WCR VOL 2B

TUNA-4

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ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

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WELL COMPLETION REPORT
TUNA-4
VOLUME II (B)
INTERPRETATIVE DATA

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA LIMITED

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WELL COMPLETION REPORT

VOLUME 2(A)

(Interpretative Data)

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APPENDIX 6

RFT REPORT

ESSO

INTERPRETIVE
DATA

TUNA-4 RFT TEST PROGRAM

G.R.G. Woodham

March 1985

(1978f)

TUNA-4 RFT TESTS

SUMMARY

A series of RFT tests were conducted on the Tuna-4 exploration well over the periods June 1 to July 10, 1984. These tests spanned five major zones, three of which contain significant hydrocarbons. Figures 1-4 are plots of the pressure data and detailed results are provided in Tables 1 and 2.

The first of these hydrocarbon systems, identified as the M-1 reservoir, consists of a 12 m gross oil column between the RFT interpreted GOC at 1400 m MDKB (-1379 m) and the OWC at 1412 m MDKB (-1391 m). These estimates are consistent with the log derived fluid contacts.

The second zone constitutes the 'L' and 'T' units and is located between approximately 1930 m MDKB and 2350 m MDKB. No hydrocarbons were encountered. It is apparent from the pressure data that the West Tuna fault which juxtaposes the T-1 producing sands against the Tuna-4 'L' units is sealing.

The third major zone, the 'R' reservoirs, was encountered below 2388 m MDKB and was found to consist primarily of two stacked gross oil columns 72 m and 47 m in thickness. Based on RFT pressure plots and sample data, the OWC in the upper and the lower 'R' reservoirs are interpreted to be 2537.5 m MDKB and 2570.0 m MDKB, respectively. The shale unit separating the two hydrocarbon systems appears to be sealing. A further small hydrocarbon zone is likely at 2451.3 m MDKB based on the RFT pressure and log data.

The fourth zone consists of the 'S' reservoirs and this represents a number of hydrocarbon systems within the interval 2652 m MDKB to 3062 m MDKB. It was not possible to identify all the fluid contacts from the RFT pressure plot and sample data because of the lack of water sands and transition to overpressure. However, there appears to be two major separate systems with gas-oil contacts at 2808.0 and 2937.0 m MDKB, respectively and additional smaller oil and gas zones.

Two samples were also attempted in the deeper 'C' reservoirs, but the recoveries were inconclusive.

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Results and Discussion

A total of 34 RFT runs were conducted over the interval 1377.0-3157.8 m MDKB as follows:

Run No.	Pretests	Interval (m MDKB)	Reason for Test	Sample Recovery	Sample Run/Seat	Depth (m MDKB)
1	17	1377.0-2399.5	SPT	Gas, w/f	1/16	1398.5
2	1	1400.5	SPT	Gas, oil, w/f	2/18	1400.5
3	1	1398.5	SPT	Gas, cond,w/f	3/19	1398.5
4	3	2369.4-2369.6	SPT	i	4/22	2369.6
5	22	2451.3-2639.0	PT	-	-	-
6	1	2451.5	SPT	i	6/45	2451.5
7	3	2470.4-2470.7	SPT	i	7/48	2470.4
8	2	2471.0-2475.0	SPT	Gas, oil, w/f	8/50	2475.0
9	1	2550.0	SPT	Gas, oil, w/f	9/51	2550.0
10	1	2566.0	SPT	Gas, oil, w/f	10/52	2566.0
11	3	2582.8	SPT	sf	-	-
12	1	2582.8	SPT	i	12/56	2582.8
13	1	2507.2	SPT	Gas, oil, w/f	13/57	2507.2
14	1	2470.0	SPT	i	14/58	2470.0
15	20	2738.5-2995.2	PT	-	-	-
16	1	150.0	PT	gf	-	-
17	8	2610.0-2948.5	SPT	n	17/87	2948.5
18	1	2948.5	SPT	Gas, oil, w/f	18/88	2948.5
19	8	2896.0-2919.3	SPT	sf	19/89	2896.5
20	3	2896.5	SPT	sf	-	-
21	1	2866.2	SPT	Gas, w/f	21/100	2866.2
22	1	2827.0	SPT	i	22/101	2827.0
23	1	2775.0	SPT	i	23/102	2775.0
24	1	2775.0	SPT	i	24/103	2775.0
25	3	2682.2-2775.0	SPT	Gas, cond,w/f	25/104	2686.2
26	1	2919.5	SPT	Gas, cond,w/f	26/107	2919.5
27	1	2812.5	SPT	Gas, oil, w/f	27/108	2812.5
28	1	2768.0	SPT	i	28/109	2768.0
29	7	2929.5-2930.0	SPT	sf	-	-
30	2	2929.5-2952.0	SPT	Stuck Tool	30/118	2929.5
31	3	3157.8	SPT	i	30/121	3157.8
32	1	3062.0	SPT	Gas, cond, w/f	32/122	3062.0
33	2	3031.5	SPT	Gas, oil, w/f	33/123	3031.5
34	1	3119.4	SPT	i	34/125	3119.4

PT = Pressure Test
SPT = Sample and Pressure Test
gf = Gauge failure
sf = seal failure
i = inconclusive
w/f = water/filtrate
n = no sample taken/probe plugged

(1978f)

Of the 125 pretests attempted, 121 were successful in providing formation pressures. The Hewlett-Packard gauge malfunctioned in run 7 (with seat at 2470.7 m MDKB) and throughout runs 8, 15 and 16. All pressure data for run 15 was collected with the Schlumberger strain gauge, which also displayed a consistent error. Pressures for run 15 were corrected by adding a 42 psi correction based on comparison with data from other runs, and then 14.7 psi to convert to psia. Both gauges appeared to function normally during all subsequent runs.

Samples were collected on all RFT runs except runs 5, 15 and 16, a summary of which are shown above. In sample runs 1-3 inclusive, the chambers used were of 22.5 litres (6 gallons) and 3.8 litres (1 gallon) capacities whereas in run number 4, a 10.4 litre (2-3/4 gallon) chamber was used in place of the 3.8 litre chamber. Throughout runs 6-10, 17-27 and 29-34, 45.4 litre (12 gallon) and 10.4 litre chambers were employed, however, the 10.4 litre chamber was replaced by a 3.8 litre one in runs 12-14 and 28. Complete details of the pretest and sample data are given in Tables 1 and 2.

The RFT pressure plot of the M-1 reservoir, shown in the attached Figure 1, indicates the presence of a 12.0 m gross oil column located between the interpreted GOC at 1400 m MDKB and the OWC at 1412 m MDKB. These results are consistent with the log derived fluid contacts. An average gradient of 0.18 psi/m was measured for the gas column, 0.89 psi/m for the oil column and 1.42 psi/m in the water zone. These gradients are consistent with the PVT properties. The reservoir pressure was 25 psi below the estimated initial pressure based on the Basin correlation.

Figure 2 shows small discontinuities in the water gradient through the interval 1420.5-2399.5 m MDKB comprising the 'L' and 'T' units. There appears to be no significant pressure drawdown in the 'L' unit due to production from the T-1 reservoir, to which it is juxtaposed. This would imply that the West Tuna fault adjacent to the Tuna-4 well completely seals the 'L' unit. A water line with a gradient equal to the Gippsland Basin average of 1.44 psi/m was drawn through the point at 1/1 (2399.5 m MDKB) which lies in the 'T' unit. The pressures at seats 1/2 and 1/3 are below the water gradient line and as such, indicate that there is some drawdown in the 'T' unit due to production from the T-1 reservoir. The pressure at 2206.0 m MDKB (seat 1/3) is estimated to be drawndown by 22.5 psi whereas at a depth of 2282.5 m MDKB (seat 1/2),

the pressure is drawndown by 41.6 psi relative to the water line through seat 1/1. The implication is that the 'T' unit around the Tuna-4 well is in hydraulic communication with the Tuna T-1 reservoir, from which production is occurring.

Figure 3 illustrates the RFT pressure plot for the 'R' reservoirs. This plot confirms the presence of two stacked gross oil columns of 72 m and 47 m. A water line with a gradient of 1.44 psi/m was drawn through points corresponding to pretests 5/24 and 5/25. In the upper 'R' reservoir, an oil line with a gradient of 0.98 psi/m (based on PVT data) was drawn through the point 5/36 and in the lower 'R' zone, a 0.98 psi/m oil line was drawn through 5/31. Oil-water contacts of 2537.5 m MDKB (-2516.5 m) for the upper 'R' reservoir and 2570.0 m MDKB (-2549 m) for the lower 'R' reservoir were obtained. The 'R' reservoir pressures are 20 psi higher than the initial Basin pressure correlation. Oil was confirmed by samples at 2475, 2550, 2566 and 2507.2 m MDKB and three subsequent production tests.

The RFT plot for the 'S' reservoir, which was encountered from 2650.0 m MDKB to 3062 m MDKB is attached as Figure 4. Pressure and sample data from both openhole and cased hole RFT runs confirm the presence of a series of separate hydrocarbon systems, within the transition zone to overpressure.

Oil-water contacts cannot be established as no water bearing sands are available to establish the water gradient line. Three main hydrocarbon zones were defined in the 'S' reservoir. In the lowest of these zones, a gas line was obtained by joining points corresponding to pretests 15/61 and 15/62, the latter being identified to be within a gas column from the results of sample run 26 (with seat at 2919.5 m MDKB). This gave a gas gradient of 0.294 psi/m which could be used to identify other potential gas columns. Based on the fact that oil was recovered from sample run 18 (with seat at 2948.5 m MDKB) and CRFT run (with seat at 2940.0 m MDKB), an oil line with a gradient of 1.0 psi/m was drawn between these points. This construction yields a GOC at 2937.0 m MDKB. In the second zone, a gas line of gradient 0.294 psi/m was drawn through the point corresponding to pretest 15/71 (with seat at 2803.5 m MDKB). Using a gradient of 1.0 psi/m, an oil line was drawn through the point corresponding to pretest 15/70 (with seat at 2827.0 m MDKB). The GOC was subsequently calculated to be at 2808.0 m MDKB. Sample runs 27 (with seat at 2812.5 m MDKB) and 22 (with seat at 2827.0 m MDKB) yielded respectively, 5.7 litres of oil and a trace of waxy, oil scum (plus varying amounts of gas and

water/filtrate), thereby confirming the existence of an oil column. Fluid contacts could not be established for a third possible hydrocarbon system located at approximately 2750 m MDKB.

In addition to these zones within the 'S' reservoir interval, several other probable hydrocarbon bearing sands exist which are mutually isolated. Sampling runs established the presence of oil at 3031.5 m MDKB and gas at 2866.2 m MDKB, 2919.5 m MDKB and 3062.0 m MDKB. It was not possible to estimate the location of any other fluid contacts based on the available RFT pressure data.

Two samples at 3157.8 m and 3119.4 m were attempted in the 'C' reservoir below 3062 m MDKB, but the recoveries were inconclusive. At 3157.8 m the formation pressure was 5599.4 psia equivalent to 10.4 ppg.

FIGURE 1 : TUNA-4 RFT PRESSURE PLOT
M-1 RESERVOIR

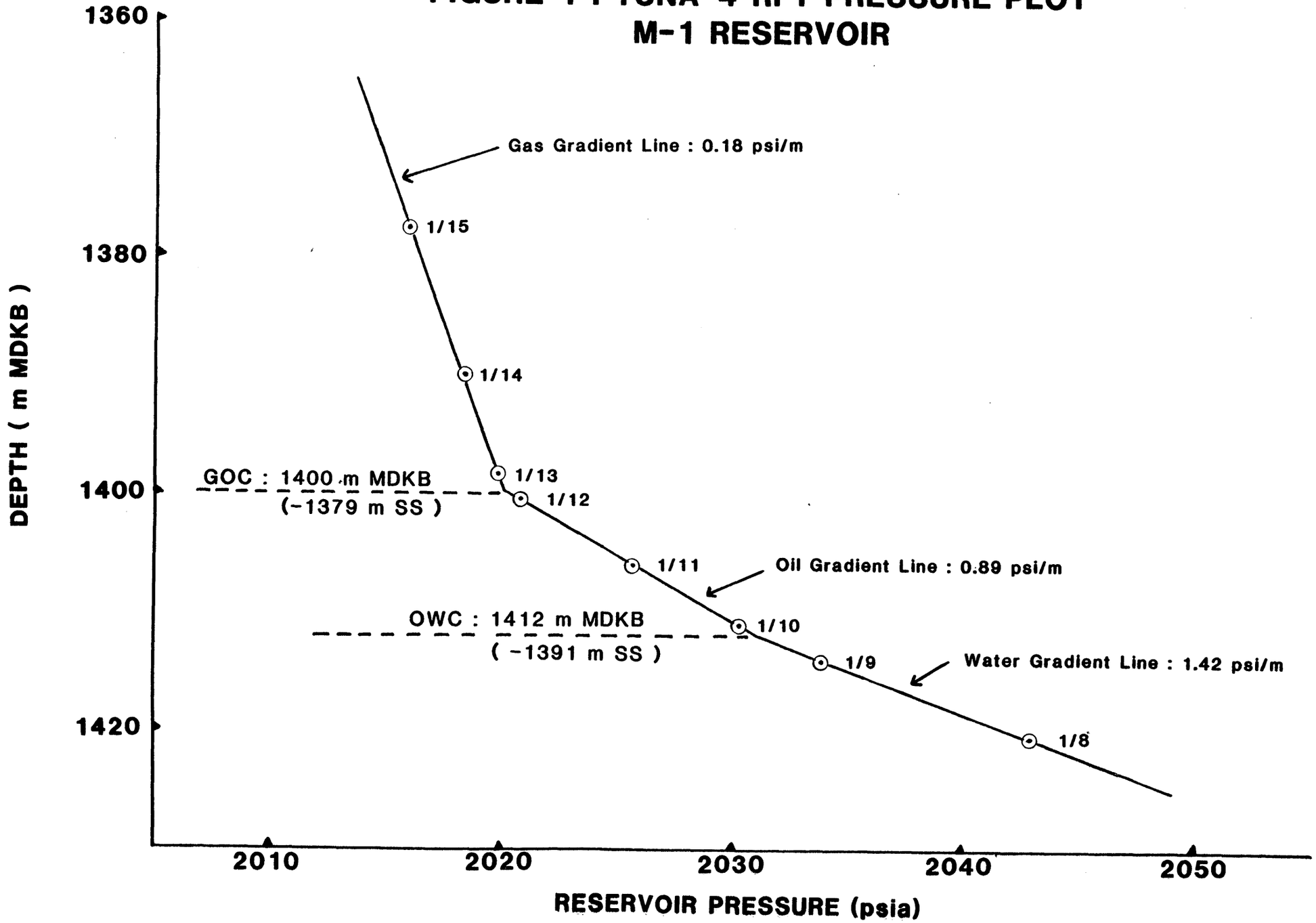


FIGURE 2 : TUNA-4 RFT PRESSURE PLOT
L & T UNITS

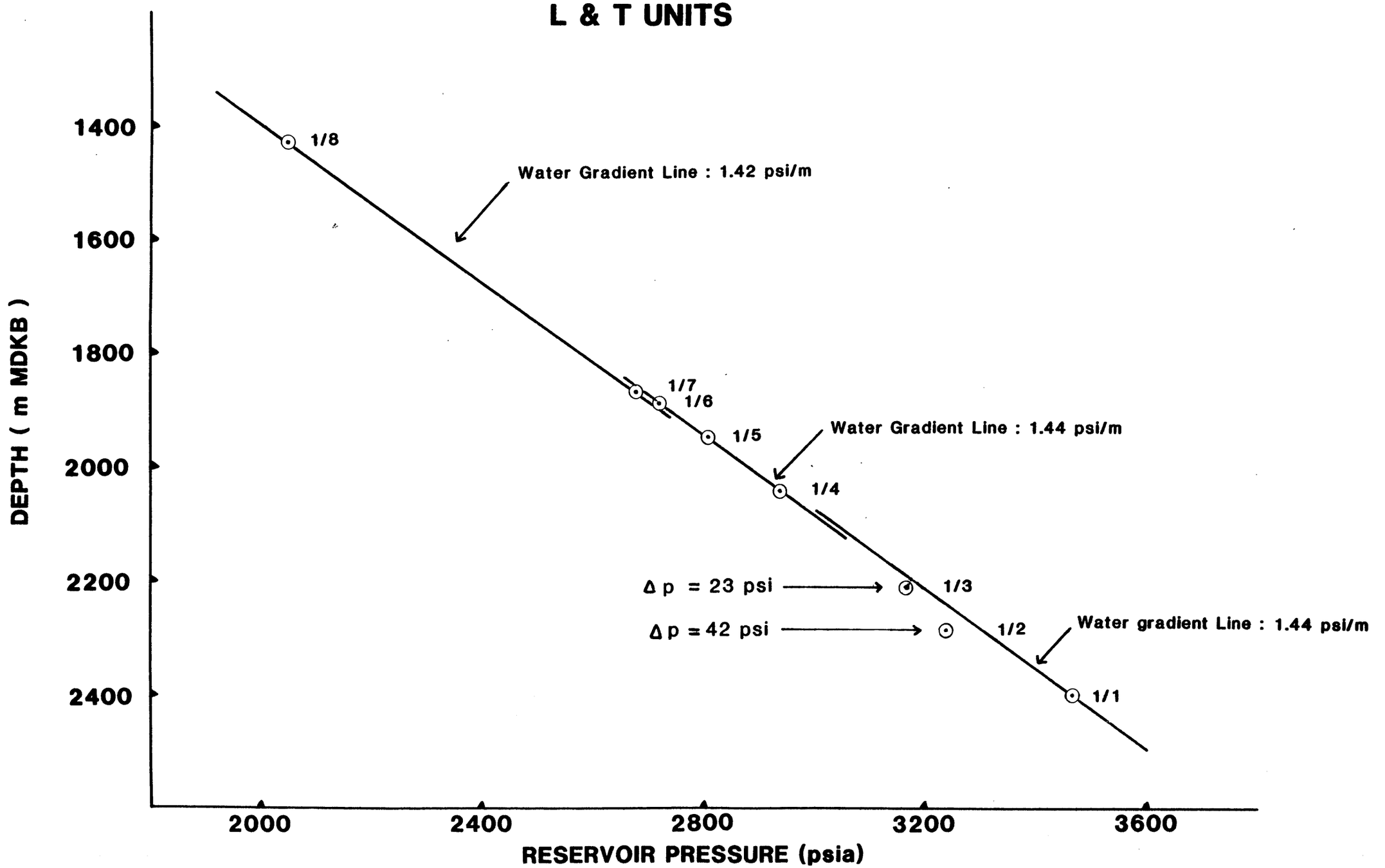


FIGURE 3 : TUNA-4 RFT PRESSURE PLOT
R RESERVOIR

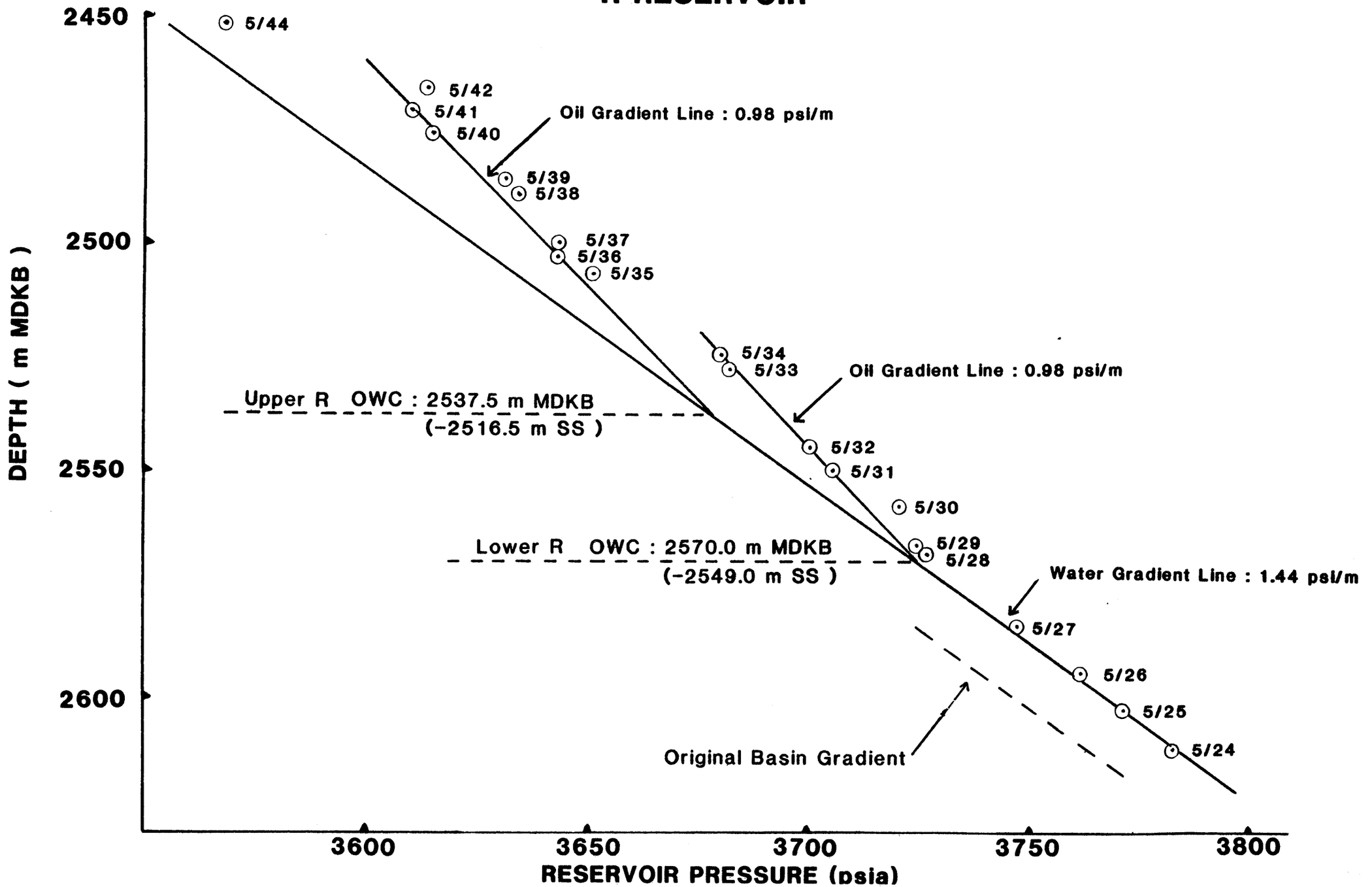
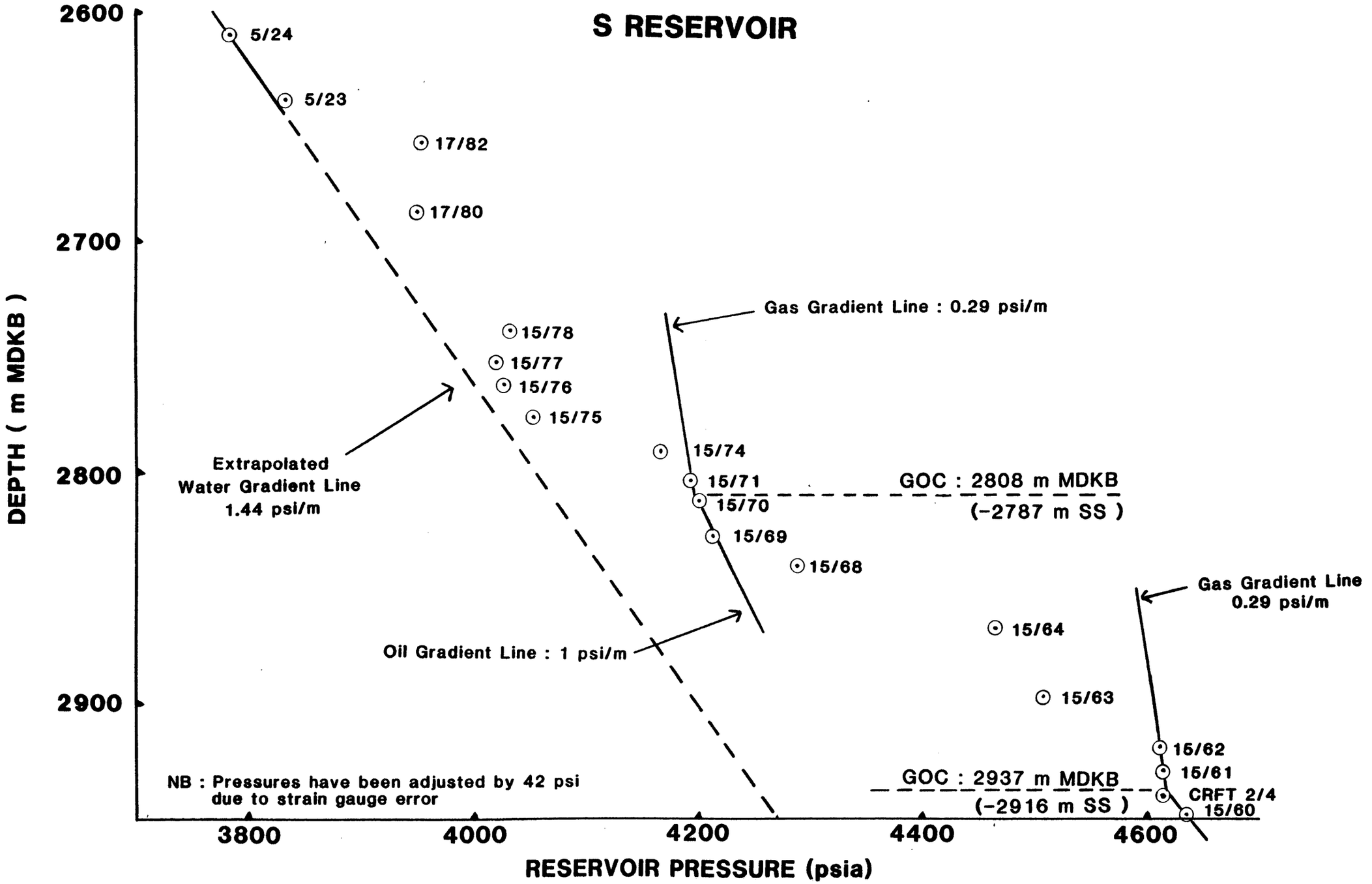


FIGURE 4 : TUNA-4 RFT PRESSURE PLOT
S RESERVOIR



TUNA-4
PRODUCTION TEST AND CASED HOLE RFT REPORT

1. Summary

During July and August 1984, a total of five production tests and five cased hole RFT runs were conducted on Tuna-4.

The production tests consisted of one gas test in the 'C' reservoirs, one oil test in the 'S' reservoirs and three oil tests in the 'R' reservoirs, The first of the 'R' reservoir tests produced at high water cut around 50 percent, but no formation water was produced in the other tests. The measured permeabilities in the 'R' and 'S' were comparable and ranged from 30 to 50 md with little or no formation damage indicated. No pressure depletion or major heterogeneities were observed in the 'R' reservoir, although there is some evidence of pressure depletion in the 'S' reservoir. Table 1 summarises the results of these tests and details are provided in Appendix A.

The cased hole RFT program proved oil at 2940.0 m MDKB and 2768.7 m MDKB, the remaining tests recovering mainly filtrate. The sampling results are provided in Appendix B.

2. Production Test No. 1: 3138.0-3147.0 m MDKB

Production test No. 1 was conducted on July 18-20, 1984 in a poor quality sand section in the deep intra-Latrobe within the 'C' section. The objectives were to identify the fluid content and additionally, should the fluid content be oil, to determine whether or not the rock is net productive. Both open hole logs and RFT's had failed to identify the fluid content.

The test results are summarised in Table 1 while the details are contained in Appendix A-1. After surfacing diesel and some mud, the well flowed gas at 400,000 SCF/D on a 26/64th fixed choke at an average FWHP and FBHP of 112 psig and 260 psia respectively. No formation liquid was observed or recovered at surface. The cumulative production over a 21.5 hour flow period was 300 kSCF.* The perforated interval is concluded to be gas bearing and tight with very low productivity.

3. Cased Hole RFT @ 2938.8 m MDKB

A cased hole RFT sample was attempted at 2938.8 m MDKB in order to more closely define the GOC of the hydrocarbon accumulation at this depth within the 'S' reservoirs. The sample was inconclusive as only filtrate with a trace of gas was recovered. The detailed results are contained in Appendix B.

4. Cased Hole RFT @ 2940.0 m MDKB

As the previous cased hole RFT at 2938.8 m MDKB was unsuccessful in establishing the fluid content, an attempt was made at 2940.0 m MDKB. While the first chamber recovered only filtrate with an oil scum, the second chamber contained 0.1 litres of oil, which established high proved oil for this system at 2940.0 m MDKB. The detailed results are contained in Appendix B.

5. Production Test No. 2: 2820.0-2829.0 m MDKB

Production test No. 2 was conducted on July 23-27, 1984 in an oil bearing sand within the 'S' reservoirs. The test objectives were to determine productivity, permeability, reservoir boundaries and depletion.

The test results are summarised in Table 1 while the details are contained in Appendix A-2. The zone flowed 470 STB/D of 35° API waxy oil with an average GOR of 1380 SCF/STB on a 1/2 inch fixed choke. Average FWHP and FBHP was 300 psig and 1192 psia respectively. Cumulative oil production was 880 STB over a flow period of 1.8 days. No formation water was recovered at surface.

A Horner plot of the build-up data, as shown in Figure 1, yields an average permeability in the range 30-51 md. The change in slope seen in the MTR probable represents an improvement in kh away from the wellbore. The productivity index was 0.16 STB/D/psi with a flow efficiency of 0.8. Extrapolation of the Horner plot yields a pressure of 4085 psia, i.e. approximately 87 psi below initial pressure. The build-up period had to be terminated early due to a mechanical problem and consequently, it is not certain whether or not this difference represents partial depletion, particularly in view of the upward turning evident at the start of the

late time region on the Horner plot. On the basis that it is partial depletion, the volume of oil accessible to the well has been estimated at 900 kSTB.

6. Cased Hole RFT's @ 2775.0 m MDKB, 2752.0 m MDKB and 2768.7 m MDKB

These samples were attempted in order to establish the fluid content in a zone in which logs and open hole RFT's had been inconclusive. The first two samples were inconclusive primarily mud/filtrate recoveries, but the third recovered oil. Full details are provided in Appendix B.

7. Production Test No. 3: 2562.0-2569.0 m MDKB

This test was conducted at the base of the lower 'R' reservoir in a zone of interpreted high water saturation. The zone flowed 110 STB/D of 39° API oil with an average GOR of 840 SCF/STB and a watercut of 50 percent on a 24/64 inch fixed choke. Average flowing wellhead pressure was 125 psig. Cumulative oil and water production was 180 barrels over a flow period of 15.5 hours. The perforated interval is concluded to be oil and water bearing with an estimated total productivity index of the order of 0.5-1.0 barrels/day/psi. The test results are summarised in Table 1 while the details are contained in Appendix A-3.

8. Production Test No. 4: 2543.0-2552.0 m MDKB

This test was conducted in the highest quality sand in the lower 'R' reservoir. The test results are summarised in Table 1 while the details are contained in Appendix A-4.

The zone flowed 1915 STB/D of 39° API oil with an average GOR of 770 SCF/STB on a 32/64 inch fixed choke. Average FWHP and FBHP were 900 psig and 2890 psig respectively. Cumulative oil production was 1115 STB over a flow period of 13.8 hours. No formation water was recovered at surface.

A Horner superposition plot of the build-up data, as shown in Figure 2, yields an average permeability in the range 36 to 40 md. The measured productivity index was 2.5 STB/D/psi (with damage ratio 0.6), which corresponds to a pseudo-steady state productivity index of approximately 1.9 STB/D/psi. No partial depletion was observed with P* being higher

than the initial pressures suggesting the effective kh for flow improves beyond 129 m from the wellbore which was the depth of investigation for the test.

9. Production Test No. 5: 2469.5-2477.0 m MDKB

This test consisted of two major flow periods and was conducted in the highest quality sand in the upper 'R' reservoir. The test results are summarised in Table 1 while the details are contained in Appendix A-5.

In the initial test, the zone flowed 1708 STB/D of 38.5° API oil with an average GOR of 787 SCF/STB on a 40/64 inch choke. Average FWHP and FBHP were 600 psig and 2166 psig respectively. Cumulative oil production was 620 STB over a flow period of 11.2 hours. The test was terminated early due to adverse weather conditions and subsequently repeated.

The bottomhole pressure was measured prior to resumption of the test and no depletion was observed. The zone flowed 1610 STB/d with an average GOR of 824 SCF/STB on a 40/64 inch fixed choke. Cumulative oil production during this second flow period of 11.5 hours was 800 STB.

A Horner plot of the build-up data, as shown in Figure 3, yields an average permeability in the range 30 to 41 md. The measured productivity index was 1.0 STB/D/psi, which corresponds to a pseudo-steady state productivity index of 0.9 STB/D/psi. The measured flow efficiency was 0.9 (damage ratio 1.1).

In neither test 4 (nor 5) was there any evidence of a sealing fault within the reservoir region investigated. Although there is a fault interpreted close to Tuna-4 at these depths, it either does not seal or its presence is masked by the early time region. The depth of investigation for the tests (129 m for test 4 and 247 m for test 5) was insufficient to see the effects of the main West Tuna fault which was approximately 900 m NE.

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TABLE 1

TUNA-4 PRODUCTION TESTS

SUMMARY

Test Number	1	2	3	4	5
Date (1984)	July 18-20	July 23-27	August 8-9	August 16-17	August 20-24
Perforation Interval (m MDKB, KB = 21)	3138.0-3147.0	2820.0-2829.0	2562.0-2569.0	2543.0-2552.0	2469.5-2477.0
Produced Fluid	Gas	Oil	Oil and Water	Oil	Oil
Cumulative Production (STB or kSCF)	300	880	180(1)	1115	1420
Flowing Period (Hours)	23	39	15.5	13.8	22.7
Average Metered Rate (STB/D or kSCF/D)	400	470	110 Oil	1915	1611(2)
Choke Size (64ths)	26	32	32	32	40
Oil Gravity (°API)	-	35	39	39	38.5
Pour Point (°C)	-	36	30	30	3.1
Gas Oil Ratio (SCF/STB)	-	1380	840	773	824(2)
CO_2 (%) in Gas	16-23	30-45	30	26	25
H_2S (ppm)	Nil	Nil	Nil	8	7
Initial Pressure (psia)	5555 @ 3143 m	4210 @ 2825 m (RFT)	3725 @ 2566 m (RFT)	3703 @ 2547 m (RFT)	3613 @ 2473 m (RFT)
Flowing WHP (psig)	112	300	95	900	582
Flowing BHP (psia)	260	1192	-	2905	1995
Max. BHT (°C)	128	120	109	117	113
Productivity Index (STB/D/psi or kSCF/D/psi)	0.08	0.2	0.5-1.0	2.5	1.0
Permeability-Thickness (md-ft)	-	147-253	-	1068-1168	676-916
Permeability (md)	-	30-51	-	36-40	30-41
Damage Ratio	-	1.2	-	0.6	1.1
Depth of Investigation (m)	-	305	-	129	247

Notes:

(1) Oil plus water (50 percent watercut)
(2) Second major flow period.

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PRODUCTION TEST 2

BUILDUP ANALYSIS

1. Rate q = 469.9 (STB/D; MSCF/D)

2. Horner Time: $\frac{\text{Cumulative production}}{\text{Last rate}} = 24 \times \frac{817.3 \text{ (STB)}}{469.9 \text{ (STB/D)}} =$ 41.74 (hr)

3. Fluid and reservoir properties

   Viscosity: μ = 0.37 (cp)

   Compressibility factor (for gas wells): z = -

   Compressibility: c = 11.4×10^{6} (1/psi)

   Volume factor: B = 1.85 (RB/STB) at pressure of _____ (psi)

   Thickness: h = 4.92 (ft)

   Perforated thickness: h_p = 30 (ft)

   Porosity: ϕ = 16 (%)

   Wellbore radius: r_w = 0.3 (ft)

   Bottom-hole temperature: T = 248 (°F)

4. Initial pressure: p_i = 4172 (psia) at 2787 m

5. Flowing bottom-hole pressure: p_{wf} = 1192 (psia)

6. Wellbore storage: α = _____ (RB/psi)

7. End of afterflow: Δt_{af} = _____ (min)

8. Middle time region slope: m = 356 (psi)

9. Extrapolated pressure: p* = 4085 (psi)

10. Ideal buildup pressure at Δt = 1 hr: p_{w1} = 3698 (psi)

11. Permeability-thickness product: $kh = \frac{162.6\, q\mu B}{m}$

$$kh = \frac{162.6 \,(\, 469.9 \,)\,(\, 0.37 \,)\,(\, 1.85 \,)}{(\, 356 \,)} = 146.9 \text{ (md-ft)}$$

12. Permeability: $k = \frac{kh}{h} = \frac{(\, 146.9 \,)}{(\, 4.92 \,)} =$ 29.9 (md)

13. **Diffusivity:** $\eta = \dfrac{2.637 \times 10^{-4}\ k}{\phi \mu c}$

$$= \frac{2.637 \times 10^{-4}\ (\ 29.9\ )}{(\ 0.16\ )\ (\ 0.37\ )\ (11.4 \times 10^{-6})} = \underline{\quad 11{,}683 \quad} \text{ (ft}^2\text{/hr)}$$

14. **Average permeability:** $\bar{k} = \dfrac{141.2\ q\mu B \ln (r_e/r_w)}{h\ (p^* - p_{wf})}$ $(\ln r_e/r_w \simeq 6.0\text{-}8.0$

$$\bar{k} = \frac{141.2\ (\ 469.9)\ (\ 0.37\ )\ (\ 1.85\ )\ \ln (\quad / \quad)}{(\ 4.92\ )\ ((\ 4085\ ) - (\ 1192\ ))} = \underline{\quad 22 \quad} \text{ (md)}$$

15. **Radius of investigation beginning of MTR:**

$$R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4\ (\ 11{,}683\ )\ (\ 0.3833\ )} = \underline{\quad 134 \quad} \text{ (ft)}$$

16. **Skin factor:** $s = 1.151\left[\dfrac{p_{w1} - p_{wf}}{m} - \log\left(\dfrac{k}{\phi\mu c r_w^2}\right) + 3.23\right]$

$$s = 1.151\left[\frac{((\ 3698\ )\ \ (1191.6))}{(\ \ 356\ \ )} - \log \frac{(29.9\ )}{(0.16)(0.37)(11.4)(\ 0.3)^2} + 3.23\right]$$

E-6

$$s = \underline{\quad 1.82 \quad}$$

17. **Pressure drop due to skin:**

$$\Delta p_s = 0.87\ ms = 0.87\ (\ 356\ )\ (\ 1.82\ ) = \underline{\quad 563 \quad} \text{ (psi)}$$

18. **Flow efficiency:** $E = \dfrac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$

$$E = \frac{(\ 4085\ ) - (\ 1192\ ) - (\ 563\ )}{(\ \ 4085\ \ ) - (\ 1192\ \ )} = \underline{\quad 0.8054 \quad}$$

19. **Damage ratio:** $DR = \dfrac{1}{E} = \dfrac{1}{(0.8054)} = \underline{\quad 1.24 \quad}$

20. **Productivity index:** $J = \dfrac{q}{p^* - p_{wf}} = \dfrac{(\ 469.9\ )}{((4085\ ) - (\ 1192\ ))} = \underline{\quad 0.16 \quad}$ ((B/D)/psi)

21. **Closest possible boundary:** L_{cb} _____ (ft)

PRODUCTION TEST 4

MULTI-RATE ANALYSIS

1. Rate q_1= 1915, q_2 = 0, q_3 = 1915 STB/D

2. t_1 = 258, t_2 = 646, t_3 = 1235 mins.

