

# WELL: WAKA NUI-1



Country: New Zealand

Location: offshore Northland

Latitude: 38 30' 44.716" S Longitude: 172 50' 41.668" E

New Zealand Map Grid Y: 6 521 458.9 N X: 2 508 507.7 E

Spud Date: 30/04/1999

Directional Data: Near vertical well

Operator: Conoco (UK) Ltd.

Petroleum Report: 2436

Scale: 1:2,000

Total Depth: 3681 m MDRT

Ground Level Elevation: 1454.9 m bmsl

Rotary Table Elevation: 24.0 m amsl

Status: Plugged and abandoned

Hydrocarbon Shows: n/a

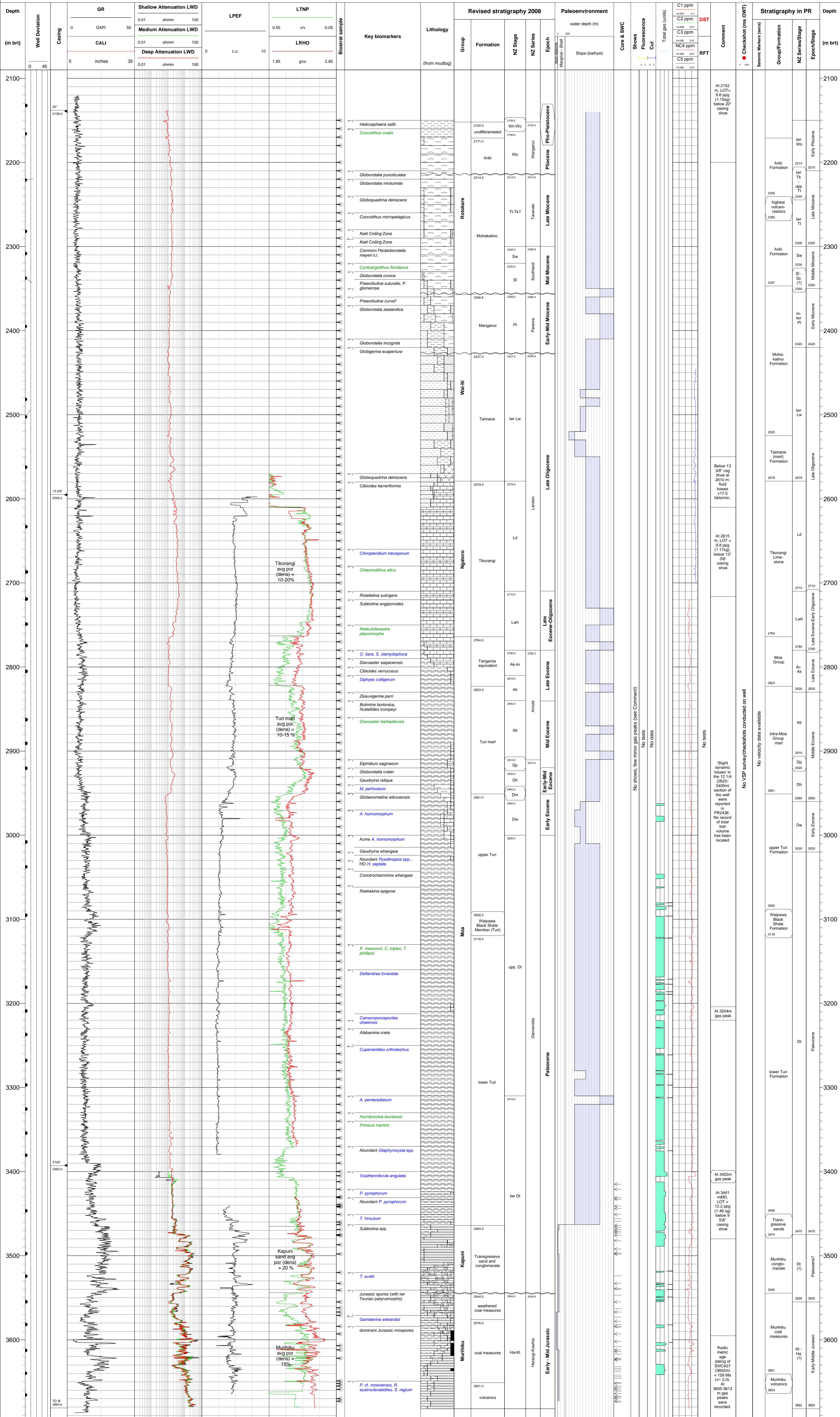
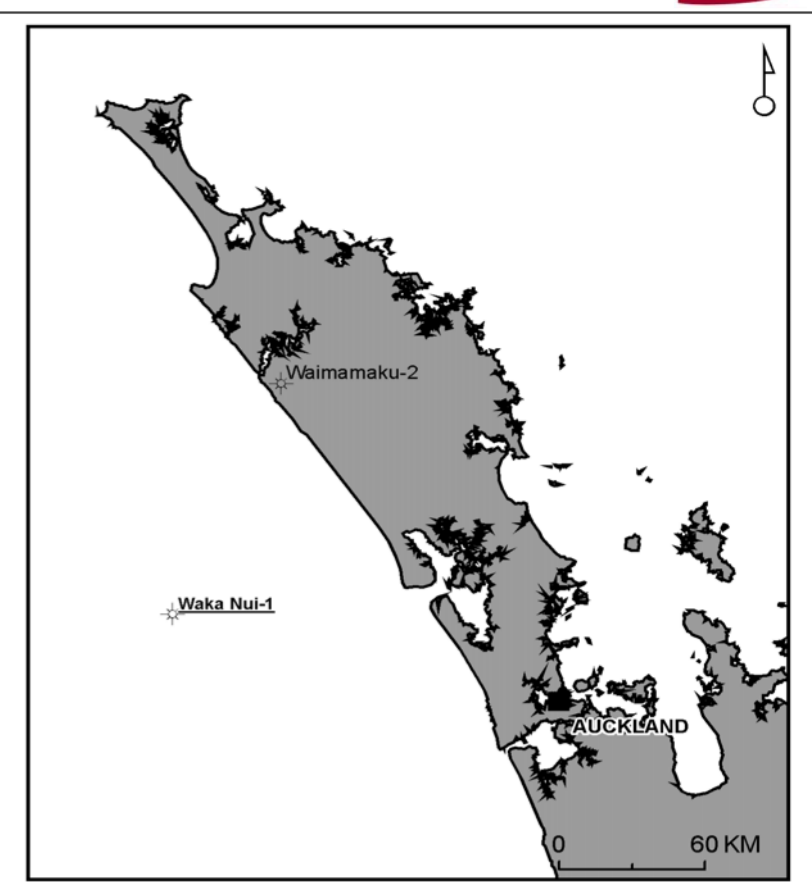
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## Technical summary

