total Depth 669'. Drilled 394' of 9-7/8" hole. Presently reaming at 310', 13-3/4" hole. Deviation 3/4 degree at 450'. Mud 8.9 - 150.

9/13/60

WOC after reaming 9-7/8" hole to 13-3/4" hole to a depth of 358'. Ran 11 joints of 9-5/8" casing set at 358' KB. Cemented with 300 sacks regular 2% CaCl₂. Plug down 2:00 p.m. yesterday. Good returns.

9/14/60

Total Depth 9-7/8" hole, 669'. Drilling cement out of surface hole. Presently working on pump, ready to drill on past surface.

9/15/60

Drilling at 1809' with Bit No. 1. Drilled 1,140', shale and sand. Mud 9 - 33. Deviation 1 degree at 1350', 3/4 degree at 1760'.

WELL: CONSOLIDATED-HALE NO. 1-24

9/16/60

Drilling at 2405' with Bit No. 3. Drilled 596', sand and shale. Mud 9.1 - 32 - 10 - 3/4 degree at 2200'.

9/17/60

Drilling at 3006' with Bit No. 4. Drilled 601'. Mud 9.4 - 34 - 12%. Deviation 3/4 degree at 2775'.

9/18/60

Drilling at 3425' with Bit No. 5. Drilled 419', shale and sand. Mud 9.4 - 34 - 18%. Deviation 3/4 degree at 3050'.

9/19/60

Drilling at 3709' with Bit No. 7. Drilled 284', sand and shale. Mud 9.5 - 34.

9/20/60

Drilling at 3959' with Bit No. 8. Drilled 250', shale and sand. Mud 9.4 - 34 - 13. Deviation 3/4 degree at 3765'.

9/21/60

Total Depth 4113'. Drilled 154', sand and shale. Presently tripping for Bit No. 10. Mud 9.5 - 35.

9/22/60

Total Depth 4273'. Drilled 160', sand and shale. Presently tripping for Bit No. 11. Mud 9.7 - 47.

9/23/60

Total Depth 4432'. Drilled 159', shale and sand. Mud 9.4 - 42 - 7.2.

WELL: CONSOLIDATED-HALE NO. 1-24

9/24/60

Drilling at 4659' with Bit No. 13. Drilled 227', shale and sand. Mud 9.6 - 47 - 8.2 - deviation 1 degree at 4400'.

9/25/60

Drilling at 4925' with Bit No. 14. Drilled 266', shale and sand. Mud 9.5 - 44 - 8.6.

9/26/60

Drilling at 5138' with Bit No. 16. Drilled 213', shale and sand. Mud 9.6 - 46 - 7.6 - 2-1/4 degrees at 5073'.

9/27/60

Drilling at 5359' with Bit No. 17. Drilled 221', shale and sand. Mud 9.5 - 52 - 6.

9/28/60

Drilling at 5569' with Bit No. 18. Drilled 210'. Mud 9.6 - 47 - 6.4.

9/29/60

Drilling at 5830' with Bit No. 19. Drilled 261', shale and sand. Mud 9.6 - 48 - 6.5. Deviation 1-1/4 degrees at 5658'.

9/30/60

Drilling at 6115' with Bit No. 20. Drilled 285', sand and shale. Mud 9.5 - 48 - 6.4.

10/1/60

Total Depth 6323'. Drilled 208', sand and shale. Presently tripping for Bit No. 22. Mud 9.8 - 48 - 6.8. Deviation 1-1/4 degree at 6225'.

10/2/60

Total Depth 6546'. Drilled 223', shale and sand. Presently tripping for Bit No. 23. Mud 9.7 - 51 - 6.6.

WELL: CONSOLIDATED-HALE NO. 1-24

10/3/60

Total Depth 6760'. Drilled 214', shale and sand. Presently fishing for cone off Bit No. 23. Mud 9.8 - 49 - 5 - 6% oil.

10/4/60

Drilling at 6775' with Bit No. 25. Drilled 15', sand and shale. Mud 9.8 - 49.

10/5/60

Drilling at 7048' with Bit No. 26. Drilled 273', shale and sand. Mud 9.9 - 54 - 6.8.

10/6/60

Drilling at 7120' with Bit No. 28. Drilled 77', sand. Mud 9.8 - 68 - 6.

10/7/60

Drilling at 7183' with Bit No. 31. Drilled 63', sand. Mud 9.8 - 68 - 5.6.