3. **Fluid and reservoir properties**

   Viscosity: μ = 0.48 (cp)

   Compressibility factor (for gas wells): z = -

   Compressibility: c = 11.3 x 10^6 (1/psi)

   Volume factor: B = 1.50 (RB/STB) at pressure of _____ (psi)

   Thickness: h = 27.2 (ft)

   Perforated thickness: h_p = 29.5 (ft)

   Porosity: ϕ = 0.19 (%)

   Wellbore radius: r_w = 0.3 (ft)

   Bottom-hole temperature: T = 243 (°F)

4. **Initial pressure:** p_i = 3682 (psia) at 2519.4 m

5. **Flowing bottom-hole pressure:** p_{wf} = 2905 (psia)

6. **Wellbore storage:** α = _____ (RB/psi)

7. **End of afterflow:** Δt_{af} = _____ (min)

8. **Middle time region slope:** m = 192/209 (psi)

9. **Extrapolated pressure:** p* = 3712 (psi)

10. **Ideal buildup pressure at Δt = 1 hr:** p_{w1} = 3485 (psi)

11. **Permeability-thickness product:** $kh = \frac{162.6\, q\mu B}{m}$

$$kh = \frac{162.6\ (\ 1915\ )\ (\ 0.48\ )\ (\ 1.50\ )}{(\ 192\ )} = 1168 \text{ (md-ft)}$$

12. **Permeability:** $k = \frac{kh}{h} = \frac{(\ 1168\ )}{(\ 29.5\ )} = 39.6$ (md)

13. Diffusivity: $\eta = \dfrac{2.637 \times 10^{-4}\ k}{\phi \mu c}$

$= \dfrac{2.637 \times 10^{-4}\ (\ 39.6\ )}{(\ 0.19\ )\ (\ 0.48\ )\ (11.3 \times 10^{-6})} =$ 10,133 (ft^2/hr)

14. Average permeability: $\bar{k} = \dfrac{141.2\ q\mu B\ \ln\ (r_e/r_w)}{h\ (p^* - p_{wf})}$ ($\ln\ r_e/r_w \approx 6.0\text{-}8.0$

$\bar{k} = \dfrac{141.2\ (\ 1915\ )\ (\ 0.48\ )\ (\ 1.50\ )}{(\ 29.5\ )\ ((\ 3682\ )\ -\ (\ 2905\ ))} =$ 59 (md)

15. Radius of investigation beginning of MTR:

$R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4\ (10{,}133\ )\ (\ 0.25\ )} =$ 101 (ft)

16. Skin factor: $s = 1.151\left[\dfrac{p_{w1} - p_{wf}}{m} - \log\left(\dfrac{k}{\phi\mu c r_w^2}\right) + 3.23\right]$

$s = 1.151\left[\dfrac{((\ 3485\ )\ (\ 2905\ ))}{(\ 192\ )} - \log \dfrac{(\ 39.6\ )}{(0.19)(0.48)(11.3)(0.3)^2\ E\text{-}6} + 3.23\right]$

$s =$ -2.99

17. Pressure drop due to skin:

$\Delta p_s = 0.87\ ms = 0.87\ (\ 209\ )\ (-2.99\ ) =$ 544 (psi)

18. Flow efficiency: $E = \dfrac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$

$E = \dfrac{(\ 3682\ ) - (\ 2905\ ) - (\ 544\ )}{(\ 3682\ ) - (\ 2905\ )} =$ 1.70

19. Damage ratio: $DR = \dfrac{1}{E} = \dfrac{1}{(\ 1.70\ )} =$ 0.59

20. Productivity index: $J = \dfrac{q}{p^* - p_{wf}} = \dfrac{(\ 1915\ )}{((\ 3682\ ) - (\ 2905\ ))} =$ 2.46 ((B/D)/psi)

21. Closest possible boundary: L_{cb} _____ (ft)

PRODUCTION TEST 5

BUILDUP ANALYSIS

1. Rate q = 1611 (STB/D; MSCF/D)

2. Horner Time: $\frac{\text{Cumulative production}}{\text{Last rate}} = 24 \times \frac{801 \text{ (STB)}}{1611 \text{ (STB/D)}} =$ 11.93 (hr)

3. Fluid and reservoir properties

   Viscosity: μ = 0.48 (cp)

   Compressibility factor (for gas wells): z = _____

   Compressibility: c = 12.1×10^{6} (1/psi)

   Volume factor: B = 1.50 (RB/STB) at pressure of _____ (psi)

   Thickness: h = 22.6 (ft)

   Perforated thickness: h_p = 24.6 (ft)

   Porosity: ϕ = 0.19 (%)

   Wellbore radius: r_w = 0.3 (ft)

   Bottom-hole temperature: T = _____ (°F)

4. Initial pressure: p_i = 3579 (psi) at 2443.6

5. Flowing bottom-hole pressure: p_{wf} = 1994.6 (psi)

6. Wellbore storage: α = _____ (RB/psi)

7. End of afterflow: Δt_{af} = _____ (min)

8. Middle time region slope: m = 206/279 (psi)

9. Extrapolated pressure: p* = 3560 (psi)

10. Ideal buildup pressure at Δt = 1 hr: p_{w1} = 3243 (psi)

11. Permeability-thickness product: $kh = \frac{162.6\ q\mu B}{m}$

$$kh = \frac{162.6\ (\ 1611\ )\ (\ 0.48\ )\ (\ 1.5\ )}{(\ 206\ )} = 915.5 \text{ (md-ft)}$$

12. Permeability: $k = \frac{kh}{h} = \frac{(\ 915.5\ )}{(\ 22.6\ )} =$ 40.51 (md)

13. **Diffusivity:** $\eta = \dfrac{2.637 \times 10^{-4}\ k}{\phi \mu c}$

$= \dfrac{2.637 \times 10^{-4}\ (\ 40.5\ )}{(\ 0.19\ )\ (0.48\ )\ (12.1 \times 10^{6})} =$ 9678 (ft^2/hr)

14. **Average permeability:** $\bar{k} = \dfrac{141.2\ q\mu B\ \ln\ (r_e/r_w)}{h\ (p^* - p_{wf})}$ $(\ln r_e/r_w \approx 6.0\text{-}8.0$

$\bar{k} = \dfrac{141.2\ (\ 1611\ )\ (\ 0.48\ )\ (\ 1.50\ )\ \ln\ (\quad /\quad)}{(\ 22.6\ )\ ((\ 3579\ ) - (1994.6))} =$ 32 (md)

15. **Radius of investigation beginning of MTR:**

$R_{ib} = \sqrt{4\eta\Delta t} = \sqrt{4\ (\ 9678\ )\ (0.1833\ )} =$ 84.2 (ft)

16. **Skin factor:** $s = 1.151\left[\dfrac{p_{w1} - p_{wf}}{m} - \log\left(\dfrac{k}{\phi\mu c r_w^2}\right) + 3.23\right]$

$s = 1.151\left[\dfrac{((\ 3243\ )\ (1994.6))}{(\ 206\ )} - \log \dfrac{(\ 40.5\ )}{(0.19)(0.48)(12.1)(0.3)^2} + 3.23\right]$

E-6

$s =$ 0.782

17. **Pressure drop due to skin:**

$\Delta p_s = 0.87\ ms = 0.87\ (\ 206\ )\ (0.782\ ) =$ 140 (psi)

18. **Flow efficiency:** $E = \dfrac{p^* - p_{wf} - \Delta p_s}{p^* - p_{wf}}$

$E = \dfrac{(\ 3579\ ) - (\ 1995\ ) - (\ 140\ )}{(\ 3579\ ) - (\ 1995\ )} =$ 0.91

19. **Damage ratio:** $DR = \dfrac{1}{E} = \dfrac{1}{(\ 0.91\ )} =$ 1.1

20. **Productivity index:** $J = \dfrac{q}{p^* - p_{wf}} = \dfrac{(\ 1611\ )}{((\ 3579\ ) - (1994.6))} =$ 1.0 ((B/D)/psi)

21. **Closest possible boundary:** L_{cb} _____ (ft)

FIGURE 1 : PROD. TEST NO. 2 - HORNER PLOT

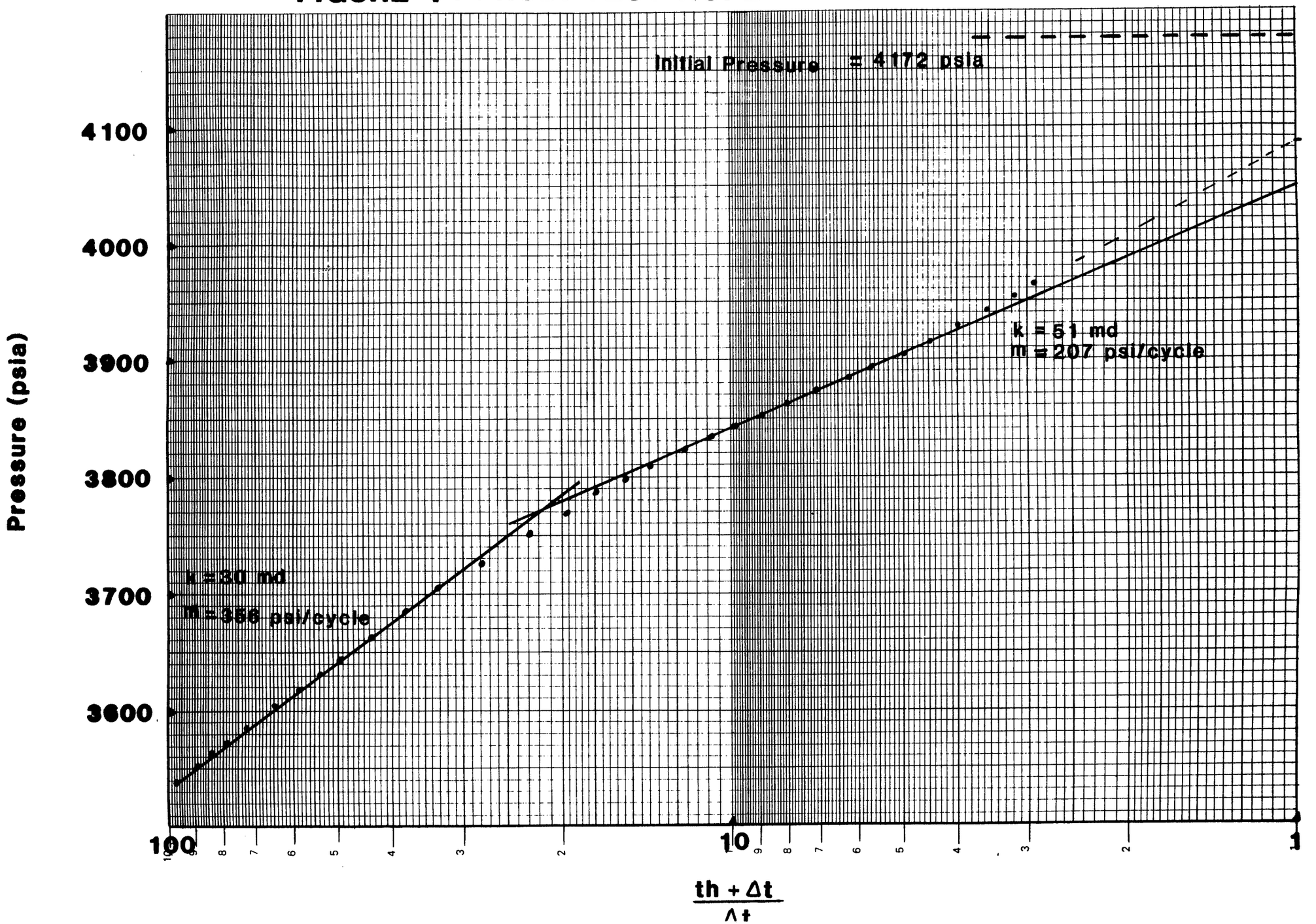


FIGURE 2 : PROD. TEST NO. 4 - MULTIRATE ANALYSIS

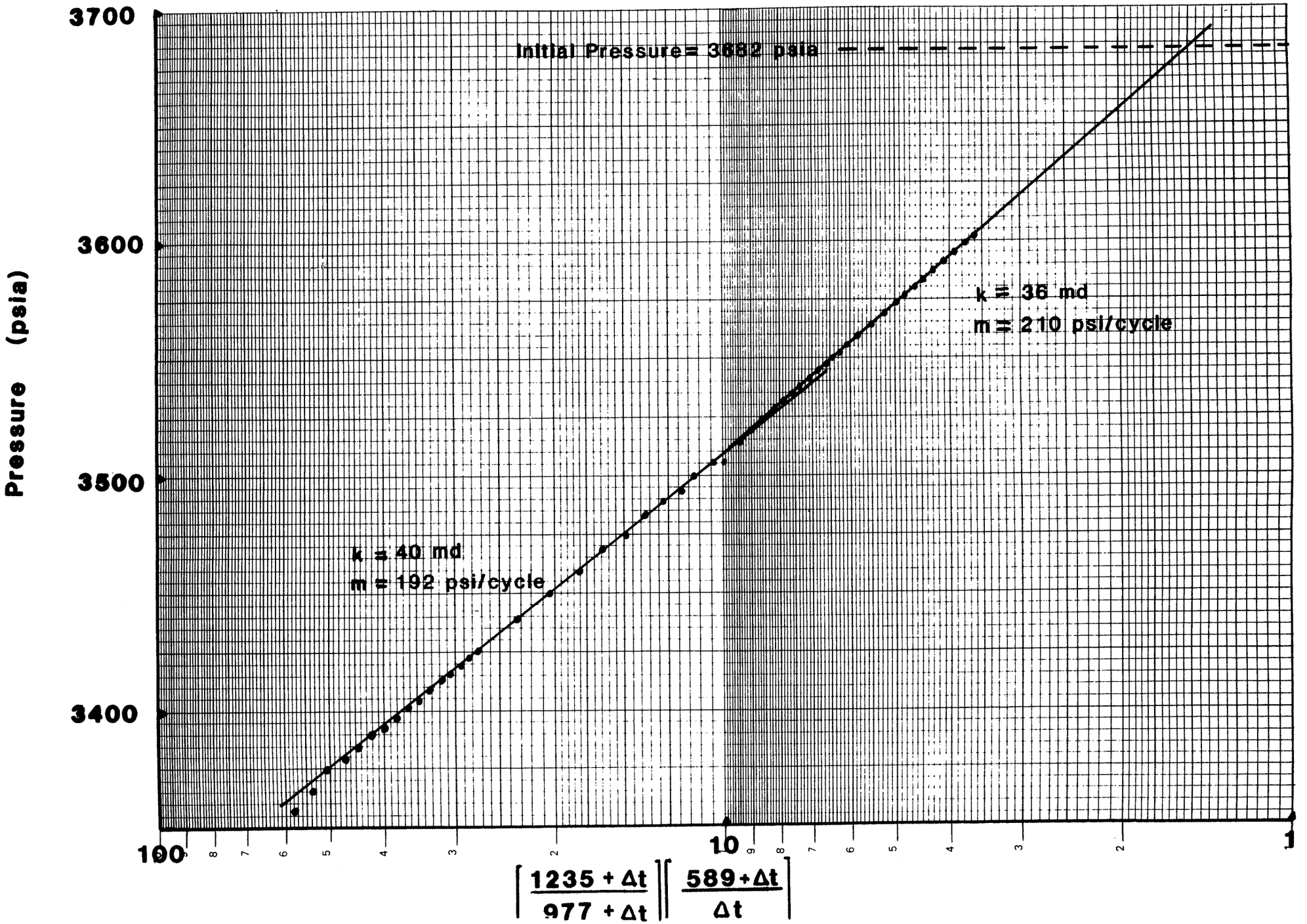


FIGURE 3 : PROD. TEST NO. 5 - HORNER PLOT

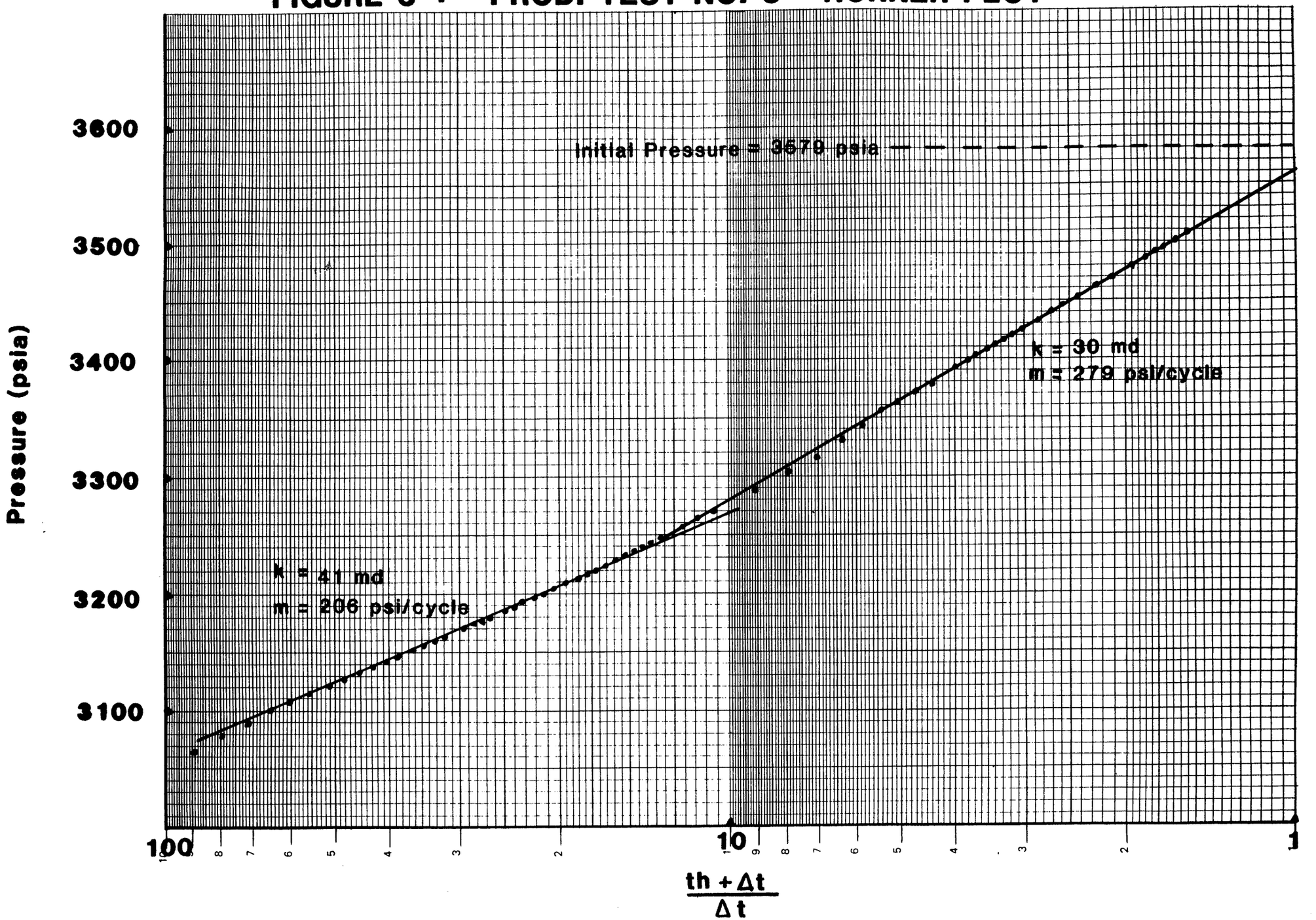


TABLE 1

RFT PRETEST PRESSURES

WELL:	TUNA-4	GAUGE TYPE:	H.P. (971) STRAIN (59282)
DATE:	1 JUNE 1984	PROBE TYPE:	LONG NOSE
ENGINEER:	KOH S.T.		

RFT No.	Depth m MDKB	Depth m TVDss KB=	IHP psi	Time Set	Minimum Flowing Pressure psi	Formation Pressure RFT/HP psig/psia	Temp °F	Time Retract	FHP psi	Comments	
1/1	2399.5	2378.5	4024.5	0800	3000.3	3444/3465.1	210.3	0802.5	4025	V	3460 PSIA
1/2	2282.5	2261.5	3829.2	0823	3118.4	3237/3255.0	207.7	0828	3831.2	V	3293 PSIA
1/3	2206	2185	3703.9	0844	3088.2	3146/3164.0	202.2	0850	3705.7	V	3184
1/4	2040	2019	3430.0	0910	2927.2	2921/2936.9	193.0	0915	3431.6	V	2948
1/5	1945	1924	3272.1	0929.5	2740.0	2786/2801.8	187.5	0935	3274.0	V	2813
1/6	1887.5	1866.5	3177.7	0948.5	2681.0	2700/2716.7	183.9	0951	3178.8	V	2716
1/7	1864	1843	3138.6	0958	2526.7	2657/2674.1	182.4	1001	3139.3	V Check GR Calibrate	3139.3
1/8	1420.5	1399.5	2385.6	1026	2026.8	2028/2042.9	166.5	1028	2385.9	V 1.385 psi/m	2068
1/9	1414	1393	2375.4	1032.5	2016.0	2019/2033.9	165.5	1035.5	2375.5	V 1.267 psi/m	2059
1/10	1411	1390	2370.5	1040	1988.5	2013/2030.1	164.5	1044.5	2371.1	V 0.9 psi/m	2055
1/11	1406	1385	2362.2	1049	1921.4	2009/2025.6	163.7	1052	2362.4	V 0.87 psi/m	2048
1/12	1400.5	1379.5	2353.2	1056.5	2002.5	2004/2020.8	163.2	1059.5	2353.5	V 0.55 psi/m	2040
1/13	1398.5	1377.5	2350.2	1102.5	2008.6	2003/2019.7	162.8	1105	2350.3	V 0.15 psi/m	2037
1/14	1390	1369	2335.8	111.5	1998.1	2001/2018.4	162.3	1114	2336.2	V 0.18 psi/m	2025
1/15	1377	1356	2314.2	1120	1748.5	1999/2016.0	162.0	1123.5	2314.4	V	2006
1/16	1398.5	1377.5	2350.0	1131	2007.7	2003/2019.9	161.5	1143	2351.4	Sample - Plugged line (Free)	
1/17	1398.4	1377.4	2351.4	1144.5	2007	2002/2020.1	161.5	1203	2351	Sample - Plugged line (Free)	
2/18	1400.5	1379.5	2350.6	1415	1991.5	2004/2021.0	161	1429.5	2350.4	Sample - Good Oil Recovery	
3/19	1398.5	1377.5	2347.8	1732.5	1977.6	2004/2020.6	161	1747	2347.2	Sample - Good Gas Recovery	
4/20	2369.5	2348.5	3966.2	2046	3341.4	3403/3421	215.4	2057.5	3968	Sample - Lost Seal	
4/21	2369.4	2348.4	3972.1	2102	3079.6	3403/3429.7	217.4	2105	3973	Slow Seal Failure	
4/22	2369.6	2348.6	3972.5	2108.5	3143.6	3403/3424.3	217.9	2135	3973.7	Sample - Water/Filtrate	

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 5 WELL: TUNA - 4

DATE: 9/6/84 OBSERVERS: GUODACRE, O'BYNE, PRIEST, NEUMAN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN FLOW PRESS (psia)
				HP	Y	A	4241.9		3834.9		4242.1				
5/23	2639.0	2618	PT	SCH	Y	G	4424		3816		4224		Valid	226	3619
				HP	Y	A	4195.4		3783.2		4196				
5/24	2610.0	2589	PT	SCH	Y	G	4173		3760		4174		Valid	226.7	3647
				HP	Y	A	4184		3772.4		4187				
5/25	2601.7	2580.7	PT	SCH	Y	G	4161		3747		4161		OK	226.1	3630
				HP	Y	A	4174		3762.0		4174				
5/26	2594.2	2573.2	PT	SCH	Y	G	4150		3738		4150		Valid	225.8	2537
				HP	Y	A	4157		3747.5		4157				
5/27	2583	2562	PT	SCH	Y	G	4138		3729		4138		Valid	224.6	40
				HP	Y	A	3132		3727.1		4136				
5/28	2568	2547	PT	SCH	Y	G	4115		3709		4118		OK	224	3569
				HP	Y	A	4133		3724.9		4134				
5/29	2566	2543	PT	SCH	Y	G	4116		3708		4116		OK	222.6	2701

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/9

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 5 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: GOODACRE, O'BYNE, PRIEST, NEUMAN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN. FLOW PRESS PSIA
				HP	Y	A	4118		3720.8		4119		Super-		
5/30	2557.5	2536.5	PT	SCH	Y	A	4410		3704		4102		Charged?	221	754
				HP	Y	A	4109		3706.2		4110				
31	2550	2529	PT	SCH	Y	G	4092		3695		4095		Valid	219.6	3639
				HP	Y	A	4101		3700.5		4102				
32	2545	2524	PT	SCH	Y	G	4083		3684		4085		Valid	218.4	3559
				HP	Y	A	4075		3682.4		4075				
33	2527.3	2506.3	PT	SCH	Y	G	4058		3667		4060		Valid	216.4	2554
				HP	Y	A	4072		3680.7		4074				
34	2524.5	2503.5	PT	SCH	Y	G	4057		3666.0		4058		Valid	216.2	3597
				HP	Y	A	4046		3651.5		4051				
35	2507.2	2486.2	PT	SCH	Y	G	4029		3628		4031		Valid	213.6	3437
				HP	Y	A	4029		3643.7		4042.5				
36	2502.7	2481.7	PT	SCH	Y	G	4042		3626		4026		Valid	212.8	3555

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

6751f/11

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 5 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: GOODACRE, O'BYRNE, PRIEST, NEUMAN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN FLOW PRESS PSIA
				HP	Y	A	4038		3643.9		4041				
5/37	2500	2479	PT	SCH	Y	G	4023		3626		4025		Valid	212.7	3148
				HP	Y	A	4021		3634.8		4008				
38	2489	2468	PT	SCH	Y	G	4007		3618		4019		Valid	211.9	2954
				HP	Y	A	4018		3632.1		4019				
39	2485.7	2464.7	PT	SCH	Y	G	4000		3612		3999		Valid	211.6	3427
				HP	Y	A	3999.4		3615.4		4002.7				
40	2475.5	2464.5	PT	SCH	Y	G	3984		3597		3985		Valid	210.9	3530
				HP	Y	A	3994.8		3611.4		3995.5				
41	2470.5	2449.5	PT	SCH	Y	G	3997		3594		3977		Valid	210.0	2933
				HP	Y	A	3987.5		3614.5		3992		Super		
42	2466	2445	PT	SCH	Y	G	3971		3594		3972		Charged	209.2	1350
				HP	Y	A	3966.0		-		3968.1		Seal		
43	2451.5	2430.5	PT	SCH	Y	G	3948		-		3948		Failure	206.8	3361

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

6751f/12

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 5 WELL: TUNA - 4
DATE: 10/6/84
OBSERVERS: GOODACRE, NEUMAN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN. FLOW PRESS PSIA
				HP	Y	A	3968.4		3568.9		3966				
5/44	2451.3	2430.3	PT *	SCH	Y	G	3949		3551		3949		Valid	206.3	3394

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

675lf/13

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 10, 11, 12, 13, 14 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: O'BYRNE, PRIEST, NEUMANN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN. FLOW PRESS PSIA
				HP	Y	PSIA	4116.5		3721.8		4116.0		Valid		
10/52	2566.0	2545.0	SPT	*SCH	Y	PSIG	4100		3705		4100		Pretest	234.5°	3469
				HP	Y	PSIA	4144.75		-		4143.07				
11/53	2582.8	2561.8	SPT	SCH	Y	PSIG	4129		-		4126		SF	237	
				HP	Y	A	4143.07		-		4142.49		SF		
11/54	2582.8	2561.8	SPT	SCH	Y	G	4126		-		4142			237	
				HP	Y	A	4142.27		-		4141.57				
11/55	2582.8	2561.8	SPT	SCH	Y	G	4124		-		4173.0		SF	237	
				HP	Y	A	4153.45		3746.8		4135.5				
12/56	2582.8	2561.8	SPT	SCH	Y	G	4135		3730		4119		Valid	236	3311
				HP	Y	A	4017.9		3648.6		4023.53				
13/57	2507.2	2486.2	SPT	SCH	Y	G	4002		3630		4004		Valid	230.5	
				HP	Y	A	3959.7		3606.8		3965.6		Valid		
14/58	2470.0	2449.0	SPT	SCH	Y	G	3943		3589		3947		Pretest	226.9	3400

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

6751f/15

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 15 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: PRIEST, SHOGHI

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
15/59	2995.2	2974.2	PT	HP SCH	Y Y	A G	5241	10.23	5036	9.90			Tight HP Failure	115.4	16
15/60	2948.5	2927.5	PT	HP SCH	Y Y	A G	5155	10.22	4578	9.14	5155	10.22	Valid	112.8	4675
15/61	2929.5	2908.5	PT	HP SCH	Y Y	A G	5122	10.22	4556	9.16	5122	10.22	Valid	115.0	4466
15/62	2919.3	2898.3	PT	HP SCH	Y Y	A G	5102	10.24	4553	9.19	5105	10.24	Valid	113.5	4464
15/63	2896.5	2875.5	PT	HP SCH	Y Y	A G	5062	10.25	4450	9.05	5064	10.25	Valid	113.0	3208
13/64	2866.2	2845.2	PT	HP SCH	Y Y	A G	5013	10.26	4404	9.05	5013	10.26	Valid	112.1	4166
15/65	2853.5	2831.5	PT	HP SCH	Y Y	A G	4989	10.25			4989	10.25	Tight		49

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/16

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 15 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: PRIEST, SHOGHI

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A							Tight		
15/66	2853.5	2831.5	PT	SCH	Y	G	4889	10.23							40
					Y	A									
15/67	2853.2	2832.2	PT	SCH	Y	G	4991	10.23			4991	10.23	Tight	111.2	40
					Y	A									
15/68	2840	2839	PT	SCH	Y	G	4967	10.23	4230	8.92	4968	10.23	Valid	111.1	1489
					Y										
15/69	2827	2806	PT	SCH	Y	G	4945	10.23	4156	8.66	4943	10.23	Valid	110.4	3836
15/70	2812.5	2791.5	PT	SCH	Y	G	4916	10.25	4143	8.68	4920	10.26	Valid	109.9	4006
15/71	2803.5	2782.5	PT	SCH	Y	G	4903	10.23	4137	8.69	4902	10.23	Valid	109.3	3796
15/72	2790.5	2769.5	PT	SCH	Y	G	4882	10.23					Tight	109.1	40

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

6751f/17

HP gauge problems

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 6, 7, 8, 9 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: GOODACRE, NEUMAN

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °F	MIN. FLOW PRESS PSIA
				HP	Y	A	3968.4		3568.4		3966				
6/45	2451.3	2430.3	PT	SCH	Y	G	3949		3551		3949		Valid	212.4	3530
				HP	Y	A	3957.7		-		3972.2				
7/46	2470.5	2449.5	SPT	SCH	Y	G	3958		-		3958		SF	214.6	3580
				HP	Y	A	3971.2		3609.38		3974.68		Flowline		
7/47	2470.7	2449.7	SPT	SCH	Y	G	3952		3590		3952		Plugged?	215.0	3540
				HP	Y	A	3973.2		3611.55		HP failure				
7/48	2470.4	2449.4	SPT	SCH	Y	G	3952		3589		3952		HP Failure?	217.0	3587
				HP	Y	A							HP gauge problems		
8/49	2471.0	2450.0	SPT	SCH	Y	G	3946		3591		3950		Valid Pretest	221.8	3312
				HP	Y	A	3974.1						HP gauge probs		
8/50	2475.0	2454.0	SPT	SCH	Y	G	3958		3596		3958		Valid Pretest	221.7	3553
				HP	Y	A	4089.0		3704.4		4093.0				
9/51	2550.0	2529.0	SPT	SCH	Y	G	4072		3687		4076		Valid	232.0	3673

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

6751f/2526

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 15 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: PRIEST, SHOGHI

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
15/73	2790.0	2769.0	PT	SCH	Y	G	4882	10.23					Seal Failure		
15/74	2790.7	2769.7	PT	SCH	Y	G	4882	10.23	4109	8.68	4882	10.23	Valid		2511
15/75	2775.0	2754.0	PT	SCH	Y	G	4852	10.22	3995	8.48	4853	10.23	Valid	108.9	174
15/76	2760.7	2759.7	PT	SCH	Y	G	4827	10.22	3970	8.41	4828	10.23	Valid	108.7	2567
15/77	2752.0	2731.0	PT	SCH	Y	G	4813	10.23	3963	8.49	4813	10.23	Valid	108.4	3671
15/78	2738.5	2717.5	PT	SCH	Y	G	4791	10.23	3975	8.55	4792	10.23	Valid		3428
				HP	Y	A	Set tool @ 150m to check								
15/79			PT -	SCH	Y	G	HP gauge. Gauge appeared to malfunction.						POOH to replace		

1. Pressure Test = PT
   Sample & Pressure Test - SPT
2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard
3. Yes = Y
   No = N
4. PSIA = A
   PSIG = G

2526f/18

HP gauge problems

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 17 WELL: TUNA - 4
DATE: 9/6/84
OBSERVERS: PRIEST, O'BYRNE

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	4730.36		3949.27		4727.04				
17/80	2686.2	2665.2	PT	SCH	Y	G	4718		3935		4713		Valid	95.2	3916.6
				HP	Y	A	4678.77		-		4678.61				
17/81	2656.2	2635.2	PT	SCH	Y	G	4656		-		4658		Seal Failure		
				HP	Y	A	4678.61		3954.09		4681.73				
17/82	2656.2	2635.2	PT	SCH	Y	G	4658		3936		4661		Tight	96.5	129.7
				HP	Y	A	4682.31		-		4686.47				
17/83	2656	2635	PT	SCH	Y	G	4661		-		4661		Tight	97.1	31
				HP	Y	A	4602.66	10.3	3783.69		4601.79				
17/84	2610.0	2589.0	PT	SCH	Y	G	4573		3759		4574		Valid	97.5	3691
				HP	Y	A	4922.31		-		4916.18				
17/85	2790.7	2769.7	PT	SCH	Y	G	4899		-		4894		Plugged	102.6	573
				HP	Y	A	4916.33		-		4916.27				
17/86	2790.7	2769.7	PT	SCH	Y	G	4894		-		4896		Plugged	103.4	506

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 17, 18, 19 WELL: TUNA - 4 DATE: 9/6/84 OBSERVERS: O'BYRNE, PRIEST, SHOGHI

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	5188.24		-		5189				
17/87	2948.5	2927.5	SPT	SCH	Y	G	5158.0		-		-		Probe Plugged	110.9	1269.08
				HP	Y	A	5185.1		4637.02		5177.00				
18/88	2948.5	2927.5	SPT	SCH	Y	G	5160.0		4613		5153.00		Valid	114.7	4571.97
				HP	Y	A	5086.0		4510.3		-				
19/89	2896.5	2875.5	SPT	SCH	Y	G	5067		4492		-		Valid Pretest	116.3	3408
				HP	Y	A	5074.5		-		5074.3				
19/90	2896.3	2875.3	SPT	SCH	Y	G	5056		-		5056		Tight Pretest	117.4	-
				HP	Y	A	5072.7		4442*		-				
19/91	2896.0	2875.0	SPT	SCH	Y	G	5056		4433*		-		Tight Pretest	117.4	2060
				HP	Y	A	5132.4*		4613.2*		5120.8*				
19/92	2919.3	2898.3	SPT	SCH	Y	G	5098*		4585*		5091*		Valid Pretest		
				HP	Y	A	5065.8		4318		5068.4				
19/93	2892.5	2871.5	SPT	SCH	Y	G	5042		-		5043		Tight Pretest	118.0	2019

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

*Did not wait for stabilisation.

2526f/20

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 19, 20 WELL: TUNA - 4
DATE: 22/6/84
OBSERVERS: O'BYRNE, PRIEST,

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	5075.3		4328*		-				
19/94	2896.5	2875.5	SPT	SCH	Y	G	5049		4307*		-		Valid Pretest	117.0	2729
				HP	Y	A	4955.8		-						
19/95	2827.0	2806.0	SPT	SCH	Y	G	4942		-					115.9	3720
				HP	Y	A			3951.1		4960.6		Anomalous		
19/96	2827.0	2806.0	PT	SCH	Y	G			3940		4945		form. press.		
				HP	Y	A	5086.8		-		5084.6				
20/97	2896.5	2875.5	SPT	SCH	Y	G	5053		-		5052		Seal Failure	118.68	
				HP	Y	A	5084.41		4506.48		-		Seal Fail. during		
20/98	2896.5	2875.5	SPT	SCH	Y	G	5050		4477		-		12 gal sampling	118.68	2197
				HP	Y	A	5069.1		4498.0		5064.6		Seal Failure during 2 3/4		
20/99	2896.5	2875.5	SPT	SCH	Y	G	5038		4470		5036		gal sampling	120.20	3994

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/21

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 21,22,23,24,25 WELL: TUNA - 4
DATE: 23/6/84
OBSERVERS: O'BYRNE, PRIEST, SHOGHI

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	5068.0		4460.4		Not stabilized				
21/100	2866.2	2845.2	SPT	SCH	Y	G	5058.0		4452.0		(did not wait)		Valid	98	4063
				HP	Y	A	4983.5		4211.6		4989.4				
22/101	2827	2806	SPT	SCH	Y	G	4971		4201		4987		Valid	104.4	3456
				HP	Y	A	4881.6		4054.1		4889.5				
20/102	2775.0	2754.0	SPT	SCH	Y	G	4855		4030		4876		Valid Pretest	107.9	2903
				HP	Y	A	4875.4		4053.9		4884.22				
20/103	2775	2754	SPT	SCH	Y	G	4844		4027		4860		Valid	106.8	3140
				HP	Y	A	4867.6		4050.7*		4876.2				
25/104	2775.0	2754.0	SPT	SCH	Y	G	4841		4027*		4864		Valid Pretest	115.6	2791
				HP	Y	A			4034.2*		4878.1				
25/105	2775.0	2754.0	SPT	SCH	Y	G			4027*		4870		Valid Pretest	114.0	3
				HP	Y	A	4707.5		3941.32*		4728.0				
25/106	2686.2	2665.2	SPT	SCH	Y	G	4700		3929*		4705		Valid		3935

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

*Not stabilised.

2526f/22

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 26,27,28,29 WELL: TUNA - 4
DATE: 24/6/84
OBSERVERS: PENNY, MARK, SAEED

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	5114.3		4606.9		5122.7				
26/107	2919.5	2898.5	SPT	SCH	Y	G	5089		4582		5097		Valid Pretest	119.2	4541
				HP	Y	A	4196.5		4196.5		4932.4				
27/108	2812.5	2791.5	SPT	SCH	Y	G	4915.00		4185		4927		Valid	114.7	4130
				HP	Y	A	4856.0		4037.6		4855.1				
28/109	2768.0	2747.0	SPT	SCH	Y	G	4840		4024		4850		Valid	113.2	
				HP	Y	A	5130.55		4608.2		-				
29/110	2930.0	2909.0	SPT	SCH	Y	G	5119		4599		-		Seal Failure	120	4539
				HP	Y	A	5124.7		-		-				
29/111	2930.0	2909.0	SPT	SCH	Y	G	5115		-		-		Seal Failure	120.8	4480
				HP	Y	A	5124.7		4610.7		-				
29/112	2929.5	2908.5	SPT	SCH	Y	G	5114		4602		-		Seal Failure	120.8	4493
				HP	Y	A	5125.8		-		-				
29/113	2929.5	2908.5	SPT	SCH	Y	G	5115		-		-		Seal Failure		

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/23

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 30 WELL: TUNA - 4
DATE: 25/6/84
OBSERVERS: MARK, SAEED

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	5224.5		-		5228.2				
30/117	2930	2909.0	SPT	SCH	Y	G	5201		-		5203		Tight	102.6	186.6
				HP	Y	A	5225.3		4615.4		5227.0				
30/118	2929.5	2908.5	SPT	SCH	Y	G	5202		4595		5222		Valid	103	4513.5

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/25

RFT PRETEST PRESSURES

SERVICE COMPANY: SCHLUMBERGER RFT RUN. NO: 29 WELL: TUNA - 4 DATE: 25/6/84 OBSERVERS: PENNY, MARK, SAEED

SEAT NO.	DEPTH	DEPTH (Ss)	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION psi	FORMATION ppg	FHP psi	FHP ppg	TEST RESULT	TEMP °C	MIN. FLOW PRESS PSIA
				HP	Y	A	4825.7		4016.9		-				
29/114	2752	2731	SPT	SCH	Y	G	4817		4006		-		Seal Failure	115.3	3795
				HP	Y	A	4781.9		-		-				
29/115	2752	2731	SPT	SCH	Y	G	4813		-		-		No Seal	115.4	
				HP	Y	A	4791.75		-		-				
29/116	2752	2731	SPT	SCH	Y	G	4814		-		-		No Seal		
				HP	Y	A	5130.55		4608.2		-				

1. Pressure Test = PT
   Sample & Pressure Test - SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

2526f/24

RFT SAMPLE TEST REPORT

(2526f/27)

WELL: Tuna-4
OBSERVER: S.T. Koh
DATE: June 1, 1984
RUN: 1/16

	CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
SEAT NO.	1/16		1/16	
DEPTH	1398.5 m		1398.5 m	
A. RECORDING TIMES				
Tool Set	1131			
Pretest Open	1131.5			
Time Open	1134			
Chamber Open	1134			
Chamber Full	Not Filled			
Fill Time	-			
Start Build-up	-			
Finish Build-up	-			
Build-Up Time	-			
Seal Chamber	1141	Suspect plugging		
Tool Retract	1143			
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP	2350	psia		psia
ISIP	2019.9	psia		
Initial Flowing Press.	123.7	psia		
Final Flowing Press.	200	psia		
Sampling Press. Range	(Supect plugging)	psia		
FSIP				
FHP				
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached	2403	mkB		m
Max. Rec. Temp.	208	°F		°C
Time Circ. Stopped	0530 (hrs) 31 May, 1984			
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	450	psig		psig
Amt Gas	23.9	CF		ft
Amt Oil	Nil	lit.		lit
Amt Water (Filtrate)	500	CC		lit
Amt Others	Trace Condensate			lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	436700	ppm		ppm
C2	66400	ppm		ppm
C3	35700	ppm		ppm
IC4/nC4	15400	ppm		ppm
C5+	3850	ppm		ppm
C6+	660	ppm		ppm
CO2/H2S	1%/Nil	ppm		ppm
Oil Properties	°API @	°C	°API@	°C
Colour	-			
Fluorescence	-			
GOR	-			
Water Properties (Filtrate)				
Resistivity	0.47 @	56 °F		°C
NaCl Equivalent	17000	ppm		ppm
Cl-titrated	10000	ppm		ppm
NO3/Ca^{2}+	80	ppm		ppm
Est. Water Type	PH = 8.3			
Mud Properties				
Resistivity	0.257	@ 18°C		@ °C
Na Cl Equivalent	29000	ppm		ppm
Cl - titrated	22000	ppm		ppm
Calibration				
Calibration Press.	-	psig	-	psig
Calibration Temp.		°C		°C
Hewlett Packard No.	971/Strain = 59282		971/59282	
Mud Weight	9.7	ppg	9.7	ppg
Calc. Hydrostatic	2329	psia	2329	psia
RFT Chokesize	1x0.03	inch	1x0.02	inch
Remarks	Flowline plugged during sampling. Long nose probe probe used. Free attempt.			

