

WELL HISTORY

GENERAL DATA:

Well Name and Number: East Johnny's Creek No. 1

Location: 24°11'00"S; 131°37'55"E

Name and Address of Operator:

Exoil (N.T.) Pty. Ltd.,  
Perry House,  
Elizabeth Street,  
BRISBANE. QUEENSLAND.

Name and Address of Tenement Holder:

Magellan Petroleum (N.T.) Pty. Ltd.,  
276 Edward Street,  
BRISBANE. QUEENSLAND.

Details of Petroleum Tenement:

Oil Permit 43, Northern Territory of Australia

Area: 9918 square miles

District: Lake Amadeus

Total Depth: 6344 feet

Date Drilling Commenced: 23rd March, 1965

Date Drilling Completed: 18th May, 1965

Date Well Abandoned: 20th May, 1965

Date Rig Released: 20th May, 1965

Drilling Time to Total Depth: 56 days

Elevation: Kelly Bushing 2200 feet a.s.l. (approximately)

Status: Dry and abandoned

Cost:

DRILLING DATA:

Name and Address of Drilling Contractor:

Oil Drilling and Exploration Ltd.,  
93 York Street,  
SYDNEY. N.S.W.

Drilling Plant:

Make: National Ideal

Type: Rotary T-32

Motors (2): G.M.C. Twin Model 471, 225 h.p.

Mast:

Make: Emsco

Type: Serial 12

Rated Capacity: 416,000 lbs.

Pumps:

Make:	National (1)	Emsco (1)
Type:	C-250	D-300
Size:	7 $\frac{1}{4}$ " x 15"	7 $\frac{1}{4}$ " x 14"
Motors:	Twin G.M.C. 671 (1) Twin G.M.C. 471 (1)	Twin G.M.C. 671 (1)

Air Drilling Equipment:

<u>Unit</u>	<u>Make</u>	<u>Type</u>	<u>Size</u>	<u>Motors</u>
Compressor	Ingersoll-Rand	HHE 3 stage	1500 c.f.m. 300 p.s.i.	Waukesha 405 h.p.
Booster Compressor	Ingersoll-Rand	HHE 2 stage	3000 c.f.m. 1500 p.s.i.	Waukesha 405 h.p.
Injection Pump	Aldrich	Triplex H.S. 3B	1" x 2 $\frac{1}{2}$ "	Wisconsin 30 h.p.

Blow-out Preventor Equipment:

Make:	Shaffer	Hydril	Shaffer
Type:	"B"	G.K.	Rotating
Size:	12"	12"	12"
Series:	900	900	900
Working Pressure:	3000 p.s.i.	3000 p.s.i.	3000 p.s.i.

Hole Sizes and Depths:

20" from surface to 64'  
 17 $\frac{1}{2}$ " from 64' to 101'  
 13 $\frac{3}{4}$ " from 101' to 1277'  
 9 $\frac{7}{8}$ " from 1277' to 3665'  
 7 $\frac{7}{8}$ " from 3665' to 6344'

Casing and Cementing Details:

Size:	15"	10 $\frac{3}{4}$ "	8 $\frac{1}{2}$ "
Weight:		32.75 lbs.	28 lbs.
Grade:	Conductor	H40	J55, FJ40
Setting Depth:	101'	1277'	3665'
Cement Used:	35 sacks	280 sacks	50 sacks
Cemented to:	surface	surface	approx. 3,000'
Method Used:	Rig pumps	Rig pumps	B.J. Services

Drilling Fluid:

East Johnny's Creek No. 1 was drilled from surface to 135 feet with air, from 135 feet to 5302 feet with mist and from 5302 feet to 6344 feet with aerated mud. For mist drilling a solution of foaming agent and corrosion inhibitor in water was continuously injected at rates of 7-16 barrels per hour according to the amount of water the hole was making. At 3665 feet, the hole was mudded up for logging but was flushed out during subsequent mist drilling. The hole was again mudded up for aerated mud drilling and the average mud analysis is:-