The Waka Nui-1 wildcat exploration well was spudded on 30th April 1999, in the deep water licence area PEP 38602, west of the Northland peninsula. The well was intended to test a large drape structure mapped over a tilted fault block, apparently overlain by a "bright" seismic unit interpreted to be Cretaceous coal measures. The sequence drilled largely matched the expected well prognosis, except that no Cretaceous coal measures were encountered, the "bright" seismic unit proving to be coal-bearing Murihiku Supergroup sediments of Early to Mid Jurassic age. The well intersected a 26 m thick Waipawa Black Shale interval, found to be immature for hydrocarbon generation at the well site. No shows were recorded. The well was plugged and abandoned on 25th June 1999, after reaching a total depth of 3681 m.

LWD Logging data		Unit			
Logging Run		2	3	5	6
Logging Suite		LWD Schlumberger COR tool			
Top Log Depth	metres	2150	2510	3495	3470
Bottom Log Depth	metres	2904.00	3402.0	3487.00	3681.0
Casing collar depth	metres	2150.00	2595.00	3393.00	3393.00
Casing collar depth	metres	n/a	n/a	n/a	n/a
Casing size	inches	20	13.56	9.56	9.56
Bit size	inches	17.5	12.25	8.5	8.5
<b>Mud data</b>					
Mud Type	WBM	PHPA	PHPA/KCL	PHPA/KCL	PHPA/KCL
Mud Weight	ppg	8.6-9.2	9.9	10.3	10.5
RM	ohmm	0.08	0.031	0.062	0.055
Temp. RM	°C	n/a	n/a	42	63
RMF	ohmm	0.061	0.028	0.065	0.053
Temp. RMF	°C	n/a	n/a	42	63
RMC	ohmm	n/a	n/a	n/a	n/a
Temp. RMC	°C	n/a	n/a	n/a	n/a
Max. recorded temp	°C	n/a	n/a	n/a	n/a
Fluid Loss	bbbl/min	0	17.5	0	0



## Notes from Petroleum Report 2436:

Losses occurred whilst drilling out the 13 3/8" shoe track (17 1/2" section 2610m - 13 3/8" shoe at 2595m). A record of +17.5 bbls/min total losses in reported in the PR. No losses were registered at TD of the 17 1/2" section. New hole was drilled to 2613m with 10.5ppg whilst preparing for a LOT total loss circulation occurred (pumping at 735 gal/min). 150 bbls of sealing pill was pumped, the string pulled back to 2305m and the well observed. The well was displaced to 9.8ppg mud before tagging bottom and drilling ahead.