RFT SAMPLE TEST REPORT

(2526f/28)

WELL: Tuna-4
OBSERVER: S.T. Koh DATE: June 1, 1984 RUN: 1/17

		CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
	SEAT NO.	1/17		1/17	
	DEPTH	1398.4 m		1398.4 m	
A.	RECORDING TIMES				
	Tool Set	1144.5			
	Pretest Open	1145			
	Time Open	1146			
	Chamber Open	1146			
	Chamber Full	Not Filled			
	Fill Time	-			
	Start Build-up	-			
	Finish Build-up	-			
	Build-Up Time	-			
	Seal Chamber	1202 (Flow Line Plugging)			
	Tool Retract	1203			
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	2351.4	psia		psia
	ISIP	2020.1	psia		
	Initial Flowing Press.	414.1	psia		
	Final Flowing Press.	632	psia		
	Sampling Press. Range	(Susp.Plugging)			
	FSIP				
	FHP				
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2403	mkB		m
	Max. Rec. Temp.	208	°F		°C
	Time Circ. Stopped	0530 (hrs) 31 May, 1984			
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	450	psig		psig
	Amt Gas	23.9	CF		ft
	Amt Oil	Nil	lit.		lit
	Amt Water (Filtrate)	500	CC		lit
	Amt Others	Trace Condensate			lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	436700	ppm		ppm
	C2	66400	ppm		ppm
	C3	35700	ppm		ppm
	IC4/nC4	15400	ppm		ppm
	C5+	3850	ppm		ppm
	C6+	660	ppm		ppm
	CO2/H2S	1%/Nil	ppm		ppm
	Oil Properties	°API @	°C	°API@	°C
	Colour	-			
	Fluorescence	-			
	GOR	-			
	Water Properties (Filtrate)				
	Resistivity	0.47 @ 56 °F			°C
	NaCl Equivalent	17000	ppm		ppm
	Cl-titrated	10000	ppm		ppm
	NO3/Ca^{2}+	80	ppm		ppm
	Est. Water Type	PH = 8.3			
	Mud Properties				
	Resistivity	0.257	@ 18°C		@ °C
	Na Cl Equivalent	29000	ppm		ppm
	Cl - titrated	22000	ppm		ppm
	Calibration				
	Calibration Press.	-	psig	-	psig
	Calibration Temp.		°C		°C
	Hewlett Packard No.	971/59282 (SG)		971/59282	
	Mud Weight	9.7	ppg	9.7	ppg
	Calc. Hydrostatic	2329	psia	2329	psia
	RFT Chokesize	1x0.03	inch	1x0.02	inch
	Remarks	Flowline plugged during sampling. Long nose probe used. Free attempt.			

RFT SAMPLE TEST REPORT

(2526f/29)

WELL: Tuna-4
OBSERVER: S.T. Koh
DATE: June 1, 1984
RUN: 2/18

		CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
	SEAT NO.	2/18		2/18	
	DEPTH m MDKB	1400.5 m		1400.5 m	
A.	RECORDING TIMES				
	Tool Set	1415			
	Pretest Open	1415			
	Time Open	1416.5		1426	
	Chamber Open	1417		1426	
	Chamber Full	1423		1427.5	
	Fill Time	6 minutes		1.5 minutes	
	Start Build-up	1423		1427.5	
	Finish Build-up	1424		1428	
	Build-Up Time	1 minute		0.5 minute	
	Seal Chamber	1425		1429	
	Tool Retract	-		1429.5	
	Total Time		hrs	hrs	
B.	SAMPLE PRESSURES				
	IHP	2350.5	psia		psia
	ISIP	2021.0	psia	2020.7	
	Initial Flowing Press.	321.9-723-990		775.3	
	Final Flowing Press.	1922.8	psia	1996.9	
	Sampling Press. Range	321-1923		775-1997	psia
	FSIP	2020.7		2020.7	
	FHP			2350.4	
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	1471	mKB	1471	m
	Max. Rec. Temp.	159	°F	159	°C
	Time Circ. Stopped	0530 Hrs. 31 May'84		0530 Hrs. 31 May	
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	1200	psia		psia
	Amt Gas	56	CF		
	Amt Oil	13000	CC		lit
	Amt Water (Filtrate)	2250	CC		lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	453200	ppm		ppm
	C2	60830	ppm		ppm
	C3	12290	ppm		ppm
	IC4/nC4	9770	ppm		ppm
	C5	3180	ppm		ppm
	C6+	1110	ppm		ppm
	CO2/H2S	2%/Nil	ppm		ppm
	Oil Properties	48.9 °API @ 60	°F	°API@	°C
	Colour	Reddish Brown			
	Fluorescence	Bright Cream			
	GOR	685 SCF/STB			
	Water Properties (Filtrate)				
	Resistivity	0.307 @	64 °F		°C
	NaCl Equivalent	24000	ppm		ppm
	Cl-titrated	15000	ppm		ppm
	NO3	100	ppm		ppm
	Est. Water Type	PH = 8			
	Mud Properties				
	Resistivity	0.257	@ 18°C		@ °C
	Na Cl Equivalent	29000	ppm		ppm
	Cl - titrated	22000	ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C		°C
	Hewlett Packard No.	971/59282		971/59282	
	Mud Weight	9.7	ppg	9.7	ppg
	Calc. Hydrostatic	2332	psia	2332	psia
	RFT Chokesize	1x0.03	inch	1x0.02	inch
	Remarks	Martineau Probe Used.		Segregated Chamber Kept for PVT Analysis No. RFS AD1157.	

RFT SAMPLE TEST REPORT

(2526f/30)

WELL: Tuna-4
OBSERVER: S.T. Koh
DATE: June 1, 1984
RUN: 3/19

	CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
SEAT NO.	3/19		3/19	
DEPTH m MDKB	1398.5 m		1398.5 m	
A. RECORDING TIMES				
Tool Set	1732.5			
Pretest Open	1732.5			
Time Open	1734.5		1742.5	
Chamber Open	1734.5		1743.0	
Chamber Full	1740.5		1745.5	
Fill Time	6 minutes		2.5 minutes	
Start Build-up	1740.5		1745.5	
Finish Build-up	1741.5		1746	
Build-Up Time	1 minute		0.5 minute	
Seal Chamber	1742		1746.5	
Tool Retract	-		1747.0	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP	2347.8	psia		psia
ISIP	2020.6	psia	2019.9	
Initial Flowing Press.	964-1583-1942		2015.6	
Final Flowing Press.	2004.7	psia	2014.9	
Sampling Press. Range	964-2005		2015-2016	psia
FSIP	2019.9		2019.9	
FHP			2347.2	
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached	1470	mKB	1470	m KB
Max. Rec. Temp.	161	°F		°C
Time Circ. Stopped	0530 Hrs. 31 May'84		0530 Hrs. 31 May	
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	1400	psia		psia
Amt Gas	92	CF		
Amt Condensate	340	CC		lit
Amt Water (Filtrate)	800	CC		lit
Amt Others				lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	434300	ppm		ppm
C2	63600	ppm		ppm
C3	33480	ppm		ppm
IC4/nC4	14310	ppm		ppm
C5	5200	ppm		ppm
C6+	1680	ppm		ppm
CO2/H2S	3%/TR	ppm		ppm
Properties Condensate	64.8 °API @ 60	°F	°API@	°C
Colour	Light Brown			
Fluorescence	Bright White			
	23 STB/MILLION SCF			
Properties (Filtrate)				
Resistivity	0.390 @	61 °F		°C
NaCl Equivalent	20000	ppm		ppm
Cl-titrated	15000	ppm		ppm
NO3	100	ppm		ppm
Est. Water Type	PH = 8.5			
Mud Properties				
Resistivity	0.257	@ 18°C	0.257	@ 18°C
Na Cl Equivalent	29000	ppm	29000	ppm
Cl - titrated	22000	ppm	22000	ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C		°C
Hewlett Packard No.	971/59282		971/59282	
Mud Weight	9.7	ppg	9.7	ppg
Calc. Hydrostatic	2329	psia	2329	psia
RFT Chokesize	0.03	inch	0.02	inch
Remarks	Martineau Probe Used.		Segregated Sample Kept for PVT Analysis No. RFS AD1129.	

RFT SAMPLE TEST REPORT

(2526f/31)

WELL: Tuna-4
OBSERVER: S.T. Koh DATE: June 1, 1984 RUN: 4/20

		CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
	SEAT NO.	4/20		4/20	
	DEPTH m MDKB	2369.5 m		2369.5 m	
A.	RECORDING TIMES				
	Tool Set	2046			
	Pretest Open	2046			
	Time Open	2055			
	Chamber Open	2055			
	Chamber Full	- Lost Seal			
	Fill Time				
	Start Build-up	-			
	Finish Build-up	-			
	Build-Up Time				
	Seal Chamber	2055.5 (Lost Seal)			
	Tool Retract	2057.5		1747.0	
	Total Time		hrs	hrs	
B.	SAMPLE PRESSURES				
	IHP	3966.2	psia		psia
	ISIP	3421	psia		
	Initial Flowing Press.	149.2-3968(HP)			
	Final Flowing Press.	-	psia		
	Sampling Press. Range	-			
	FSIP				
	FHP				
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2416	mKB	2416	m KB
	Max. Rec. Temp.	-	°F		°C
	Time Circ. Stopped	0530 Hrs. 31 May'84		0530 Hrs. 31 May	
	Time since Circ.	-	hrs.	-	hrs.
	Form. Temp. (Horner)	-	°C	-	°C
D.	SAMPLE RECOVERY				
	Surface Pressure	300	psia	300	psia
	Amt Gas	0.7	CF	0.3	CF
	Amt Oil	Nil		Nil	lit
	Amt Water (Filtrate)	21900		9000	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1		ppm		ppm
	C2		ppm		ppm
	C3		ppm		ppm
	IC4/nC4		ppm		ppm
	C5		ppm		ppm
	C6+		ppm		ppm
	CO2/H2S		ppm		ppm
	Oil Properties	°API @	°F	°API@	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	@	°F		°C
	NaCl Equivalent		ppm		ppm
	Cl-titrated		ppm		ppm
	NO3		ppm		ppm
	Est. Water Type				
	Mud Properties				
	Resistivity	0.257	@ 18°C	0.257	@ 18°C
	Na Cl Equivalent	29000	ppm	29000	ppm
	Cl - titrated	22000	ppm	22000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C		°C
	Hewlett Packard No.	971/59282		971/59282	
	Mud Weight	9.7	ppg	9.7	ppg
	Calc. Hydrostatic	3936.4	psia	3936.4	psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Martineau Probe Used.		Lost Seal 0.5 min. After Chamber Opened.	

RFT SAMPLE TEST REPORT

(2526f/32)

WELL: Tuna-4
OBSERVER: S.T. Koh
DATE: June 1, 1984
RUN: 4/22

		CHAMBER 1 (22.5 lit.)		CHAMBER 2 (3.75 lit.)	
	SEAT NO.	4/22		4/22	
	DEPTH	2369.6 m		2369.6 m	
A.	RECORDING TIMES				
	Tool Set	2108.5		-	
	Pretest Open	2108.5		-	
	Time Open	2111		2125	
	Chamber Open	2111		2125.5	
	Chamber Full	- (Seal Chamber)		2137	
	Fill Time	-		11.5 Mins.	
	Start Build-up	2124		2137	
	Finish Build-up	-			
	Build-Up Time	-			
	Seal Chamber	2124		2133	
	Tool Retract	-		2135	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	3972.5	psia	-	psia
	ISIP	3424.3	psia	3406.3	
	Initial Flowing Press.	93.5-599-1886		500.8-2364	
	Final Flowing Press.	1987.2-3264.8	psia	2501.1-3295	
	Sampling Press. Range	-		500 - 3295	
	FSIP	3406.3		3364 (Not Stabilized)	
	FHP	-		3973.7	
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2416	mKB	2416	m KB
	Max. Rec. Temp.	-	°F	-	°C
	Time Circ. Stopped	0530 Hrs. 31 May'84		0530 Hrs. 31 May	
	Time since Circ.	-	hrs.	-	hrs.
	Form. Temp. (Horner)	-	°C	-	°C
D.	SAMPLE RECOVERY				
	Surface Pressure	300	psia	300	psia
	Amt Gas	0.7	CF	0.3	CF
	Amt Oil	Nil		Nil	lit
	Amt Water (Filtrate)	21900		9000	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	No Sample	ppm	No Sample	ppm
	C2	Possible	ppm	Possible	ppm
	C3		ppm		ppm
	IC4/nC4		ppm		ppm
	C5		ppm		ppm
	C6+		ppm		ppm
	CO2/H2S		ppm		ppm
	Oil Properties	°API @	°F	°API@	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.218 @ 70 °F		0.256 @ 64°C	
	NaCl Equivalent	32000	ppm	30000	ppm
	Cl-titrated	18000	ppm	16000	ppm
	NO3	80	ppm	40	ppm
	Est. Water Type	7.5 (Greyish)		7 (Clear)	
	Mud Properties				
	Resistivity	0.257 @ 18°C		0.257 @ 18°C	
	Na Cl Equivalent	29000	ppm	29000	ppm
	Cl - titrated	22000	ppm	22000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	971/59282		971/59282	
	Mud Weight	9.7	ppg	9.7	ppg
	Calc. Hydrostatic	3936	psia	3936	psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Martineau Probe Used.			

RFT SAMPLE TEST REPORT

(2526f/33)

WELL: Tuna-4
OBSERVER: Goodacre/Neumann DATE: June 10, 1984 RUN: 6

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	6/45		6/45	
	DEPTH	2451.5 m		2451.5 m	
A.	RECORDING TIMES				
	Tool Set	00:18			
	Pretest Open	00:18			
	Time Open	1			
	Chamber Open	00:22		00:37	
	Chamber Full	00:34		00:43	
	Fill Time	12 mins		6 mins	
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber			00:14	
	Tool Retract			00:52	
	Total Time		hrs	00: 15	hrs
B.	SAMPLE PRESSURES				
	IHP	3941	psia		psia
	ISIP	3568.4	psia		psia
	Initial Flowing Press.	85	psia	176	psia
	Final Flowing Press.	2280	psia	3055	psia
	Sampling Press. Range	2200	psia	2900	psia
	FSIP	3566	psia	3566 (still rising at end)	psia
	FHP	3945	psia		psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2451.5	m KB		m KB
	Max. Rec. Temp.	214.2	°F		°C
	Time Circ. Stopped	2200 Hrs. 8/6/84			
	Time since Circ.	26	hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	300	psia	0	psia
	Amt Gas	0.78	CF	-	CF
	Amt Oil	0	lit	-	lit
	Amt Water (Filtrate)	41.55	lit	9.4	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	51,020	ppm		ppm
	C2	4,914	ppm		ppm
	C3	2,865	ppm		ppm
	IC4/nC4	1,539	ppm		ppm
	C5	713	ppm		ppm
	C6+	28	ppm		ppm
	CO2/H2S	1.5/20	ppm		ppm
	Oil Properties	°API @	°C	°API@	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.284 @ 18 °C		0.290 @ 17°C	
	NaCl Equivalent	26000	ppm	26000	ppm
	Cl-titrated	15000	ppm	15000	ppm
	NO3	20	ppm	20	ppm
	Est. Water Type	pH 9		pH 8	
	Mud Properties				
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent	pH 10.5	ppm	pH 10.5	ppm
	Cl - titrated	22000	ppm	22000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	971		971	
	Mud Weight	9.4	ppg	9.4	ppg
	Calc. Hydrostatic	3940.5	psia	3940.5	psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Martineau Probe Used.		Martineau Probe Used.	

RFT SAMPLE TEST REPORT

(2526f/34)

WELL: Tuna-4
OBSERVER: Goodacre/Neumann DATE: June 10, 1984 RUN: 7

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	7/48		7/48	
	DEPTH	2470.4 m		2470.4 m	
A.	RECORDING TIMES				
	Tool Set	04:57			
	Pretest Open				
	Time Open	3 min			
	Chamber Open	0500/0515/0517		05:28	
	Chamber Full				
	Fill Time				
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber			05:42	
	Tool Retract				
	Total Time		hrs	00: 15	hrs
B.	SAMPLE PRESSURES				
	IHP	3973.2	psia		psia
	ISIP	3611.5	psia		psia
	Initial Flowing Press.	65	psia	1680	psia
	Final Flowing Press.	180	psia		psia
	Sampling Press. Range	P R E S S U R E S			
	FSIP	U N R E L I A B L E			
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2470.4	m KB	3470.4	m KB
	Max. Rec. Temp.		°C	223	°F
	Time Circ. Stopped	2200 Hrs. 8/6/84			
	Time since Circ.	27	hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	400	psia	150	psia
	Amt Gas	1.35	CF	0.65	CF
	Amt Oil	-	lit	-	lit
	Amt Water (Filtrate)	41.75	lit	9.25	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1				
	C2	N O T E N O U G H			
	C3				
	IC4/nC4				
	C5	S A M P L E			
	C6+				
	CO2/H2S	11%/25	ppm		ppm
	Oil Properties	°API @	°C	°API@	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity				
	NaCl Equivalent		ppm		ppm
	Cl-titrated	17000	ppm	16000	ppm
	NO3	10	ppm		ppm
	Est. Water Type	pH 7.5		pH 7	
	Mud Properties				
	Resistivity	0.259 @ 17°C			
	Na Cl Equivalent	pH 10.5	ppm		ppm
	Cl - titrated	22000	ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	971		971	
	Mud Weight	9.4	ppg	9.4	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Martineau Probe Used.		Martineau Probe Used.	

RFT SAMPLE TEST REPORT

(2526f/35)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 10, 1984 RUN: 8

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	8/50		8/50	
	DEPTH	2475.0 m		2475.0 m	
A.	RECORDING TIMES				
	Tool Set	10:00			
	Pretest Open	10:00			
	Time Open	10:03:10			
	Chamber Open	10:03:10		10:16:15	
	Chamber Full	10:11:00		10:21:34	
	Fill Time			5:19	
	Start Build-up	10:11:00		10:21:34	
	Finish Build-up	10:14:50			
	Build-Up Time	3:50			
	Seal Chamber	10:15:05		10:23:21	
	Tool Retract			10:24:49	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	3958	psia		psia
	ISIP	3596	psia		psia
	Initial Flowing Press.	111	psia	3168	psia
	Final Flowing Press.	2402	psia	3119	psia
	Sampling Press. Range	111-2402	psia	3168-3119	psia
	FSIP	3592	psia	3593	psia
	FHP		psia		psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m KB		m KB
	Max. Rec. Temp.	221.7	°F	221.7	°F
	Time Circ. Stopped	2200 Hrs. 8/6/84		2200 Hrs. 8/6/84	
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	375	psia	200	psia
	Amt Gas	1.61	CF	-	CF
	Amt Oil	Trace	lit	8 cc	
	Amt Water (Filtrate)	41,700 cc		8,550 cc	
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
Gas Composition					
	C1		ppm		ppm
	C2	INSUFFICIENT	ppm	NO	ppm
	C3		ppm		ppm
	IC4/nC4	SAMPLE	ppm	SAMPLE	ppm
	C5		ppm		ppm
	C6+		ppm		ppm
	CO2/H2S	3%	ppm		ppm
Oil Properties		°API @	°C	°API@	°C
	Colour	Tan		Tan	
	Fluorescence	Bright White		Bright White	
	GOR				
Water Properties					
	Resistivity	0.279 @ 15.5 °C		0.285 @ 15.5°C	
	NaCl Equivalent	12750	ppm	12250	ppm
	Cl-titrated	19000	ppm	16000	ppm
	NO3	40	ppm	40	ppm
	Est. Water Type	pH 7.5		pH 7.5	
Mud Properties					
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	22000	ppm	22000	ppm
Calibration					
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
Remarks					

RFT SAMPLE TEST REPORT

(2526f/36)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 10, 1984 RUN: 9

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	9/51		9/51	
	DEPTH	2550.0 m		2550.0 m	
A.	RECORDING TIMES				
	Tool Set	14:17:39			
	Pretest Open	14:17:42			
	Time Open	14:22:37			
	Chamber Open	14:22:40		14:40:24	
	Chamber Full	14:30:30		14:46:05	
	Fill Time	7:50mins		5:41 mins	
	Start Build-up	14:30:30		14:46:05	
	Finish Build-up			14:50:00	
	Build-Up Time			13 mins	
	Seal Chamber	14:38:56		14:50:13	
	Tool Retract			14:52:12	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	4089.0	psia		psia
	ISIP	3704.4	psia	3704.9	psia
	Initial Flowing Press.	165	psia	1479.6	psia
	Final Flowing Press.	2679	psia	3179.2	psia
	Sampling Press. Range	165-2679	psia	1479-3179	psia
	FSIP	3702.3	psia	3704.7	psia
	FHP		psia	4093.0	psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2590	m KB	2590	m KB
	Max. Rec. Temp.	232	°F	232	°F
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	1400	psia		psia
	Amt Gas	64.36	CF	-	CF
	Amt Oil	15.55	lit		
	Amt Water (Filtrate)	18.30			
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	360621	ppm		ppm
	C2	52660	ppm	SAMPLE	ppm
	C3	37481	ppm		ppm
	IC4/nC4	5287	ppm	PRESERVED	ppm
	C5	1102	ppm		ppm
	C6+	400	ppm		ppm
	CO2/H2S	19%/12	ppm		ppm
	Oil Properties	39.5 °API @ 15 °C		°API@ °C	
	Colour	Red-Brown			
	Fluorescence	Bright Cream			
	GOR	660 SCF/STB			
	Water Properties				
	Resistivity	@ °C		@ °C	
	NaCl Equivalent		ppm	SAMPLE	ppm
	Cl-titrated	16000	ppm		ppm
	NO3	20	ppm	PRESERVED	ppm
	Est. Water Type	pH 8			
	Mud Properties				
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	22000	ppm	22000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
	Remarks	Pour Point 87°F.		Sample Preserved. Chamber No. RFT-AE 43.	

RFT SAMPLE TEST REPORT

(2526f/37)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 10, 1984 RUN: 10

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	10/52		10/52	
	DEPTH	2566.0 m		2566.0 m	
A.	RECORDING TIMES				
	Tool Set	17:31:42			
	Pretest Open	17:31:50			
	Time Open	3:18			
	Chamber Open	17:35:08/18:04:09		18:50:15	
	Chamber Full	)			
	Fill Time	) Shut chamber		28 mins	
	Start Build-up	) before full		) Did not wait for build-up	
	Finish Build-up	)		)	
	Build-Up Time	)			
	Seal Chamber	18:03:22/18:48:50		19:18:16	
	Tool Retract			19:19:57	
	Total Time	1:16	hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	4116.5	psia	-	psia
	ISIP	3721.8	psia	-	psia
	Initial Flowing Press.	77	psia	434.2	psia
	Final Flowing Press.	) Shut chamber before full			psia
	Sampling Press. Range	) due to low, slow flowrates		3698	psia
	FSIP	-	psia	3717.7	psia
	FHP	-	psia	4116.0	psia
	Form.Press. (Horner)	-			
C.	TEMPERATURE				
	Depth Tool Reached	2566.0	m KB	2566.0	m KB
	Max. Rec. Temp.		°F	235	°F
	Time Circ. Stopped	2200 Hrs 8/6/84		2200 Hrs 8/6/84	
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	700	psia	950	psia
	Amt Gas	27.6	CF	6.69	CF
	Amt Oil	6.1	lit	3.2	lit
	Amt Water (Filtrate)	25.1	lit	7.0	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	297961	ppm	326533	ppm
	C2	97696	ppm	52541	ppm
	C3	68017	ppm	19544	ppm
	IC4/nC4	28200	ppm	5581	ppm
	C5	80309	ppm	1037	ppm
	C6+	1800	ppm	150	ppm
	CO2/H2S	20%/16	ppm	23%/22	ppm
	Oil Properties	40.1 °API @ 15 °C		°API@ °C	
	Colour	Brown		Brown	
	Fluorescence	Bright White		Bright White	
	GOR	720 SCF/STB		332 SCF/STB	
	Water Properties				
	Resistivity	0.300 @ 19°C		0.298 @ 23°C	
	NaCl Equivalent	18000	ppm	20000	ppm
	Cl-titrated	15000	ppm	16000	ppm
	NO3	10	ppm	10	ppm
	Est. Water Type	pH 7		pH 7	
	Mud Properties				
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	19000	ppm	19000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	876		876	
	Mud Weight	9.4	ppg	9.4	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Sealed and reopened chamber to check on and improve flowrate.			

RFT SAMPLE TEST REPORT

(2526f/38)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 11, 1984 RUN: 12

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	12/56		12/56	
	DEPTH	2582.8 m		2582.8 m	
A.	RECORDING TIMES				
	Tool Set	0522			
	Pretest Open	-			
	Time Open	7 min			
	Chamber Open	0529		0546	
	Chamber Full	0537		0549	
	Fill Time	8 min		3 min	
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	0542		0550	
	Tool Retract	-		0558	
	Total Time	20 min		12 min	
B.	SAMPLE PRESSURES				
	IHP	4153.5	psia	-	psia
	ISIP	3746.8	psia	-	psia
	Initial Flowing Press.	107 (plugged)	psia	3548	psia
	Final Flowing Press.	3214	psia	3507	psia
	Sampling Press. Range	-	psia	-	psia
	FSIP	-	psia	-	psia
	FHP	-	psia	4135.5	psia
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2582.8	m KB	2582.2	m KB
	Max. Rec. Temp.		°F	238	°C
	Time Circ. Stopped	2200 Hrs 8/6/84		-	
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	500	psia	290	psia
	Amt Gas	5.8	CF	0.55	CF
	Amt Oil	-	lit	-	lit
	Amt Water (Filtrate)	40.4	lit	3.5	lit
	Amt Others	-		-	lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	129592	ppm		ppm
	C2	7446	ppm	NOT ENOUGH	ppm
	C3	5232	ppm		ppm
	IC4/nC4	1557	ppm	SAMPLE	ppm
	C5	145	ppm		ppm
	C6+	27	ppm		ppm
	CO2/H2S	11%/0	ppm		ppm
	Oil Properties	°API @ °C		°API@ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.301 @ 17°C		0.322 @ 16°C	
	NaCl Equivalent	25000	ppm	25000	ppm
	Cl-titrated	16000	ppm	16000	ppm
	NO3	20	ppm	30	ppm
	Est. Water Type	pH 6.9		pH 7.2	
	Mud Properties				
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	19000	ppm	19000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	876			
	Mud Weight	9.4	ppg	9.4	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Plugging evident, then tool cleared itself.			

RFT SAMPLE TEST REPORT

(2526f/40)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 11, 1984 RUN: 14

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	14/58		14/58	
DEPTH	2470.0 m		2470.0 m	
A. RECORDING TIMES				
Tool Set	14:51:04			
Pretest Open	14:51:05			
Time Open	2:47			
Chamber Open	14:53:52		15:28:02	
Chamber Full	15:20:55		15:30:00	
Fill Time	28:03		7:58	
Start Build-up	15:20:55		15:30:00	
Finish Build-up	15:26:29		15:32:32	
Build-Up Time	6:34			
Seal Chamber	15:26:36		15:32:58	
Tool Retract	-		15:33:46	
Total Time				
B. SAMPLE PRESSURES				
IHP	3959.7	psia	-	psia
ISIP	3606.8	psia	-	psia
Initial Flowing Press.	165	psia	146	psia
Final Flowing Press.	1678	psia	1717.5	psia
Sampling Press. Range	165-1678	psia	146-1717.5	psia
FSIP	3607.0	psia	3607.1	psia
FHP	-	psia	3965.6	psia
Form.Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached	2500	m KB	2500	m KB
Max. Rec. Temp.	226.9	°F	226.9	°F
Time Circ. Stopped	2200 Hrs 8/6/84		2200 Hrs 8/6/84	
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	500	psia	0	psia
Amt Gas	3.64	CF	0	CF
Amt Oil	Trace wacy oil scum		Trace waxy oil scum	
Amt Water (Filtrate)	41.55	lit	3.5	lit
Amt Others				lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	104082	ppm		ppm
C2	8637	ppm	N O	ppm
C3	4043	ppm		ppm
IC4/nC4	1527	ppm		ppm
C5	488	ppm	S A M P L E	ppm
C6+	180	ppm		ppm
CO2/H2S	3.5%/2	ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	0.262 @ 20°C		0.263 @ 20°C	
NaCl Equivalent	26000	ppm	26000	ppm
Cl-titrated	15000	ppm	15000	ppm
NO3	0	ppm	0	ppm
Est. Water Type	pH 7		pH 6.8	
Mud Properties				
Resistivity	0.259 @ 17°C		0.259 @ 17°C	
Na Cl Equivalent		ppm		ppm
Cl - titrated	22000	ppm	22000	ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.	-	°C	-	°C
Hewlett Packard No.	-			
Mud Weight	9.4	ppg	9.4	ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks				

RFT SAMPLE TEST REPORT

(2526f/39)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 11, 1984 RUN: 13

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
	SEAT NO.	13/57		13/57	
	DEPTH	2507.2 m		2507.2 m	
A.	RECORDING TIMES				
	Tool Set	0940			
	Pretest Open				
	Time Open				
	Chamber Open	0949		1021	
	Chamber Full			1026	
	Fill Time	25 min		5 min	
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	1021		1034	
	Tool Retract	-		1036	
	Total Time	31 min		15 min	
B.	SAMPLE PRESSURES				
	IHP	4017.9	psia	-	psia
	ISIP	3648.65	psia	-	psia
	Initial Flowing Press.	141	psia	1705	psia
	Final Flowing Press.	3625.87	psia	1967	psia
	Sampling Press. Range	-	psia	-	psia
	FSIP	-	psia	-	psia
	FHP	-	psia	4023.53	psia
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2507.2	m KB	-	m KB
	Max. Rec. Temp.	-	°F	233	°F
	Time Circ. Stopped	2200 Hrs 8/6/84		-	
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	975	psia		psia
	Amt Gas	26	CF	SAMPLE	CF
	Amt Oil	5.25	lit		lit
	Amt Water (Filtrate)	32.95	lit	PRESERVED	lit
	Amt Others				lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	351023	ppm		ppm
	C2	69102	ppm	SAMPLE	ppm
	C3	30679	ppm		ppm
	IC4/nC4	9987	ppm		ppm
	C5	2463	ppm	PRESERVED	ppm
	C6+	512	ppm		ppm
	CO2/H2S	15%/16	ppm		ppm
	Oil Properties	40 °API @ 15 °C		°API@ °C	
	Colour	Brown Waxy			
	Fluorescence	Bright White			
	GOR	787			
	Water Properties				
	Resistivity	0.286 @ 17°C			
	NaCl Equivalent	27000	ppm		ppm
	Cl-titrated	14500	ppm		ppm
	NO3	Nil	ppm		ppm
	Est. Water Type	pH 7.0			
	Mud Properties				
	Resistivity	0.259 @ 17°C		0.259 @ 17°C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	19000	ppm	19000	ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	-	°C	-	°C
	Hewlett Packard No.	876		876	
	Mud Weight	9.4	ppg	9.4	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks			3.8 litre chamber preserved No. RFS-AD 1123.	

RFT SAMPLE TEST REPORT

(2526f/41)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 19, 1984 RUN: 17

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.2 lit.)	
SEAT NO.	87		87	
DEPTH	2948.5 m		2948.5 m	
A. RECORDING TIMES				
Tool Set	21.02			
Pretest Open	21.02			
Time Open	0.04			
Chamber Open	21.05			
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	21.06			
Tool Retract	21.08			
Total Time				
B. SAMPLE PRESSURES				
IHP	5188.24	psia		psia
ISIP		psia		psia
Initial Flowing Press.		psia		psia
Final Flowing Press.		psia		psia
Sampling Press. Range		psia		psia
FSIP		psia		psia
FHP		psia		psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached	2948.5	m KB		m KB
Max. Rec. Temp.	110.8	°F		°C
Time Circ. Stopped				
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY DID NOT TAKE SAMPLE				
Surface Pressure		psia		psia
Amt Gas		CF		CF
Amt Oil				
Amt Water (Filtrate)		lit		lit
Amt Others				lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
NO3		ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.		psia		psia
Calibration Temp.		°C		°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks	Probe plugged. Tried to unplug by opening 12 gal. chamber and re-setting tool. Probe remained plugged. Run aborted. Packer rubber sucked back into probe.			

RFT SAMPLE TEST REPORT

(2526f/42)

WELL: Tuna-4
OBSERVER: S. Shoghi DATE: June 19, 1984 RUN: 18

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.2 lit.)	
	SEAT NO.	18/88		18/88	
	DEPTH	2948.5 m		2948.5 m	
A.	RECORDING TIMES				
	Tool Set	00:38:00			
	Pretest Open	00:38:12			
	Time Open				
	Chamber Open	00:47:47		1:44:12	
	Chamber Full			1:48:00	
	Fill Time			3:48	
	Start Build-up)			1:48:00	
	Finish Build-up)	Did not wait		) Did not wait	
	Build-Up Time)			)	
	Seal Chamber	01:42:50		02:02	
	Tool Retract	-		02:05	
	Total Time	1:04:50	hrs	00:20:48	hrs
B.	SAMPLE PRESSURES				
	IHP	5185.1	psia	-	psia
	ISIP	4637.02	psia	-	psia
	Initial Flowing Press.	106.09	psia	979.22	psia
	Final Flowing Press.	4229.09	psia	584.46	psia
	Sampling Press. Range	106-4229	psia	972-584	psia
	FSIP	4604.71	psia	4605.14	psia
				Not Stabilised	
	FHP	-	psia	5177.00	psia
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2955.0	m KB	2955.0	m KB
	Max. Rec. Temp.	114.7	°C	114.7	°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	850	psia	1100	psia
	Amt Gas	16.61	CF	10.65	CF
	Amt Oil	1.75	lit	1.50	lit
	Amt Water (Filtrate)	37.45	lit	6.75	lit
	Amt Others		lit		lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	328770	ppm	309923	ppm
	C2	61079	ppm	51825	ppm
	C3	25692	ppm	20257	ppm
	IC4/nC4	7905	ppm	5434	ppm
	C5	1536	ppm	940	ppm
	C6+	199.6	ppm	174.7	ppm
	CO2/H2S	15%/5	ppm	20%/2	ppm
	Oil Properties	37.8 °API @ 15.6 °C		38.3 °API @ 15.6 °C	
	Colour	Red Brown		Red Brown	
	Fluorescence	Bright Cream		Bright Cream	
	GOR	1509 SCF/STB		1130 SCF/STB	
	Water Properties				
	Resistivity	0.260 @ 21°C		0.277 @ 21°C	
	NaCl Equivalent	26000	ppm	25000	ppm
	Cl-titrated	17000	ppm	16000	ppm
	NO3	30	ppm	40	ppm
	Est. Water Type	pH 7.5		pH 8.0	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.	115.6	°C	-	°C
	Hewlett Packard No.	974		974	
	Mud Weight	10.5	ppg	10.5	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	.03	inch	.02	inch
	Remarks	Pour Point 37°C.			

RFT SAMPLE TEST REPORT

(2526f/43)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 22, 1984 RUN: 19

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	19/94		19/95	
DEPTH	2896.5 m		2827.0 m	
A. RECORDING TIMES				
Tool Set	10:08:04		11:19:20	
Pretest Open	10:08:08		11:19:23	
Time Open				
Chamber Open	10:13:29		Pretest gave anomously low	
Chamber Full	Not Full		formation values.	
Fill Time	Pressure build-up too			
Start Build-up	slow - gave up.		Did not open chamber.	
Finish Build-up)	Chamber not full.			
Build-Up Time)				
Seal Chamber	10:46:41			
Tool Retract	10:48:34		11:30:56	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP (not stabilised)	5075.3	psia	4955.8	psia
ISIP	4328	psia	-	psia
Initial Flowing Press.	113	psia	-	psia
Final Flowing Press.	-	psia		psia
Sampling Press. Range	-	psia	N O	psia
FSIP	-	psia		psia
FHP	-	psia		psia
Form.Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.		°C	S A M P L E	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	25	psia		psia
Amt Gas	1.26	CF		CF
Amt Oil	Waxy oil scum	lit	A S	lit
Amt Water (Filtrate)	6.25	lit		lit
Amt Others		lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1	268042	ppm	C H A M B E R	ppm
C2	34549	ppm		ppm
C3	14822	ppm		ppm
IC4/nC4	5928	ppm		ppm
C5	2624	ppm	N O T	ppm
C6+	699	ppm		ppm
CO2/H2S	3%/4	ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence			O P E N E D	
GOR				
Water Properties				
Resistivity	0.253 @ 21°C		@ °C	
NaCl Equivalent	27000	ppm		ppm
Cl-titrated	15000	ppm		ppm
NO3	Trace	ppm		ppm
Est. Water Type	pH 8.2			
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks	Packer damaged - rubber sucked into probe - blocked probe.			

RFT SAMPLE TEST REPORT

(2526f/62)

WELL: Tuna-4

OBSERVER: M. O'Byrne/P. Priest DATE: June 22, 1984 RUN: 19

		CHAMBER 1 (45.1 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	19/89		19/89	
	DEPTH	2896.5 m		2896.5 m	
A.	RECORDING TIMES				
	Tool Set	08:14:35		Did not open	
	Pretest Open	08:14:39		10.4 lit. chamber	
	Time Open	10:35			
	Chamber Open	08:24:16			
	Chamber Full	Chamber not full			
	Fill Time	Flowing rate very low and slow, moved up to 2896.3			
	Start Build-up				
	Finish Build-up)	Chamber not			
	Build-Up Time)	full			
	Seal Chamber	08:51:30			
	Tool Retract	08:54:50			
	Total Time				
B.	SAMPLE PRESSURES				
	IHP	5086	psia		psia
	ISIP	4510.3	psia		psia
	Initial Flowing Press.	101	psia		psia
	Final Flowing Press.	-	psia		psia
	Sampling Press. Range	101-160	psia		psia
	FSIP	-	psia		psia
	FHP	50	psia		psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m KB		m KB
	Max. Rec. Temp.		°C		°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure		psia		psia
	Amt Gas	S E E	CF		CF
	Amt Oil		lit		lit
	Amt Water (Filtrate)		lit		lit
	Amt Others	S E A T			
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	9 4	ppm		ppm
	C2		ppm		ppm
	C3		ppm		ppm
	IC4/nC4	F O R	ppm		ppm
	C5		ppm		ppm
	C6+		ppm		ppm
	CO2/H2S	R E S U L T S			ppm
	Condensate				
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	@ °C		@ °C	
	NaCl Equivalent		ppm		ppm
	Cl-titrated		ppm		ppm
	NO3		ppm		ppm
	Est. Water Type				
	Mud Properties				
	Resistivity	@ °C		@ °C	
	NO3		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia		psia
	Calibration Temp.		°C		°C
	Hewlett Packard No.	974		974	
	Mud Weight	10.5	ppg	10.5	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize and RFT Gauge No.	.03 Inch 59491		.02	inch
	Remarks	Re-opened chamber (seat 94) at same depth. See seat 19/94 for sample recovery.			

RFT SAMPLE TEST REPORT

(2526f/44)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 22, 1984 RUN: 20

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	20/98		20/98	
	DEPTH	2896.5 m		2896.5 m	
A.	RECORDING TIMES				
	Tool Set	03:07:30			
	Pretest Open	03:08:00			
	Time Open				
	Chamber Open	03:16:00		16:19:07	
	Chamber Full				
	Fill Time	S E A L		S E A L	
	Start Build-up				
	Finish Build-up	F A I L U R E		F A I L U R E	
	Build-Up Time				
	Seal Chamber	Seal Failed @ 16:16:15			
	Tool Retract	16:17:21			
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	5084.41	psia	-	psia
	ISIP	4506.48	psia	-	psia
	Initial Flowing Press.	175.09	psia		psia
	Final Flowing Press.	-	psia		psia
	Sampling Press. Range	-	psia		psia
	FSIP		psia		psia
	FHP	-	psia		psia
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2896.5	m KB		m KB
	Max. Rec. Temp.	118.7	°C		°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	300	psia	Re-set tool and	
	Amt Gas	9.25	CF	re-opened chamber at	
	Amt Oil	Nil	lit	same depth - seat 99	
	Amt Water (Filtrate)		lit	(for recovery see	
	Amt Others	28.0	lit	seat 20/99)	
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	293171	ppm		ppm
	C2	46889	ppm		ppm
	C3	18775	ppm		ppm
	IC4/nC4	7411	ppm		ppm
	C5	2892	ppm		ppm
	C6+	1198	ppm		ppm
	CO2/H2S	2%/Trace	ppm		ppm
	Oil Properties	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.258 @ 16°C		@ °C	
	NaCl Equivalent	31000	ppm		ppm
	Cl-titrated	18000	ppm		ppm
	NO3	120	ppm		ppm
	Est. Water Type	pH 9.7			
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
	Remarks	Seal failure after 1 hour sampling. Packer damaged - sucked into probe.			