<u>Weight</u> <u>(lbs./gal.)</u>	<u>Viscosity</u> <u>(Secs Marsh)</u>	<u>Water Loss</u> <u>(CC'S API)</u>	<u>Cake</u> <u>(ins)</u>	<u>pH</u>
8.6	36	14.9	2/32	10.6

The following mud and additives were used throughout the drilling operation:-

Gel	10,860 lbs.
Caustic	14,400 lbs.
Bichromate	6,758 lbs.
Lime	4,400 lbs.
Spersene	1,100 lbs.
XP20	550 lbs.
Driscose	200 lbs.
Calcium Chloride	149 lbs.
Lost Circulation Material	65 lbs.
Tol Foam	1,258 $\frac{1}{4}$ gallons

Water Supply:

A water bore was drilled by Austral Geo Prospectors Pty. Ltd. to 236 feet at a point approximately 600 yards from the well. A small supply of fresh water was obtained below 110 feet which, together with water made during drilling of East Johnny's Creek No. 1, was sufficient for operating purposes.

Perforating and Shooting:

Welex fired shots with a casing cutter at 3100' 3000' and 2900' in attempts to back off the 8 $\frac{1}{2}$ " casing.

However, the shooting was unsuccessful as the casing backed off at approximately 1500 feet.

Plugging Back:

In abandoning the well, the following plugs were run with rig pumps:-

<u>Plug No.</u>	<u>Circulated Off</u>	<u>Cement</u>	<u>Felt At</u>
1	4900'	60 sacks	-
2	1500'	70 sacks	-
3	Surface	15 sacks	-

Fishing Operations:

On 25th March, 1965 the bit was found to be broken off at the pin after hoisting from a depth of 95 feet. Several unsuccessful runs were made with the grapple but the fish was finally recovered in three pieces with a wireline and hook. 13½ hours were lost on the fishing operation.

LOGGING AND TESTING:

Ditch Cuttings:

Drill cuttings were collected from the blooey line at ten foot intervals except during coring and over the interval 610' - 640', when five-foot samples were taken. Three cuts of samples were made, one for each of the Northern Territory Administration (Alice Springs), Magellan Petroleum (N.T.) Pty. Ltd. and Exoil (N.T.) Pty. Ltd.