10/8/60

Total Depth 7224'. Drilled 41', sand. Presently tripping for Bit No. 32. Mud 9.9 - 76 - 4.8.

10/9/60

7242' Total Depth. Drilled 18'. Waiting on orders

10/10/60

Running 5-1/2" casing. 110 joints in hole at report time. Mud 9.9 - 98 - 4.4. Ran Schlumberger ES-Induction and Gamma Ray-Sonic logs. Excellent Dakota Sand development indicated. Out of some 200 ft. of gross indicated sand, we anticipate approximately 100 ft. of net Dakota pay. The Pictured Cliffs Formation appears to have some 25 ft. of net gas pay.

WELL: CONSOLIDATED-HALE NO. 1-24

10/11/60

WOC. PBTD 7210'. Ran 229 joints J-55, 5-1/2" ST&C new casing and set at 7240' K.B. (0-4753' is 14# and 4753' to 7240' is 15.5#).

Float collar at 7210', stage collar at 2809'. Casing centralized through Dakota and Pictured Cliffs with cement baskets at 2843' and 2615'.

Cemented first stage opposite the Dakota with 398 sacks regular cement with 6% gel. Bumped plugs at 3000 psig - checked floats OK. WOC 3 hours and cemented opposite Pictured Cliffs through stage collars with 153 sacks regular cement with 6% gel. Bumped plug at 3000 psig.

Now hauling in frac tanks and preparing to haul frac water.

11/3/60

Moving on completion rig.

11/4/60

Picking up workover tubing in preparation for drilling out cement plugs.

11/8/60

Cleaning out frac sand 500' off bottom. Had a total of 700' frac sand in hole. A summary of completion activities since 11/4/60 follows in sequential order:

Went in hole with 2-7/8" EUE workover tubing and 4-3/4" bit and drilled stage collar, which had approximately 1' hard cement on top.

WELL: CONSOLIDATED HALE NO. 1-24

11/8/60 - (Continued)

at which point 10,000 gal. sand-laden water were treated with Dowell's J-101 gelling agent, with resulting pressure decline to 2500 psig. After 20,000 lbs. sand in, dropped 20 balls with pressure increase to 2600 psig. After 30,000 lbs. sand in, dropped 20 balls with pressure increase to 2650 psig. After 45,000 lbs. sand in, increased concentration of sand to 2 lbs. per gal. and treated additional 10,000 gal. frac water with J-101. Pressure had then risen to 2700 psig and immediately decreased to 2600 psig as a result of the gelled water. After 55,000 lbs. sand in, dropped 25 balls and started clear water flush before balls hit perforations. Flushed at 2950 psig.

JOB SUMMARY -

62,000 lbs. (20-40 mesh) sand
55,000 gal. water (20,000 gal. gelled)
65 balls
2450 to 2950 psig
30 bpm

Standing pressure was 2500 psig immediately, dropped to 1300 psig in one hour. Opened well and backflowed for approximately 6 hours, at which point it ceased continuous flow, but then flowed with intermittent gas heads increasing to the point where water was thrown 40 ft. vertically out of the casing, with gas pockets that would burn for periods of 1 to 5 minutes.

Hooked up pump truck and pumped in 2500-lb. slug of sand at 4 lbs. per gal. Pressure increased to 3000 psig and then broke back to 2400 psig. Pumped in additional 2500-lb. slug at 7 lbs. per gal., merely displacing to bottom. Well held a steady 1350 psig, which immediately dropped to 600 psig after placing Pictured Cliffs perforations as follows: Four bullets per foot 2700' to 2709', 2713' to 2724'. Sand-water fraced Pictured Cliffs in one stage as follows:

Started injecting at 1300 psig with 1 lb. sand per gal., increasing to 1-1/2 lbs. per gal. in 3 minutes. At this time, pressure had decreased

WELL: CONSOLIDATED HALE NO. 1-24

11/8/60 - (Continued)

Cleared casing to 7210' K.B., PBTD. Pulled tubing and bit and reran tubing with Dowell Abrasijet tool. Notched casing at 7165' and 7142'. Displaced 500 gal. 15% HCl on bottom and pulled tubing and Abrasijet tool.

Displaced acid into formation in three stages, allowing to soak 30 minutes after each stage at 2500, 2400 and 2200 psig respectively. Sand-water fraced Stage 1 as follows:

Started injecting at 2450 psig with sand at 1/2 lb. per gal., rapidly increasing to 3/4 lb. and then to 1 lb. per gal. by the time 6,000 lbs. were injected. Continued job with only minor pressure fluctuations at about 32 bpm throughout. All of the sand-laden water was gelled with Dowell's J-101. Overflushed sand with approximately 50 barrels clear water and shut in with a standing pressure of 2625 psig, falling off to 1600 psig in 30 minutes.