RFT SAMPLE TEST REPORT

(2526f/45)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 22, 1984 RUN: 20

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.			20/99	
DEPTH			2896.5 m	
A. RECORDING TIMES				
Tool Set			16:27:00	
Pretest Open			16:27:03	
Time Open				
Chamber Open		16:32:26/16:35:26		
Chamber Full				
Fill Time			Seal Failure/Seal Failure	
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber				
Tool Retract			16:36:25	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP		psia	-	psia
ISIP		psia	-	psia
Initial Flowing Press.		psia		psia
Final Flowing Press.	-	psia		psia
Sampling Press. Range	-	psia		psia
FSIP		psia		psia
FHP	-	psia		psia
Form.Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.		°C		°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure		psia	Nil	
Amt Gas		CF	Nil	
Amt Oil		lit	Nil	
Amt Water (Filtrate)		lit	Nil	
Amt Others		lit	Nil	
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm	N O	ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm	S A M P L E	ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
NO3		ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks			Re-set tool: 2nd seal failure. POOH.	

RFT SAMPLE TEST REPORT

(2526f/46)

WELL: Tuna-4

OBSERVER: Priest/O'Byrne/Shoghi DATE: June 22, 1984 RUN: 21

		12 GAL. CHAMBER 1 (45.4 lit.)		2-3/4 CHAMBER 2 (10.4 lit.)	
	SEAT NO. 100	21/100		21/100	
	DEPTH 2866.2 m	2866.2 m		2866.2 m	
A.	RECORDING TIMES				
	Tool Set	11:14:34			
	Pretest Open	11:14:55			
	Time Open				
	Chamber Open	11:19:29		12:31:09	
	Chamber Full				
	Fill Time				
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	12:27:58		12:51:10	
	Tool Retract			12:52:13	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	5068	psia	-	psia
	ISIP	4460.4	psia	-	psia
	Initial Flowing Press.	86.0	psia	365	psia
	Final Flowing Press.	608 psia (Before Sealing Chamber)		930	psia
	Sampling Press. Range	-	psia		psia
	FSIP	Not Stabilised	psia	Not Stabilised	psia
	FHP	Did Not Wait	psia	Not Stabilised	psia
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2900.0	m KB		m KB
	Max. Rec. Temp.	98	°C		°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	420	psia	500	psia
	Amt Gas	13.1	CF	7.63	CF
	Amt Oil	Nil	lit	Nil	lit
	Amt Water (Filtrate)	28.5	lit	4.6	lit
	Amt Others		lit		
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	4000384	ppm	301465	ppm
	C2	57016	ppm	11878	ppm
	C3	16865	ppm	11243	ppm
	IC4/nC4	5690	ppm	4377	ppm
	C5	1405	ppm	527	ppm
	C6+	284	ppm	284	ppm
	CO2/H2S	9%/4	ppm	9%/11	ppm
	Oil Properties	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.242 @ 21°C		0.243 @ 22°C	
	NaCl Equivalent	27000	ppm	27000	ppm
	Cl-titrated	17000	ppm	17000	ppm
	NO3	Trace	ppm	Trace	ppm
	Est. Water Type	pH 8.3		pH 8.3	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight	10.5	ppg		ppg
	Calc. Hydrostatic	5134	psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks				

RFT SAMPLE TEST REPORT

(2526f/47)

WELL: Tuna-4
OBSERVER: Shogi/O'Byrne DATE: June 23, 1984 RUN: 22

	12 GAL. CHAMBER 1 (434 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO. 101	22/101		22/101	
DEPTH 2827 m	2827 m		2827 m	
A. RECORDING TIMES				
Tool Set	15:24:00			
Pretest Open	15:24:30			
Time Open				
Chamber Open	15:28:00		16:28:30	
Chamber Full)				
Fill Time)	N O T		N O T	
Start Build-up)				
Finish Build-up)	F U L L		F U L L	
Build-Up Time)				
Seal Chamber	16:27:30		16:56:00	
Tool Retract			16:57:00	
Total Time		hrs	63 mins	
B. SAMPLE PRESSURES				
IHP	4983.5	psia	-	psia
ISIP	4211.6	psia	-	psia
Initial Flowing Press.	90	psia	186	psia
Final Flowing Press.	830	psia	142	psia
Sampling Press. Range	90-830	psia	186-142	psia
FSIP	4207 (Not Stable)	psia	4212.0 (Not Stable)	psia
FHP	-	psia	-	psia
Form.Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached	2840	m KB	2840	m KB
Max. Rec. Temp.	109.6	°C	110.6	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	370	psia	80	psia
Amt Gas	1.55	CF	Nil	CF
Amt Oil	-	lit	Trace Waxy Oil Scum	
Amt Water (Filtrate)	14.25	lit	5.25	lit
Amt Others		lit		
E. SAMPLE PROPERTIES				
Gas Composition				
C1	178995	ppm		ppm
C2	19251	ppm		ppm
C3	5621	ppm	N O	ppm
IC4/nC4	1751	ppm		ppm
C5	702	ppm	S A M P L E	ppm
C6+	355	ppm		ppm
CO2/H2S	6%	ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	0.250 @ 20°C		0.253 @ 20°C	
NaCl Equivalent	27000	ppm	27000	ppm
Cl-titrated	18000	ppm	18000	ppm
NO3	Trace	ppm	Trace	ppm
Est. Water Type	pH 8.3		pH 8.0	
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight	10.5	ppg	10.5	ppg
Calc. Hydrostatic	5079	psia	5079	psia
RFT Chokesize	0.03	inch	0.02	inch
Remarks			Tried closing and re-opening to improve performance.	

RFT SAMPLE TEST REPORT

(2526f/48)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest/Shoghi DATE: June 24, 1984 RUN: 23

		12 GAL. CHAMBER 1 (434 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	23/102		23/102	
	DEPTH	2775.0 m		2775.0 m	
A.	RECORDING TIMES				
	Tool Set	20:08:49			
	Pretest Open	20:08:52			
	Time Open	7:22			
	Chamber Open	20:15:14		20:37:50/20:47:40*	
	Chamber Full)				
	Fill Time)	COULD			
	Start Build-up)	NOT PICK			
	Finish Build-up)	FULL			
	Build-Up Time)	POINT		Did not wait for build-up	
	Seal Chamber	20:36:32		20:46:51/21:17:53	
	Tool Retract			21:20:58	
	Total Time		hrs	1:12:51	
B.	SAMPLE PRESSURES				
	IHP	4881.6	psia	-	psia
	ISIP	4054.1	psia	-	psia
	Initial Flowing Press.	662	psia	100	psia
	Flowing Press.	4030 psia when chamber shut		4029 psia when chamber shut	
	Sampling Press. Range	662-4030	psia	100-4029	psia
	FSIP	4052.0	psia	4040.2 psia not stabilised	
	FHP	-	psia	4889.5 psia not stabilised	
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached	2850	m KB	2850	m KB
	Max. Rec. Temp.	111.3	°C	111.3	°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	150	psia	100	psia
	Amt Gas	0.23	CF	0.01	CF
	Amt Oil	Nil	lit	Small trace waxy oil scum	
	Amt Water (Filtrate)	1.1	lit	9.75	lit
	Amt Others		lit		
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	94208	ppm		ppm
	C2	8314	ppm	INSUFFICIENT	ppm
	C3	3279	ppm		ppm
	IC4/nC4	1422	ppm		ppm
	C5	643	ppm	SAMPLE	ppm
	C6+	264	ppm		ppm
	CO2/H2S	3%/3	ppm		ppm
	Oil Properties	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.289 @ 17°C		0.253 @ 16°C	
	NaCl Equivalent	26000	ppm	32000	ppm
	Cl-titrated	18000	ppm	18000	ppm
	NO3	30	ppm	40	ppm
	Est. Water Type	pH 9.7		pH 10.2	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight	10.5	ppg	10.5	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize	0.03	inch	0.02	inch
	Remarks	Suspect blockage downstream of pressure gauge that cleared once end chamber was opened.		*Sealed chamber to check for tool problems - built up quickly. No obvious problems, re-opened chamber.	

RFT SAMPLE TEST REPORT

(2526f/49)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest/Shoghi DATE: June 24, 1984 RUN: 24

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	24/103		24/103	
	DEPTH	2775.0 m		2775.0 m	
A.	RECORDING TIMES				
	Tool Set	00:16:15			
	Pretest Open	00:16:45			
	Time Open				
	Chamber Open	00:24:07		00:45:45	
	Chamber Full			01:04:00	
	Fill Time				
	Start Build-up			01:05:00	
	Finish Build-up			01:09:00	
	Build-Up Time				
	Seal Chamber	00:44:20		01:10:20	
	Tool Retract			01:16:15	
	Total Time		hrs		
B.	SAMPLE PRESSURES				
	IHP	4875.4	psia	-	psia
	ISIP	4053.9	psia	-	psia
	Initial Flowing Press.	794.0	psia	93.00	psia
	Final Flowing Press.	4044	psia	480.00	psia
	Sampling Press. Range				
	FSIP		psia	4035.10 psia not stabilised	
	FHP	-	psia	4884.22 psia not stabilised	
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached		m KB		m KB
	Max. Rec. Temp.	106.8	°C	111.7	°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	200	psia	100	psia
	Amt Gas	0.28	CF	Nil	CF
	Amt Oil	Nil	lit	Nil	lit
	Amt Water (Filtrate)	1.0	lit	9.0	lit
	Amt Others		lit		
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	40627	ppm		ppm
	C2	1744	ppm	N O	ppm
	C3	732	ppm		ppm
	IC4/nC4	315	ppm		ppm
	C5	66	ppm	S A M P L E	ppm
	C6+	9	ppm		ppm
	CO2/H2S	Nil/Nil	ppm		ppm
	Oil Properties	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	@ °C		@ °C	
	NaCl Equivalent	-	ppm	-	ppm
	Cl-titrated	16000	ppm	18000	ppm
	NO3	30	ppm	50	ppm
	Est. Water Type	pH 9.1		pH 9.5	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight	10.5	ppg	10.5	ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
	Remarks				

RFT SAMPLE TEST REPORT

(2526f/50)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 25, 1984 RUN: 25

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	25/104		25/104	
	DEPTH	2775.0 m		2775.0 m	
A.	RECORDING TIMES				
	Tool Set	04:43:21			
	Pretest Open	04:43:22			
	Time Open	3:15			
	Chamber Open	04:46:35/04:56:58*		05:28:59	
	Chamber Full	05:31:09	)		
	Fill Time)		)		
	Start Build-up)	NOT FULL	)	NOT FULL	
	Finish Build-up)		)		
	Build-Up Time)		)		
	Seal Chamber	04:45:15/05:27:45		05:30:20	
	Tool Retract	05:36:10/05:37:26			
	Total Time		hrs		
B.	SAMPLE PRESSURES				
	IHP	4867.6	psia)	-	psia
	ISIP	4050.7	psia)	-	psia
	Initial Flowing Press.		psia)	N O T	psia
	Final Flowing Press.		psia)		psia
	Sampling Press. Range		)	S T A B I L I S E D	
	FSIP	4007/4863	psia)		
	FHP	4876.2	psia)		
	Form.Press. (Horner)	-		-	
C.	TEMPERATURE				
	Depth Tool Reached		m KB	RE-OPENED	m KB
	Max. Rec. Temp.	114.0	°C	CHAMBER	°C
	Time Circ. Stopped		hrs	AT SAME	hrs
	Time since Circ.		hrs.	DEPTH	hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure		psia		psia
	Amt Gas		CF		CF
	Amt Oil		lit	SEE 105 FOR	lit
	Amt Water (Filtrate)		lit	SAMPLE RECOVERY	lit
	Amt Others		lit		
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1		ppm		ppm
	C2		ppm		ppm
	C3		ppm		ppm
	IC4/nC4		ppm		ppm
	C5		ppm		ppm
	C6+		ppm		ppm
	CO2/H2S		ppm		ppm
	Oil Properties	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	@ °C		@ °C	
	NaCl Equivalent	-	ppm	-	ppm
	Cl-titrated		ppm		ppm
	NO3		ppm		ppm
	Est. Water Type				
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch

Remarks *Sealed and re-opened chamber for approximately 2 mins (see above).

RFT SAMPLE TEST REPORT

(2526f/51)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 25, 1984 RUN: 25

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	25/105		25/105	
DEPTH	2775.0 m		2775.0 m	
A. RECORDING TIMES				
Tool Set	05:39:57			
Pretest Open				
Time Open				
Chamber Open	05:42:45		05:54:38	
Chamber Full)		)		
Fill Time)		)		
Start Build-up)	NOT FULL	)	NOT FULL	
Finish Build-up)		)		
Build-Up Time)		)		
Seal Chamber	05:52:28		06:24:35	
Tool Retract			06:28:06	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP		psia	-	psia
ISIP		psia	-	psia
Initial Flowing Press.	350	psia		psia
Final Flowing Press.		psia		psia
Sampling Press. Range				
FSIP	4010.5	psia	4019.5) NOT	psia
FHP		psia	4878) STABILISED	psia
Form.Press. (Horner)	-		-	
C. TEMPERATURE				
Depth Tool Reached	2800	m KB		m KB
Max. Rec. Temp.	115.2	°C		°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure		psia	10.0	psia
Amt Gas		CF	0.11	CF
Amt Oil		lit	Nil	lit
Amt Water (Filtrate)		lit	6.75	lit
Amt Others		lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm	INSUFFICIENT	ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5		ppm	SAMPLE	ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Oil Properties	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@ °C		0.255 @ 10°C	
NaCl Equivalent	-	ppm	-	ppm
Cl-titrated		ppm	17000	ppm
NO3		ppm	Trace	ppm
Est. Water Type			pH 8.4	
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks	Re-opened chamber @ 2686.2 m (see seat 25/106 for recoveries). Sealed and re-opened chamber		Opened chamber - draw down to approximately 120 built-up v. slowly.	

RFT SAMPLE TEST REPORT

(2526f/52)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 25, 1984 RUN: 25

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (lit.)	
	SEAT NO.	25/106			
	DEPTH	2686.2 m			
A.	RECORDING TIMES				
	Tool Set	06:40:11			
	Pretest Open	06:40:13			
	Time Open	3:34			
	Chamber Open	06:43:47			
	Chamber Full	06:53:30			
	Fill Time	9:43			
	Start Build-up	06:53:50			
	Finish Build-up)	Did Not			
	Build-Up Time)	Wait for Build-up			
	Seal Chamber	07:02:50			
	Tool Retract	07:04:06			
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	4707.5 psia) not			psia
	ISIP	3941.3 psia) stabilised			psia
	Initial Flowing Press.	190	psia		psia
	Final Flowing Press.	1844	psia		psia
	Sampling Press. Range	190-1844			
	FSIP	3946.0 psia (stable)			psia
	FHP	4728.0	psia		psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m KB		m KB
	Max. Rec. Temp.		°C		°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	1600	psia		psia
	Amt Gas	81.2	CF		CF
	Amt Oil	Nil	lit		lit
	Amt Water (Filtrate)	30.7	lit		lit
	Amt Others	0.25 L Condensate			lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	320307	ppm		ppm
	C2	38010	ppm		ppm
	C3	14996	ppm		ppm
	IC4/nC4	3279	ppm		ppm
	C5	547	ppm		ppm
	C6+	38	ppm		ppm
	CO2/H2S	Trace	ppm		ppm
	Condensate	41.6 °API @ 15.6 °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.249 @ 19°C		@ °C	
	NaCl Equivalent	28000	ppm		ppm
	Cl-titrated	17000	ppm		ppm
	NO3	Trace	ppm		ppm
	Est. Water Type	pH 8.5			
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
	Remarks	This chamber previously opened at seat 105, depth of 2775.0 m.			

RFT SAMPLE TEST REPORT

(2526f/53)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 24, 1984 RUN: 26

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	107		107	
	DEPTH	2919.5 m		2919.5 m	
A.	RECORDING TIMES				
	Tool Set	11:13:30			
	Pretest Open	11:14:00			
	Time Open				
	Chamber Open	11:18:00		12:14:30	
	Chamber Full			12:23:05	
	Fill Time)	N O T			
	Start Build-up)			12:23:05	
	Finish Build-up)	F U L L	)	Build-up Not	
	Build-Up Time)		)	Complete	
	Seal Chamber	12:13:30		12:41:04	
	Tool Retract			12:43:12	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	5114.3	psia		psia
	ISIP	4606.9	psia		psia
	Initial Flowing Press.	95	psia	1329	psia
	Final Flowing Press.	3229	psia	1698.0	psia
	Sampling Press. Range	95-3229	psia	1329-1698.0	psia
	FSIP	4534 (Not Stable)	psia	4605.2	psia
	FHP		psia	5122.6	psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2975	m KB	2975	m KB
	Max. Rec. Temp. @ 2919.5	118.1	°C	118.1	°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	1500	psia	1600	psia
	Amt Gas	131.3	CF	48.8	CF
	Amt Oil	-	lit	-	lit
	Amt Water (Filtrate)	17.5	lit	1.85	lit
	Amt Others	Thin layer of cond. (unmeasurable)		0.22 L condensate	
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	70656	ppm	56960	ppm
	C2	9502	ppm	8696	ppm
	C3	3982	ppm	2979	ppm
	IC4/nC4	1313	ppm	1468	ppm
	C5	468	ppm	369	ppm
	C6+	142	ppm	248	ppm
	CO2/H2S	17%/2	ppm	20%/15	ppm
	Condensate	°API @ °C		°API @ °C	
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.249 @ 17°C		0.244 @ 17°C	
	NaCl Equivalent	16000	ppm	16500	ppm
	Cl-titrated	16000	ppm	16000	ppm
	NO3	20	ppm	Trace	ppm
	Est. Water Type	pH 8.4		pH 8.3	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
	Calibration				
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight		ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
	Remarks	Packer Damaged.			

RFT SAMPLE TEST REPORT

(2526f/54)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 24, 1984 RUN: 27

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	108		108	
	DEPTH	2812.5 m		2912.5 m	
A.	RECORDING TIMES				
	Tool Set	15:21:25			
	Pretest Open	15:21:35			
	Time Open				
	Chamber Open	15:26:20		16:02:22	
	Chamber Full	15:50:00		16:11:22	
	Fill Time	00:23:40		09:00	
	Start Build-up			16:11:20	
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	16:00:05		16:27:10	
	Tool Retract			16:29:15	
	Total Time		hrs		hrs
B.	SAMPLE PRESSURES				
	IHP	4927.69	psia		psia
	ISIP	4196.5	psia		psia
	Initial Flowing Press.	98.0	psia	470.0	psia
	Final Flowing Press.	2800.00	psia	975.0	psia
	Sampling Press. Range		psia		psia
	FSIP	4165.4	psia	4195.3 (Stabilised)	psia
	FHP		psia	4932.4	psia
	Form.Press. (Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m.KB		m KB
	Max. Rec. Temp.	114.7	°C	117.3	°C
	Time Circ. Stopped		hrs		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	700	psia	1200	psia
	Amt Gas	12.4	CF	14.67	CF
	Amt Oil	2.35	lit	3.36	lit
	Amt Water (Filtrate)	32.3	lit	3.75	lit
	Amt Others				
E.	SAMPLE PROPERTIES				
Gas Composition					
	C1	12953	ppm	14692	ppm
	C2	1781	ppm	1878	ppm
	C3	1037	ppm	1269	ppm
	IC4/nC4	984	ppm	1096	ppm
	C5	204	ppm	674	ppm
	C6+	107	ppm	296	ppm
	CO2/H2S	10%/5	ppm	13%/25	ppm
Condensate		36.6 °API @ 15.6 °C		36 °API @ 15.6 °C	
	Colour	Redish Brown		Redish Brown	
	Fluorescence	Yellowish Cream		Yellowish Cream	
	GOR	839 SCF/STB		694 SCF/STB	
Water Properties					
	Resistivity	0.261 @ 21°C		0.247 @ 22°C	
	NaCl Equivalent	18500	ppm	20500	ppm
	Cl-titrated	17000	ppm	17000	ppm
	NO3	10	ppm	30	ppm
	Est. Water Type	pH 8.1		pH 7.9	
Mud Properties					
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated		ppm		ppm
Calibration					
	Calibration Press.	-	psia	-	psia
	Calibration Temp.		°C	-	°C
	Hewlett Packard No.				
	Mud Weight	10.5	ppg		ppg
	Calc. Hydrostatic		psia		psia
	RFT Chokesize		inch		inch
Remarks				Pour point 34°C.	

RFT SAMPLE TEST REPORT

(2526f/55)

WELL: Tuna-4

OBSERVER: O'Byrne/Priest DATE: June 25, 1984 RUN: 28

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO.	28/109		28/109	
DEPTH	2768.0 m		2768.0 m	
A. RECORDING TIMES				
Tool Set	19:40:55			
Pretest Open	19:41:50			
Time Open				
Chamber Open	19:48:18		20:53:00	
Chamber Full			20:58:32	
Fill Time)	N O T		5:32	
Start Build-up)			20:58:32	
Finish Build-up)	F U L L	)	Did not wait for build-up to	
Build-Up Time)		)	finish	
Seal Chamber	20:51:55		21:06:59	
Tool Retract			21:08:39	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP	4856	psia		psia
ISIP	4037.6	psia		psia
Initial Flowing Press.	113	psia	434	psia
Final Flowing Press.	2382	psia	738	psia
Sampling Press. Range	113-2382	psia	434-738	psia
FSIP	3970 (Not Stable)	psia	4006.5	psia
FHP		psia	4851.1	psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached	2780	m KB	2780	m KB
Max. Rec. Temp. @ 2768.0	117.7	°C	117.5	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	400.0	psia	100.0	psia
Amt Gas	2.07	CF	0.24	CF
Amt Oil	Waxy oil scum (waxy oil as in previous samples		Oil Scum (Not waxy oil)	
Amt Water (Filtrate)	41.5	lit	3.75	lit
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1	21196	ppm	17664	ppm
C2	3563	ppm	3469	ppm
C3	1873	ppm	1690	ppm
iC4/nC4	273	ppm	246	ppm
C5	117	ppm	120	ppm
C6+	71	ppm	58	ppm
CO2/H2S	4%/0	ppm	2%/0	ppm
Condensate	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	0.254 @ 17°C		0.267 @ 17°C	
NaCl Equivalent	15000	ppm	14500	ppm
Cl-titrated	18000	ppm	18000	ppm
NO3	40	ppm	20	ppm
Est. Water Type	pH 8.5		pH 8.3	
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks				

RFT SAMPLE TEST REPORT

(2526f/56)

WELL: Tuna-4
OBSERVER: O'Byrne/Priest DATE: June 25, 1984 RUN: 29

	12	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO.	110	112	114		
DEPTH	2930 m	2929.5 m	2752 m		
A. RECORDING TIMES					
Tool Set	00:53:10	01:12:07	02:04:45		
Pretest Open	00:53:25	01:12:18	02:06:55		
Time Open					
Chamber Open	00:58:58	01:24:20	02:09:05		
Chamber Full					
Fill Time		S E A L		N O T	
Start Build-up					
Finish Build-up					
Build-Up Time		F A I L U R E S		O P E N E D	
Seal Chamber					
Tool Retract					
Total Time					
B. SAMPLE PRESSURES					
IHP	5130.5	5124.7	4825.7	psia	psia
ISIP	4608.2	4610.7	4016.9	psia	psia
Initial Flowing Press.			135.5	psia	psia
Final Flowing Press.				psia	psia
Sampling Press. Range				psia	psia
FSIP				psia	psia
FHP				psia	psia
Form.Press. (Horner)					
C. TEMPERATURE					
Depth Tool Reached	120	120.8	115.3	m KB	m KB
Max. Rec. Temp.				°C	°C
Time Circ. Stopped				hrs	hrs
Time since Circ.				hrs.	hrs.
Form. Temp. (Horner)				°C	°C
D. SAMPLE RECOVERY					
Surface Pressure		100		psia	psia
Amt Gas		5.47		CF	CF
Amt Oil				lit	lit
Amt Water (Filtrate)	Mud	16.75		lit	lit
Amt Others				lit	lit
E. SAMPLE PROPERTIES					
Gas Composition					
C1		25024		ppm	ppm
C2		3267		ppm	ppm
C3		1757		ppm	ppm
IC4/nC4		1231		ppm	ppm
C5		878		ppm	ppm
C6+		248		ppm	ppm
CO2/H2S	6.1%/CO_2/Nil H_2S			ppm	ppm
Condensate				°API @	°C
Colour					
Fluorescence					
GOR					
Water Properties					
Resistivity	0.361 @ 31 °C			@	°C
NaCl Equivalent		20000		ppm	ppm
Cl-titrated				ppm	ppm
NO3				ppm	ppm
Est. Water Type					
Mud Properties					
Resistivity				@	°C
Na Cl Equivalent				ppm	ppm
Cl - titrated				ppm	ppm
Calibration					
Calibration Press.	-			psia	psia
Calibration Temp.				°C	°C
Hewlett Packard No.					
Mud Weight		10.5		ppg	ppg
Calc. Hydrostatic				psia	psia
RFT Chokesize		0.3		inch	inch
Remarks	Packer failure.				

RFT SAMPLE TEST REPORT

(2526f/57)

WELL: Tuna-4

OBSERVER: O'Byrne/Shoghi DATE: June 25, 1984 RUN: 30

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (3.8 lit.)	
SEAT NO. 118	118		118	
DEPTH 2929.5 m	2929.5 m		2929.5 m	
A. RECORDING TIMES				
Tool Set	17:14:10			
Pretest Open	17:14:30			
Time Open				
Chamber Open	17:16:10		18:13:45	
Chamber Full	18:01:45			
Fill Time	45:35			
Start Build-up	18:01:45			
Finish Build-up	18:12:00			
Build-Up Time	10:15			
Seal Chamber	18:12:00		19:12:45	
Tool Retract			19:18:45	
Total Time		hrs		hrs
B. SAMPLE PRESSURES				
IHP	5225.3	psia		psia
ISIP	4615.4	psia		psia
Initial Flowing Press.	395.1	psia	600	psia
Final Flowing Press.	1306.5	psia	750	psia
Sampling Press. Range		psia		psia
FSIP	4611.5	psia	4610.4	psia
FHP		psia		psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached	2950	m KB	3950	m KB
Max. Rec. Temp. @ 2768.0	112.6	°C	112.6	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure		psia		psia
Amt Gas		CF		CF
Amt Oil		lit		lit
Amt Water (Filtrate)		lit		lit
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
iC4/nC4		ppm		ppm
C5		ppm		ppm
C6+		ppm		ppm
CO2/H2S		ppm		ppm
Condensate	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated		ppm		ppm
NO3		ppm		ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks	Tool stuck.			

RFT SAMPLE TEST REPORT

(2526f/58)

WELL: Tuna-4
OBSERVER: Palmer/Roche DATE: July 7, 1984 RUN: 31

	CHAMBER 1 (12 Gal.)		CHAMBER 2 (2-3/4 Gal.)	
SEAT NO. 121				
DEPTH 3157.8 m				
A. RECORDING TIMES				
Tool Set	13:57			
Pretest Open				
Time Open				
Chamber Open	14:00		14:31	
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	14:30		15:08	
Tool Retract			15:11	
Total Time	33 mins		40 mins	
B. SAMPLE PRESSURES				
IHP	6048.4	psia		psia
ISIP	5599.4	psia	5604	psia
Initial Flowing Press.	229	psia	519	psia
Final Flowing Press.	504.4 (Steady)	psia	5605.52	psia
Sampling Press. Range		psia		psia
FSIP	5604	psia	5608.8	psia
FHP		psia	6051.6	psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.		°C	111.3	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	Under 100	psia	2000	psia
Amt Gas	4.0	CF	5.8	CF
Amt Oil	0	lit	-	lit
Amt Water (Filtrate)	20.3	lit	8.9	lit
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1	372817	ppm	322437	ppm
C2	41722	ppm	40284	ppm
C3	11520	ppm	9360	ppm
IC4/nC4	3083	ppm	3083	ppm
C5	822	ppm	925	ppm
C6+	189	ppm	258	ppm
CO2/H2S	2%/0 H_2S	ppm	9%/0 H_2S	ppm
Condensate	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties	pH 8.5		pH 7.2	
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated	16000	ppm	18000	ppm
NO3	198	ppm	176	ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
NO3		ppm	190	ppm
Cl - titrated		ppm	17500	ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg	11.5	ppg
Calc. Hydrostatic		psia	6193	psia
RFT Chokesize		inch	30/1000	inch
Remarks	Sealed chamber after 30 minutes. CSU Power failure at 14:35. No readings 14:35 to 14:45.			

RFT SAMPLE TEST REPORT

(2526f/59)

WELL: Tuna-4
OBSERVER: Palmer/Roche DATE: July 9, 1984 RUN: 32

	CHAMBER 1 (12 Gal.)		CHAMBER 2 (2-3/4 Gal.)	
SEAT NO. 122				
DEPTH 3062.0 m KB				
A. RECORDING TIMES				
Tool Set	18:07			
Pretest Open				
Time Open				
Chamber Open	18:10		19:02	
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	19:00		19:25	
Tool Retract			19:26	
Total Time	53 mins		24 mins	
B. SAMPLE PRESSURES				
IHP	5879*	psia		psia
ISIP	5392.1	psia	5389.13	psia
Initial Flowing Press.	2500	psia	2100.12	psia
Final Flowing Press.	4950.86	psia	5389.08	psia
Sampling Press. Range		psia		psia
FSIP	5389	psia	5389.52	psia
FHP		psia	5837.36	psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.		°C	106.6	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	2280	psia	2250	psia
Amt Gas	24 9	CF	78	CF
Amt Oil	2.25	lit	0.35	lit
Amt Water (Filtrate)	11.3	lit	0.73	lit
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1	332513	ppm	324956	ppm
C2	64671	ppm	51793	ppm
C3	23616	ppm	21888	ppm
IC4/nC4	7428	ppm	8479	ppm
C5	2150	ppm	2656	ppm
C6+	504	ppm	654	ppm
CO2/H2S	23%/7	ppm	19%/7	ppm
Condensate	°API @ °C		49.1 °API @ 20 °C	
Colour				
Fluorescence				
GOR				
Water Properties	pH 8.4		pH 5.2	
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated	23000	ppm	17500	ppm
NO3	213	ppm	195	ppm
Est. Water Type	Filtrate		Filtrate	
Mud Properties				
Resistivity	@ °C		@ °C	
NO3		ppm	190	ppm
Cl - titrated		ppm	17500	ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg	11.5	ppg
Calc. Hydrostatic		psia	6006	psia
RFT Chokesize		inch	30/1000	inch
Remarks	*Hydrostatic continually declining.			

RFT SAMPLE TEST REPORT

(2526f/60)

WELL: Tuna-4
OBSERVER: Palmer/Roche DATE: July 10, 1984 RUN: 33

	CHAMBER 1 (12 Gal.)		CHAMBER 2 (2-3/4 Gal.)	
SEAT NO. 123				
DEPTH 3031.5 m KB				
A. RECORDING TIMES				
Tool Set	00:57			
Pretest Open				
Time Open				
Chamber Open	01:00		01:46	
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	01:45		02:30	
Tool Retract			02:32	
Total Time	48 mins		46 mins	
B. SAMPLE PRESSURES				
IHP	5877	psia		psia
ISIP	5267.2	psia	5275	psia
Initial Flowing Press.	300	psia	360	psia
Final Flowing Press.	260	psia	4835	psia
Sampling Press. Range		psia		psia
FSIP	5275	psia	5271.3	psia
FHP		psia	5779.8	psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.		°C	113.3	°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	80	psia	2000	psia
Amt Gas	8	CF	39.5	CF
Amt Oil	Slight Waxy Scum		0.2	lit
Amt Water (Filtrate)	11.75	lit	4.75	lit
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1	342589	ppm	352665	ppm
C2	53232	ppm	47477	ppm
C3	25344	ppm	20735	ppm
IC4/nC4	6727	ppm	4905	ppm
C5	801	ppm	596	ppm
C6+	Nil	ppm	Nil	ppm
CO2/H2S	10/Nil	ppm	10/Nil	ppm
Condensate	°API @ °C		43 °API @ 20 °C	
Colour				
Fluorescence				
GOR				
Water Properties	pH 7.15		pH 6.5	
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated	19500	ppm	21000	ppm
NO3	198	ppm	195	ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
NO3		ppm		ppm
Cl - titrated		ppm		ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch

Remarks 13:20 closed chamber to check probes not blocked.

RFT SAMPLE TEST REPORT

(2526f/61)

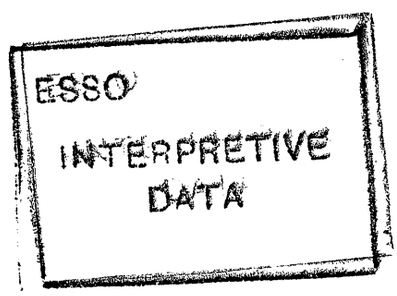
WELL: Tuna-4
OBSERVER: Palmer/Roche DATE: July 10, 1984 RUN: 34

	CHAMBER 1 (12 Gal.)		CHAMBER 2 (2-3/4 Gal.)	
SEAT NO. 125				
DEPTH 3119.4 m KB				
A. RECORDING TIMES				
Tool Set				
Pretest Open Time	07:39			
Chamber Open	07:43		08:26	
Chamber Full				
Fill Time				
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber	08:25		09:01	
Tool Retract			09:04	
Total Time	46 mins		28 mins	
B. SAMPLE PRESSURES				
IHP	5931.55	psia		psia
ISIP	5474.50	psia	5199.24	psia
Initial Flowing Press.	133.53	psia	160.79	psia
Final Flowing Press.		psia	5470.01	psia
Sampling Press. Range		psia		psia
FSIP	5199.24	psia	5470.60	psia
FHP		psia	5930.62	psia
Form.Press. (Horner)				
C. TEMPERATURE				
Depth Tool Reached		m KB		m KB
Max. Rec. Temp.	117.4	°C		°C
Time Circ. Stopped		hrs		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure		psia	600	psia
Amt Gas	1.2	CF	0.5	CF
Amt Oil	-	lit	-	lit
Amt Water (Filtrate)	1500	CC	9750	CC
Amt Others				
E. SAMPLE PROPERTIES				
Gas Composition				
C1	165918	ppm	183516	ppm
C2	51795	ppm	20142	ppm
C3	50688	ppm	5326	ppm
IC4/nC4	2943	ppm	1296	ppm
C5	62	ppm	246	ppm
C6+	Nil	ppm	Nil	ppm
CO2/H2S	15%/Nil	ppm	2%/Nil	ppm
Condensate	°API @ °C		°API @ °C	
Colour				
Fluorescence				
GOR				
Water Properties	pH 7.8		pH 7.5	
Resistivity	@ °C		@ °C	
NaCl Equivalent		ppm		ppm
Cl-titrated	20000	ppm	17500	ppm
NO3	209	ppm	198	ppm
Est. Water Type				
Mud Properties				
Resistivity	@ °C		@ °C	
NO3		ppm	190	ppm
Cl - titrated		ppm	17500	ppm
Calibration				
Calibration Press.	-	psia	-	psia
Calibration Temp.		°C	-	°C
Hewlett Packard No.				
Mud Weight		ppg		ppg
Calc. Hydrostatic		psia		psia
RFT Chokesize		inch		inch
Remarks	Sealed @ 8.01. Re-open @ 8.02.			

APPENDIX 7

APPENDIX 7

PRODUCTION TEST AND CASED HOLE RFT REPORT



APPENDIX A-1

DATA SHEETS FOR PRODUCTION TEST NO. 1

PRODUCTION TEST SUMMARY

Well TUNA - 4 Test 1 Date July 18-20, 1984

Test Data:

1. Interval 3138.0 - 3147.0 m MDKB
2. Produced fluid GAS
3. Cumulative production 0.3 (MSCF)
4. Stabilized rate 400 (KSCF/D)
5. Length of flow period 23.4 (hr)
6. Choke 26F (Final) (64ths)
7. Gravity of oil or condensate None observed (°API @ 60°F)
8. GOR or Condensate - Gas Ratio N/A (SCF/STB, STB/MSCF)
9. Water cut No formation water observed (%)
10. Chlorides 7500 (ppm)
11. H_2S 0 (%, ppm)
12. CO_2 16-23 (%)
13. Stabilized flowing wellhead pressure 112 (psig)
14. Stabilized flowing wellhead temperature 55 (°F)
15. Wellhead pressure at end of buildup N/A (psig)
16. Initial reservoir pressure 5555 (psia) @ 3143 (m)
17. Final flowing pressure 260 (approx.) (psia) @ 3143 (m)
18. Productivity index 7.6×10^{-5} $\left(\frac{\text{MSCF/D}}{\text{psi}}\right)$
19. Maximum bottom-hole temperature 128 (°C) @ 3143 (m)
20. Samples taken: One gas sample for B. Burns (Explor. Dept.)
21. Remarks:

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COMPLETION DATA

Well TUNA - 4 Test 1 Date 18/7/84

Company Supervisor I.M./G.W.

Test Engineer DS/MJO

1. Interval 3138.0 - 3147.0 m
2. Well loading fluid DIESEL (59 Bbl), WATER (2 Bbl), N_2 (29 Bbl)
3. Approximate Differential (p_{f-Pw}) 500 (psi)
4. Type of perforating gun 2 1/8 inch ENERJET
5. Perforation density 4 (spf)
6. Mud weight 11.0 (ppg)
7. Cl^- of filtrate 15000 (ppm) NO_3^- 120 (ppm)
8. Cl^- of mud filtrate at time of drilling 17500 (ppm) NO_3^- 195 (ppm)
9. Casing:
   - Size 9 5/8 (in.)
   - Weight 47 (lb/ft)
   - Grade N-80
   - Capacity 0.0732 (bbl/ft)
   - Shoe 2434 (m)
   - Burst 6870 psig
10. Liner:
    - Size 7 (in.)
    - Weight 26 (lb/ft)
    - Grade N-80
    - Capacity 0.0382 (bbl/ft)
    - Top 2227 (m)
    - Shoe 3219 (m)
11. Tubing:
    - Size 3 1/2 (in.)
    - Inside Diameter 2.992 (in.)
    - Weight 9.3 (lb/ft)
    - Grade L-80
    - Capacity 0.00870 (bbl/ft)
    - Connections EUE A.B. Modif.
    - Burst pressure 15000 psig
12. Plugged back total depth 3182 (m) Lowest 126 JTS are J-55
13. Depth of packer 3080 (Top) (m)
14. Tubing volume 87.9 (bbl) (to packer)
15. Volume between packer and lowest perforation 8.4 (bbl) (9 Bbl Diesel
16. Rathole volume 4.4 (bbl) spotted below packer)
17. Depth of tailpipe 3083.4 (m) (Muleshoe) Depth of XN 3076.9 (m)
18. Location of pressure gauges: depth - (ft) gauge number -
    depth - (ft) gauge number -
19. Initial WHP before well open

N.B. 1000m of Nitrogen used.

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PERFORATION

Well TUNA-4 Test 1 Perforation 3138-3147 Date 19/7/84

1. Geologists(s): S.S.
2. Test Engineer(s): D.S./MJO
3. Service Company/Engineer: SCHLUMBERGER
4. Distance between CCL and top of gun: 1.4 m
5. Number of Runs: 1 (117 shots)
6. Wellhead pressure bled down to zero before perforating?

   \- (Yes) X (No)
7. Wellhead pressure before perforating: 2180 psi
8. Time of perforation: 1457 (local time)
9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)	WHT. °F	Time (Local)	WHP (PSIG)	WHT. °F
1457	2180	45			
1505	2180	45			
1525	2180	45			
1550	2178	45			

10. Other perforating runs:

Time	Run	Interval	WHP

11. Remarks: Bleed WHP from 2920 psig to 2180 psig prior to perforating well to obtain underbalance of 500 psi.

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INITIAL FLOW PERIOD DATA*

Well TUNA-4 Test 1 Perforation 3138-3147 Date 20 July, 1984

1. Wellhead pressure prior to opening well 2168 (psi)

2. Time well opened 1735 July 19

3. Initial choke size 28A (64ths)

4. Well response: (Well (flowed, died)
   Time gas surfaced 0700 July 20
   Time mud surfaced -
   Time formation fluid surfaced -

5. Well data just prior to shut in (1715 hrs July 20)
   Flowing wellhead pressure 112 (psi)
   Choke size 26F (64ths)
   Pressure downstream of the choke 35 (psi)
   Rate 400 (KCFD) (measured,)

6. Time of shut in 1715 hours July 20

7. Total length of initial flow 23.4 (hr)

8. Cumulative production 0.3 (bbl, KSCF) (measured, estimated)

9. Description of produced fluids:
   Oil N/A % - °API
   Water N/A % Cl^- 7500 (ppm)
   Gas: Sp Gr 0.82

C_1	99,994 (ppm)	C_5^+	1092 (ppm)
C_2	11,750 (ppm)	CO_2	16.2 (ppm)
C_3	4,033 (ppm)	H_2S	0 (ppm, %)
C_4	1,569 (ppm)		

*If extended initial flow (clean up) is run, enter production data at 30 min. intervals on Production Test Data Sheet (D-5).

If well is swabbed, fill out swab report (D-3).