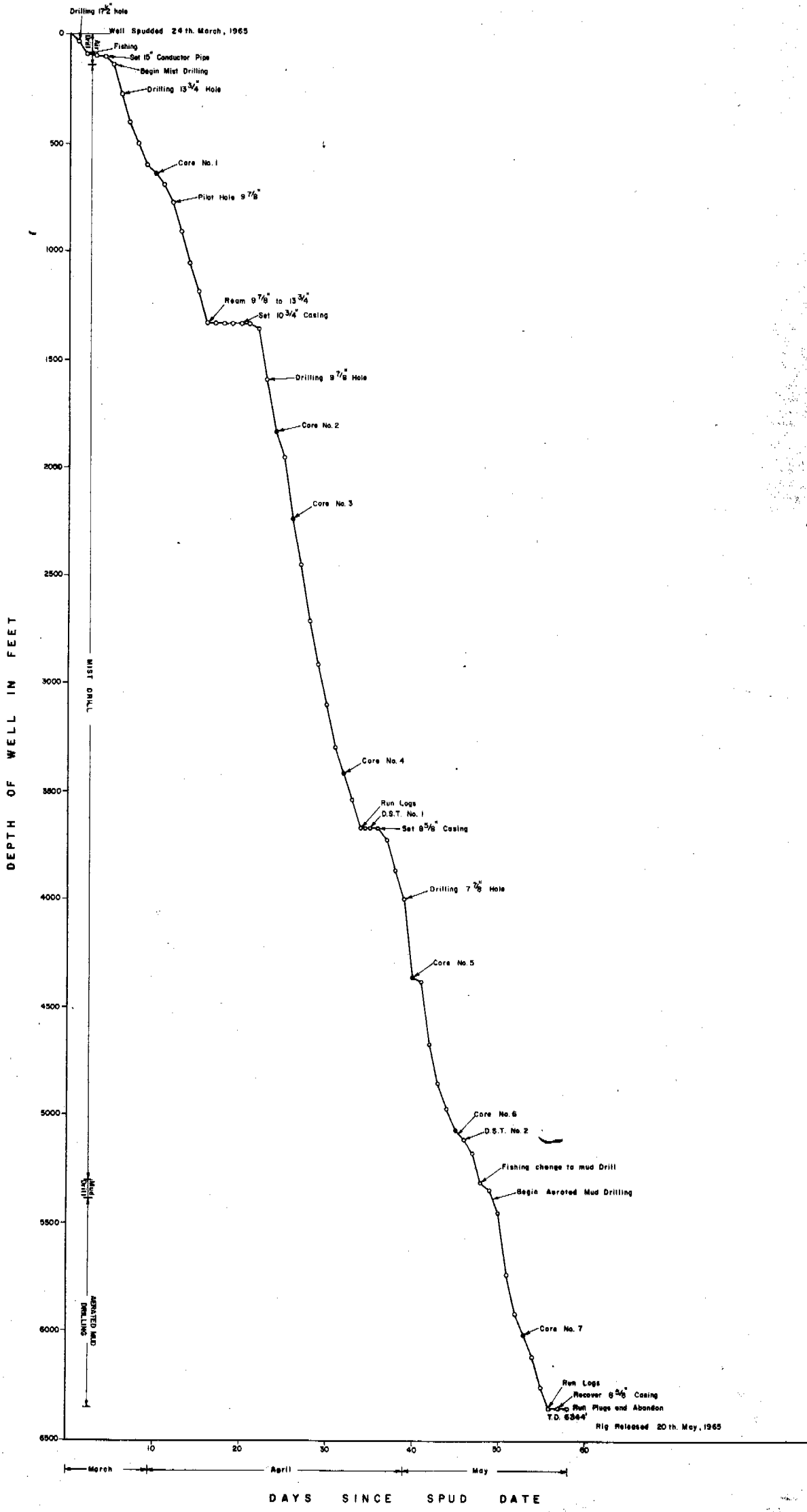
Coring:

Seven cores were cut as required to evaluate porosity, hydrocarbon indications or change in lithology. Core No. 1 was cut with a Hughes conventional "J" type barrel using a 7½" hard formation head but the remaining six cores were taken with a 6¼" Christensen diamond core barrel using an 8<sup>11</sup>/<sub>16</sub>" diamond head for cores 2 - 4 and 7<sup>13</sup>/<sub>16</sub>" diamond heads for cores 5 - 7.

The following table lists cored intervals and recoveries:-

<u>Core No.</u>	<u>Interval</u>	<u>Cored</u>	<u>Recovered</u>	<u>% Recovered</u>
1	610' - 614'	4'	1'3"	31
2	1836' - 1848'	12'	12'	100

EXOIL (N.T.) PTY. LTD.  
 EAST JOHNNY'S CREEK No.1  
 TIME VERSUS DEPTH GRAPH



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3	2215' - 2230'	15'	15'	100
4	3393' - 3408'	15'	15'	100
5	4359' - 4375'	16'	14'10"	93
6	5091' - 5113'	22'	2'	9
7	6015' - 6030'	<u>15'</u>	<u>7'5"</u>	<u>49</u>
	Total	99'	67'6"	68

(See Appendix 1 for core descriptions)

Electrical and Other Logging:

Two logging runs were made by Welex. The hole was mudded up just prior to the first run. For the second run, the mud was conditioned prior to logging.

The following logs were run at 2" and 5" scales:-

	<u>Run 1</u>	<u>Run 2</u>
Induction Electric	1277' - 3660'	3664' - 6338'
Acoustic Velocity	1277' - 3658'	3664' - 6334'
Gamma-Ray	-	130' - 6314'
FoRxo-Caliper	1277' - 3663'	3664' - 6338'

Drilling Time and Gas Log:

The drilling penetration rate was recorded on a geograph and is plotted on the composite log as minutes per five foot interval.