STAGE SUMMARY -

60,000 lbs. (20-40 mesh) sand
68,000 gal. Water (approximately 60,000 gal. gelled)
500 gal. HCl 15%
2450 psig
32 bpm

Lubricated in Guiberson drillable magnesium bridge plug and set on wire line at 7135'. Bled off casing pressure, which went immediately to 0, indicating successful plug setting.

Went in with bullet gun and found sand fillup above bridge plug to 7072'. Perforated with 4 bullets per foot 7053' to 7072', 6994' to 7013'. Immediately after first perforations, noted communication in that casing pressure rose rapidly to 1000 psig at surface. While this could have resulted from cement channeling, it is believed that it was the result of communication via vertical formation fracturing. Proceeded with Stage 2 Dakota sand-water frac as follows:

Started injecting at 2600 psig with 1/2 lb. per gal. of sand, rapidly increasing to 1 lb. per gal. Pressure then gradually rose to 2650 psig.

WELL: CONSOLIDATED HALE NO. 1-24

11/8/60 - (Continued)

to 1000 psig. Increased sand to 2 lbs. per gal., pressure remaining at 1000 psig. After 20,000 lbs. sand, dropped 10 balls with pressure to 1100 psig. After 30,000 lbs. sand, dropped 30 balls and increased concentration of sand to 2-1/2 lbs. per gal., with pressure increased to 1150 psig. Flushed sand with clear water and shut in with a standing pressure of 600 psig immediately, which held steadily for one hour, at which point the well was allowed to backflow - died off in one hour of flowing.

JOB SUMMARY -

47,500 lbs. (10-20 mesh) sand
37,000 gal. water
40 balls
1000 to 1150 psig average
46.5 bpm average

Picked up completion tubing and bit and went in hole to clean out frac sand.

11/9/60

Drilling on bridge plug at 7135'. Noted considerable frac water and sand entry into wellbore while cleaning out opposite Dakota perforations.

11/10/60

Stripping out of hole with workover tubing and bit in preparation for running dual completion equipment. Completed drilling bridge plug yesterday and cleaned out to 7210' K.B. - PBTD. Well headed heavily while circulating and finally came in on its own while circulating on bottom, with early indications of 3 to 4 MMCFD with both the Dakota and Pictured Cliffs zones open to the wellbore.

WELL: CONSOLIDATED-HALE NO. 1-2411/11/60

Preparing to go in hole with 1-1/2" Dakota completion tubing. Stripped out of hole with workover tubing. After killing well with water, well livened up several times while coming out of hole. Lubricated in Baker Model D permanent completion production packer, set at 6950' K.B. Laid down workover tubing.

11/16/60

Testing well. The chronology of events since last report is as follows:

Went in hole with Dakota completion tubing and washed 15' of frac sand from above the Baker Model D production packer. Landed 6941', 214 joints, of 1-1/2" Integral Joint (J & L Aztec) in packer set at 6950'. Lower part of Dakota tubing string consists of 5.01', including locator sub, three seal units and 15" of stinger.

Dakota came in on its own with no swabbing immediately after landing completion tubing in packer. Dakota flow measured 5-1/4 MMCFD after 4 hours, and 2500 MCFD after 24 hours continuous blowing, with a heavy water and oil mist.

Ran Pictured Cliffs completion tubing - 2662' (83 joints) of 1" regular CW set at 2670' KB. Instigated natural flow from Pictured Cliffs utilizing Dakota supply gas. Allowed Pictured Cliffs to flow and unload heavy waterheads for 8 hours.

Both zones will be tested today after being shut in overnight. The Dakota has indicated a surface pressure of 2500 psig after 24 hours.

11/17/60

Shut in for initial 7-day pressure buildup and subsequent official potential determination. Tested well yesterday with following results:

Dakota -

Tubinghead pressure after 24 hours shut in was 2295 psig. Well was blown for 4 hours thru a 3/4" positive choke with the following hourly readings:

WELL: CONSOLIDATED-HALE NO. 1-2411/24/60 - (Continued)

<u>Time</u>	<u>Dakota Tubing-head Flow Pressure</u>	<u>Pictured Cliffs Casing Pressure</u>	<u>Flowing Gas Temperature</u>
15 Min	702 psig	747	50 degrees
30	402	747	49
45	355	745	49
60	310	747	49
120	255	746	50
180	* 215	745	50

* 3250 MCFD. Flow stream contained heavy frac water fog with some slugs.