Shows summary:  
These data are from the Baker Hughes report on mudlogging included in the final well report. No UV fluorescence shows were observed in the well cuttings or SWCs. Gas levels were remarkably low; the minimum amount of gas needed to register on the total gas equipment (0.01% - 100ppm C1) was not registered until 3086m. The maximum level of gas registered during drilling was 0.05% (total gas) - 486ppm C1 only) at 3403m. A total gas peak of 0.8%, consisting entirely of methane, was registered whilst pulling the bit from 3489m, this was caused by swabbing the hole while the bit was inside the 9 5/8" casing. Jurassic coal measures penetrated in Waka Nui-1 gave small amounts of gas; 100ppm C1 (only) at 3590m, 250ppm C1 (only) at 3605m, 205ppm C1 (only) at 3613m and 105ppm C1 (only) at 3637m. Background gas levels over this interval were approximately 80ppm C1 (not enough gas to be registered on the total gas equipment), mud weight was 10.5ppg / 1.26SG. These do not constitute 'shows' but reflect relative increases in gas values. C3 (only) was registered over the interval 2446m-2700m, this is thought to be as a result of the drilling fluid additive Soltex, which contains asphalt.

Vitrinite reflectance study:  
Ro (normal) is calculated from actual measurements on indigenous vitrinite of normal chemistry. Ro (total) is calculated from measurements on indigenous normal and suppressed (perhydrous) vitrinite, and contaminating vitrinite (where present). Ro (total) does not include SOLTTEX (mud additive which contains asphalt) contamination, because this is readily distinguishable visually, whereas contamination from drilled lithologies is primarily distinguished based on VRF characteristics. For each sample, the reflectance value which is considered to be the most useful is shown in bold type. See the 'Pyrolysis' work sheet for analysis of SOLTTEX at concentrations calculated to be representative of those present in the mud system whilst drilling Waka Nui-1.

- Clastic reservoir
- Carbonate reservoir
- conglomerate
- sandstone
- siltstone
- claystone
- coal
- limestone/dolomite
- marl
- chert
- volcanics/tuff
- intrusive
- granite
- basement
- pebbly
- glauconite
- quartzite
- carbonaceous
- calcareous
- tuffaceous
- pyrite
- mudstone clast
- bioclastic debris
- Casing
- SWC no return
- Gas shows
- Oil shows
- Oil and Gas shows
- Highest occurrence
- Lowest occurrence

## General Information:

Latitude/longitude and NZ Map Grid coordinates quoted in the header are referenced to Geodetic Datum 1949 (GD49). All depths mentioned herein are measured depth below rotary table (MDRT). Wireline logs were not acquired for this well. LWD logs are the original, spliced logs with no corrections applied.

Formation tops in this document are based on published GNS Science information with revisions by GeoSphere (2006) and GNS (2008). Lithology descriptions are summarised from the mudlog.

Revised datings and paleoenvironmental interpretations are based on new biostratigraphic data and reassessment of existing data carried out by GNS (2008). Depths refer to SWC or cuttings interval bottom depth. Biomarkers key: black = foraminifera; blue = polyomorphs; green = calcareous nanoplankton.

Shows, fluorescence and cut are summarised from data on well completion log. Total gas data and chromatograph data are given in units and ppm respectively. Note: Gas data is only provided where listed in petroleum report (generally peak readings only) or where digital logs exist.

Seismic markers reported in two-way-time (secs). Checkshot data displayed as one-way travel time (msec).

Paleoenvironmental interpretations used:  
Lower bathyal = 2000 to 1000m; Mid bathyal = 1000 to 600m; Upper bathyal = 600 to 200m; Uppermost bathyal = 200 to 100m; Outer shelf = 200 to 100m; Mid shelf = 100 to 50m; Inner shelf = 50 to 10m; Marginal marine = 0 to 10m. Non marine taken as 0 to 50m.

Fluorescence and cut quantifications:  
0.5 = trace, 1 = minor, 2 = moderate-strong

**Abbreviations:**  
A = abundant  
DST = drill stem test  
e. = early  
fl = fluorescence  
l = late  
lwr = lower  
MDT = modular formation dynamics tester  
RFT = repeat formation test  
RM = resistivity mud  
RMF = resistivity mud filtrate  
e. = early  
RMC = resistivity mud cake  
ROP = rate of penetration  
SWC = sidewall core  
TD = total depth  
upp. = upper