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PRODUCTION TEST DATA SHEET

D-5

Well TUNA - 4 Test 1 Perforations 3138-3147 Date 19/7/84 Page 1 of 1

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR	CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
Jul19 1330	BLEED WHP	2220													
1330	RIH SCHLUMBERGER														
1450	BLEED WHP	2180		440											
1457	PERFORATE	2180	45												
1505	POOH	2180	45	440	-										
1620	GUN AT SURFACE	ALL	SHOTS	FIRED											
1730		2168	40	420	-										
1735	BLEED THP	1620	45	420	-										
1740	RIH SCH. HP GAUGE	1620	45	420	-										
1745		1620	45	420	-										
1800		1630	44	420	-										

0515f/4

PRODUCTION TEST DATA SHEET

Well TUNA - 4 Test 1 Perforations 3138 - 3147 Date 19/7/84 Page 2 of 2

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR OR CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR=1
1815		1655	42	420	-									
1830		1657	42	420	-	Influx	rate	= 70	STB/D					
1845		1667	41	420	-									
1900	Logging perfs with CCL	1675	41	420	Influx		rate =	63	STB/D					
1910	HP at 3143m	1679	41	420										

RIG-FLOOR AND BOTTOMHOLE DATA D-5A

Well TUNA - 4 Test 1 Perforations 3138 - 3147 Date 19/7/84 Page 1 of 3

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1915	July 19				-	4513.0	128.1
1930	Bleeding THP to Zero	1680	41		28A	4507.2	128.1
1945		855	40	400	"	3600	127.8
2000		310	40	380	"	3036.1	127.8
2015		90	40	380	"	2817.6	127.5
2030		20	40	370	"	2746.4	127.2
2045		1	40	370	"	2733.5	126.9
2100		0	40	360	"	2742.3	126.9
2115		0	40	380	"	2742.5	126.9
2130		0	40	380	"	2748.1	126.9
2145		0	40	380	"	2762.1	126.4
2200		0	40	380	"	2773.6	125.8

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
2215		0	40	360	"	2778.6	125.4
2230		0	40	380	"	2778.3	125.2
2245		0	40	380	"	2781.8	125.2
2300		0	40	380	"	2791.6	125.5
2315		0	40	420	28A	2818.1	125.2
2330		0	40	420	"	2831.0	124.9
2345		0	40	420	"	2847.4	124.6
2400		0	40	420	"	2863.4	124.9
0005	Pull up to 3118m for first gradient stop						
0025	Pull up to 3093m for seconed gradient stop						
0045	Pull up to 3068m for third gradient step						
0105	Pull up to 3018m for fourth gradient step						
0125	RIH to 3143m						

(0515f/6)

RIG-FLOOR AND BOTTOMHOLE DATA

Well TUNA - 4 Test 1 Perforations 3138 - 3147 Date 19/7/84 Page 2 of 3

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0130	July 20	0	40	420	28A	-	-
0200	POOH with HP	0	41	460	"	2934.7	124.3
0230		0	41	460	"	-	-
0300		0	41	470	"	-	-
0320	Close crown valve						
0330	M/U HP+BHS on Schlumberger Line						
0440	Diesel at surface						
0500	11" Diesel- 9 Bbl	70	50	510	28A	-	-
0515	16" Diesel-13 Bbl	125	52		"	-	-
0530	23" Diesel-19 Bbl	230	55	540	"	-	-
0545	30" Diesel-25 Bbl	370	60	500	"	-	-
0600	39" Diesel-32 Bbl	500	62	530			
0615	THP dropped to zero						
0630	Open test tree valve						
0645	Increase choke	475	53	530	40A		
0700	Increase choke Gas at surface	493	67	550	50A		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0715	S/in as burner out	200					
0731	Open well				40A		
0732		295	66		"		
0740		125	63	550	"		
0800		18	58	540	"		
0830		110	50	560	"		
0900	M/up BHS + HP - Clocks set 0900 (4-1/2 & 5 hrs)						
0915	Well S/i at MV	220	62	620			
0930	P/T Lubricator	-	55	610			
0940	Open top M.V.	420	55	610)	Still		
0945		445	55	600)	S/in for ship		
0955	RIH with HP + BHS						
1044		740	50	580			
1045	Open well up				40	-	-
1100		250	60	600	40	-	-
1101	HP at 3143 m				40	-	-

(0515f/7)

RIG-FLOOR AND BOTTOMHOLE DATA

Well TUNA - 4 Test 1 Perforations 3138 - 3147 Date 19/7/84 Page 3 of 3

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1115		130	64	600	"	-	-
1130		38	57	580	"	-	-
1140	Pull up to 3118m				"	-	-
1200	Pull up to 3093m	39	55	580	"		
1215	Pull up to 3068m	39	55	580	"		
1230		37	55	580	"		
1235	Pull up to 3093 for first BHS						
1330	Pull up to 3118 for	35	50	Second BHS			
1420	POOH, change choke				28A		
1400		36	50		26F		
1458	Change choke				26F		
1500		90	50		26F		
1530	BHS + HP at surface	200	57	520	26F		
1620	Gas to separator				26F		
1630	Sample for B. Burns	112	55	620	26F		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1700	Rate=400,000 SCFD	112			26F		
1715	S/I well - Picked up out of packer						
	Reverse circulate - Approx. one BBL of						
	high solids filtrate - recovered						
	Unable to establish injectivity with						
	5000psi surface pressure and mud in well						

(0515f/8)

SEPARATOR DATA SHEET

Well TUNA - 4 Test 1 Date 20/7/84

DATE TIME Jul20	SEPARATOR PRESS PSIG	SEPARATOR TEMP °F	OIL METER READING BBLS	OIL METER DIFF. BBLS	WATER METER READING BBLS	WATER METER DIFF. BBLS	GAS METER DATA Gas Meter Dia. 3.826" Type Orifice STATIC PSIA	DIFF. IN.H_2O	TEMP °F	PLATE IN.	GAS GRAVITY	REMARKS
1620	GAS	TO SEPARATOR										
1630	35	50	-	-	-	-	50.73	104	50	1.000	0.82	
1645	35	52	-	-	-	-	48.73	102	52	1.000	"	
1700	35	55	-	-	-	-	48.73	104	55	1.000	"	
1715	35	52	-	-	-	-	48.73	106	52	1.000	"	

GAS RATE CALCULATIONS

Well TUNA - 4 Test PT 1 Date 20 JULY, 1984

DATE TIME	GAS METER				BASIC ORIFICE FACTOR F_b	FLOWING TEMP FACTOR F_{tf}	SPECIFIC GRAVITY FACTOR F_g	SUPER-COMPRESSIBILITY F_{pv}	ORIGINAL CONSTANT C' = $F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	RATE $Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	REMARKS Y2
	STATIC (p_f) PSIA	DIFF.(h_w) IN H_2O	TEMP. °F	PLATE IN.							
1620	GAS	TO	SEPARATOR								
1630	50.73	104	50	1.000	202.2	1.0097	1.10431	1.0072	227.08	401.34	1.0137
1645	48.73	102	52	1.000	202.2	1.0077	1.10431	1.0068	226.54	388.75	1.014
1700	48.73	104	55	1.000	202.2	1.0048	1.10431	1.0067	225.87	391.46	1.0143
1715	48.73	106	52	1.000	202.2	1.0077	1.10431	1.0068	226.54	396.52	1.0145

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA - 4 Test 1 Date 20/7/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl^- (ppm)	WATER RES(m)	pH	T (°F)	NO_3^-
		OIL	WATER	BS&W						
1515	CHOKE MAN				38°	7500		7.2		trace
20/7					(Diesel)					
1900	CHOKE MAN	FILTRATE (8.41 PPG)				7500		7.2		trace
20/7					(Sample Kept)					

GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA - 4 Test PT 1 Date 20th July, 1984

TIME SAMPLED	SAMPLE POINT	COMPONENTS							
		C_1 PPM	C_2 PPM	C_3 PPM	C_4 PPM	C_5 PPM	H_2S PPM	CO_2 (%)	C_{6+}
07:40	MANIFOLD	88,883	10,575	3,639	1,308	565	0	23	274
16:36	SEPARATOR	101,104	10,967	3,682	1,420	594	0	18.4	277
17:00	SEPARATOR	100,074	10,379	3,760	1,312	594	0	16.0	282
17:20	SEPARATOR	99,994	11,750	4,033	1,569	780	0	16.2	312

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WELLBORE GRADIENT DATA - SURVEY NO. 1

Well TUNA - 4 Test 1 Date 20/7/84

BOTTOM-HOLE TEMPERATURE: 124.9 °F

TIME	DEPTH (m)	PRESSURE (psi)	p (psi) Corrected	GRADIENT (psi/m)	REMARKS Pcorrected
00 15	3118	2816.7			2800.3
			63.1	2.5	
00 20	3118	2822.3			
			46.3	1.9	
00 35	3093	2791.8			2776.1
00 40	3093	2796.7			
			30.8	1.2	
00 55	3068	2779.4			2765.9
01 00	3068	2783.5			
			58.0	1.2	
01 15	3018	2747.0			2725.6
01 20	3018	2757.2			

0515f/13

WELLBORE GRADIENT DATA - SURVEY NO. 2

Well TUNA - 4 Test 1 Date 20/7/84

BOTTOM-HOLE TEMPERATURE: ____ °F

TIME	DEPTH (m)	PRESSURE (psi)	p (psi) Corrected	GRADIENT (psi/m)	REMARKS BHT (°C)
11 35	3143	260.1			
11 40	3143	262.8	- Does not compute - Too much J-T - cooling		96.4
11 55	3118	287.2			104.5
12 00	3118	284.0			
12 10	3093	315.9			111.5
12 15	3093	300.4			
12 30	3068	302.9			112.9
12 35	3068	300.1			

0515f/14

BOTTOM-HOLE SAMPLE DATA

Well TUNA - 4 Date 20/7/84

Test 1

Producing Interval 3138-3147

Initial Reservoir Pressure 3555 psia @ 3143 (m)

Reservoir Temperature 126 °C @ 3143 (m)

Last Production Rate _____ STB/D

Last Flowing Bottom-hole Pressure 312 (No.1) psi 330.5 (No. 2)

Type of Bottom-hole Sampler Used _____

	(Bottom) Sample No. 1	(Top) Sample No. 2
Container No.		
Time Sampled	13:15	14:00
Length of Time Well Shut in (hrs)	N/A	N/A
Sampling Depth (m)	3093	3118
Sampling Depth Pressure (psi)		
Tubing Pressure (psi)	35	36
Sampler Pressure after Valve Opening (psi)		
Sample Transfer Temperature (°F)		
Sample Transfer Pressure (psi)		
Outage Taken in Sample Container (cc)		
Container Volume (cc)		

Special Instructions for Lab _____

Notes: Samples taken while well flowing

650 ml recovered total - Ph 6.8, Cl^- 14000, NO_3^- 80 ppm

Sampled by _____

0515f/17

17 PAGES.

TUNA - 4.

PRODUCTION TEST DATA

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 1

COMPANY ESSO AUSTRALIA LTD DATE 23-25TH JULY, 1984

WELL TUNA #4 PWT# 2

PERFORATIONS 2820 - 2829 m (FM, RKB)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

	TIME HH:MM	SAMPLING POINT	NO	SHAKE OUT % OIL	H2O	SLDS	API @ TEMP —	°F	COLOUR OIL	POUR POINT ° C	WATER RES @ TEMP Ω-m	°	Cl PPM	NO3 PPM	PH	COMMENTS
	05:30	CH/MAN					35.5	60	Dk brn	33						
	06:30	CH/MAN					37.8	60	Dk brn	35						
	07:30	CH/MAN														
24/7/84	07:30	CH/MAN		98	2	0	34.2	60	Dk brn	32						
	08:00	CH/MAN		98.7	1.3	TR	34.8	60	Dk brn	34						
	08:30	CH/MAN		99.0	1.0	TR	32.4	60	Dk brn	32.3						
	09:00	CH/MAN		99.3	0.6	0.1	33.2	60	Dk brn	33.0						
	09:30	CH/MAN		99.2	0.7	0.1	34.6	60	Dk brn	34.4						
	10:00	CH/MAN		99.6	0.3	0.1	32.4	60	Dk brn	33.6						
	10:30	CH/MAN		99.6	0.3	0.1	36.2	60	Dk brn	34.6						
	11:00	CH/MAN		99.5	0.4	0.1	32.68	60	Dk brn	36						
	11:30	CH/MAN		96.6	0.3	0.1	36.9	60	Dk brn	36						
	12:00	CH/MAN		99.2	0.6	0.2	36.3	60	Dk brn	35						
25/7/84	12:30	CH/MAN		99.4	0.4	0.2	36.4	60	Dk brn	35						
	01:00	COLLECTED JERRY CAN SAMPLE NO. 1														
	01:00	CH/MAN		96.2	3.6	0.2	36.5	60	Dk brn	35						
	01:30	CH/MAN		98.9	1.0	0.1	36.2	60	Dk brn	35						
	02:00	CH/MAN		98.6	1.1	0.25	36.3	60	Dk brn	35						
	02:30	CH/MAN		98.0	1.8	0.2	36.2	60	Dk brn	35						
	03:00	CH/MAN		98.0	1.7	0.3	35.9	60	Dk brn	35						
	03:30	CH/MAN		99.2	0.7	0.1	36.0	60	Dk brn	35.5						
	04:30	CH/MAN		98.8	1.1	0.1	36.1	60	Dk brn	35.4						
	05:30	CH/MAN		99.5	0.4	0.1	35.5	60	Dk brn	35.0						
	06:30	CH/MAN		99.5	0.4	0.1	36.1	60	Dk brn	36.0						
	07:30	CH/MAN		99.8	0.2	TR	35.7	60	Dk brn	35.0						
	08:30	CH/MAN		98.7	1.1	0.2	35.4	60	Dk brn	35.5						
	09:30	CH/MAN		99.1	0.7	0.2	36.4	60	Dk brn	35.0						
	10:30	CH/MAN		98.8	1.1	0.1	36.4	60	Dk brn	35.5						
	11:30	CH/MAN		99.8	0.2	TR	35.4	60	Dk brn	36.0						
	11:55	CH/MAN		99.7	0.3	0.2	34.96	60	Dk brn	36.0						

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 2

COMPANY ESSO AUSTRALIA LTD DATE 26TH JULY, 1984

WELL TUNA #4 PWT# 2

PERFORATIONS 2820 - 2829 m (FM, RKB)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	SHAKE OUT % H2O	SHAKE OUT % SLDS	API @ TEMP —	API @ TEMP °F	COLOUR OIL	POUR POINT °C	WATER RES @ TEMP Ω-m	WATER RES @ TEMP °	Cl PPM	NO3 PPM	PH	COMMENTS
12:45	CH/MAN		99.7	0.5	0.2	34.6	60	Dk brn	35.5						
01:45	CH/MAN		99.8	0.2	TR	35.6	60	Dk brn	36						
02:45	CH/MAN		99.5	0.4	0.1	35.4	60	Dk brn	35.5						Shut in at
03:45	CH/MAN		99.7	0.2	0.1	35.0	60	Dk brn	36.0						02:50 to
05:00	CH/MAN		99.0	0.9	0.1	36.1	60	Dk brn	35.5						pressure
06:00	CH/MAN		99.5	0.4	0.1	34.8	60	Dk brn	36.0						test
07:00	CH/MAN		99.8	0.2	TR	35.4	60	Dk brn	35.5						
08:00	CH/MAN		99.4	0.3	TR	36.0	60	Dk brn	35.5						
09:00	CH/MAN		99.3	0.7	TR	35.4	60	Dk brn	36.0						Shut from
10:30	CH/MAN		99.4	0.5	0.1	35.1	60	Dk brn	35.0						09:18-10:00
11:00	CH/MAN		99.7	0.3	TR	35.4	60	Dk brn	36.0						to repair
12:00	CH/MAN		99.6	0.4	TR	35.6	60	Dk brn	35.0						chiksan leak
01:00	CH/MAN		99.7	0.3	TR	30.8	60	Dk brn	36.0						
01:30	CH/MAN		99.8	0.2	TR	31.6	60	Dk brn	35.4						
02:00	CH/MAN		99.8	0.2	TR	33.0	60	Dk brn	36.2						

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET# 3

COMPANY ESSO AUSTRALIA LTD DATE 8TH AUGUST, 1984
9TH AUGUST, 1984

WELL TUNA #4 PWT# 3

PERFORATIONS 2562 - 2569 m (FM, RKB) INITIAL FLOW

RATHOLE FLUID: TYPE _____ RES. Ω m _____ @ _____ PH _____ Cl (TITRAT) _____ PPM
NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ @ _____ PH _____
Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	H2O	SLDS	API @ TEMP —	@	COLOUR OIL	POUR POINT °C	WATER RES @ TEMP Ω-m	°C	Cl PPM	NO3 PPM	PH	COMMENTS
12:30	CHOKE		97	3	0.1	39.3		Dk brn	29						
13:17	CHOKE		45	40	15	37.9		Dk brn	30			16000	187	7.9	
15:45			31	68	4	37.7		Dk brn		0.82	18	15000	143	7.14	
16:15	CHOKE		31	65	4	37.6		Dk brn	31	0.76	18	16000	187	6.91	
22:50	CHOKE		75	25	1.75										
23:00	CHOKE		92	7.5	0.5	37.2		Dk brn	29			15000	187	8.17	
9/8/84 13:35	CHOKE		95	4.5	0.5										
13:50	CHOKE		99	0.9	0.1										
14:05	CHOKE		99.5	0.4	0.1	39									
14:20	CHOKE		99.3	0.7	TR										
14:35	CHOKE		98	1.5	0.3	38.8		Dk brn	30						
14:50	CHOKE		99	0.8	TR										
15:05	CHOKE		99.9	0.1	TR	39.0		Dk brn	30						
15:30	CHOKE		99	0.2	TR	39									
15:45	CHOKE		99.8	0.3	0.2										
16:00	CHOKE		35	65	0.5										
16:15	CHOKE		TR	99.8	0.2							15000	TR	6.75	
16:30	CHOKE		10	90	0.5										
17:00	CHOKE		10	90	0.5	39		Dk brn	31			16500	55	7.34	
17:15	CHOKE		10	90	0.5										
17:30	CHOKE		10	89	1							18000	66	7.86	
17:45	CHOKE		10	90	0.2										
18:00	CHOKE		20	80	0.1							18500	33	8.00	
18:15	CHOKE		35	65	0.2										
18:30	CHOKE		30	70	0.1										
18:45	CHOKE		40	60	0.1										
19:00	CHOKE		60	40	0.1										
19:15	CHOKE		55	45	0.1										
19:30	CHOKE		55	45	0.1										

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 4

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT# 3

PERFORATIONS 2562 - 2569 m (FM, RKB)

DATE 8TH AUGUST, 1984

INITIAL FLOW

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	SHAKE OUT % H2O	SHAKE OUT % SLDS	API @ TEMP —	API @ TEMP °	COLOUR OIL	POUR POINT °	WATER RES @ TEMP Ω-m	WATER RES @ TEMP °	Cl PPM	NO3 PPM	PH	COMMENTS
19:45	CHOKE		50	50	TR										
20:00	CHOKE		50	50	TR										
20:15	CHOKE		45	55	TR										
20:30	CHOKE		40	60	-							18500	TR	6.8	
20:45	CHOKE		45	55	TR										
21:00	CHOKE		50	50	TR										
21:15	CHOKE		55	45	-										
21:30	CHOKE		55	45	-										
21:45	CHOKE		55	45	TR										
22:00	CHOKE		55	45	TR										
22:15	CHOKE														
22:30	CHOKE		55	45	TR										
22:45	CHOKE														
23:00	CHOKE		55	45	-										
23:30	CHOKE		50	50	-										

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 5

COMPANY ESSO AUSTRALIA LTD DATE 9TH AUGUST, 1984

WELL TUNA #4 PWT # 3

PERFORATIONS 2562 - 2569 m (FM, RKB) FINAL FLOW

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	SHAKE OUT % H2O	SHAKE OUT % SLDS	API @ TEMP —	API @ TEMP °	COLOUR OIL	POUR POINT °	WATER RES @ TEMP Ω-m	WATER RES @ TEMP °	Cl PPM	NO3 PPM	PH	COMMENTS
17:45	SEPARATOR		10	90	0.2										
18:30	SEPARATOR											16500	TR	7.1	
19:00	SEPARATOR					39		Dk brn	29			19500	33	6.9	
19:30	SEPARATOR					38		Dk brn	30			11500	TR	7	
20:00	SEPARATOR		TR	100	TR	38		Dk brn				19000	TR	6.8	
20:30	SEPARATOR											18500	TR	6.8	
21:00	SEPARATOR		TR	100	TR	39		Dk brn	30			17000	TR	6.9	
21:30	SEPARATOR		TR			39		Dk brn	30			18000	TR	6.9	
22:00	SEPARATOR					39		Dk brn				19000	TR	6.9	
22:30	SEPARATOR											16000	TR	7	
23:00	SEPARATOR		TR	100	-	39		Dk brn	30						
23:30	SEPARATOR					39		Dk brn	30						

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 6

COMPANY ESSO AUSTRALIA LTD DATE 16TH AUGUST, 1984

WELL TUNA #4 PWT# 4 INITIAL FLOW

PERFORATIONS 2543 - 2552 m (FM, RKB)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	H2O	SLDS	API @ TEMP —	°F	COLOUR OIL	POUR POINT °C	WATER RES @ TEMP Ω-m °	Cl PPM	NO3 PPM	PH	COMMENTS
20:11	CHOKE		69	3.3	27.7	39	60	brown	32					
20:34	C/MAN		78	0	22	38	60	brown	28					
20:51	C/MAN		92	0	8	38	60	brown	30					
21:12	C/MAN		91	1	8	37	60	brown	29					
21:37	C/MAN		97	0	3	39	60	brown	31					
21:56	C/MAN		99.5	0	0.5	39	60	brown	31					
22:09	C/MAN		99.8	0	0.2	39	60	brown	32					
22:26	C/MAN		99.6	0	0.4	39	60	brown	31					
22:40	C/MAN		99.7	0	0.3	-	-	brown	-					
22:56	C/MAN		99.55	0.05	0.4	39	60	brown	31					
23:22	C/MAN		99.7	0	0.3	-	-	brown	-					

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 7

COMPANY ESSO AUSTRALIA LTD DATE 17TH AUGUST, 1984

WELL TUNA #4 PWT # 4 FINAL FLOW

PERFORATIONS 2543 - 2552 m (FM, RKB)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ @ _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ @ _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	H2O	SLDS	API @ TEMP —	°F	COLOUR OIL	POUR POINT °C	WATER RES & TEMP Ω-m	@	Cl PPM	NO3 PPM	PH	COMMENTS
06:00	CH/MAN		97	0	3	39	60	Brown	27						Solids are soft sediment/filtrate
06:30	CH/MAN		75	0	25	39	60	Brown	26						
07:00	CH/MAN		98	0	2	39	60	Brown	28						
07:30	CH/MAN		98	0	2			Brown	28						
08:00	CH/MAN		98	0	2	37	60	Brown	28						
08:30	CH/MAN		98	0	2	38	60	Brown	27						
09:00	CH/MAN		98.7	0	1.3	37	60	Rd-brn	29						
09:30	CH/MAN		99.8	0	.02			Rd-brn							
10:00	CH/MAN		99.85	0	.15	37	60	Rd-brn	29						
10:30	CH/MAN		99.95	0	.05			Rd-brn							
11:00	CH/MAN		100	0	TR	40	60	Rd-brn	27						
11:30	CH/MAN		100	0	TR			Rd-brn							
12:00	CH/MAN		100	0	TR	38	60	Brown	26						
12:30	CH/MAN		99.7	TR	0.3			Brown							
13:00	CH/MAN		100	0	0	38	60	Brown	31			13000	110	7	
13:30	CH/MAN		100	0	0										
14:00	CH/MAN		100	0	0	39	60	Brown	31						
14:30	CH/MAN		100	0	0										
15:00	CH/MAN		100	0	0	39	60	Brown	31						
	SHUT THE WELL IN PREMATURELY DUE TO A WEATHER ALERT AT 15:45 HRS.														

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 8

COMPANY ESSO AUSTRALIA LTD DATE 20TH AUGUST, 1984

WELL TUNA #4 PWT # 5

PERFORATIONS 2469.5 - 2477 m (FM, RKB) INITIAL FLOW (CLEAN-UP)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	SHAKE OUT % H2O	SHAKE OUT % SLDS	API @ TEMP —	API @ TEMP °F	COLOUR OIL	POUR POINT °C	WATER RES @ TEMP Ω-m °	Cl PPM	NO3 PPM	PH	COMMENTS
16:05	CH/MAN		ONLY GAS-CUT MUD WAS RECOVERED											
16:50	CH/MAN		99.5	-	0.5	39	60	Brown	30					
17:05	CH/MAN					40	60	Brown	30		13000	150	8.5	
17:20	CH/MAN		8	90.8	1.2	OIL	EMULSION/WATER		RECOV.		13000	150	8.5	
17:47	CH/MAN		83	17	TR									
18:00	CH/MAN		95	5	TR	40	60	Brown	31					Pale crm-blue flourescence
18:30	CH/MAN		12	87.6	0.4						13000	176	7.4	
19:00	CH/MAN		95	5	TR	39	60	Brown	30					
19:15	CH/MAN		55	45	-						13000	200	7.3	
20:00	CH/MAN		52	48	TR	38	60	Brown	30		13000	200	6.7	
20:15	SEPARATOR										12000	200	6.8	

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 9

COMPANY ESSO AUSTRALIA LTD DATE 21ST AUGUST, 1984

WELL TUNA #4 PWT# 5

PERFORATIONS 2469.5 - 2477 m (FM, RKB) FINAL FLOW

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME HH:MM	SAMPLING POINT	NO.	SHAKE OUT % OIL	SHAKE OUT % H2O	SHAKE OUT % SLDS	API @ TEMP —	API @ TEMP °F	COLOUR OIL	POUR POINT °C	WATER RES @ TEMP Ω-m	WATER RES @ TEMP °	Cl PPM	NO3 PPM	PH	COMMENTS
02:00	CH/MAN		95	4.5	.5	39	60	Brown	30						The water is a dirty filtrate
02:30	CH/MAN		99.4	.6	TR	38	60	Brown	30						
03:00	CH/MAN		94	6	TR	38	60	Brown	31						
03:30	CH/MAN		95	5	TR	38	60	Brown	31						
04:00	CH/MAN		94	6	TR	38		Brown	31						
04:30	CH/MAN		84	16	TR	38.5	60	Brown	31						
05:00	CH/MAN		98.5	1.5	TR	38	60	Brown	31						
06:00	CH/MAN		95	5	TR	38	60	Brown	31						
06:30	CH/MAN		95.5	4.5	TR	38	60	Brown	30						
07:00	CH/MAN		95	5	TR	39	60	Brown	31						
07:30	CH/MAN		97.5	3.5	TR	37	60	Brown	31						
07:50	CH/MAN		95.5	4.5	TR	38	60	Brown	32						
	WELL WAS SHUT-IN PREMATURELY DUE TO BAD WEATHER.														

CORE LAB. **PRODUCTION WELL TEST DATA SHEET** SHEET # 10

COMPANY ESSO AUSTRALIA LTD DATE 23RD AUGUST 1984

WELL TUNA #4 PWT# 5 (contd)

PERFORATIONS 2469.5 - 2477 m (FM, RKB) FINAL FLOW (RESUMED)

RATHOLE FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____ Cl (TITRAT) _____ PPM

NO3 _____ PPM DENSITY _____

CUSHION FLUID: TYPE _____ RES. Ω m _____ ° _____ PH _____

Cl (TITRAT) _____ PPM DENSITY _____

TIME	SAMPLING POINT	NO.	SHAKE OUT %			API @ TEMP		COLOUR OIL	POUR POINT	WATER RES @ TEMP		Cl	NO3	PH	COMMENTS
HH:MM			OIL	H2O	SLDS	—	°		°	Ω-m	°	PPM	PPM		
07:45	CH/MAN		84	15.9	.1	39	60	Brown	32						Water is a
08:00	CH/MAN		99.2	.8	TR	37	60	Brown	32						brown
08:30	CH/MAN		99.6	.4	TR	38	60	Brown	31						filtrate/
09:00	CH/MAN		95	5	TR	38	60	Brown	30						emulsion
09:30	CH/MAN		96	4	TR	39	60	Brown	30						
10:00	CH/MAN		96.5	3.5	TR	38	60	Brown	30						
10:30	CH/MAN		97	3.0	TR	38	60	Brown	31						
11:00	CH/MAN		96.5	3.5	TR	38	60	Brown	30						
11:30	CH/MAN		96	4	TR	38	60	Brown	30			5000	40	65	
12:00	SEPARATOR		98	2	0	39	60	Brown	30			5000	90	67	
12:30	CH/MAN		99.5	0.5	0	40	60	Brown	31						
13:00	SEPARATOR		98	2	0	39	60	Brown	31			5000	90	67	
13:30	CH/MAN		100	0	0	39	60	Brown	31			5000	100	67	
14:00	SEPARATOR		100	0	0	39	60	Brown	31						
14:30	CH/MAN		99	1	0	38	60	Brown	31			6000	120	66	
15:00	SEPARATOR		98	2	0	38	60	Brown	31			7000	130	63	
15:30	CH/MAN		100	0	0	38	60	Brown	30			7000	140	65	
16:00	SEPARATOR		100	0	0	39	60	Brown	31			11000	0	79	MUD
16:30	CH/MAN		100	0	0	38	60	Brown	31						
17:00	SEPARATOR		99	1	0	38	60	Brown	32						
17:30	CH/MAN		99.5	0.5	0	37	60	Brown	31						
18:00	SEPARATOR		100	0	0	38	60	Brown	31						

CORE LAB — PRODUCTION WELL TEST DATA SHEET — SHEET # 1

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 1

PERFORATIONS 3147 - 3138 m (FM, RKB)

DATE 20TH JULY, 1984

INITIAL FLOW

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	
07:40	MANIFOLD	88,883	10,575	3,639	1,308	565	274	23	0	
16:36	SEPARATOR	101,104	10,967	3,682	1,420	594	277	18.4	-	
17:00	SEPARATOR	100,074	10,379	3,760	1,312	594	282	16.0	-	
17:20	SEPARATOR	99,994	11,750	4,033	1,569	780	312	16.2	-	

CORE LAB — PRODUCTION WELL TEST DATA SHEET — SHEET # 2

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 2

PERFORATIONS 2820 - 2829 m (FM. RKB)

DATE 23 - 26 JULY, 1984

	TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
	HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	Comment
	6:30	CHOKE MANI	528,711	35,840	12,410	4,229	1,370	560	18	NIL	
	7:30										
24/7/84	10:30	CHOKE MANI	396,533	51,200	16,547	4,229	1,960	960	17	TR	
	11:00	CHOKE MANI	387,869	51,169	16,274	4,169	1,860	796	20	TR	
	11:30	CHOKE MANI	WAXY	SAMPLE							
26/7/84	05:00	SEPARATOR	401,254	72,240	37,232	11,357	1,626	280	N/A	NIL	
	06:00	SEPARATOR	339,886	61,440	31,027	8,458	2,739	336	N/A	NIL	
	07:00	SEPARATOR	424,857	66,560	26,890	7,295	2,396	210	31	-	
	08:00	SEPARATOR	434,298	69,120	28,958	7,400	1,284	175	36	-	
	09:00	SEPARATOR	429,578	69,120	31,027	10,572	3,210	630	34	-	*Shut
	12:00	SEPARATOR	436,186	69,786	33,621	11,261	3,460	730	40	-	down
	12:30	SEPARATOR	453,181	69,896	33,095	13,744	5,136	2,742	43	-	for
	13:45	SEPARATOR	469,260	69,989	33,696	14,276	4,696	7,134	45	-	chiksan repair

CORE LAB

PRODUCTION WELL TEST DATA SHEET

SHEET # 3

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 3

PERFORATIONS 2562 - 2569 m (FM, RKB)

DATE 8TH AUGUST, 1984

INITIAL FLOW

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM
12:45	CHOKE	571,432	86,384	19,617	7,614	3,099	1,028		0
13:17	CHOKE	302,043	82,065	58,245	24,038	6,220	684	36	0
		CLOSED TO PULL OUT SCHLUMBER'S TOOL							
16:15	CHOKE	310,128	64,665	38,830	19,236	7,128	2,138	33	0
		CLOSED DUE TO POOR BURNING							0
23:00	CHOKE	232,596	73,426	51,298	22,443	5,447	642	28	0
11:30	DOWN HOLE SAMPLE	365,308	30,138	6,067	1,152	295	0	45	0
		224,491	35,617	10,920	2,404	453	0	-	-
15:00	SEPARATOR	261,160	77,746	58,245	33,664	14,266	2,742	35	0
16:00	SEPARATOR	261,226	45,351	38,830	28,855	15,563	4,200	35	0
17:00	SEPARATOR	301,967	43,192	19,415	7,013	2,593	942	33	-
18:00	SEPARATOR	302,043	51,830	24,268	11,221	4,669	1,455	31	-
19:00	SEPARATOR	293,879	58,309	32,358	16,030	8,300	2,185	28	-
19:30	SEPARATOR	302,043	60,469	35,594	17,633	6,744	1,628	30	-
20:00	SEPARATOR	310,206	53,990	29,122	12,824	4,669	1,157	29	-
20:30	SEPARATOR	310,206	56,150	29,122	12,824	5,293	1,542	30	-
21:00	SEPARATOR	310,206	53,990	32,321	16,030	4,982	1,285	30	-
21:30	SEPARATOR	293,879	60,469	33,976	19,236	8,559	3,214	31	-
22:00	SEPARATOR	289,798	56,150	32,358	17,633	8,819	3,942	31	-
22:30	SEPARATOR	290,671	53,990	32,321	18,136	8,469	3,526	31	-
23:00	SEPARATOR	293,879	60,469	35,594	19,236	9,078	3,700	31	-
23:30	SEPARATOR	297,961	60,469	32,358	17,633	7,781	2,914	31	-

CORE LAB

PRODUCTION WELL TEST DATA SHEET

SHEET # 4

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 4

PERFORATIONS 2543 - 2552 m (FM. RKB)

DATE 17TH AUGUST, 1984

FINAL FLOW

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	
07:00	CH/MAN	326,533	41,432	12,538	3,005	745	150	20+	TR	
09:15	CH/MAN							44	6	
09:30	SEPARATOR	306,124	58,309	25,886	8,015	1,880	300	24	6	
10:30	SEPARATOR	318,369	60,469	26,291	7,614	1,621	380	25	8	
11:30	SEPARATOR	291,962	60,901	29,767	12,023	3,955	1,071	27	6	
12:30	SEPARATOR	314,288	62,629	31,549	11,221	4,021	1,071	26	8	
13:30	SEPARATOR	273,471	64,788	29,123	14,428	5,836	1,886	28	2	C_7 also
14:30	SEPARATOR	273,471	60,469	28,314	12,624	3,988	857	26	8	

CORE LAB

PRODUCTION WELL TEST DATA SHEET

SHEET # 5

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 5

PERFORATIONS 2469.5 - 2477 m (FM, RKB)

DATE 20TH AUGUST, 1984

INITIAL FLOW

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	
16:05	CH/MAN	41,189	3,956	3,544	3,213	2,897	875	8	0	+ C_7
16:20	CH/MAN	52,345	4,216	3,096	2,419	713	146	18	0	
17:05	CH/MAN	53,203	4,320	3,137	2,340	624	117	19	0	
17:47	CH/MAN	53,203	4,372	3,096	2,221	579	131	21	0	TR C_7
18:30	CH/MAN	53,203	4,060	2,892	2,142	540	124	21	0	TR C_7
19:30	CH/MAN	48,912	3,487	2,526	2,062	847	219	25	0	
20:00	SEPARATOR	44,622	3,747	2,851	2,261	2,229	642	26	4	Traces C_7 & C_8

CORE LAB

PRODUCTION WELL TEST DATA SHEET

SHEET # 6

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 5

PERFORATIONS 2469.5 - 2477 m (FM. RKB)

DATE

FINAL FLOW

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	
03:00	CH/MAN	53,095	3,435	3,525	1,824	758	175	24	TR	
03:30	CH/MAN	50,709	3,747	2,688	2,213	891	233	25	4	
04:00	SEPARATOR	52,344	3,955	2,933	2,379	1,504	325	26	2	TR C_7
04:30	SEPARATOR	52,400	3,372	2,625	2,062	1,281	570	26	2	
05:00	SEPARATOR	49,770	3,990	3,340	2,776	2,139	623	26	2	
06:00	SEPARATOR	50,709	3,955	2,770	2,221	1,961	710	26	7	
06:30	SEPARATOR	53,202	4,829	3,747	3,093	2,187	554	26	6	
07:00	SEPARATOR	53,031	4,830	3,747	3,054	2,362	612	27	7	C_7 +
07:30		52,376	3,800	2,647	2,142	2,180	597	26	6	
	WELL WAS SHUT-IN PREMATURELY DUE TO ROUGH WEATHER									

CORE LAB

PRODUCTION WELL TEST DATA SHEET

SHEET # 7

COMPANY ESSO AUSTRALIA LTD

WELL TUNA #4 PWT # 5 (contd)

PERFORATIONS 2469.5-2477m (FM. RKB)

DATE 23RD AUGUST, 1984

FINAL FLOW RESUMED

TIME	SAMPLING POINT	C1	C2	C3	C4	C5	C6	CO2	H2S	
HH:MM		PPM	PPM	PPM	PPM	PPM	PPM	%	PPM	
08:00	CH/MAN	51,486	3,851	3,592	2,260	802	218	25	-	
08:30	CH/MAN	51,500	3,747	2,867	2,253	891	294	26	-	C_7
09:00	CH/MAN	51,480	3,414	2,525	2,062	847	236	26	-	
09:30	CH/MAN	50,642	3,120	2,362	1,938	824	227	26	-	
10:00	SEPARATOR	50,731	3,226	2,514	2,125	1,780	562	26	-	
10:30	SEPARATOR	49,770	3,018	2,362	1,983	1,827	592	26	1	
11:00	SEPARATOR	51,659	2,956	2,444	2,062	2,050	440	26	2	
11:30	SEPARATOR	48,912	2,706	2,199	1,824	1,783	525	26	2	
12:00	SEPARATOR	46,338	3,747	2,851	2,340	1,649	262	24	2	
12:30	SEPARATOR	42,906	3,643	2,892	2,340	981	109	24	1	
13:00	SEPARATOR	41,189	3,331	2,648	2,221	1,516	335	26	7	
13:30	SEPARATOR	43,764	3,643	2,933	2,499	1,649	416	24	7	
14:00	SEPARATOR	43,764	3,383	2,607	2,142	1,917	467	26	7	
14:30	SEPARATOR	44,622	3,643	2,770	2,340	2,050	744	25	6	ABUNDANT C_7
15:00	SEPARATOR	47,196	3,539	2,689	2,181	2,229	715	25	7	
15:30	SEPARATOR	42,047	3,643	2,770	2,261	2,273	860	25	6	
16:00	SEPARATOR	48,054	3,851	2,953	2,419	2,496	890	25	2	
16:30	SEPARATOR	44,622	3,435	2,648	2,142	2,318	977	26	6	
17:00	SEPARATOR	47,196	3,539	2,689	2,142	2,273	802	26	6	
17:30	SEPARATOR	43,764	3,123	2,566	2,102	2,140	744	26	7	
18:00	SEPARATOR	47,196	3,747	2,770	2,261	1,783	452	24	4	

APPENDIX A-2

DATA SHEETS FOR PRODUCTION TEST NO. 2

(0561f/21)

PRODUCTION TEST SUMMARY

Well TUNA - 4 Test 2 Date 27/7/84

Test Data:

1. Interval 2820 - 2829
2. Produced fluid OIL
3. Cumulative production 880 (STB)
4. Stabilized rate 470 (STB/D)
5. Length of flow period 39 (hr) (Excluding initial flow period)
6. Choke 32F (64ths)
7. Gravity of oil or condensate 35.5 (°API @ 60°F)
8. GOR or Condensate - Gas Ratio 1380 (SCF/STB)
9. Water cut 0 (%)
10. Chlorides - (ppm)
11. H_2S NIL (%, ppm)
12. CO_2 30 - 45 (%)
13. Stabilized flowing wellhead pressure 300 (psig)
14. Stabilized flowing wellhead temperature 75 (°F)
15. Wellhead pressure at end of buildup DHSI used (psi)
16. Initial reservoir pressure 4210 (psi) @ 2825 (m)
17. Final flowing pressure 1192 (psia) @ 2787 (m)
18. Productivity index 0.16 (STB/D, MMSCF/D) / psi psi
19. Maximum bottom-hole temperature 248 (°F) @ 2787 (m)
20. Samples taken: 4 x 500 ml oil, 2 x 20 l gas, 3 x 5 gal Jerry cans oil.
21. Remarks: POUR POINT: 36°C

(0561f/15)

COMPLETION DATA

Well TUNA-4 Test 2 Date 23rd July, 1984

Company Supervisor I.M./R.D.

Test Engineer /M.J.O.