Since the well was drilled by air methods from surface to total depth, a pilot light was kept burning continuously at the end of the blooey line to detect shows. The minor shows encountered did not produce any flare at the blooey line.

A Corelab hot wire gas detector was kept on location in the event of conversion to mud drilling and for the purpose of testing cuttings gas in the blender.

Formation Testing:

Two conventional drill stem tests were run, the first to evaluate golden fluorescence and a petroliferous

odour in the upper Illara sand, the second to test fluorescence and residual hydrocarbon show in a sand (5078' - 5091') within the Bitter Springs. Detailed test results are included as Appendix 2.

Drill Stem Test No. 1: 3500' - 3665'

Initial shut-in 30 minutes, Flowing 30 minutes, Final shut-in 30 minutes.

I.H.P.	1632 p.s.i.	F.F.P.	1148' p.s.i.
I.S.I.P.	1370 p.s.i.	F.S.I.P.	1344' p.s.i.
I.F.P.	704 p.s.i.	F.H.P.	1645' p.s.i.

Blow: Strong initial air blow remaining steady throughout flow period.

Recovery: 2420' slightly mud-cut fresh water.

Pressure Chart: See Figure 3.

Conclusions: Test mechanically successful. Formation permeable but no recoverable hydrocarbons.

Drill Stem Test No. 2: 5025' - 5113'

Initial Shut-in 30 minutes, Flowing 30 minutes, Final Shut-in 30 minutes.

I.H.P.	1775 p.s.i.	F.F.P.	181 p.s.i.
I.S.I.P.	286 p.s.i.	F.S.I.P.	Nil, packer worked loose
I.F.P.	155 p.s.i.	F.H.P.	1723 p.s.i.

Blow: Good initial blow remaining steady throughout flow period.

Recovery: 320' fresh soapy water

Pressure Chart: See Figure 4.

Conclusions: Interval tight, little or no formation water recovered.

Deviation Surveys:

Surveys were taken with a Lane-Wells "Sure-shot" instrument run inside the drill pipe on a wire line. Readings were taken at frequent intervals above 1,500 feet, then every 300-500 feet till the instrument was dropped and damaged at 4359'.



The table below shows all surveys taken:-

70'	0°	810'	1°	1508'	¾°
175'	¾°	870'	¾°	2020'	½°
205'	½°	940'	¾°	2500'	1½°
295'	½°	1025'	¾°	2805'	1½°
415'	½°	1110'	¾°	3080'	1°
500'	0°	1210'	¾°	3389'	¾°
675'	0°	1340'	1°	3840'	¼°
755'	¾°	1410'	¾°	4359'	-

Drilling Observations:

A total of 1396¼ hours were required to drill East Johnny's Creek No. 1. Total rotating hours on bottom (excluding coring) were 699½ (50% of total time). 37 bits were used in drilling 6245 feet of hole. In addition, 2 X 1¾" button bits were used to ream for casing and one reamer was run on surface hole.

An average penetration rate of 8.9 ft./hr. was achieved and average footage per bit was 169. 22 conventional and 14 button bits were used in drilling this well. In addition one 7<sup>13</sup>/<sub>16</sub>" diamond bit was run.

Breakdown of Drilling Operations:

	<u>Footage</u>	<u>Hours Required</u>	<u>Ft./Hr.</u>	<u>No. of Bits</u>	<u>Ft./Bit</u>
Surface Hole	101	37¼	2.7	3	34
Air & Mist Drill 1¾" Hole	1172	191	6.1	15	78
Mist Drill 9¾" Hole	2344	198	11.3	7	335
Mist Drill 7¾" Hole	1599	145	11.0	*9	178
Mud and Aerated Mud Drill 7¾" Hole	1027	128¼	8.0	*4	256

\*Note:- Bit No. 42 made 189 feet in 11¼ hours (Mist Drilling) and 338 feet in 24¼ hours (Aerated Mud Drilling).