The 7-day static wellhead pressures were as follows:

<u>Dakota Tubinghead</u>	<u>Pictured Cliffs Tubinghead</u>	<u>Pictured Cliffs Casinghead</u>
2382	747	747

WELL: CONSOLIDATED-HALE NO. 1-2411/17/60 - (Continued)

After 1 hour: 256 psig @ 62 degrees
 After 2 hours: 160 psig @ 64 degrees
 After 3 hours: 175 psig @ 64 degrees
 After 4 hours: 170 psig @ 64 degrees

This indicates a settled actual flow rate of about 2400 MCFD. The Flow stream is still quite wet with frac water and natural gas liquids.

Pictured Cliffs -

This zone had been blowing and was cleaned up overnight and was shut in for 2 hours prior to testing. After 2 hours well head pressures were 670 psig tubing and 680 psig casing. The well was flowed through a 1/2" positive choke with the following results:

After 1 hour: 103 psig tubing
 539 psig casing
 65 degrees
 After 2 hours: 104 psig tubing
 335 psig casing
 68 degrees

11/18/60

Shut in for initial 7-day buildup.

11/24/60

Shut in for second 7-day buildup. Ran official initial Dakota test on 11/23/60 by blowing to atmosphere for three hours through a 3/4 in. choke following 7-day shut-in period. The results were as follows:

OPEN FLOW TEST DATA

DATE November 23, 1960

Operator CONSOLIDATED OIL & GAS, INC.		Lease CONSOLIDATED-HALE NO. 1-24	
Location 795' FNL-1700' FEL, Sec. 24-T26N-R8W		County San Juan	State New Mexico
Formation Dakota		Pool Basin-Dakota	
Casing: Diameter 5-1/2	Set At: Feet 7240'	Tubing: Diameter 1-1/2 I. Jt.	Set At: Feet 6970
Pay Zone: From 6994	To 7155	Total Depth: 7210 PB	
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 P.C.	+ 12 = PSIA	Days Shut-In 7	Shut-In Pressure, Tubing PSIG 2382
Flowing Pressure: P PSIG 215	+ 12 = PSIA	Working Pressure: Pw PSIG 227	+ 12 = PSIA 2394
Temperature: T °F 50	n = .75	Fpv (From Tables) 1.029	Gravity .700

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

$$Q = 14.1605 \times 227 \times 1.0098 \times .9258 \times 1.029 = \underline{\quad 3090 \quad} \text{MCF/D}$$

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

$$Aof = \left(\frac{\quad}{\quad} \right)^n =$$

$$Aof = \underline{\quad \quad \quad} \text{MCF/D}$$

TESTED BY Robert B. Tenison

WITNESSED BY

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OPEN FLOW TEST DATA

DATE November 30, 1960

Operator CONSOLIDATED OIL & GAS, INC.		Lease CONSOLIDATED-HALE NO. 1-24	
Location 795' ENL-1700' FEL Sec. 24 - T26N-R8W		County San Juan	State New Mexico
Formation Pictured Cliffs		Pool Ballard	
Casing: Diameter 5-1/2"	Set At: Feet 7240'	Tubing: Diameter 1" NUE	Set At: Feet 2662'
Pay Zone: From 2700	To 2724	Total Depth: Packer 6950'	
Stimulation Method Sand-Water Frac		Flow Through Casing	Flow Through Tubing X

Choke Size, Inches 0.750		Choke Constant: C 14.1605			
Shut-In Pressure, Casing, PSIG 757	+ 12 = PSIA 769	Days Shut-In 14	Shut-In Pressure, Tubing PSIG 759	+ 12 = PSIA 771	
Flowing Pressure: P PSIG 46	+ 12 = PSIA 58		Working Pressure: P _w PSIG	+ 12 = PSIA	
Temperature: T °F 45	n = 0.75		F _{pv} (From Tables) 1.00	Gravity .700	

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

$$Q = 14.1605 \times 58 \times 1.0147 \times .9258 = \underline{\quad 772 \quad} \text{ MCF/D}$$

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

$$Aof = \left(\frac{\quad}{\quad} \right)^n =$$

$$Aof = \underline{\quad} \text{ MCF/D}$$

TESTED BY Robert B. Tenison

WITNESSED BY _____

Robert B. Tenison