1. Interval 2820-2829m MOKB (LOT C - CNTH-GR of 19/6/84)
2. Well loading fluid DIESEL (53 Bbl), WATER (2 Bbl, N_2 (26.5 Bbl)
3. Approximate Differential (p_{f-Pw}) 500 (psi)
4. Type of perforating gun 2 1/8 inch ENERJET
5. Perforation density 4 (spf)
6. Mud weight 11.0 (ppg)
7. Cl^- of filtrate 15,000 (ppm) NO_3^- - (ppm)
8. Cl^- of mud filtrate at time of drilling 17500 (ppm) NO_3^- 195 (ppm)
9. Casing:
   Size 9 5/8 (in.)
   Weight 47 (lb/ft)
   Grade N-80
   Capacity 0.0732 (bbl/ft)
   Shoe 2434 (m)
   Burst: 6870 psig
10. Liner:
    Size 7 (in.)
    Weight 26 (lb/ft)
    Grade N-80
    Capacity 0.0382 (bbl/ft)
    Top 2227 (m)
    Shoe 3219 (m)
11. Tubing:
    Size 3 1/2 (in.)
    Inside Diameter 2.992 (in.)
    Weight 9.3 (lb/ft)
    Grade L-80
    Capacity 0.00870 (bbl/ft)
    Connections EVE A.B.Modified
    Burst pressure 1500 psig
    Lowest 96 JTs are J-55
12. Plugged back total depth 2930 (m)
13. Depth of packer 2790 (m)
14. Tubing volume 79.6 (bbl)
15. Volume between packer and lowest perforation 4.9 (bbl)
16. Rathole volume 12.6 (bbl)
17. Depth of tailpipe 2793.4 (m) (Muleshoe)
18. Location of pressure gauges: depth _____ (ft) gauge number _____
    depth _____ (ft) gauge number _____
19. Initial WHP before well underbalanced: 3100 psi
20. Depth of XN 2786.7 (m)

(0536f/1)

Well TUNA-4 Test 2 Perforation 2820-2829 Date 23/7/84

1. Geologists(s): S.S.
2. Test Engineer(s): /M.J.O.
3. Service Company/Engineer: SCHLUMBERGER
4. Distance between CCL and top of gun: 1.4 m
5. Number of Runs: 1 (117 SHOTS)
6. Wellhead pressure bled down to zero before perforating?

   - (Yes) X (No)
7. Wellhead pressure before perforating: 1305 psi
8. Time of perforation: 0800 (local time)
9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)	WHT. °F	Time (Local)	WHP (PSIG)	WHT. °F
0800	1305	50	0810	1390	49
0801	1320	49	0815	1410	49
0802	1330	49	0830	1455	49
0803	1340	49	0845	1500	49
0804	1350	49	0900	1525	49
0805	1355	49	0915	1555	49

10. Other perforating runs:

Time	Run	Interval	WHP

11. Remarks: Bleed WHP from 3100 psig to 1305 psig prior to perforating well to obtain underbalance of 500 psi.

(0536f/2)

INITIAL FLOW PERIOD DATA*

D-2

Well TUNA-4 Test 2 Perforation 2820-2829 Date 23/7/84

1. Wellhead pressure prior to opening well 1765 (psi)

2. Time well opened 1530

3. Initial choke size 32A (64ths)

4. Well response: (Well (flowed)
   Time gas surfaced 1730
   Time mud surfaced
   Time oil surfaced 1732

5. Well data just prior to shut in
   Flowing wellhead pressure 670 (psi)
   Choke size 48A (64ths)
   Pressure downstream of the choke (psi)
   Rate 500 (B/D,) (estimated)

6. Time of shut in 1900

7. Total length of initial flow 3 hrs. 30 mins (min, hr)

8. Cumulative production 65 (bbl,) (estimated)

9. Description of produced fluids:
   Oil % 38 °API
   Water % Cl^- 14,000 (ppm) NO_3^- 60 (ppm) Ph: 7.2
   Gas: Sp Gr

C_1	528711 (ppm)	C_5^+	1930 (ppm)
C_2	35840 (ppm)	CO_2	18 %
C_3	12410 (ppm)	H_2S	0 (ppm, %)
C_4	4229 (ppm)		

*If extended initial flow (clean up) is run, enter production data at 30 min. intervals on Production Test Data Sheet (D-5).

If well is swabbed, fill out swab report (D-3).

0536f

INITAL BUILDUP DATA

Well TUNA-4 Test 2 Date 23/7/84

S/in

Shut-in Time (min)*	WHP (psi)
1900	670
1901	685
1902	700
1905	725
1910	790
1915	850
1930	1050
1945	1162
2000	1265
2015	1390

Shut-in Time (min)	WHP (psi)

* Record WHP at 15 min intervals.

If pressure gauges are run on wireline, make stop at Kelly bushing; record:

Time _____ WHP _____ psi

If stops are made while running pressure gauges in the hole, record:

Stop	Time	Depth

Stop	Time	Depth

Time gauges reached bottom: _____

Other events _____

_____

_____

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 2 Perforations 2820-2829 Date 23/7/84 Page 1 of 2

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR	CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
	July 23														
0720	BLEED THP TO 1305	1305			-										
0800	PERFORATE	1305	50	300	-										
0804	Rate = 1050 BPD	1350	49	300	-				1050						
0815	POOH GUN	1410	49	300	-										
0830	Avge Rate = 465 BPD	1455	49	320	-				465						
0900	Avge Rate = 340 BPD	1525	49	320	-				340						
0929	Close upper master														
0945	Rig down Gun	All	shots	fired											
1000	Rig up HP + Ameradas	(36 hr	clocks)												
1045	Pressure Test Lub.														
1100	Rig down HP & check														

PRODUCTION TEST DATA SHEET

D-5

Well TUNA - 4 Test 2 Perforations 2820-2892 Date 23/7/84 Page 2 of 2

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR	CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
	July 23														
1200	Rig up HP & Armeradas														
1230	Pressure test lubicator	- small leak, initially													
1400	R I H	1730	49	320	-				110						
1430		1750	48	340	-										
1500	Correlating depth	1770	48	340	-										

0536f

Well TUNA-4 Test 2 Perforations 2820-2829 Date 23/7/84 Page 1 of 15

TIME LOCAL	REMARKS July 23	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIG	BHT °C
1510	Hang HP at 2825m				-	4212	118.8
1530	Begin bleeding THP	1765	47	320	24A	4210.3	118.8
1535		1500	47	320	32A	3931.8	118.8
1540		600	47	320	32A	2882.2	118.5
1545		210	46	320	32A	2658.5	118.5
1550		61	46	320	32A	2525.0	118.5
1555		6	46	320	32A	2523.4	118.8
1600		0	46	320	"	2564.5	118.9
1605	Q= 395 Bbl/day				"	2612.7	118.9
1610	Q= 413 Bbl/day				"	2663.0	119.1
1615	Q= 378 Bbl/day	0	46	320	"	2709.0	119.0
1630	Q= 319 Bbl/day	0	46	420	"	2825.7	119.0
1645	Diesel at surface	0	46	430	"	2933.1	119.0
1650	3" - 1.2 Bbl	22	46		"	2914.4	119.0
1655	10" - 4.1 Bbl	33	47		"	2830.7	119.0
1700	18" - 7.4 Bbl	51	48	380	"	2767.4	119.0

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1715	53"-21.8 Bbl	300	62		32A	2501.4	118.7
1720	78"-32 Bbl	Divert to Burner					
1730	Formation Fluid at Surface	415	68	430	"	2232.3	118.7
1732	Oil at Surface				"		
1745	Increase choke	580	69		48A	2225	118.5
1800	Reduce choke	420	70		32A	1602.7	117.9
1815	GAS (No Oil)	305	72	400	"	1708.6	117.3
1830	Oil - separator running	315	67	420	48A	1957.4	117.9
1845		535	70		"	2038.8	117.9
1900	S/in:POOH Schl.	670	70		Nil	2233.1	118.2
1901		685	70		Nil		
1902		700	68		"	-	-
1905		725	67		"	-	-
1910		790	67		"	-	
1915		850	65		"	-	
1930		1050	64	500	"	-	

Well TUNA-4 Test 2 Perforations 2820-2829 Date 24/7/84 Page 2 of 15

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1945		1162	62		Nil	2233.1	
2000		1265	62	220	"	-	
2015	Schl.HP at surface	1390	61	210	"	-	
2020	Close upper M.V.						
2025	Close crown valve						
2130	Rig up Otis	120 hrs. & 72 hrs. clocks					
2255	Rigged up Ameradas						
2315	RIH with Mandrel	1830	49	320	-	-	-
2330		1815	49	320	-	-	
2345		1830	49	190			
0000		1835	49	190			
0020	Otis rig down	1845	45				
0130	Rig up Schlumberger						
0300	Tool won t fit lubricator						

TIME LOCAL	REMARKS JULY 24	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0430	Schlumb. hung up in BOP's						
0445		1900	45	160	-	-	
0500		1900	45	160	-	-	
0605		1900	44	160	-	-	
0635	Open well to clear possible wax plug				48A		
0636		1900			"		
0640		780	49	150	"		
0650		380	56	150	"		
0700		350	56	180	"		
0715		380	56		"		
0718	S/in	420	56		-		
0719		460	56		-		
0720		490	56		-		
0723	Sch. RIH - hung up again						
0725		560	56	170	-		
0730		630	56	170	-		

Well TUNA-4 Test 2 Perforations 2820-2829 Date _____ Page 3 of 15

TIME LOCAL	REMARKS JULY 24	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0745		825	54	190	-		
0800		1000	53	195			
0815		1150	51	200			
0840	Close LMV						
0855	Pressure test						
0909	Open LMV:Remove CCL & narrower sinker bar						
1100	Schlumberger Stab Lub. on						
1115	Press Test Sch. Lub. to 4000 psi						
1120	Bl ed off leak @ lubricator						
1128	Press Test Sch. lub. to 4000 psi				-		
1135	Wire line run in to Tag SSLV				-		
1232	Close swab valve & choke manifold				-		
1235	Open LMV				-		
1250	Close wing valve on Haliburton				-		
1253	Open well	1880			32A		
1255	Gas only	1670	48	240	-		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1300	Gas only	1505	47	250	32A		
1315	" "	1185	46	250	"		
1330	Oil	1050	46	250	"		
1345	Oil	680	56				
1355	Oil Rock choke	710	57	240	"		
1400		710	57	240	32A		
1403	Open choke 48/64	ADT			48		
1404		610	52		"		
1405		560	57	230	"		
1410		530	58		"		
1415		520	58	230			
1420	Open choke 52/64	520	58		52		
1421		500	58		"		
1422		480	58		52		
1423		470	58	230	52		
1424		420	58				

Well TUNA-4 Test 2 Perforations 2820-2829 m Date 24/7/84 Page 4 of 15

TIME LOCAL	REMARKS JULY 24	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1425		400	58				
1430		370	58	230	52		
1445	Oil	265	58	230	52		
1446	Oil cut choke to 50/64	260	58	230	50		
1447		260	58				
1448		260	58				
1449		260	58				
1455	Cut choke to 48/64 ADJ	250	58		48		
1456		280	58				
1457		270	58				
1458		275	58	230	48		
1500		270	58				
1511	FLARE OUT SHUT IN WELL				0		
1512		310	58				
1513		340	58		48		
1514		350	58				

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1515		370					
1530	Open well on 46/64	610	58		46		
1545	Gas/Oil	420	58	300	46		
1550	Pressure Test Sch. lub.						
1600	Sch. equilizer pressure	410	59	325			
1605	Close choke to 32/64						
1609	Open Swab Valve Sch. R.I.H.						
1615	Oil	485	59	340	32		
1630		550	58	360	32		
1645	Oil	630	57	360	32		
1700		690	56	340	32		
1715	Oil	735	56	380	32		
1730	Oil	780	56	380	32		
1745		780	55	390	32		
1750	Shut in at choke	780	55	390	32		
1751		820	55	390	32		

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TIME LOCAL	REMARKS JULY 24	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1752		835					
1753		845					
1754		850					
1755		860					
1800	STING IN	885	55	390	32		
1805		970	55	390		2560.4	119.6
1810		1015	55	390			
1815		1060	55	390			
1820		1090				3456.03	120.2
1825		1140	55	390	32		
1830	Opened value on choke to bleed 500 lb.	1160	- Pressure test DHGI				
1835	Shut in well	1025			-		
1836		1030			-		
1837		1040			-		
1838		1040			-		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1839		1040			-		
1840	Bleed down - fix Chiksan						
1900		-	-		-	3132.2	117.9
1915	Chiksan fixed - On-Line				32A	3249.0	120.2
1930		1240	57	350	32A	2956.6	119.9
1945		1075	62	350	32A	2823.8	119.3
2000		955	65	350	"	2603.0	119.3
2015		890	65	350	32A	2473.5	119.6
2030		855	62	350	32A	2352.0	119.9
2035	Fixed Choke				32F		
2045		635	62	420	"	1894.1	119.3
2100		500	65	440	"	1586.9	118.7
2115		470	65	460	"	1406.3	118.3
2130		375	65	470	"	1300.2	118.1
2145		365	65	500	"	1287.9	117.8
2200		330	62	510	"	1295.5	117.8

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
	July 24						
2215	Decrease choke	345	62	510	28A	1359.7	117.8
2230	Gas only	485	60	510	"	1707.1	118.4
2235		510	55	340	"		
2240		545	57	350	36A		
2241		535	57	350	"		
2242		535	57	350	"		
2245		540	57	350	"	1822.0	119.0
2300		545	57	380	"	1819.5	119.0
2315		615	57	460	"	1829.4	119.3
2330		570	57	240	"	1820.5	119.3
2345		560	57	240		1846.2	119.3
2350	Change Choke- piece of metal recovered				32F		
	from Adjustable Choke						
2400		485	57	240	32F	1673.8	119.3
0015		455	63	290	"	1421.0	118.7
0030		450	64	300	"	1276.8	118.4

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
	July 25						
0045						1175.1	118.1
0100		268	64	300	32F	1154.6	117.8
0130		310	62	320	32F	1250.1	117.8
0200		305	62	320	"	1262.2	117.8
0230		330	62	360	"	1230.1	117.8
0300		305	62	350	"	1196.0	117.8
0330		290	62	360	"	1218.5	117.8
0400		350	60	360	"	1248.1	117.8
0430		320	60	360	"	1179.5	117.8
0500		315	60	400	"	1245.5	117.8
0530		345	60	410	"	1245.4	118.1
0600		330	62	410	"	1204.9	118.1
0630		335	62	410	"	1233.6	118.1
0700		340	62	410	"	1212.3	118.1
0730		350	62	460	"	1208.9	118.1
0800		360	62	460	"	1210.97	118.1

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TIME LOCAL	REMARKS July 25	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0830		350	62	460	32F	1209.81	118.1
0900		260	63	470	"	1216.87	118.4
0930	Bled ann.@ 0945 hrs	335	67	470	"	1221.52	118.4
1000		320	71	180	"	1198.13	118.4
1030		325	71	180	"	1173.26	118.4
1100		315	71	200	"	1188.29	118.4
1130		315	74	220	"	1193.42	118.4
1200	Close DHSI	300	74	220	"	1201.3	118.7
1201	Close choke	300	74		-	1460.0	118.7
1202		315	74		-	1652	118.7
1203		330	74		-	1771	
1204		340	74		-	1885	
1205		348	74		-	1974	
1206					-	2057	
1207					-	2144	
1208					-	2215	

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1209					-	2261	
1210		400	70		-	2295	117.5
1211					-	2319	
1212					-	2337	
1213					-	2350	
1214					-	2350	
1215		445	70		-	2342	
1216	Pulling up on tool to 1300 lbs.				-	2344	
1218	Pulling up on tool to 1500 lbs.				-	2716	
1219					-	2961	
1220					-	3168	
1221	Trying to reset tool				-	1618	
1222					-	1629	
1223					-	1673	
1224					-	1716	
1225	Still leaking				-	1735	

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1226					-	1763	
1227					-	1788	118.1
1228					-	1817	
1229					-	1841	
1230		630	65	200	-	1880	
1232					-	1921	
1234					-	1970	
1236					-	2027	
1238					-	2069	
1240					-	2118	
1242	Pull to 2500 lbs.				-	2159	
1244					-	2206	
1246					-	2252	
1250					-	2336	
1252					-	2367	
1254					-	2413	

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1256	Pull tool out & reset				-	2447	
1300					-	2525	
1305					-	2617.8	
1310					-	2672	
1315		1050	61	225	-	2789	
1320	Fully open tool				-	2857	
1325					-	2917	
1330		1148	60	220	-	2982	
1335		1180	59	220	-	3039	
1340		1207	59	210	-	3094.8	121.0
1345		1235	59	210	-	3146.6	121.0
1350		1260	59	200	-	3193.8	121.0
1355		1285	59	200	-	3239.0	121.0
1400		1300	58	190	-	3278.4	120.7
1410		1340	58	195	-	3353.1	
1420		1372	58	295	-	3415.6	120.7

RIG-FLOOR AND BOTTOMHOLE DATA

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1430		1400	57	285	-	3470.1	120.7
1440		1427	56	270	-	3518.2	120.4
1450		1450	56	260	-	3564.1	120.4
1500		1470	56	255	-	3599.6	120.4
1510		1490	56	250	-	3634.2	120.2
1520		1505	56	240	-	3664.3	120.2
1530		1525	55	230	-	3691.1	120.2
1540		1535	54	220	-	3715.3	120.2
1550		1550	54	210	-	3737.1	119.9
1600		1560	54	205	-	3756.9	119.9
1610		1572	53	200	-	3774.1	119.9
1620		1583	52	200	-	3789.7	119.6
1630		1593	52	290	-	3804.3	119.6
1640		1600	51	290	-	3817.2	119.6
1650		1605	51	280	-	3829.3	119.6
1700		1610	51	270	-	3839.6	119.3

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1710		1620	51	265	-	3850.0	119.3
1720		1628	51	260	-	3858.8	119.3
1730		1635	51	260	-	3866.8	119.3
1740		1640	51	255	-	3874.1	119.3
1750		1645	50	260	-	3880.4	119.3
1800						3886.4	119.0
1810						3891.6	119.0
1820						3896.9	119.0
1830						3901.5	119.0
1900		1670	49	290	-	3913.2	119.0
1915		1675	48	290	-	3916.8	119.0
1920	Flow well				32	3919.9	119.0
1922		1200	47		32	3803.4	119.0
1926		680	48		"	2208.5	119.0
1930	Increase choke	480	54	250	48		
1945		226	55	230	48	1410.3	119.0

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1952	Decrease choke				32		
2000		245	59	210	32	1266.6	119.9
2015		220	62	250	"	1239.3	120.2
2020	Decrease choke				24		
2023	Schl. Start POOH						
2030	Shut in at choke	250	62	145	-	1337.1	119.6
2045		465			-	1722.1	120.
2100		575			-	2092.5	123.1
2110	Open well						
2115	Schl Commenced POOH	585	62	260	32A	1920.2	122.8
2130		615	62	280	"	1080.3	93.7
2145		475	62	280	32A	789.8	69.2
2149	Well shut-in at choke	465			-		
2150		515	60	280	-		
2151		520	60	280	-		
2152		535	60	280	-		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
2153		535	60	280	-		
2200		600	62	280	-		
2215		730	58	300	-		
2220	Sch. at surface	810	58	300	-		
	close valve						
2257	Open well to heater	1070	55	300	32A		
2258		810	55	300	32A		
2259		820	55	300	32A		
2300		800	55	290	32A		
2315		640	57	290	"		
2330		530	57	290	"		
2345		370	60	290	32A		
0000		410	62	340	"		
0015		515	62	350	"		
0030		545	62	350	"		
0032					32F		

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0045		480	63	360	32F		
0100		380	73	390	"		
0105	PT Lubricator						
0110		365	75	390	"		
0130		415	75	400	"		
0150	RIH Schl. & D.H.S.I	295	75	400	"		
2000		300	75	390	"		
0215		295	75	430	32F		
0230		300	75	430	32F		
0245		290	75	440	32F		
0250	Well S/in	290	75	440	-		
0251		335	75	440	-		
0252		340	75	440	-		
0253		340	75	440	-		
0254		370	75	440	-		
0255		390	75	440	-		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0300	Test OHSI tool	450	71	440	-		
0315	Well open	590	68	440	32F		
0316		460	68	440	32F		
0317		460	68	440	"		
0318		430	68	440	32F		
0319		405	68	440	"		
0320		405	68	440	"	1793.4	120.8
0325		405	67	420	"	1726.6	120.8
0330		435	70	430	"	1630.8	120.8
0345	To Separator	410	73	430	"	1281.3	120.2
0400		315	74	460	"	1291.0	120.2
0415		270	75	480	"	1227.1	119.9
0430		395	75	480	"	1268.8	119.9
0445		335	75	480	"	1224.9	119.6
0500		280	75	500	"	1219.6	119.6
0515		295	75	200	"	1227.0	119.6

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TIME LOCAL	REMARKS July 26	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0530		300	75	220	32F	1234.0	119.6
0545	Separator stable: calibrate meters	305	75	220	"	1242.5	119.6
0600		340	75	220	"	1235.5	119.6
0615		305	75	220	"	1200.4	
0630		290	75	220	"	1200.5	119.6
0645		275	75	220	"	1201.1	119.6
0700		290	75	220	"	1223.3	119.6
0715		325	75	230	"	1228.5	119.6
0730		300	75	250	"	1224.6	119.6
0745		310	75	250	"	1213.7	119.6
0800		310	75	250	"	1212.3	119.6
0815		290	75	250	"	1220.6	119.6
0830		300	75	250	"	1221.5	119.6
0845		305	75	240	"	1222.9	119.6
0900		300	75	240	"	1227.9	119.6
0915					"	1222.8	119.6

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0918	S/in Leaking Chikson -	-		-		1227.0	119.6
0925	S/down Separator	-	-		-	1415.1	119.6
0930		-	-		-	1553.9	120.2
0935		-	-		-	1706.3	120.5
0940		-	-		-	1806.7	120.5
0945		-	-		-	1945.3	120.8
0950		-	-		-	2047.3	121.1
0955		-	-		-	2141.41	121.1
1000	ON-LINE TO BURNER				32F	2208.8	121.4
1005	ON-LINE	645	62	280	32F		
1007		620	62	220	"		
1008		560	65	220	"		
1009		540	66	220	"		
1010		500	66	220	"		
1015		510	74	220	"	1904.8	
1020		505	74	220	"		

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TIME LOCAL	REMARKS July 26	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1030		455	74	240	32F	1503.9	120.5
1045		360	74	240	"	1380.6	120.5
1100		375	74	240	"	1280.0	120.2
1115		285	75	220	"	1181.4	119.9
1130		325	75	220	"	1149.1	119.6
1145		290	70	230	"	1167.8	119.6
1200		275	70	230	"	1192.1	119.6
1215		305	70	230	"	1214.1	119.6
1230	Separator stable	290	70	400	"	1232.7	119.6
1245		295	69	370	"	1240.6	119.9
1300	]	300	68		"	1247.8	119.9
1315	]Separator Sample 1]	300	67	370	32F	1248.5	119.9
1330	]	300	67	360	"	1235.8	119.9
1345	]Separator Sample 2]	300	66	350	"	1214.5	119.9
1400	]	310	66	340	"	1197.3	119.6
1407	DHSI Closed	305	66	340	"	1191.6	119.6

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1409	Close choke	305	66	340	-		
1411		305	66	340	-		
1412		310	66		-		
1413		320			-		
1414		335			-		
1415		350	66	340	-		
1420		370	64	340	-		
1430	Flushing line w/diesel	405	60	34	-		
1445		460			-		
1500		475			-		
1515		485			-		
1530		487			-		
1545		492					
1600		496	50	270	-		
1615		500	49	250	-		
1630		504	49	240	-		

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RIG-FLOOR AND BOTTOMHOLE DATA

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TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1700		510	48	210	-		
1730		515	48	360	-		
1800		519	48	360	-		
1830		519	48	320	-		
1900		519	48	300	-		
1930		520	48	290	-		
2000		520	48	260	-		
2030		520	48	260	-		
2100		520	48	240	-		
2130		520	47	230	-		
2200		520	47	230	-		
2230		520	47	220	-		
2300		520	47	210			
2330		519	47	320			
0000	JULY 27	518	46	320	-		
0030		518	46	320	-		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0100		519	46	300	-		
0130		519	46	290	-		
0200		520	46	290	-		
0230		520	46	280	-		
0300		520	46	270	-		
0330		520	46	270	-		
0400		520	47	260	-		
0430		520	47	250	-		
0500		519	47	250	-		
0530		519	47	250			
0600		519	47	240			
0630		519	47	240	-		
0700		515	47	240	-		
0730		510	47	240	-		
0800		515	45	500	-		
0830		515	45	500	-		

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TIME LOCAL	REMARKS JULY 27	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0900		515	45	500	-		
0930		510	45	250	-		
1000		500	45	250	-		
1025	Sub sea test tree valve closed						
1030							
1100	Valve open but hydraulic line leaking						
1135	Open DHSI						
1140	Pull out of mandrel POOH					1575	115.3
1150	Flow well to clear wax						

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C

TANK: ins. METER: BBl SEPARATOR DATA SHEET

N.B. Tank No. 4 - 0.519 Bbl = 1"

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME	SEPARATOR		OIL METER		WATER METER		GAS METER DATA Gas Meter Dia. ____ Type ____				GAS GRAVITY	REMARKS
	PRESS PSIG	TEMP °F	READING BBLS	DIFF. BBLS	READING BBLS	DIFF. BBLS	STATIC PSIA	DIFF. IN.H_2O	TEMP °F	PLATE IN.		
0545	100	146	6.0 / 12.75		326.2			70	132	1.25	0.93	
0600	130	144	15.0 / 15.74	4.671	326.2		104.73	70	13	1.25		
0615	100	146	26.0 / 18.9		326.2		104.73	70	140	1.25		
0630	100	147	39.0 / 21.73		326.2		86.73	68	135	1.25		
0645	120	144	45.0 / 24.06		326.2		109	60	135	1.25		
0700	120	148	54.0 / 26.07		326.2		114.73	60	135	1.25		
0715	100	142	63.0 / 32.54		326.2		119.73	60	139	1.25		
0730	120	142	35.0 Initial		326.2		114.73	64	139	1.25		
0745	120	148	44.0 / 35.46		326.2		124.73	67	141	1.25		
0800	125	148	55.0 / 38.52		326.2		119.73	68	140	1.25		
0815	120	148	66.0 / 41.16		326.2		114.73	66	140	1.25		
0830	105	151	77.0 / 44.4		326.2		114.73	72	143	1.25		
0845	90	151	86.0 / 46.93		326.2		114.73	70	142	1.25		
0900	92	153	73/83 / -		326.2		112.73	72	144	1.25		
0915							94.73	72	144	1.25		

SHUT DOWN 09118 DUE TO CHIKSAN LEAK

SEPARATOR DATA SHEET

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME July	SEPARATOR		OIL METER		WATER METER		GAS METER DATA Gas Meter Dia. ____ Type ____				GAS GRAVITY	REMARKS
	PRESS PSIG 26	TEMP °F	READING BBLS	DIFF. BBLS	READING BBLS	DIFF. BBLS	STATIC PSIA	DIFF. IN.H_2O	TEMP °F	PLATE IN.		
1215	100	76	7									
1230	90	138	16.0				114.73	68	125	1.25	0.92	
1245	105	131	25.0		NO		114.73	58	138	"		
1300	95	135	35.0		WATER		119.73	58	135	"		
1315	90	139	44.0				114.73	66	135	"		
1330	85	140	55.0				114.73	70	135	"		
1345	95	145	65.0				109.73	70	135	"		
1400	100	136	75.5				114.73	70	138	"		

OIL RATE CALCULATIONS

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME July	TIME 26	TANK OIL TEMP °F	GRAVITY °API@60°	TANK READING ins.	DIFF.	METER FACTOR	SHRINKAGE	TEMP. CORR.	1- BSW %	CORRECTED VALUES CUM.PROD STB	RATE STB/D	GOR SCF/STB	REMARKS
0545		146	Initial	6.0 ins	= 3.114 Bbl								
0600		144		15.0	4.671			0.9609	-		430.85	1502	
0615		146		26.0	5.709			0.9600	-		520.0	1230	
0630		145		39.0	6.747			0.9605	-		622.1	922	
0645		147		45.0	3.114			0.9595	-		286.8	2209	
0700		140		54.0	4.671			0.9628	-		431.7	1448	
0715		143		63.0	4.671			0.9614	-		431.1	1480	
0730		143		73.0	5.19			0.9614	-		479.0	1300	
0745		147		Init.35/ 44	4.671			0.9595	-		430.2	1600	
0800		149		55	5.709			0.9586	-		525.4	1295	
0815		148		66	5.709			0.9590	-		525.6	1246	
0830		151		77	5.709			0.9577	-		524.8	1294	
0845		150		86	4.671			0.9582	-		429.7	1575	
0900				73/83	5.19			0.9567	-		476.6	1298	
0915				SHUT DOWN 09118 DUE TO CHIKSAN LEAK									

TANK FACTOR = 0.5[illegible] BBL/IN

OIL RATE CALCULATIONS

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME July	TIME 26	OIL								CORRECTED VALUES			REMARKS
		TEMP °F	GRAVITY °API@60°	TANK READING ins.	DIFF.	METER FACTOR	SHRINKAGE	TEMP CORR.	1- BSW %	CUM.PROD STB	RATE STB/D	GOR SCF/STB	
1215				7.0	Initial								
1230		128		16.0	9			0.9684			434.2	1532	
1245		130		25.0	9			0.9674			433.8	1418	
1300		135		35.0	10			0.9651			480.9	1310	
1315		146		44.0	9			0.9600			430.5	1528	
1330		148		55.0	11			0.9590			525.6	1290	
1345		147		65.0	10			0.9595			478.1	1385	
1400		147		75.5	10.5			0.9595			501.9	1347	
											469.9	Average	

OIL RATE CALCULATIONS

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME July	TIME 26	TANK OIL TEMP °F	GRAVITY °API@60°	TANK READING ins.	DIFF.	METER FACTOR	SHRINKAGE	TEMP. CORR.	1- BSW %	CORRECTED VALUES CUM.PROD STB	RATE STB/D	GOR SCF/STB	REMARKS
0545		146	Initial	6.0 ins	= 3.114 Bbl								
0600		144		15.0	4.671			0.9609	-		430.85	1502	
0615		146		26.0	5.709			0.9600	-		520.0	1230	
0630		145		39.0	6.747			0.9605	-		622.1	922	
0645		147		45.0	3.114			0.9595	-		286.8	2209	
0700		140		54.0	4.671			0.9628	-		431.7	1448	
0715		143		63.0	4.671			0.9614	-		431.1	1480	
0730		143		73.0	5.19			0.9614	-		479.0	1300	
0745		147		Init.35/44	4.671			0.9595	-		430.2	1600	
0800		149		55	5.709			0.9586	-		525.4	1295	
0815		148		66	5.709			0.9590	-		525.6	1246	
0830		151		77	5.709			0.9577	-		524.8	1284	X
0845		150		86	4.671			0.9582	-		429.7	1575	
0900				73/83	5.19			0.9567	-		476.6	1298	
0915				SHUT DOWN 09118 DUE TO CHIKSAN LEAK									

GAS RATE CALCULATIONS

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME	GAS METER				BASIC ORIFICE FACTOR F_b	FLOWING TEMP FACTOR F_{tf}	SPECIFIC GRAVITY FACTOR F_g	SUPER-COMPRESSIBILITY F_{pv}	ORIGINAL CONSTANT C' = $F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	RATE $Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	REMARKS Y2
	STATIC (p_f) PSIA	DIFF.(h_w) IN H_2O	TEMP. °F	PLATE IN.							
0545	104.73	70	132	1.250							
0600	104.73	70	132	1.250	318.03	0.9372	1.04257	1.0127		0.646	1.0043
0615	104.73	70	140	1.250	318.03	0.9309	1.04257	1.0120		0.640	1.0043
0630	86.73	68	140	1.250	318.03	0.9309	1.04257	1.0093		0.574	1.0051
0645	109	64	135	1.250	"	0.9349	1.04257	1.0093		0.632	1.0040
0700	114.73	60	135	1.250	"	0.9349	1.04257	1.0136		0.624	1.0042
0715	119.73	60	135	1.250	"	0.9349	1.04257	1.0142		0.638	1.0033
0730	114.73	60	139	1.250	"	0.9317	1.04257	1.0125		0.623	1.0034
0745	124.73	67	141	1.250	"	0.9302	"	1.0144		0.688	1.0034
0800	119.73	68	140	1.250	"	.9309	"	1.0138		0.680	1.0037
0815	114.73	66	140	1.250	"	.9309	"	1.0132		0.655	1.0038
0830	114.73	72	143	1.250	"	.9286	"	1.0130		0.683	1.0041
0845	114.73	70	142	1.250	"	.9294	"	1.0130		0.674	1.0041
0900	112.73	72	144	1.250	"	.9279	"	1.0128		0.677	1.0042
0915	94.73	72	144	1.250	"	.9279	"	1.0106		0.619	1.0049

0536f

SHUT DOWN 0918 DUE TO LEAKING CHIKSAN

GAS RATE CALCULATIONS

Well TUNA-4 Test 2 Date 26/7/84

DATE TIME	GAS METER				BASIC ORIFICE FACTOR	FLOWING TEMP FACTOR	SPECIFIC GRAVITY FACTOR	SUPER-COMPRESSIBILITY	ORIGINAL CONSTANT	RATE	REMARKS
	STATIC (p_f) PSIA	DIFF.(h_w) IN H_2O	TEMP. °F	PLATE IN.							
					F_b	F_{tf}	F_g	F_{pv}	$F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	$Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	Y
1315	114.73	66	135	1.25	318.03	0.9349	1.64257	1.0136		0.658	1.0036
1330	114.73	70	135	1.25	318.03	0.9349	1.64257	1.0136		0.678	1.0032
1345	109.73	70	135	1.25	"	0.9349	1.64257	1.0136		0.662	1.0030
1400	114.73	70	138		"	0.9325	"	1.0134		0.676	1.0032
1230	114.73	68	125	"	"	0.9428	"	1.0144		0.665	1.0040
1245	114.73	58	138	"	"	0.9325	"	1.0134		0.615	1.0033
1300	119.73	58	135	"	"	0.9349	"	1.0142		0.630	1.0026
										649.000 SCFD AVERAGE	

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 2 Date 23/7

TIME SAMPLED July 23	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl^- (ppm)	WATER RES(m)	pH	T (°F) NO 3	POUR POINT °C
		OIL	WATER	BS&W						
1730	Choke	x	-	-	35.5	-	-	-	-	33
1830	Choke	x	-	-	37.8	DARK	BROWN			35
1900	Separator	-	x	-		14,000		7.2	60 ppm	
~~July 24~~ 1930	Choke	98	2	0	34.28					32
2000	Choke	98.7	1.3	tr	34.88		DARK	BROWN		34
2030	Choke	99.0	1.0	tr	32.40		"	"		32.3
2100	"	99.3	0.6	0.1	33.3		"	"		33
2130	"	99.2	0.7	0.1	34.6		"	"		34.4
2200	"	99.6	0.3	0.1	32.2		"	"		33.6
2230	"	99.6	0.3	0.1	36.2		"	"		34.6
2300	"	99.5	0.4	0.1	32.7		"	"		36
2330	"	99.6	0.3	0.1	36.9		"	"		36
2400	"	99.2	0.6	0.2	36.3		"	"		35
~~July 25~~ 0030	"	99.4	0.4	0.2	36.4		"	"		35
0100	Collected Jerry Can sample				No. 1					
0130	Choke	96.0	3.6	0.2	36.2		"	"		35
0200	"	98.6	1.1	.25	36.3		"	"		35
0230	"	98.0	1.8	.20	36.2		"	"		35
0300	"	98.0	1.7	0.3	35.9					35
0330	"	99.2	0.7	0.1	36.0					35.5
0430	"	98.8	1.1	0.1	36.1					35.4
0530	"	99.5	0.4	0.1	35.5					35.0
0630	"	99.5	0.4	0.1						36.0

(0561f)

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 2 Date 25/7/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl⁻ (ppm)	WATER RES(m)	pH	T (°F) NO 3	POUR POINT °C
		OIL	WATER	BS&W						
0730	Choke Manifold	99.8	0.2	tr	35.7	DARK	BROWN			35.0
0830	"	98.7	1.1	0.2	35.4	DARK	BROWN			35.5
0930	"	99.1	0.7	0.2	36.4	"	"			35.0
1030	"	98.8	1.1	0.1	36.4	"	"			35.5
1130	"	99.8	0.2	tr	35.4	"	"			36.0
1155	"	99.9	0.2	tr	34.96	"	"			
~~July 26~~ 0145	Choke	99.8	0.2	tr	35.6					36
0245	"	99.5	0.4	0.1	35.4					35.5
0345	"	99.7	0.2	0.1	35.0					36
0500	"	99.0	0.9	0.1	36.1					35.5
0600	"	99.5	0.4	0.1	34.8	JERRY	CAN RETAINED			36
0700	"	99.8	0.2	tr	35.4					35.5
0800		99.4	0.3	tr	36.0					35.5
0900		99.3	0.7	tr	35.4					36.0
1030		99.4	0.5	0.1	35.1					35.0
1100		99.7	0.3	tr	35.4					36.0
1200		99.6	0.4	tr	35.6					35.0
1300		99.7	0.3	tr	36.8					36.0
1330		99.8	0.2	tr	31.6					
1400		99.8	0.2	tr	33.0					

(0561f)

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 2 Date 25/7/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl⁻ (ppm)	WATER RES(m)	pH	T (°F) NO 3	POUR POINT °C
		OIL	WATER	BS&W						
0730	Choke Manifold	99.8	0.2	tr	35.7	DARK	BROWN			35.0
0830	"	98.7	1.1	0.2	35.4	DARK	BROWN			35.5
0930	"	99.1	0.7	0.2	36.4	"	"			35.0
1030	"	98.8	1.1	0.1	36.4	"	"			35.5
1130	"	99.8	0.2	tr	35.4	"	"			36.0
1155	"	99.9	0.2	tr	34.96	"	"			
~~July 26~~ 0145	Choke	99.8	0.2	tr	35.6					36
0245	"	99.5	0.4	0.1	35.4					35.5
0345	"	99.7	0.2	0.1	35.0					36
0500	"	99.0	0.9	0.1	36.1					35.5
0600	"	99.5	0.4	0.1	34.8	JERRY	CAN RETAINED			36
0700	"	99.8	0.2	tr	35.4					35.5
0800		99.4	0.3	tr	36.0					35.5
0900		99.3	0.7	tr	35.4					36.0
1030		99.4	0.5	0.1	35.1					35.0
1100		99.7	0.3	tr	35.4					36.0
1200		99.6	0.4	tr	35.6					35.0
1300		99.7	0.3	tr	36.8					36.0
1330		99.8	0.2	tr	31.6					
1400		99.8	0.2	tr	33.0					

(0561f)

GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 2 Date 23/7/84

TIME SAMPLED July 23	SAMPLE POINT	COMPONENTS							
		C_1 PPM	C_2 PPM	C_3 PPM	C_4 PPM	C_5 PPM	H_2S PPM	CO_2 (%)	C_6
1830	Choke	528711	35840	12410	4229	1370	Nil	18%	560
July 24 2230	Choke	396533	51200	16547	4229	1960	Tr	17%	960
2300	"	387869	51169	16274	4169	1860	Tr	20%	796
July 26 0500	Separator	401254	72240	37232	11357	1626	Nil	-	280
0600	Separator	339886	61440	31027	8458	2739	Nil	19%	336
0700	Separator	424857	66560	26890	7295	2396	Nil	31%*	210
0800	"	434298	69120	28958	7400	1284	Nil	36%*	175
0900	"	429578	69120	31027	10572	3210	Nil	34%*	630
1200	"	436186	69786	33621	11261	3460	Nil	40%*	730
1230	"	453181	69896	33095	13744	5136	Nil	43%*	2742
1300	"	NO SAMPLE / line used for sampling							
1330	"	" "		" "	"	"			
1345	"	469260	69989	33696	14276	4696	7134	45%*	
* Better Drager tube - previous readings beyond range of tube used.									

