(SUBMIT IN TRIPLICATE)

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

white are orbited 13-01-00'	
Indian Agency	2
Allottee Manage	
Losso No. 24-60-600-735	

TICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF WATER SHUT-OFF	
	SUBSEQUENT REPORT OF SHOOTING OR AC	
TICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING	<u>. </u>
TICE OF INTENTION TO REDRILL OR REPAIR WELL.	SUBSEQUENT REPORT OF REDRILLING OR I	8/1/1/ TH */ HEA
ICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT.	
ICE OF INTENTION TO PULL OR ALTER CASING.	SUPPLEMENTARY WELL HISTORY	
ICE OF INTENTION TO ABANDON WELL	Set Bartage Geg.	1
(INDICATE ABOVE BY CHECK MA	ARK NATURE OF REPORT, NOTICE, OR OTHER DATA)	
	Ny 11	, 19 22
No. 5 is located 660 ft.	from N line and 1960 ft. from W	line of sec. 3
	14H There steems a mine	
(14 Sec. and Sec. No.) (Twp.)	(Range) (Meridian)	
oti - Callup Sun J	tree March	
(Field) (Cou	nty or Subdivision) (State or	Territory)
DET names of and expected depths to objective sands; show ing points, and s Drilled life hale to 335° II telth Estional Testes pattern	AILS OF WORK vizes, weights, and lengths of proposed casings; indicated the important proposed work) B TD. Rom S jto, of 9-5/8" AS these and this, and walk continue.	ate mudding jobs, cement-
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Drilled 124" hele to 335° E with Mational Semme pattern caller - 320° total. Landon commit with 1/4 ct. ft./sz., commit. People top plug to Good commit returns to small Sected 9-5/5" cag. with 500 contains the plug to Good commit returns to small Sected 9-5/5" cag. with 500 contains the plug to Good commit returns to small sected 9-5/5" cag. with 500 contains the plug to Good commit returns to small sected 9-5/5" cag. with 500 contains the plug to Good commit returns to small sected 9-5/5" cag. with 500 contains the plug to good contains the good contains the plug to good contains the plug to good contains the plug to good contains the good	sizes, weights, and lengths of proposed casings; indicated other important proposed work) B TD. Rum S jtc. of 9-5/8" AS also and this, and wold combined at 333 * 13, and commuted 193 of structurates and 135 as of 250 * 13. Used top and bottom asc. Nexted on coment 24 hours pat., for 30 min hald CK.	regular plug.
names of and expected depths to objective sands; show ing points, and so the same pattern with Mathemal Runne pattern caller - 320° total. Laple commit with 1/4 ca, ft./22, commit. Passed top plug to Good commit returns to such the same sands. Tested 9-5/8" cage with 500 and the same sands.	raizes, weights, and lengths of proposed casings; indicated interimportant proposed work) B TD. Ram S Jis., of 9-5/8" AS also and this, and wold combined at 333° IB, and commuted 375 of structures and 125 an of 290° IB. Used top and bottom pole. Ser 30 min hald Ch. Producing Company	1 4 1959 CON. COM.
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LOCATE WELL CORRECTLY

Indian Agency Window Rock NUMBER 14-20-603-735 LEASE OR PERMIT TO PROSPECT MAYEN

UNITED STATES

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

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GEOLOGICAL COMPLETION REPORT BRITISH-AMERICAN NO.5 NAVAJO

Well Classification:

Development Well Bisti-Gallup Field San Juan County, New Mexico British-American Navajo #5 C NE NW Section 13-26N-14W

Well Data:

Commenced drilling: Completed drilling: Contractor: Casing Record:

Elevation: Total Depth and Datum: PBTD, Datum and Formation:

Completion Data:

Producing zone: Perforations:

Treatment:

Initial Production:

Geological Data:

Samples:

E. S. Induction

Microlog: Gamma Ray Geolograph:

Formation Record:

Name	Schl. Top	Schl. Datum	Fluid Content
Pictured Cliffs	1464	+4854	
Point Lookout	39 <i>3</i> 5	+2383	
Mancos	4100	+2218	
Upper Gallup	5060	+1258	
Gallup Pay	51 34	+1184	-

Core Record: None

Drill Stem Test Record: None

May 9, 1959 May 20, 1959

Force Drilling Company

Set 9 5/8" at 332 KB w/175 sax cmt Set 5 1/2" at 5262 KB w/100 sax cmt 2% gel.

G. L. 6309 K. B. 6318.5

Driller 5265 +1053; E.S. 5269 +1049

5193 +1125; Gallup ss.