(0561f)

N.B. t_H based on 1253 Hrs July 24 to 1200 Hrs July 25

FIRST BUILD-UP BOTTOM-HOLE PRESSURES D-12A

Well TUNA-4 Test 2 Date 25/7/84 Page 1 of 2

Horner Time 1387 mins. Flowing BHP 1201.3 Initial BHP 4210 psia at 2825 m
4172 psia at 2787 m

TIME LOCAL	MINS		BHP PSIA	REMARKS
1200	0	00	1201.3	
1201	1	1388	1460.0	
1202	2	694.5	1652	
1203	3	463.3	1771	
1204	4	347.8	1885	
1205	5	278.4	1974	
1206	6	232.2	2057	
1207	7	199.1	2144	
1208	8	174.4	2215	
1209	9	155.1	2261	
1210	10	139.7	2295	
1211	11	127.1	2319	
1212	12	116.5	2337	
1213	13	107.7	2350	
1214	14	100.1	2350	
1215	15	93.5	2342	
1216	16	87.7	2344	
1218	18	78.1	2716	
1219	19	74.0	2961	
1220	20	70.4	3168	
1221	21	67.0	1618	
1222	22	64.0	1629	
1223	23	61.3	1673	

TIME LOCAL	MINS		BHP PSIA	REMARKS
1224	24	58.8	1716	
1225	25	56.5	1735	
1226	26	54.3	1763	
1227	27	52.4	1788	
1228	28	50.5	1817	
1229	29	48.8	1841	
1230	30	47.2	1880	
1232	32	44.3	1921	
1234	34	41.8	1970	
1236	36	39.5	2027	
1238	38	37.5	2069	
1240	40	35.7	2118	
1242	42	34.0	2159	
1244	44	32.5	2206	
1246	46	31.2	2252	
1250	50	28.7	2336	
1252	52	27.7	2376	
1254	54	26.7	2413	
1256	56	25.8	2447	
1300	60	24.1	2525	
1305	65	22.3	2617	
1310	70	20.8	2672	

N.B. t_H based on 1253 Hrs July 24 to 1200 Hrs July 25

FIRST BUILD-UP BOTTOM-HOLE PRESSURES D-12A

Well TUNA - 4 Test 2 Date 25/7/84 Page 2 of 2

Horner Time 1387 mins. Flowing BHP 1201.3 Initial BHP 4210 psia at 2825 m
4172 psia at 2787 m

TIME LOCAL	MINS		BHP PSIA	REMARKS
1315	75	19.5	2789	
1320	80	18.3	2857	
1325	85	17.3	2917	
1330	60	24.1	2525	
1350	95	15.6	3039	
1340	100	14.9	3094.8	
1345	105	14.2	3146.6	
1350	110	13.6	3193.8	
1355	115	13.1	3239.0	
1400	120	12.6	3278.4	
1410	130	11.7	3353.1	
1420	140	10.9	3415.6	
1430	150	10.2	3470.1	
1440	160	9.7	3518.2	
1450	170	9.1	3564.15	
1500	180	8.7	3599.6	
1510	190	8.3	3634.2	
1520	200	7.9	3664.3	
1530	210	7.6	3691.1	
1540	220	7.3	3715.3	
1550	230	7.0	3737.1	
1600	240	6.8	3756.9	
1610	250	6.5	3774.1	
1620	260	6.3	3789.7	

TIME LOCAL	MINS		BHP PSIA	REMARKS
1630	270	6.1	3804.3	
1640	280	5.95	3817.2	
1650	290	5.78	3829.3	
1700	300	5.62	3839.6	
1710	310	5.47	3850.0	
1720	320	5.33	3858.8	
1730	330	5.20	3866.8	
1740	340	5.08	3874.1	
1750	350	4.96	3880.4	
1800	360	4.85	3886.4	
1810	370	4.75	3891.6	
1820	380	4.65	3896.0	
1830	390	4.57	3901.5	
1840	400	4.47		
1900	420	4.30		
1915	435	4.19		
1930	450	4.08		
1945	435	4.19		
2000	480	3.89		

(0561f/79)

SECOND BUILD-UP BOTTOM-HOLE PRESSURES

Well TUNA - 4 Test 2 Date 26/7/84 Page 1 of 5

Horner Time 2505 mins. Flowing BHP 1191.6 Initial BHP 4210 psia at 2825 m
4172 psia at 2787 m

TIME LOCAL	MINS		BHP PSIA	REMARKS
1407	0	0	1191.6	
1408	1	2506	1755	
1409	2	1254	2130	
1410	3	836	2371	
1411	4	627	2620	
1412	5	502	2858	
1413	6	419	3029	
1414	7	359	3130	
1415	8	314	3207	
1416	9	279	3262	
1417	10	251.5	3304	
1418	11	229	3337.4	
1419	12	210	3365.2	
1420	13	194	3389.2	
1421	14	180	3410.2	
1422	15	168	3426.0	
1423	16	158	3441.1	
1424	17	148	3454.8	
1425	18	140	3467.6	
1426	19	133	3480.7	
1427	20	126	3489.3	
1428	21	120	3499.3	

TIME LOCAL	MINS		BHP PSIA	REMARKS TEMP C°
1429	22	115	3507.9	
1430	23	110	3516.2	
1431	24	105	3524.1	
1432	25	101	3531.6	
1433	26	97	3538.4	
1434	27	94	3544.7	
1435	28	90	3550.7	
1436	29	87	3556.5	
1437	30	85	3562.1	
1438	31	82	3567.7	
1439	32	79	3573.1	
1440	33	77	3577.8	
1442	35	73	3587.1	
1444	37	69	3595.6	
1446	39	65	3603.8	
1448	41	62	3611.4	
1450	43	59	3618.5	
1452	45	57	3625.3	
1454	47	54	3631.9	
1456	49	52	3637.8	
1458	51	50	3643.6	
1500	53	48	3648.9	

SECOND BUILD-UP BOTTOM-HOLE PRESSURES

Well TUNA - 4 Test 2 Date 26/7/84 Page 2 of 5

Horner Time 2505 mins. Flowing BHP 1191.6 Initial BHP 4210 psi at 2825 m
4172 psi at 2787 m

TIME LOCAL	MINS		BHP PSIA	REMARKS
1505	58	44	3662.0	
1510	63	41	3673.6	
1515	68	38	3684.4	
1520	73	35.3	3694.9	119.3
1525	78	33.1	3703.8	
1530	83	31.1	3712.5	
1535	88	29.5	3719.20	
1540	93	27.9	3726.34	119.3
1545	98	26.6	3732.5	
1550	103	25.3	3738.6	119.3
1555	108	24.2	3744.3	
1600	113	23.1	3749.7	
1610	123	21.4	3759.7	
1620	133	19.8	3768.5	
1630	143	18.5	3776.8	
1640	153	17.4	3784.8	
1650	163	16.4	3790.9	119.0
1700	173	15.5	3796.9	
1710	183	14.7	3802.2	
1720	193	14.0	3807.9	
1730	203	13.3	3812.8	119.0
1740	213	12.8	3817.4	

TIME LOCAL	MINS		BHP PSIA	REMARKS TEMP C°
1750	223	12.2	3821.7	
1800	233	11.8	3825.8	119.0
1810	243	11.3	3830.6	
1820	253	10.9	3832.7	
1830	263	10.5	3836.5	
1840	273	10.2	3839.2	
1850	283	9.9	3842.7	
1900	293	9.5	3845.7	
1910	303	9.3	3848.4	119.0
1920	313	9.9	3851.2	
1930	323	8.8	3853.8	
1940	333	8.5	3856.4	
1950	343	8.3	3858.8	119.0
2000	353	8.1	3861.1	

(0561f)

SECOND BUILD-UP BOTTOM-HOLE PRESSURES

Well TUNA - 4 Test 2 Date 26/7/84 / 27/7/84 Page 3 of 5

Horner Time 2505 mins. Flowing BHP 1191.6 Initial BHP 4172 psia at 2787 m (4138 psia if mud)

TIME LOCAL	MINS		BHP PSIA	REMARKS TEMP C°
2010	363	7.9	3863.4	
2020	373	7.7	3865.5	
2030	383	7.5	3867.8	119.0
2040	393	7.4	3869.8	
2050	403	7.2	3871.8	118.7
2100	413	7.07	3873.8	119.0
2110	423	6.92	3875.8	
2120	433	6.79	3877.6	
2130	443	6.65	3879.4	118.7
2140	453	6.53	3881.2	
2150	463	6.41	3882.9	
2200	473	6.30	3884.6	118.7
2210	483	6.19	3886.3	119.0
2220	493	6.08	3887.9	
2230	503	5.98	3889.5	
2240	513	5.88	3891.1	
2250	523	5.79	3892.6	118.7
2300	533	5.70	3894.0	
2310	543	5.61	3895.7	
2320	553	5.53	3897.2	
2330	563	5.45	3898.5	118.7
2340	573	5.37	3899.9	
2350	583	5.30	3901.3	
2400	593	5.22	3902.7	118.7
0010	603	5.15	3904.0	
0020	613	5.09	3905.3	
0030	623	5.02	3906.7	
0040	633	4.96	3907.8	118.7
0050	643	4.90	3909.2	
0100	653	4.84	3910.5	
0110	663	4.78	3911.7	
0120	673	4.72	3912.85	
0130	683	4.67	3914.0	118.7
0140	693	4.61	3915.2	
0150	703	4.56	3916.4	
0200	713	4.51	3917.72	
0210	723	4.46	3918.6	
0220	733	4.42	3919.77	
0230	743	4.37	3920.9	
0240	753	4.33	3921.93	
0250	763	4.28	2923.0	118.7
0300	773	4.24	3924.0	
0310	783	4.20	3925.1	
0320	793	4.16	3926.1	

(0561f/12)

SECOND BUILD-UP BOTTOM-HOLE PRESSURES

Well TUNA - 4 Test 2 Date 26/7/84 / 27/7/84 Page 4 of 5

Horner Time 2505 mins. Flowing BHP 1191.6 Initial BHP 4172 psia at 2787 m (4138 psia if mud)

TIME LOCAL	MINS		BHP PSIA	REMARKS
0330	803	4.12	3927.2	
0340	813	4.08	3928.1	
0350	823	4.04	3929.1	
0400	833	4.01	3930.1	
0410	843	3.97	3931.1	118.7
0420	853	3.94	3932.0	
0430	863	3.90	3932.9	
0440	873	3.87	3933.9	
0450	883	3.84	3934.8	
0500	893	3.81	3935.8	
0510	903	3.77	3936.7	
0520	913	3.74	3937.6	
0530	923	3.71	3938.4	
0540	933	3.68	3939.3	
0550	943	3.66	3940.2	
0600	953	3.63	3941.0	
0610	963	3.60		
0620	973	3.57	3942.7	
0630	983	3.55	3943.5	
0640	993	3.52	3944.3	
0650	1003	3.50	3945.1	
0700	1013	3.47	3945.9	

TIME LOCAL	MINS		BHP PSIA	REMARKS
0710	1023	3.45	3946.7	
0720	1033	3.42	3947.5	
0730	1043	3.40	3948.26	
0740	1053	3.38	3949.03	
0750	1063	3.36	3949.80	
0800	1073	3.33	3950.53	
0810	1083	3.31	3951.28	
0820	1093	3.29	3952.00	
0830	1103	3.27	3952.60	
0840	1113	3.25	3953.40	
0850	1123	3.23	3954.17	
0900	1133	3.21	3954.93	
0910	1143	3.19	3955.62	
0920	1153	3.17	3956.28	
0930	1163	3.15	3956.98	
0940	1173	3.14	3957.66	
0950	1183	3.12	3958.33	
1000	1193	3.10	3959.03	
1010	1203	3.08	3959.69	
1020	1213	3.07	3960.34	
1030	1223	3.05	3960.99	
1040	1233	3.03	3961.63	

(0561f/13)

SECOND BUILD-UP BOTTOM-HOLE PRESSURES

Well TUNA - 4 Test 2 Date 26/7/84 / 27/7/84 Page 5 of 5

Horner Time 2505 mins. Flowing BHP 1191.6 Initial BHP 4172 psia at 2787 m (4138 psia if mud)

TIME LOCAL	MINS		BHP PSIA	REMARKS
1050	1243	3.02	3962.27	
1100	1253	3.00	3962.91	
1110	1263	2.98	3963.55	
1120	1273	2.97	3964.17	
1130	1283	2.95	3964.80	

TIME LOCAL	MINS		BHP PSIA	REMARKS

(0561f/14)

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 2 Date 26/7/84

Production Interval 2820 - 2829

Initial Reservoir Pressure 4210 psia @ 2825 m

Reservoir Temperature 120 °C @ 2825 m

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	1310	1310	1320	
Length of Time Well was Produced	18 hrs	18 hrs	18 hrs (Final flow period only)	
Container No.	A-11646	OT226T	OT047T	
Container Volume	20 Litre	510 cc	510 cc	
Separator Pressure	100	100	100	
Separator Temperature (°F)	135	140	148	
Wellhead Pressure	300	300	300	
Wellhead Temperature (°F)	68	68	67	
Flowing Bottom-hole Pressure (psia)	1248.5	1248.5	1248.5	
Flowing Bottom-hole Temperature (°C)	119.9	119.9	119.9	
Separator Rate (Sep. bbl/D)*				
Separator Gas Rate (MSCF/D)	658	658	678	
Separator GOR (SCF/Sep. bbl)				
Well Rate (STB/D)+	430.5	430.5	525.6	
Well GOR (SCF/STB)+	1528	1528	1290	
Full Wellstream Water Cut	NIL	NIL	NIL	

How Outage was taken on Liquid Samples: By Measurement.

Gas Sampling Method: Evaluation of bottle prior to sampling.

Liquid Sampling Method: Brine displacement.

Special Instruction for Lab:

Sampled by M. Buckland

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

(0561f/17)

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 2 Date 26/7/84

Production Interval 2820 - 2829

Initial Reservoir Pressure 4210 psia @ 2825 m

Reservoir Temperature 120 °C @ 2825 m

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	1340	1350	1340	
Length of Time Well was Produced	18 hrs	18 hrs	18 hrs (Final flow period only)	
Container No.	OT058T	OT038T	A-12642	
Container Volume	505 cc	505 cc	20 l	
Separator Pressure	95 psig	100 psig	95 psig	
Separator Temperature (°F)	147 °F	147 °F	135 °F	
Wellhead Pressure	300 psig	300 psig	300 psig	
Wellhead Temperature (°F)	67 °F	67 °F	67 °F	
Flowing Bottom-hole Pressure (psia)	1214.5	1214.5	1214.5	
Flowing Bottom-hole Temperature (°C)	119.9	119.9	119.9	
Separator Rate (Sep. bbl/D)*				
Separator Gas Rate (MSCF/D)	662	662	662	
Separator GOR (SCF/Sep. bbl)				
Well Rate (STB/D)+	478	502	478	
Well GOR (SCF/STB)+	1385	1347	1385	
Full Wellstream Water Cut	NIL	NIL	NIL	

How Outage was taken on Liquid Samples

Gas Sampling Method

Liquid Sampling Method

Special Instruction for Lab

Sampled by

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

(0561f/16)

APPENDIX A-3

DATA SHEETS FOR PRODUCTION TEST NO. 3

COMPLETION DATA

Well TUNA-4 Test 3 Date 8/8/84

Company Supervisor T.M/G.W.

Test Engineer P.B./J.D./M.J.O.

1. Interval 2562.0 - 2569.0m
2. Well loading fluid DIESEL (49 Bbl), WATER (2 Bbl), NITROGEN (24 Bbl)
3. Approximate Differential (p_{f-Pw}) 500 (psi)
4. Type of perforating gun 2-1/8 inch ENERJET, 4 SPF
5. Perforation density 4 (spf)
6. Mud weight 9.6 (ppg) NO_3^- _____ (ppm)
7. Cl^- of filtrate 9000 (ppm)
8. Cl^- of mud filtrate at time of drilling 17500 (ppm) NO_3^- 190 (ppm)
9. Casing:
   Size 9-5/8 (in.)
   Weight 47 (lb/ft)
   Grade N-80
   Capacity 0.0732 (bbl/ft)
   Shoe 2434 (m)
   Burst 6870 psig
10. Liner:
    Size 7 (in.)
    Weight 26 (lb/ft)
    Grade N-80
    Capacity 0.0382 (bbl/ft)
    Top 2227 (m)
    Shoe 3219 (m)
11. Tubing:
    Size 3-1/2 (in.)
    Inside Diameter 2.992 (in.)
    Weight 9.3 (lb/ft)
    Grade L-80
    Capacity 0.0087 (bbl/ft)
    Connections EUE A.B. Mod.
    Burst pressure 15000 psig
    Lowest 105 JTS Are J-55
12. Plugged back total depth 2601 (m)
13. Depth of packer 2555 (m)
14. Tubing volume 72.9 (bbl)
15. Volume between packer and lowest perforation 1.8 (bbl)
16. Rathole volume 4.0 (bbl)
17. Depth of tailpipe 2557.8 (m) (Muleshoe) Depth of XN 2551.8 (m)
18. Location of pressure gauges: depth _____ (ft) gauge number _____
    depth _____ (ft) gauge number _____
19. Initial WHP before well open _____

PERFORATION

Well TUNA-4 Test 3 Perforation 2562 - 2569 Date 8/8/84

1. Geologists(s): P.P.
2. Test Engineer(s): P.B./J.D./M.J.O.
3. Service Company/Engineer: SCHLUMBERGER
4. Distance between CCL and top of gun: 1.4
5. Number of Runs: 1, 90 shots
6. Wellhead pressure bled down to zero before perforating?

   _____ (Yes) NO (No)
7. Wellhead pressure before perforating: 1050 psi
8. Time of perforation: 0845 (local time)
9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)	WHT. °F	Time (Local)	WHP (PSIG)	WHT. °F
0845	1050		0905	1265	46
0846	1075	46°	0910	1279	46
0847	1100		0915	1290	46
0848	1120		0920	1330	
0850	1155	46°	0925	1332	
0900	1240	47°	0930	1335	46

10. Other perforating runs:

Time	Run	Interval	WHP

11. Remarks: Bleed WHP from 2275 psig to 1050 psig prior to perforating well to obtain underbalance of 500 psi.

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 3 Perforations 2562 - 2569 Date 8/8/84 Page 1 of 3

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION OIL STB	CUMULATIVE PRODUCTION WATER BBLS	CUMULATIVE PRODUCTION GAS MSCF	RATES OIL STB/D	RATES WATER B/D	RATES GAS MSCF/D	CONDENSATE GOR	GAS CONDENSATE RATIO	GRAVITY OIL °API @ 60°	GRAVITY GAS AIR=1
0720	RIH SCH. GUN				-										
0830	Bleed WHP from 2275 psi	1050			-										
0845	Perforate	1050	46		-										
0850	Q = 2150 BPD	1155	46												
0910	Q = 1170 BPD	1279	46												
0900	Gun stuck in XN or XO														
0940	Flow well (Dislodge gun)	1337	46	400	20A										
0941		1200	46	400	20A										
0942		1090	46	400	20A										
0945		780	46	390	20A										
0950		505	46	390	20A										
0955		170	45	390	20A										
1000		60	45	400	20A										
1005		20	45	410	20A										
1008		0			20A										
1035		20	45	580	20A										
1040	Initial: 17" = 7 Bbl	32	46	500	20A										
1045	22" = 9 Bbl	40	46	520	20A				576						
1050	25" = 10.3 Bbl	44	46	520	20A				374						
1055	29" = 11.9 Bbl	52	47	440	20A				460						
1100	32" = 13.2 Bbl	58	48	440	20A				374						
1105	34" = 14.0 Bbl	68	49		20A				230						
1110	36" = 14.8 Bbl	78	50	460	20A				230						
1115	Increase choke 42" = 17.3	30	51	460	32A				720						
1120	47" = 19.3 Bbl	15	51	460	32A				576						
1130	54" = 22 Bbl	18	52	460	32A				389						
1145	78" = 32 Bbl	57	55	520	32A				966						
1150	84" Change tank (int 24")														
1200	50"	305	64	460					3070						
1203	Divert to flare - GAS +	DIESEL	AT SUR	FACE											

(1959f/3)

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 3 Perforations 2562 - 2569 Date 8/8/84

DATE TIME	REMARKS	WELLHEAD PRESSURE	TEMP °F	CASING PRESSURE	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR	CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
1215	Increase choke	330	66		48A										
1220	Oil at Surface	230	65	460	48A										
1230		147	67	530	48A									39.3	
1245	Mostly gas	165	65	340	48A										
1250	Shear out of gun														
1300		240	64	360	48A										
1308	Variable choke blocked				32F										
1315		230	66	390											
1330		150	70	440											
1338					48A										
1340		130	70		48A										
1342	S/in at CM/SCHL. at Surface/oil		slick												
1345		190	70		-										
1350		245	70	480	-										
1355		285	70	480	-										
1400	Rig down Schlumberger	325	69	300	-										
1415		445	69	280	-										
1430		495	67	280	-										
1445		580	65	280	-										
1500		630	64	280	-										
1515		667	63	260	-										
1530		690	62	240	-										
1545	Open Well	320	60		32A										
1600		270	62	240											
1615		273	62	240											
1624	Shut-in: Burner out														
1630		310	62	260											
1645	Close master valve and	change	chick	san											
1700	Attempt to retrieve perf	gun	RIH	and	o'shot										

(1959f/4)

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 3 Perforations 2562-2569 Date 8/8/84 Page 3 of 3

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION OIL STB	CUMULATIVE PRODUCTION WATER BBLS	CUMULATIVE PRODUCTION GAS MSCF	RATES OIL STB/D	RATES WATER B/D	RATES GAS MSCF/D	GOR CONDENSATE	GAS RATIO	GRAVITY OIL °API @ 60°	GRAVITY GAS AIR=1
1720	Open master valve														
1730		580	57	230											
1740	Rig down W/L to check o'shot diameter - too large machine down														
1845	Rig up wireline lubricator														
1857	Pressure test W/L lub to 3500 psi														
1909		675	52	150											
1915		680	52	150											
1930		682	52	300											
1940	Shut in SSV to repair leaking chicksan														
2051	Halliburton commence testing chicksan - repair same														
2247	Open well	650	50	-	32ADJ										
2248		650	50	-	32ADJ										
2249		590	50	-	32ADJ										
2250		450	50	-	32ADJ										
2252		320	52	-	32ADJ										
2255		300	52	-	32ADJ										
2300		217	53	220	32ADJ										
2300	Jerry can sample taken from choke														
2305		235	54	230	32ADJ										
2310		211	55	200	11ADJ										
2315		200	55	300	11ADJ										
2318	Shut in well. Not burning properly. Decide to flow into tanks. Heater off.														
2320		220	55	300											
2325	Open Well	260	55	300	32ADJ	To tanks - too much gas									
2328	S/in	220	55	300	-										
2330		240	55	295											
2335		275	55	300											
2340		279	55	300	-										

(1959f/5)

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 3 Perforations 2562-2569 Date 8/8/84 Page 3 of 3

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D		OIL °API @ 60°	GAS AIR=1
0010	Rigged down Otis	(LMV	closed	)										
0030	Rig up Schu. BHS				-	5 hr	clocks set at 01:15							
0210	Pressure Test Sch.				-	(will sample at 06:15)								
0240	RIH	610	48	320	-									
0245		620	48	320	-									
0300		625	48	300	-									
0315		630	48	300	-									
0330	Depth correlating * Hang gauge at 2566m for gradient survey	635	48	290	-									

RIG-FLOOR AND BOTTOMHOLE DATA D-5A

Well TUNA-4 Test 3 Perforations 2562 - 2569 Date 8/8/84 Page 1 of ___

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0345	Hang gauge at 2566m	635	47	285	-	3602.6	115.0
0350					-	3597.9	115.0
0355					-	3596.6	
0400		639	47	270	-	3596.2	115.0
0405					-	3596.3	
0406	Pull up to 2541m				-		
0410					-	3545.7	113.5
0415		642	46	270	-	3557.3	
0420					-	3560.9	
0425					-	3562.8	113.2
0430		649	46	260	-	3563.9	
0431	Pull up to 2516m				-		
0435					-	3523.3	112.6
0440					-	3528.1	112.6
0445		655	46	260	-	3530.2	112.3
0450					-	3532.2	112.6
0455					-	3532.5	
0456	Pull up to 2466m				-	3450.4	110.9
0505					-	3457.3	
0510					-	3462.0	110.9
0515		665	46	250	-	3465.0	110.9
0520					-	3465.2	
0525					-	3466.2	110.9
0526	Pull up to 2366m				-		
0530		670	46	250	-	3304.8	109.1
0535					-	3318.1	108.6
0540					-	3324.3	108.3
0545		675	46	250	-	3327.3	
0550					-	3327.3	
0551	RIH to 2516m for BHS at 0615 hours						
0632	Pull up to 2366m for gradient surveys						
0645		690	46	230	-	3315.1	108.6
0650						3324.4	108.3
0655						3327.1	108.3
0700	Pull up to 2066m					3328.1	108.3
0705						2845.4	106.2
0710						2878.4	
0715						2893.7	99.6
0720						2901.7	99.3
0725		672	46	2000		2902.9	99.3
0730	Open SSV small pressure drop					2887.9	99.6
0735	Pull up to 1766m					2890.6	99.6
0740						2410.6	96.4
0745		675	47	200		2442.2	
0750						2461.1	88.2
0755						2467.7	87.9
0800		678	47	200		2470.7	87.9
0805						2471.5	87.9
0810	Pull up to 1266m					2472.2	87.9
0825						1768.8	71.6
0830		681	47	200		1778.3	70.8
0835						1781.9	
0840						1784.3	70.5
0845		682	47			1784.5	
0850	Pull up to 666m					1784.6	70.2
0855						1476.7	69.3
0900		682	47	420		1149.2	57.4
0905						1140.1	46.6
0910						1131.6	44.9
0915		682	47	420		1129.5	44.9
0920						1128.2	44.9
0923	Pull out to retrieve samples					1127.8	44.6
0930		682	47	420		-	
0945		683	47	420		-	
0955	Schlumberger in lubri. close M/V bleed off						
1030	Retrieve bottom hole samples						
1310	Open Lower M/V						
1315	Open well	641	50	400	16A		
1316	Shut in	641	50	400	16A		
1318	Open	642	51		16A		
1320		610	51		16A		
1325		575	52	400	22A		
1330		515	52	400	22A		

(1059f/7)

RIG-FLOOR AND BOTTOMHOLE DATA

Well TUNA-4 Test 3 Perforations 2562 - 2569 Date 8/8/84 Page 1 of ___

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1333	Flow to 24/64 pos	260	51	400	24P		
1335		255	51	400	24P		
1340		260	51	400	24P		
1345		225	50	410	24P		
1350		193	54	410	24P		
1355		185	55	420	24P		
1400		164	55	420	24P		
1415		127	55	450	24P		
1430		65	54	280	24P		
1445		34	54	300	24P		
1500		38	54	340	24P		
1515		60	55	370	24P		
1530		71	55	400	24P		
1545		62	55	320	24P		
1600		58	55	340	24P		
1615		74	55	370	24P		
1630		85	55	370	24P		
1700		87	55	280	24P		
1715		121	56	320	24P		
1745		184	64	380	24P		
1800		217	67	400	24P		
1815		210	70	420	24P		
1830		217	70	300	24P		
1845		182	69	300	24P		
1900		155	68	300	24P		
1915		159	68	330	24P		
1930		177	67	340	24P		
1945		179	65	360	24P		
2000		177	65	360	24P		
2015		140	65	-	24P		
2030		125	65	400	24P		
2045		115	65	400	24P		
2100		117	65	400	24P		
2115		125	64	320	24P		
2130		125	64	320	24P		
2145		119	63	340	24P		

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
2200		114	62	340	24P		
2215		105	62	350	24P		
2230		115	62	360	24P		
2245		95	62	360	24P		
2300		95	62	360	24P		
2315		95	62	360	24P		
2330		95	62	300	24P		

TANK FACTOR = 0519 BBL/IN

OIL RATE CALCULATIONS

Well TUNA-4 Test 3 Date 9/8/84

DATE TIME	TIME	OIL							CORRECTED VALUES			REMARKS
		TEMP °F	GRAVITY °API@60°	TANK READING (inch)	DIFF. (inch)	VOL (BBL)	SHRINKAGE	VOL. CORR. (BBL)	1- BSW %	CUM.PROD STB	RATE STB/D	GOR SCF/STB	
1400		122		11	0	-	-	-			-		
1430		120		16.5	5.5	2.85	0.9700	2.768			132.9		
1500		130		21.0	4.5	2.34	0.9710	2.267			108.8		
1600		128		40.00	19.0	9.866	0.9388	9.257			222.1		
1630		128		45.0	5.0	2.595	0.9404	2.44			117.1		172.8 BWD
1700		128		45.0	0.0	0.0	-	0.0			0.0		302.4 BWD
1730		102		45.0	0.0	0.0	-	0.0			0.0		374.4 BWD
1800		-		45.0	0.0	0.0	-	0.0			0.0		403.2 BWD
1830		110		49.0	4.0	2.076	0.9758	2.025			97.2		240.0 BWD
1900		118		54.5	5.5	2.854	0.9719	2.774			133.1		96.0 BWD
1930		128		60.0	5.5	2.854	0.9671	2.760			132.5		81.6 BWD
2000		128		66.0	6.0	3.114	0.9671	3.011			144.5		105.6 BWD
2030		128		71.0	5.0	2.595	0.9671	2.509			120.4		96.0 BWD
2100		124		74.0	3.0	1.557	0.9690	1.508			72.4		62.4 BWD
2130		127		78.0	4.0	2.076	0.9676	2.007			96.3		100.8 BWD
2200		128		83.0/6	5.0	2.595	0.9676	2.511			120.5		4.8 BWD
2230		128		11.0	5.0	2.595	0.9671	2.509			120.4		43.2 BWD
2300		128		16.0	5.0	2.595	0.9671	2.509			120.4		52.8 BWD
2330		128		22.0	6.0	3.114	0.9671	3.012			144.5		38.4 BWD

(1959f/9)

GAS RATE CALCULATIONS

Well TUNA-4 Test 3 Date 9/8/84

DATE TIME	GAS METER				BASIC ORIFICE FACTOR	FLOWING TEMP FACTOR	SPECIFIC GRAVITY FACTOR	SUPER-COMPRESSIBILITY	ORIGINAL CONSTANT	RATE	REMARKS
	STATIC (p_f) PSIA	DIFF.(h_w) IN H_2O	TEMP. °F	PLATE IN.	F_b	F_{tf}	F_g	F_{pv}	$C' = F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	$Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	Y2
1400	46.73	28	86	1.00	202.2	0.8759	0.9276	1.0111	166.11	0.144	1.0040
1430	44.73	10	92	1.00	202.2	0.9705	0.9276	1.0102	183.88	0.0935	1.0014
1500	25.73	2	88	1.00	202.2	0.9741	0.9276	1.0059	183.78	0.031	1.0005
1530	39.73	58	89	0.50	50.243	0.9732	0.9276	1.0086	45.75	0.054	1.0098
1600	36.73	40	89	0.50	50.243	0.9732	0.9276	1.0077	45.71	0.043	1.0073
1630	36.73	38	89	0.50	50.243	0.9732	0.9276	1.0077	45.71	0.041	1.0069
1700	36.73	43	102	0.50	50.243	0.9619	0.9276	1.0073	45.43	0.044	1.0078
1730	44.73	62	95	0.50	50.243	0.9679	0.9276	1.0094	45.43	0.059	1.0093
1800	58.73	200	102	0.50	50.243	0.9619	0.9276	1.0119	45.36	0.122	1.0230
1830	44.73	23	110	1.00	202.2	0.9551	0.9276	1.0056	180.14	0.141	1.0034
1900	44.73	21	118	1.00	202.2	0.9485	0.9276	1.0082	179.36	0.134	1.0031
1930	44.73	29	122	1.00	202.2	0.9452	0.9276	1.0080	178.70	0.151	1.0043
2000	44.73	22	125	1.00	202.2	0.9468	0.9276	1.0081	179.02	0.130	1.0029
2100	29.73	16	115	1.00	202.2	0.9507	0.9276	1.0052	179.24	0.095	1.0035
2130	29.73	16	120	1.00	202.2	0.9468	0.9276	1.0050	178.47	0.095	1.0035
2200	29.73	16	125	1.00	202.2	0.9428	0.9276	1.0049	177.70	0.095	
2230	29.73	16	130	1.00	202.2	0.9388	0.9276	1.0048	176.93	0.094	
2330	29.73	14	120	1.00	202.2	0.9468	0.9276	1.0050	178.47	0.094	

(1959f/10)

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 3 Date 8/8/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl⁻ (ppm)	WATER RES(m)	pH	T (°F) NO - 3 (ppm)	POUR POINT °C
		OIL	WATER	BS&W						
1230	CHOKE	97	3	0.1	39.3					29
1317	CHOKE	45	40	15	37.9	16,000		7.9	187	30
1545	CHOKE	31	65	4	37.7	15,000		7.14	143	
1600	JERRY CAN FILLED FROM CHOKE									
1615	CHOKE	31	65	4	37.6	16,000	0.270 @ 19°C ck	6.91	187	31
2250	CHOKE	75	25	1.75						
2300	JERRY CAN FILLED FROM CHOKE									
2300	CHOKE	92	7.5	0.5	37.2	15,000		8.17	187	29
	OTIS BOTTOM HOLE SAMPLER SAMPLE 1 2516m BOTTOM									
0615	BHS	SCUM	99.5	0.5	37.2	11,000	0.299 @ 18.5°C	6.5	002	
	OTIS BOTTOM HOLE SAMPLER SAMPLE 2 2516m TOP									
0615	BHS	10.5	86.3	3.2		17,000	0.303 @ 18°C	6.6	019	
1335	CHOKE	95	4.5	0.5						
1350	CHOKE	99	0.9	0.1						
1405	CHOKE	99.5	0.4	0.1	39					30
1420	CHOKE	99.3	0.7	TR						
1435	CHOKE	98	1.5	0.5	38.8					
1450	CHOKE	99	0.8	0.2						
1505	CHOKE	99.9	0.1	TR						
1530	CHOKE	99	0.2	TR	39					
1545	CHOKE	99.8	0.3	0.2		15,000		6.75	TR	
1615	CHOKE	TR	99.8	0.2						
1635	SEPARATOR - WATER	1.6	98.3	0.1						
1700	CHOKE	09.5	90.0	0.5	39	16,500	0.274 @ 17°C	7.34	55	31
1715	CHOKE	09.5	90.0	0.5			SAMPLE			
1730	CHOKE	10.5	89	1.0		18,000	NOT SUITAB.	7.86	66	
1745	SEPARATOR	10	90.0	0.2						
	CHOKE	0.8	99.0	0.2						
1800	CHOKE	20	80.0	0.1		18,500	0.273 @ 17°C	8.00	33	
1815	CHOKE	35	65.0	0.2						
1830	CHOKE	30	70.0	TR		16,500	0.276 @ 18°C	7.1	TR	
1845	CHOKE	40	60.0	0.1						
1900	SEPARATOR	-	-	-	39	19,500	0.276 @ 18°C	6.9	33	29
1900	CHOKE	60	40.0	0.1						
1915	CHOKE	55	45.0	0.1						
1930	CHOKE	55	45.0	0.1	38	11,500	0.276 @ 18°C	6.28	TR	30
1945	CHOKE	50	50.0	TR						
2000	SEPARATOR	TR	100.0	TR	38					
2000	CHOKE	50	50.0	TR		19,000	0.272 @ 18°C	6.26	TR	

(1959f/11)

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 3 Date 8/8/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl^- (ppm)	WATER RES(m)	pH	T (°F) NO - 3 (ppm)	POUR POINT °C
		OIL	WATER	BS&W						
2015	CHOKE	45	55.0	TR						
2030	CHOKE	40	60.0	0		18,500	0.272 @ 18.5°C	6.8	TR	
2045	CHOKE	45	55.0	TR						
	CHOKE	50	50.0	TR			0.261 @ 19°C			
2100	SEPARATOR	TR	100.0	TR	39	17,000		6.9	TR	
2115	CHOKE	55	45.0	TR	39					
2130	CHOKE	55	45.0	TR		18,000	0.262 @ 18.5°C	6.9	TR	
2145	CHOKE	55	45.0	TR						
2200	CHOKE	55	45.0	TR		19,000	0.265 @ 19°C	6.9	TR	
2230	CHOKE	55	45.0	TR		16,000		7.0	TR	
2300	SEPARATOR	TR	100.0	TR			0.273 @ 17°C			
2300	CHOKE	55	45.0	TR	39	16,000		7.0	TR	
2300	CHOKE	50	50.0	TR						

(1959f/12)

GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 3 Date 8/8/84

TIME SAMPLED	SAMPLE POINT	COMPONENTS							
		C_1 PPM	C_2 PPM	C_3 PPM	C_4 PPM	C_5 PPM	H_2S PPM	CO_2 (%)	C_{6+}
1245	CHOKE	571432	86384	19617	7614	3099	0	-	1028
1317	CHOKE	302043	82065	58245	24038	6220	0	36	684
1615	CHOKE	310128	64665	38830	19236	7128	0	33	2138
2300	CHOKE	232596	73426	51298	22443	5447	0	28	642
OTIS BOTTOM HOLE SAMPLER: SAMPLE 1 2516m BOTTOM									
0615	BHS	365308	30138	6067	1152	295	0	45	0
OTIS BOTTOM HOLE SAMPLER: SAMPLE 2 2516m TOP									
0615	BHS	224491	35617	10921	2404	453	0	40	0
1500	SEPARATOR	261160	77746	58245	33664	14266	0	35	2742
1600	SEPARATOR	261226	45351	38830	28855	15563	0	35	4200
1700	SEPARATOR	301967	43192	19415	7013	2593	0	33	942
1800	SEPARATOR	302043	51830	24268	11221	4669	0	31	1455
1900	SEPARATOR	293879	58309	32358	16030	8300	0	28	2185
1930	SEPARATOR	302043	60469	35594	17633	6744	0	30	1628
2000	SEPARATOR	310206	53990	29122	12824	4669	0	29	1157
2030	SEPARATOR	310206	56150	29122	12824	5293	0	30	1542
2100	SEPARATOR	310206	53990	32321	16030	4982	0	30	1285
2130	SEPARATOR	293879	60469	33976	19236	8559	0	31	3214
2200	SEPARATOR	289798	56150	32358	17633	8819	0	31	3942
2230	SEPARATOR	290671	53990	32321	18136	8469	0	31	3526
2300	SEPARATOR	293879	60469	35594	19236	9078	0	31	3700
2300	SEPARATOR	297961	60469	32358	17633	7781	0	31	2914

WELLBORE GRADIENT DATA

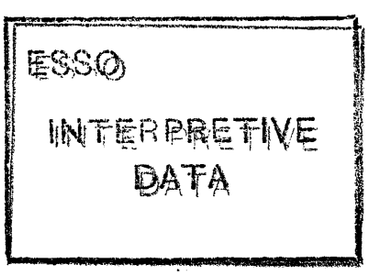
Well TUNA-4 Test 3 Date 9/8/84

BOTTOM-HOLE TEMPERATURE: 115 °C

	TIME	DEPTH	PRESSURE (psi)	Δ p (psi)	GRADIENT (psi/ft)	REMARKS P (corrected)	REMARKS Gradient (corrected)
1	0405	2566	3596.3	32.40	1.30		1.52
2	0430	2541	3563.9	31.40	1.26	3558.4	
3	0455	2516	3532.5	66.30	1.33		1.40
4	0525	2466	3466.2	138.90	1.39	3529.0	
5	0550	2366	3327.3	-	-		1.40
6	0700	2366	3328.1	425.19	1.41	3462.3	
7	0725	2066	2902.6	430.7	1.39		1.41
8	0810	1766	2472.2	687.6	1.38	3324.8	
9	0850	1266	1784.6	656.4	1.09		
10	0920	666	1128.22				

APPENDIX A-4

DATA SHEETS FOR PRODUCTION TEST NO. 4



COMPLETION DATA

Well TUNA-4 Test 4 Date 16/8/84

Company Supervisor G.W./R.D.

Test Engineer J.D./J.M.B.

1. Interval 2543 - 2552
2. Well loading fluid DIESEL (48 BBL), WATER (2 BBL), N2 (24 BBL)
3. Approximate Differential (p_{f-Pw}) 500 (psi)
4. Type of perforating gun 2-1/8" ENERJET
5. Perforation density 4 (spf)
6. Mud weight 9.5 (ppg) NO_3^- _____ (ppm)
7. Cl^- of filtrate 9000 (ppm)
8. Cl^- of mud filtrate at time of drilling 15,500-17,500 (ppm) NO_3^- 195 (ppm)

9. Casing:	10. Liner:	11. Tubing:
Size 9-5/8 (in.)	Size 7 (in.)	Size 3-1/2 (in.)
Weight 47 (lb/ft)	Weight 26 (lb/ft)	Inside Diameter 2.992 (in.)
Grade N-80	Grade N-80	Weight 9.3 (lb/ft)
Capacity 0.0732 (bbl/ft)	Capacity 0.0382 (bbl/ft)	Grade L-80
Shoe 2434 (m)	Top 2227 (m)	Capacity 0.00870 (bbl/ft)
Burst 6870 psig	Shoe 3219 (m)	Connections EVE A.B. Modif
		Burst pressure 15000 psig

12. Plugged back total depth 2553.6 (m)
13. Depth of packer 2521 (m)
14. Tubing volume 72.0 (bbl)
15. Volume between packer and lowest perforation 3.9 (bbl)
16. Rathole volume 0.20 (bbl)
17. Depth of tailpipe 2525.8 (m) (Muleshoe) Depth of XN _____ (m)
18. Location of pressure gauges: depth N/A (ft) gauge number N/A
    depth N/A (ft) gauge number N/A
19. Initial WHP before well Underbalanced: 2200
20. Depth of XN Nipple: 2519.4

PERFORATION

Well TUNA-4 Test 4 Perforation 2543 - 2552 Date 16/8/84

1. Geologists(s): P. Priest/G. Roach
2. Test Engineer(s): J.D./J.M.B.
3. Service Company/Engineer: SCHLUMBERGER/D. DAWSON
4. Distance between CCL and top of gun: 1.4m
5. Number of Runs: 1 (117 shots)
6. Wellhead pressure bled down to zero before perforating?