Gallup ss Net Fay: 10' perf.
Ferf. 5150-5160 w/L jets per ft.
SOF w/60,000 lbs sand, 1500 lbs Adomite
and 30,000 gals oil
B. D. 2600 psi, FTI 2200 psi, Average
Injection rate 44 BPM
Final swab gage before temporary abandonment

Rec 36 BW & 4 BLO in 16 hrs

252 BLO to Recover

10' samples from 5050-T.D.
Stored at: Four Corners Sample Cut
Farmington, New Mexico
2" from 333-5269 K.B.
5" from 4260-5269 K.B.
Same as 5" E. S.

4950-5193 333-5265 K.B. The British-American Navajo #5 was drilled as a development well in the C NE NN Section 13-26H-1W, San Juan County, New Mexico. The Upper Gallup was ricked on the E. S. log at 5060 +1258 and the Gallup Pay was picked at 5124 +1184. The top of the actual pay sand development was picked at 5140 +1169. The sand in this zone was quite poorly developed and the electrical log characteristics were not comparable to the Navajo #4, the south-west offset, which is currently producing 130 BO and no water per day.

The Navajo #5 was perforated from 5150-5160 and on a natural bailer test after the hole had been swabbed down, recovered 1 B.W.T.H. w/a show of oil and gas. After fracturing, the well swabbed load oil and water, and at the end of 5 days swabbed 43 BW & 7 BLO in 24 hrs. The final gauge before the well was temporarily abandoned was for 16 hours and it made 36 B.W. & 4 BLO. This water production cannot be accounted for by completion difficulties as has been the case of some of the wells in the field which have made water from the first bench. There is no indication of a channel job after cementing, the casing had no holes in it, and the correlation of the E. S. and the Carma-ray log and subsequent perforating tied into a casing collar was without error. There was a one foot correction between the Gamma-ray and the E. S., but this was adjusted.

A water sample taken from the bailer was analysed, and the analysis was generally comparable to the Bisti-Gallup water. Further, the PPM Sedium Chleride of 57,740 is in line with the 60,000 PPM Sedium Chleride calculated from electrical logs.

Calculation of E. S. Induction & M. L.'s seem to indicate that the well is capable of producing water - although the Sw is slightly less than the Sw of 55% which is usually considered the critical Sw in electricial log calculation.

The following are my log calculations for the interval 5151-60;

Rm 1.2 at 125°, Rmf .7 at 125°, Rmc 1.6 at 125°
55 MV SP R2" = 7.5/1.6 = 4.69
SN 35/1.2 = 29.1 R 1x1 = 5/1.6 = 3.12
E = 9' Por = 15.36
F = 36
Rmf/Rw = 7.6 Rt = 13r
Rmf/Rw = 7/7.6 Rwe = .092 Rt = 13r
Rw = .092 Sw =
$$\sqrt{3.6}$$
 = $\sqrt{0.277}$
Rw = .1 Sw = 52.66

The evidence seems quite conclusive that the water produced in the Navajo #5 is definitly formation water.

There are two possible explanations for the production of water from the Navajo #5. One is encroachment of water from the north-west into the field. The Navajo #5 is structurally, the lowest well in the field, having a datum of +1169, picked from the E. S. log at 5149 on top of the pay sand development.

This is only 7' low to the correlative point in the Navajo #4, which isn't producing any water at the present time. If the Navajo #4 after having been on production for a longer period of time should begin to produce some water, that should be evidence for water encroschment from the north-out, as core analysis and electrical low interpretation of the Navajo #4 gave no indication of possible water production when the well was completed.

The second and more likely explanation for the water production in the Navajo #5 is a combination of its lower structural position and an increase of interstitial water, due to a decrease in permeability and porosity. The E. S. log indicates that the 1st bench is poorly developed due to its increased shaliness, and it is outte possible that the water sturation has increased to the point that in conjunction with its lower structural position, only water can be produced.

No recommendations for additional drilling can be made at this time, but ofter the Navajo #4 has been on production long enough to assume that it isn't roing to start making water, the drilling of the C SU NW Sec. 13-26N-1/W would be justified.

This location should encounter 10 of developed 1st bench sand, and would be 25' higher structurally than the Navajo #5.

This recommendation is contingent on the continued good production from the Navajo $\# L_{\nu}$

H. A. Holtom

				Dafe June 18	1959
WELL NAME	FROM	ō	THICK.	LITHOLOGY	
British-American Navajo #5				Sample Description starts above Upper Callup	
C NE SW Sec. 13-26M-14W San Juan County, New Mexico	5050	5080		10% altst, grey vfg, tight - 90% sh-gry-dg gry, few edy, mic	
	5080	5150		Sh-grey-dk grey, few sdy & mic, const altst aa	
	51.50	51.70		5% ss-grey tan fg. shly, trace w/fair pap - trace as fg tan	
				fair pep - sh-gr-tan sity sdy	
	57.70	5200		Const as vfg, clay fill shly - sdy sh - tan-brn	
	5200	5260		Tan shly sd, clay fill and sdy sh	
					1
				GEOLOGIST H. A. Holton	