   _____ (Yes) X (No)
7. Wellhead pressure before perforating: 1055 psi
8. Time of perforation: 17.19 (local time)
9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)	WHT. °F	Time (Local)	WHP (PSIG)	WHT. °F
17.19	1055	44	1730	1370	45
17.20	1296	44	1735	1377	44
17.21	1320	44			
17.22	1330	45			
17.23	1355	45			
17.24	1359	45			
17.25	1362	45			

10. Other perforating runs:

Time	Run	Interval	WHP

11. Remarks: Tubing head pressure bled from 2200 psi to 1055 psi to produce 500 psi underbalance.

(2115f/2)

INITIAL FLOW PERIOD DATA* D-2

Well TUNA-4 Test 4 Perforation 2543 - 2552 Date 16/7/84

1. Wellhead pressure prior to opening well 970 (psi)

2. Time well opened 1907

3. Initial choke size 20A (64ths)

4. Well response: (Well (flowed)
   Time gas surfaced N/A
   Time diesel surfaced 1917
   Time formation fluid surfaced 2007

5. Well data just prior to shut in
   Flowing wellhead pressure 1150 (psi)
   Choke size 32A (64ths)
   Pressure downstream of the choke - (psi)
   Rate 1000 (B/D,) (estimated)

6. Time of shut in 2325

7. Total length of initial flow 4:18 (min, hr)

8. Cumulative production 230 (bbl,) (estimated)

9. Description of produced fluids:
   Oil 100 % 39 °API) Excluding solids
   Water TR % Cl^- - (ppm)
   Gas: Sp Gr Not possible to take gas sample

C_1	_____ (ppm)	C_5^+	_____ (ppm)
C_2	_____ (ppm)	CO_2	_____ (ppm)
C_3	_____ (ppm)	H_2S	_____ (ppm, %)
C_4	_____ (ppm)		

*If extended initial flow (clean up) is run, enter production data at 30 min. intervals on Production Test Data Sheet (D-5).

If well is swabbed, fill out swab report (D-3).

(2115f/3)

INITAL BUILDUP DATA

Well TUNA-4 Test 4 Date 16/8/84

Shut-in Time (min)*	WHP (psi)
2325	1165
2326	1180
2327	1190
2328	1210
2329	1230
2330	1245
2335	1260
2340	1270
2343	1275

Shut-in Time (min)	WHP (psi)

* Record WHP at 15 min intervals.

If pressure gauges are run on wireline, make stop at Kelly bushing; record:

Time _____ – _____ WHP _____ – _____ psi

If stops are made while running pressure gauges in the hole, record:

Stop	Time	Depth

Stop	Time	Depth

Time gauges reached bottom: _____

Other events _____

_____

_____

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 4 Perforations 2543 - 2552 Date 16/8/84 Page 1 of __

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	TEMP OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D	GOR	OIL °API @ 60°	GAS AIR=1
1710	Bleed wellhead pressure to 1050 psi.													
1719	Perforate 2543-2552m													
1730		1370	45	280										
1739	Initiate flow before last light. Flow through choke													
1744	Shut-in @ choke	1015	45	290	20A									
1750		1200	44											
1755		1198	45											
1758	Close wing valve to change leaking chicksan													
1810		1189	48											
1815		1189	48											
1825		1190	48	310	Shut-in at surface test tree. Rig down Schlumberger									
1907	Open Well													
1910		970	45	310	20A									
1915		597	44	310	20A									
1916	Increase Choke to 32A													
1917	Diesel at surface. Displace diesel into test tank 0.411 BBL/ft													
1920		660	44		32A									
1925	18.5" Q = 1238 B/D	645	46	400	32A									
1930	28.5" Q = 1181 B/D	715	50	460	32A									
1935	33" Q = 835 B/D	795	52	460	32A									
1940	36-1/2" Q = 403 B/D	834	55	460	32A									
1945	38" Q = 173 B/D	835	55	460	32A									
1950	40" Q = 260 B/D	840	56	300	32A									
1955	43" Q = 346 B/D	845	55	300	32A									
1958	Change to 32 F. 32A blocking													
2000	60" Q = 2016 B/D	815	76		32F									

(2115f/5)

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 4 Perforations 2543 - 2552 Date 16/8/84 Page 2 of __

DATE TIME	REMARKS	WELLHEAD PRESSURE	TEMP OF WELLHEAD	CASING PRESSURE	CHOKE	CUMULATIVE PRODUCTION OIL STB	CUMULATIVE PRODUCTION WATER BBLS	CUMULATIVE PRODUCTION GAS MSCF	RATES OIL STB/D	RATES WATER B/D	RATES GAS MSCF/D	CONDENSATE GAS RATIO	GRAVITY OIL °API @ 60°	GRAVITY GAS AIR=1
2007	Oil at surface. Approx. 48 BBL diesel recovered.													
2013	Change to 32A	945	82		32A									
2015	Change to 32F. Blocking chokes.													
2018	Change to 32A. Choke cleared													
2025	Change Burner. Divert to port side burner. Clear starboard burner.													
2030		1125	87	370	32A									
2045		1158	82	275	32A									
2100		1110	79	300	32A									
2115		1050	77	360	32A									
2130		1155	75	400	32A									
2145		1150	82	400	32A									
2200		1130	82	280	32A									
2215		1142	83	300	32A									
2230		1140	83	340	32A									
2245		1160	84	340	32A									
2300		1150	82	370	32A									
2315		1155	80	440	32A									
2325	Shut in well	1165	80	440	32A									
2343	Close lower master valve													

RIG-FLOOR AND BOTTOMHOLE DATA

Well TUNA-4 Test 4 Perforations 2543 - 2552 Date 17/7/84 Page 1 of ___

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
0005	Pressure tested	Line choke					
0017	Open M/V to RIH	1290	67	440			
0025		1285	56	300			
0030		1285	55	300			
0100		1285	55	300			
0130		1295	49	300			
0440	Rigged up Otis RIH BHSIT						
0535	Latch BHSIT. Commence press test same.						
0553	Open Well @ choke	1050	46	280	32A	3682	
0555		880	49	280	32A	3607.1	
0600		880	56	280	32A	3319.1	115.5
0605		920	65	280	32A	3232.2	116.1
0610		930	70	280	32A	3192.9	116.1
0615		930	75	280	32A	3162.8	116.4
0625	Shut-in. Burner out	930				3170	
0631	Open well	1250	83	280	32A	3334.9	
0635		1050	83	280	32A	3256.5	
0645		1030	83	280	32A	3240.8	
0650					32A	3232.6	
0655					32A	3233.8	116.4
0700		1045	85	320	32A		116.7
0715		1050	90	320	32A	3220.2	
0730		1055	91	320	32A	3231.3	116.7
0745		1059	91	320	32A	3220.7	
0800		1035	95	300	32A	3198.5	
0805		1040	95	300	32F		
0806		995	95	300	32F		
0807		990	95	300	32F		
0808		980	95	300	32F		
0809		980	97	300	32F		
0810		975	97	300	32F		
0815		970	97	300	32F	3108.5	
0830		963	98	300	32F	3058.3	
0845		944	100	300	32F	3040.6	
0900		938	102	290	32F	3032	117.0
0915		935	104	290	32F	3021.8	
0930		933	104	270	32F	3015.1	117.1
0945		931	106	270	32F	3007.9	
1000		927	106	270	32F	3000.6	
1005						2298.7	
1010						2997.2	117.3
1015		925	107	400	32F	2995.0	
1020		917	107	400	32F	2993.0	
1025						2990.9	
1030						2989.3	
1035						2987.4	
1040						2985.9	
1045		917	107	400		2983.9	
1050						2982.2	
1055						2979.9	
1100		900	107	380	32F	2977.9	
1105					32F	2976.1	
1110					32F	2974.1	
1115		915	107	380	32F	2972.5	
1120					32F	2950.9	
1125					32F	2967.9	
1130		905	107	380	32F	2964.7	
1135						2962.4	
1140						2962.7	
1145		905	109	260		2959.2	
1150						2957.9	
1155						2956.2	
1200		905	110	230		2953.9	
1205						2953.0	
1210						2951.5	
1215		900	110	230		2950.0	
1220						2948.7	
1225						2946.9	
1230		895	110	230		2945.6	
1235						2943.9	
1240						2942.8	
1245		895	110	250		2941.7	

(2115f/7)

RIG-FLOOR AND BOTTOMHOLE DATA

D-5A

Well TUNA-4 Test 4 Perforations 2543 - 2552 Date 17/8/84 Page 3 of ___

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1250						2940.5	
1255						2939.0	
1300		900	110	250		2937.1	
1305						2936.4	
1310						2935.0	
1315		900	110	250		2933.9	
1320						2932.1	
1325						2931.3	
1330		890	112	230		2930.4	
1335						2928.7	
1340						2927.3	
1345		890	112	230		2925.7	
1350						2924.7	
1355						2923.7	
1400		895	112	230		2922.7	
1405						2921.4	
1410						2920.1	
1415		885	112	240		2919.1	
1420						2918.3	
1425						2917.2	
1430		890	115	240		2916.2	
1435						2915.1	
1440						2913.9	
1445		885	115	240		2912.7	
1450						2911.9	
1455						2910.8	
1500	Bypass separator	885	115	240		2909.7	
1515		875	115	240			
1530		885	115	240			
1543	Shut in at C/M	850	115	240			
1544		840	115	240			
1545		820	115	220			
1550		965	113	220			
1555		1025	110	220			
1600		1015	107	220			
1603	Shut-in Chick. leak	1015	107	220			

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1624		968	92	230			
1625		968	92	230			
1630		968	90	220			
1635		969	88	220			
1640		970	88	220			
1645		970	87	220			

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 4 Date 16/9/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl⁻ (ppm)	WATER RES(m)	pH	T (°F) NO 3	POUR POINT °C
		OIL	WATER	BS&W						
2011	Choke	69	3.3	27.7	39					32
2034	Choke	78	0	22	38					28
2051	Choke	92	0	8	38					30
2112	Choke	91	1	8	37					29
2137	Choke	97	0	3	39					31
2156	Choke	99.5	0	0.5	39					31
2209	Choke	99.8	0	0.2	39					32
2226	Choke	99.6	0	0.4	39					31
2240	Choke	99.7	0	0.3						
2256	Choke	99.55	0.05	0.4	39					31
2322	Choke	99.7	0	0.3						
0600	Choke	97	0	3	39					27
0630	Choke	75	0	3	39					26
0700	Choke	98	0	2	39					28
0730	Choke	98.5	0	1.5						
0800	Choke	98	0	2	38					28
0830	Choke	98	0	2	38					27
0900	Choke	98.7	0	1.3	38					29
0930	Choke	99.8	0	0.2						
1000	Choke	99.85	0	0.15						29
1030	Choke	99.95	0	0.05						
1100	Choke	100.00	0	TR						27
1130	Choke	100.00	0	TR						

(2115f/10)

GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 4 Date 17/8/84

TIME SAMPLED	SAMPLE POINT	COMPONENTS							
		C_1 PPM	C_2 PPM	C_3 PPM	C_4 PPM	C_5 PPM	H_2S PPM	CO_2 (%)	C_{6+}
0700	Choke	326533	41032	12538	3005	745	0	20	150
0900	Choke						6	44	
0930	Separator	306124	58309	25886	8015	1800	6	24	300
1030	Separator	318369	60469	29291	7614	1621	8	25	380
1130	Separator	291962	60901	29767	12023	3955	6	27	1071
1230	Separator	314288	62629	31549	11221	4021	8	26	1071
1330	Separator	273471	64788	29123	14428	5836	2	28	1886
1430	Separator	273471	60469	28314	12624	3988	8	26	857

(2115f/11)

FIRST BUILD-UP BOTTOM-HOLE PRESSURES

D-12A

Well TUNA-4 Test 4 Date _____ Page 1 of 1

Horner Time 589 mins. Flowing BHP 2905 Initial BHP ____ psi at ____ m
____ psi at ____ m

TIME LOCAL	MINS		BHP PSIA	REMARKS
1542	0	00	2905	Shut-in
1543	1	590.00	3240	
1544	2	295.50	3279.10	
1545	3	197.33	3300.80	
1546	4	148.25	3318.12	Shutin fail
1547	5	118.80	3077.12	
1548	6	99.17	3083.30	
1549	7	85.14	3105.97	
1550	8	74.63	3080.15	
1551	9	66.44	3143.81	Shut-in
1552	10	59.90	3309.49	
1553	11	54.55	3331.44	
1554	12	50.08	3345.82	
1555	13	46.31	3356.25	
1556	14	43.07	3364.98	
1557	15	40.27	3373.91	
1558	16	37.81	3378.35	
1559	17	35.65	3382.87	
1600	18	33.72	3387.63	
1601	19	32.00	3391.63	
1602	20	30.45	3395.71	
1603	21	29.05	3399.73	
1604	22	27.77	3403.43	
1605	23	26.61	3407.18	
1606	24	25.54	3410.90	
1607	25	24.56	3414.36	
1608	26	23.65	3418.00	
1609	27	22.81	3420.80	
1610	28	22.04	3424.20	
1615	33	18.85	3437.91	
1620	38	16.50	3448.88	
1625	43	14.70	3458.54	
1630	48	13.27	3467.00	
1635	53	12.11	3474.78	
1640	58	11.16	3481.66	
1645	63	10.35	3487.98	
1650	68	9.66	3492.75	
1655	73	9.07	3499.68	
1700	78	8.55	3504.78	
1705	83	8.10	3504.78	
1710	88	7.69	3513.96	
1715	93	7.33	3518.36	
1720	98	7.01	3522.51	
1725	103	6.72	3526.43	

TIME LOCAL	MINS		BHP PSIA	REMARKS
1730	108	6.45	3530.15	
1735	113	6.21	3533.77	
1740	118	5.99	3537.00	
1745	123	5.79	3540.10	
1750	128	5.60	3544.10	
1755	133	5.43	3546.22	
1800	138	5.27	3549.00	
1805	143	5.12	3551.74	
1810	148	4.98	3554.45	
1815	153	4.85	3557.01	
1820	158	4.73	3559.42	
1825	163	4.61	3562.30	
1830	168	4.51	3564.03	
1835	173	4.46	3565.92	
1840	178	4.31	3568.10	
1845	183	4.22	3570.00	
1850	188	4.13	3572.03	
1855	193	4.05	3574.08	
1900	198	3.97	3575.85	
1905	203	3.90	3577.75	
1910	208	3.83	3579.50	
1915	213	3.77	3581.12	
1920	218	3.70	3582.75	
1925	223	3.64	3584.50	
1930	228	3.58	3586.72	
1935	233	3.53	3587.53	
1940	238	3.47	3588.72	
1945	243	3.42	3590.1	
1950	248	3.38	3591.46	
1955	253	3.33	3592.71	
2000	258	3.28	3593.95	
2005	263	3.24	3595.23	
2010	268	3.20	3596.4	
2015	273	3.16	3597.9	
2020	278	3.12	3599.05	
2025	283	3.08	3600.15	
2030	288	3.05	3601.25	

(2115f/12)

TANK FACTOR = _____ BBL/IN

OIL RATE CALCULATIONS

Well TUNA-4 Test 4 Date 17/8/84

DATE TIME	TIME	OIL								CORRECTED VALUES			REMARKS
		TEMP °F	GRAVITY °API@60°	TANK READING ins.	DIFF.	METER FACTOR	SHRINKAGE	TEMP. CORR.	1- BSW %	CUM.PROD STB	RATE STB/D	GOR SCF/STB	
0930				0									
1030		128	38	164.0	85.116		0.9675				1976.0	731	
1100		138	38	239.0	38.925		0.9627				1799	801	
1115		138	38	286.0	24.393		0.9627				2254	638	
1130		138	38	324.0	19.722		0.9627				1823	788	
1145		138	38	359.0	18.165		0.9627				1679	853	
1200		133	38	403.0	22.836		0.9651				2115	680	
1215		124	38	450.0	24.393		0.9694				2270	654	
1230		121	38	488.0	19.722		0.9703				1837	811	
1245		118	38	525.0	19.203		0.9722				1792	826	
1300		126	38	561.0	18.684		0.9684				1736	850	
1315		126	38	603.0	21.798		0.9684				2027	732	
1330		130	38	642.0	20.241		0.9665				1878	783	
1345		131	38	683.0	21.279		0.9660				1973	749	
1400		134	38	718.0	18.165		0.9646				1683	881	
1415		134	38	762.0	22.836		0.9646				2115	700	
1430		134	38	804.0	21.798		0.9646				2014	738	
1445		138	38	840.0	18.684		0.9627				1726	863	
1500		139	38	877.0	19.203		0.9622				1773	840	

(2115f/13)

GAS RATE CALCULATIONS

Well TUNA - 4 Test PT 4 Date 17 AUGUST, 1984

DATE TIME	GAS METER				BASIC ORIFICE FACTOR F_b	FLOWING TEMP FACTOR F_{tf}	SPECIFIC GRAVITY FACTOR F_g	SUPER-COMPRESSIBILITY F_{pv}	ORIGINAL CONSTANT C' = $F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	RATE $Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	REMARKS Y2
	STATIC (p_f) PSIA	DIFF.(h_w) IN H_2O	TEMP. °F	PLATE IN.							
1000	224.73	74	118	1.50	462.27	0.9485	1.03142	1.0303		1.445	
1030	224.73	75	127	1.50	462.27	0.9412	1.03142	1.0288		1.445	
1100	224.73	75	130	1.50	462.27	0.9388	1.03142	1.0288		1.437	
1115	224.73	75	130	1.50	462.27	0.9388	1.03144	1.0288		1.437	
1130	224.73	75	130	1.50	462.27	0.9388	1.03142	1.0288		1.437	
1145	104.73	86	130	1.75	637.83	0.9388	1.03142	1.0127		1.432	
1200	104.73	86	125	1.75	637.83	0.9388	1.03142	1.0130		1.438	
1215	114.73	83	121	1.75	637.83	0.9460	1.03142	1.0143		1.485	
1230	114.73	83	118	1.75	637.83	0.9485	1.03142	1.0145		1.489	
1245	114.73	82	118	1.75	637.83	0.9460	1.03142	1.0145		1.480	
1300	114.73	82	121	1.75	637.83	0.9460	1.03142	1.0143		1.476	
1315	114.73	83	122	1.75	637.83	0.9452	1.03142	1.0142		1.483	
1330	114.73	82	125	1.75	637.83	0.9428	1.03142	1.0139		1.470	
1345	114.73	83	126	1.75	637.83	0.9420	1.03142	1.0138		1.478	
1400	114.73	83	126	1.75	637.83	0.9396	1.03142	1.0136		1.483	
1415	114.73	84	131	1.75	637.83	0.9380	1.03142	1.0134		1.480	
1430	114.73	85	132	1.75	637.83	0.9372	1.03142	1.0133		1.487	
1445	114.73	85	130	1.75	637.83	0.9388	1.03142	1.0135		1.490	
1450	100.00	85	130	1.75	637.83	0.9380	1.03142	1.0135		1.490	

(2115f/14)

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA - 4 Test 4 Date 17/8/84

TIME SAMPLED	SAMPLE POINT	SHAKE OUT			API° @ 60°F	Cl^- (ppm)	WATER RES(m)	pH	T (°F)	POUR PT (°C)
		OIL	WATER	BS&W						
1200	CHOKE	100	0	TR	38°					26
1230	CHOKE	99.7	TR	0.3						
1300	CHOKE	100	0	0	38°					31
1330	CHOKE	100	0	0						
1330	SEPARATOR	TAKE PRESSURE OIL AND GAS SAMPLES						1x20L	2x500cc	31
1400	SEPATATOR	TAKE PRESSURE OIL AND GAS SAMPLES						1x20L	2x500cc	
1400	SEPARATOR	3 x 5 GALLON JERRY CANS FILLED OIL OUTLET								
1400	CHOKE	100	0	0	39					
1430	CHOKE	100	0	0						
1500	CHOKE	100	0	0	39					31

(2115f/15)

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 4 Date 17/8/84

Production Interval 2543 - 2552

Initial Reservoir Pressure 3701 psia @ 8356

Reservoir Temperature 252 °C @ 8356 ft

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	1330	1330	1330	
Length of Time Well was Produced	6.59 hrs	6.59 hrs	6.59 hrs	
Container No.	OT040T	OT095T	A-11567	
Container Volume	510 cc	510 cc	20 L	
Separator Pressure	100 psig	100 psig	100 psig	
Separator Temperature (°F)	130 °F	130 °F	130 °F	
Wellhead Pressure	890 psig	890 psig	890 psig	
Wellhead Temperature (°F)	112 °F	112 °F	112 °F	
Flowing Bottom-hole Pressure (psia)	2930	2930	2930	
Flowing Bottom-hole Temperature (°C)	117.6	117.6	117.6	
Separator Rate (Sep. bbl/D)*				
Separator Gas Rate (MSCF/D)	1.470	1.470	1.470	
Separator GOR (SCF/Sep. bbl)				
Well Rate (STB/D)+	1878	1878	1878	
Well GOR (SCF/STB)+	783	783	783	
Full Wellstream Water Cut	NIL	NIL	NIL	

How Outage was taken on Liquid Samples

Gas Sampling Method EVACUATION

Liquid Sampling Method BRINE DISPLACEMENT

Special Instruction for Lab

Sampled by CHARLIE CHAN/OTIS

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 4 Date 17/8/84

Production Interval 2543 - 2552

Initial Reservoir Pressure 3701 psia @ 8356

Reservoir Temperature 252 °C @ 8356 ft

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	1445	1445	1445	
Length of Time Well was Produced	8.14hrs	8.14hrs	8.14hrs	
Container No.	OT225T	OT054T	A-11572	
Container Volume	505 cc	505 cc	20 L	
Separator Pressure	100 psig	100 psig	100 psig	
Separator Temperature (°F)	139 °F	139 °F	139 °F	
Wellhead Pressure	885 psig	885 psig	885 psig	
Wellhead Temperature (°F)	115 °F	115 °F	115 °F	
Flowing Bottom-hole Pressure (psia)	2913	2913	2913	
Flowing Bottom-hole Temperature (°C)	117.6	117.6	117.6	
Separator Rate (Sep. bbl/D)*				
Separator Gas Rate (MSCF/D)	1.490	1.490	1.490	
Separator GOR (SCF/Sep. bbl)				
Well Rate (STB/D)+				
Well GOR (SCF/STB)+	700	700	700	
Full Wellstream Water Cut	NIL	NIL	NIL	

How Outage was taken on Liquid Samples

Gas Sampling Method EVACUATION

Liquid Sampling Method BRINE DISPLACEMENT

Special Instruction for Lab

Sampled by CHARLIE CHAN/OTIS

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

(2115f/16)

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 4 Date 17/8/84

Production Interval 2543 - 2552

Initial Reservoir Pressure 3701 psia @ 8356

Reservoir Temperature 252 °C @ 8356 ft

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	1400	1400	1400	
Length of Time Well was Produced	7.29 hrs	7.29 hrs	7.29 hrs	
Container No.	OT067T	OT110T	A-8638	
Container Volume	505 cc	510 cc	20 L	
Separator Pressure	100 psig	100 psig	100 psig	
Separator Temperature (°F)	130 °F	130 °F	130 °F	
Wellhead Pressure	895 psig	895 psig	895 psig	
Wellhead Temperature (°F)	112 °F	112 °F	112 °F	
Flowing Bottom-hole Pressure (psia)	2923	2923	2923	
Flowing Bottom-hole Temperature (°C)	117.6	117.6	117.6	
Separator Rate (Sep. bbl/D)*				
Separator Gas Rate (MSCF/D)	1.483	1.483	1.483	
Separator GOR (SCF/Sep. bbl)				
Well Rate (STB/D)+	1683	1683	1683	
Well GOR (SCF/STB)+	881	881	881	
Full Wellstream Water Cut	NIL	NIL	NIL	

How Outage was taken on Liquid Samples

Gas Sampling Method EVACUATION

Liquid Sampling Method BRINE DISPLACEMENT

Special Instruction for Lab

Sampled by CHARLIE CHAN/OTIS

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

(2115f/18)

APPENDIX A-5

DATA SHEETS FOR PRODUCTION TEST NO. 5

PRODUCTION TEST SUMMARY

Well TUNA - 4 Test 5 Date 21/8/84

Test Data:

1. Interval 2469.5 m - 2477.0 m
2. Produced fluid OIL
3. Cumulative production Major flow: 420 STB oil, 35 Bbl filtrate
   Initial flow: 200 STB oil, 100 Bbl filtrate
4. Stabilized rate 1708 (STB/D, MMSCF/D)
5. Length of flow period 5 hrs 5 mins (hr) (Major flow period)
6. Choke 40F (64ths)
7. Gravity of oil or condensate 38.5 (°API @ 60°F)
8. GOR or Condensate - Gas Ratio 787 (SCF/STB)
9. Water cut 1 - 16% (Filtrate) (%) 5.2% Avge
10. Chlorides 12000 (ppm)
11. H_2S 6 (%, ppm)
12. CO_2 26 (%)
13. Stabilized flowing wellhead pressure 600 (psi)
14. Stabilized flowing wellhead temperature 95 (°F)
15. Wellhead pressure at end of buildup N/A (psi)
16. Initial reservoir pressure 3613 (psia) @ 2473 (m)
17. Final flowing pressure 2166 (psia) @ 2443.2 (m)
18. Productivity index 1.2 (STB/D, psi
19. Maximum bottom-hole temperature 236 (°F) @ 2443.2 (m)
20. Samples taken: 2 x 5 gal jerry cans of oil
21. Remarks: 1) Test terminated during major flow period due to bad weather.
    2) Pour point: 31°C

(2418f/15)

PRODUCTION TEST SUMMARY

Well TUNA - 4 Test 5 CONT. Date 23/8/84

Test Data: REPEAT TEST

1. Interval 2469.5 - 2477.0 m
2. Produced fluid Oil, trace water
3. Cumulative production 801 STB (STB, ~~MMSCF~~)
4. Stabilized rate 1611 STB/d (STB/D, ~~MMSCF/D~~)
5. Length of flow period 11 hrs 26 mins
6. Choke 40 (64ths)
7. Gravity of oil or condensate 38 (°API @ 60°F)
8. GOR ~~or Condensate — Gas~~ Ratio 824 (SCF/STB, ~~STB/MMSCF~~)
9. Water cut Trace (%)
10. Chlorides 5000 (ppm)
11. H_2S 7 ppm (%, ppm)
12. CO_2 25 (%)
13. Stabilized flowing wellhead pressure 582 (psig)
14. Stabilized flowing wellhead temperature 116 (°F)
15. Wellhead pressure at end of buildup N/A (psi)
16. Initial reservoir pressure 3613 (psia) @ 2473 (m)
17. Final flowing pressure 1994.6 (psia) @ 2441.7 (m)
18. Productivity index 1.0 STB/D/Psi, $\frac{\text{(STB/D}}{\text{(psi}}$ $\frac{\text{~~MMSCF/D~~)}}{\text{~~psi~~)}}$
19. Maximum bottom-hole temperature 236 (°F) @ 2441.7 (m)
20. Samples taken: 3 x 11 litre gas, 6 x 500 cc oil, 2 x 1 gallon oil, 2 Jerry cans oil, 2 Jerry cans water
21. Remarks:

2418f

COMPLETION DATA

Well TUNA-4 Test 5 Date 20th August, 1984

Company Supervisor RDS

Test Engineer JD/MJO

1. Interval 2469.5 - 2477.0 m
2. Well loading fluid DIESEL (47 Bbl), WATER (2 Bbl, N2 (23 Bdl)
3. Approximate Differential (p_{f-Pw}) 500 (psi)
4. Type of perforating gun 2 1/8 inch ENERJET
5. Perforation density 4 (spf)
6. Mud weight 9.6 (ppg)
7. Cl^- of filtrate 9,500 (ppm) NO_3^- Trace
8. Cl^- of mud filtrate at time of drilling 15500-17500 (ppm) NO_3^- 195 (ppm)

9. Casing:
   - Size 9 5/8 (in.)
   - Weight 47 (lb/ft)
   - Grade N-80
   - Capacity 0.0732 (bbl/ft)

   Shoe 2434 (m)
   - Burst: 6870 psig

10. Liner:
    - Size 7 (in.)
    - Weight 26 (lb/ft)
    - Grade N-80
    - Capacity 0.0382 (bbl/ft)

    Top 2227 (m)
    - Shoe 3219 (m)

11. Tubing:
    - Size 3 1/2 (in.)
    - Inside Diameter 2.992 (in.)
    - Weight 9.3 (lb/ft)
    - Grade L-80 + J-55
    - Capacity 0.00870 (bbl/ft)
    - Connections EUE A.B.Modified
    - Burst pressure 15000 psig

12. Plugged back total depth 2519 (m)
13. Depth of packer 2447 (m)
14. Tubing volume 69.8 (bbl)
15. Volume between packer and lowest perforation 3.8 (bbl)
16. Rathole volume 1.6 (bbl)
17. Depth of tailpipe 2449.96 (m) (Muleshoe)
18. Location of pressure gauges: depth _____ (ft) gauge number _____
    depth _____ (ft) gauge number _____
19. Initial WHP before well underbalanced: 3100 psi
20. Depth of XN 2443.63 (m)

(2418f/1)

Well TUNA-4 Test 5 Perforation 2469.5-2477 Date 20/8/84

1. Geologists(s): M.S.
2. Test Engineer(s): JA/MJO .
3. Service Company/Engineer: SCHLUMBERGER
4. Distance between CCL and top of gun: 1.4 m
5. Number of Runs: 1
6. Wellhead pressure bled down to zero before perforating?

   \- (Yes) X (No)
7. Wellhead pressure before perforating: 1010 psi
8. Time of perforation: 1341 (local time)
9. After perforating, record pressure versus time every minute for the first 10 minutes and every 5 minutes thereafter until pressure stabilizes.

Time (Local)	WHP (PSIG)		Time (Local)	WHP (PSIG)	
1341	1010		1355	1250	Q = 1800
1342	1060		1400	1265	
1343	1095		1405	1270	
1344	1120		1410	1275	Q = 960
1345	1145	Q=3540 BPD	1415	1275	
1350	1215	Q=2340 BPD	1420	1275	

10. Other perforating runs:

Time	Run	Interval	WHP

11. Remarks: Bleed THP from 2020 psi to 1010 psi prior to perforating

INITIAL FLOW PERIOD DATA*

Well TUNA-4 Test 5 Perforation 2469.6-2477 Date 20/8/84

1. Wellhead pressure prior to opening well 1275 (psi)

2. Time well opened 1425 hours

3. Initial choke size 20A (64ths)

4. Well response: (Well (flowed)
   Time gas surfaced 1600
   Time mud surfaced 1605
   Time formation fluid surfaced 1610 (oil)

5. Well data just prior to shut in
   Flowing wellhead pressure 860 (psi)
   Choke size 32A (64ths)
   Pressure downstream of the choke _____ (psi)
   Rate 1080 (B/D,) (measured, (roughly).

6. Time of shut in 2035

7. Total length of initial flow 6 hrs. 10 mins (min, hr)

8. Cumulative production 200 (oil) (bbl,) (estimated)
   100 (filtrate)

9. Description of produced fluids:
   Oil 65 % 39.40 °API
   (Filtrate) Water 35 % Cl^- 13,000 (ppm) NO_3^- 200 (ppm)
   Gas: Sp Gr _____

C_1	44622 (ppm)	C_{5+}	2229 (ppm)
C_2	3747 (ppm)	CO_2	26 (ppm)
C_3	2851 (ppm)	H_2S	4 (ppm, %)
C_4	2261 (ppm)	C_{6+}	642 (ppm)

*If extended initial flow (clean up) is run, enter production data at 30 min. intervals on Production Test Data Sheet (D-5).

If well is swabbed, fill out swab report (D-3).

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 5 Perforations 2469.5-2477.0 m Date 20/8/84

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE OF	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			GOR CONDENSATE	GAS RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
	August 20														
1315	DEPTH TIE - IN				-										
1340	BLEED THP TO	1010		-	-										
1341	PERFORATE	1010	45	200	-										
1425	OPEN CHOKE	1275	45	200	20A										
1430		650	45	210	20A										
1435		320	44	210	20A										
1440		90	44	210	20A										
1445	Diesel at surface	30	44	210	20A	5	" in tank initially = 2.1 Bbl								
1450	6" = 2.5 Bbl	330	47	210	20A				115						
1452	S/in - Schl at surface				-	Rig down gun - All shots fired									
1455		555	47	210	-										
1500		575	47	210	-										
1505		590	47	210	-										
1507	Open Well	590			20A										
1510	8 ins = 3.3 Bbl								384						
1512	Increase Choke				32A										
1515	14 ins = 5.8 Bbl	245	50	310	32A				720						
1520	22" = 9.0	248	50	310	32A										
1525	31" = 12.7	70	51		31A				1066						
1530	45" = 18.5	90	54	310	32A				1670						
1535	61" = 25.1				32A				1901						
1540	Valve handle snapped - test tank	225	65	490	32A										
1545	100" = 41 Bbl0 BPD	370	68	260	32A				2290						
1547	Direct to burner				32A										
1550	104" = 42.7	520	69	280	32A										
1555		590	69	290	32A										

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 5 Perforations 2469.5-2477.0 m Date 20/8/84

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION OIL STB	CUMULATIVE PRODUCTION WATER BBLS	CUMULATIVE PRODUCTION GAS MSCF	RATES OIL STB/D	RATES WATER B/D	RATES GAS MSCF/D	GOR CONDENSATE GAS RATIO	GRAVITY OIL °API @ 60°	GRAVITY GAS AIR=1
	August 20													
1600	Gas at surface	640	70	310	32A									
1605	Mud at surface				32F	-	Check adjustable choke:- tape in choke							
1610	Oil and mud at surface	590	73	380										
1614	S/in - oil slick				-									
1616	Open well				-									
1617					32F									
1620		630	76											
1625		770	74	420	36A									
1628	S/in - check burner nozzles plugged													
1645	Open well	945			32A									
1650		840	66		2A	Burner going out								
1653	Open well & reduce check				2A									
1658	Slowly open well				10A	Looks to be producing a lot of water								
1700		745	66	250	10A									
1702					16A									
1712					14A									
1715		910	66	260	14A									
1720		945	65	260	12A									
1725		940	64	260	20A									
1730		960	64	260	20A									
1735		970	64	260	20A									
1740		955	64	260	22A									
1742		940	64	260	26A									
1745		870	64	260	32A									
1750		860	64	260	32A									
1755		835	64	260	32A									
1800		845	64	260	32A									

PRODUCTION TEST DATA SHEET

Well TUNA-4 Test 5 Perforations 2469.5-2477 Date 20/8/84 Page 3 of 3

DATE TIME	REMARKS	WELLHEAD PRESSURE PSI	WELLHEAD TEMPERATURE °F	CASING PRESSURE PSI	CHOKE 64TH	CUMULATIVE PRODUCTION			RATES			CONDENSATE GOR	GAS CONDENSATE RATIO	GRAVITY	
						OIL STB	WATER BBLS	GAS MSCF	OIL STB/D	WATER B/D	GAS MSCF/D			OIL °API @ 60°	GAS AIR=1
1811	S/in - flareout				-										
1813	Open well	960	63	200	10A										
1827	Open well				10A										
1830		890	58	200	16A										
1831					20A										
1833					13A										
1834					16A										
1843					48A										
1845		700	65	180	48A										
1850		570	68	180	56A										
1900		930	80	220	56A										
1915		540	90	220	56A										

RIG-FLOOR AND BOTTOMHOLE DATA

WELL TUNA-4 TEST 5 PERFORATIONS 2469.5-2477.0 DATE 20/8 PAGE 1 OF 1

TIME LOCAL	REMARKS	WHP PSIG	WHT DEG.F	CAS. PRESS	CHOKE 64TH	BHP PSIA	BHT °C
1930	To Separator	600	90	220	56A		
1945		610	92	210	56A		
2000	Oil: 2500 BPD/Water	650	92	220	56A		
	300 BPD						
2008		655	92	220	56A		
2010	Bad wind direction	690	92	220	40A		
2015	Gas = 0.829 MSCFD	780	92	220	32A		
2030	Oil = 1080 BPD,	850	89	220	32A		
	Water-low						
2035	SI, Rig up Mandrel	860	89	220	-		
2040	Close master valve	970	85	200	-		
2045			82	220	-		
2105	Amerada clocks on						
2140	PT Lubricator						
2158	Replace Chiksan,						
	open SSV						
2200		1205	54	200	-		
2215		1210	53	280	-		
2230		1230	52	260	-		
2316	Rig down Otis						
2330	Rig up Schlumberger						
0023	PT Schlumberger						
0040	RIH with DHSI						
0100		1280	45	100	-		
0136	DHSI latched = shut				-	3575	107.4
0145	Bleed off WHP				-	3558	108.0
0155		700			-	3555	108.0
0156	Open DHSI				-		
0159	Open well	855	45	280	32A		
0200		800	45	280	32A	3070	107.7
0205		650	50	280	40A		
0215		642	62	270	40A	2530	118.8
0230		612	82	340	40A	2403	112.2
0245		640	90	460	40F	2387	112.6
0300		616	95	260	40F	2346	112.6
0315		625	98	260	40F	2331.9	
0330		620	100	260	40F	2316.0	
0337	To September						
0345		620	100	260	40F	2297.3	112.9
0400		620	100	260	40F	2289.5	112.9
0414		620	100	260	40F	2270.0	113.2
0430		610	102	260	40F	2251.7	113.2
0445		605	102	260	40F	2243.9	113.2
0500		605	102	260	40F	2236.2	113.2
0515					40F	2230.8	
0530		600	102	260	40F	2221.5	113.2
0545					40F	2211.3	113.2
0600		600	99	260	40F		
0630		600	100	260	40F	2193.9	113.5
0700		600	95	240	40F		
0730		600	95	240	40F		
0800	S/in at 0751	825	93	230	-		
	(test terminated - bad weather)						
0815		1010	85	200	-		
0825	Open kill line valve to equalise across DHSIT						
0830		1005	74	120			
0839	Close kill line + schl POOH						

SEPARATOR DATA SHEET

Well TUNA-4 Test 5 Date 21/8/84

1	2	3	4	5	6	7	8	9	10	11	12	13
DATE	SEPARATOR		OIL METER		WATER METER		GAS METER DATA Gas Meter Dia. 1.750 TYPE Orifice				GAS	
TIME	PRESS	TEMP	READING		READING		STATIC	DIFF.	TEMP	PLATE	GRAVITY	REMARKS
	PSIG	°F	BBLS	BBLS	BBLS	BBLS	PSIA	IN.H 0 2	°F	IN.		
August 21, 1984												
0337	SEPARATOR ON										0.95	
0430							129.73	53	110	1.750		
0445							139.73	56	110	"		
0500			WATER RATE TOO LOW TO SEPARATE OR METER				128.73	58	111	"		
0515	120	121					129.73	58	112	"		
0530	140	122					124.73	62	112	"		
0545							125.73	62	112	"		
0600							123.73	62	112	"		
0630	140	124					123.73	62	112	"		
0700							124.73	62	110	"		
0730							124.73	62	110	"		

TANK: 0.519 BBL/per inch

OIL RATE CALCULATIONS

Well TUNA-4 Test 5 Date 21/8/84

1	2	3	4	5	6	7	8	9	10	11	12	13	14
		OIL								CORRECTED VALUES			
DATE TIME	TIME	TEMP °F	GRAVITY °API@60°	TANK READING ins.	INS	METER FACTOR	SHRINKAGE —	TEMP. CORR.	BSW 1- %	CUM.PROD STB	RATE STB/D	GOR SCF/STB	REMARKS
				0									
0430		117		34.0	34.0			.9727			1647.8	770	
0445		118		74.0	40.0			.9722			1937.6	699	
0500		121		110.0	36.0			.9708			1741.3	758	
0515		121		141.0	31.0			.9708			1499.4	883	
0530		120		174.0	33.0			.9712			1597.0	841	
0545		123		213.0	39.0			.9698			1884.5	715	
0660		123		252.0	39.0			.9698			1884.5	709	
6030		121		372.0	75.0			.9708			1813.8	737	
0700		120		388.0	61.0			.9712			1476.0	911	
0730		120		454.0	66.0			.9712			1597.0	842	
											1708	787	

GAS RATE CALCULATIONS

Well TUNA - 4 Test 5 Date 20 AUGUST, 1984

1	2	3	4	5	6	7	8	9	10	11	12
DATE TIME	GAS METER				BASIC ORIFICE FACTOR	FLOWING TEMP FACTOR	SPECIFIC GRAVITY FACTOR	SUPER-COMPRESSIBILITY	ORIGINAL CONSTANT	RATE	
	STATIC (p_f) PSIA	DIFF. (h_w) IN H_2O	TEMP. °F	PLATE IN.	F_b	F_{tf}	F_g	F_{pv}	$C' = F_b \cdot F_{tf} \cdot F_g \cdot F_{pv}$	$Q = .024C' \sqrt{h_w p_f}$ (Mcf/D)	REMARKS Y2
0430	129.73	53	110	1.750	637.833	.9551	1.02597	1.0177		1.269	1.0025
0445	139.73	56	110	"	"	.9551	"	1.0191		1.355	1.0025
0500	128.73	58	111	"	"	.9542	"	1.0174		1.321	1.0028
0515	129.73	58	112	"	"	.9534	"	1.0175		1.325	1.0027
0530	124.73	62	112	"	"	.9534	"	1.0168		1.343	1.0031
0545	125.73	62	112	"	"	.9534	"	1.0169		1.348	1.0030
0600	123.73	62	112	"	"	.9534	"	1.0166		1.337	1.0031
6030	123.73	62	112	"	"	.9534	"	1.0166		1.337	1.0031
0700	124.73	62	110	"	"	.9551	"	1.0170		1.345	1.0031
0730	124.73	62	110	"	"	.9551	"	1.0170		1.345	1.0031

D-9

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 5 Date 20/8/84

1 TIME SAMPLED	2 SAMPLE POINT	3 SHAKE OUT OIL	4 SHAKE OUT WATER	5 SHAKE OUT BS&W	6 API° @ 60°F	7 Cl^- (ppm)	8 WATER RES(m)	9 pH	10 T (°F) NO 3	POUR POINT °C
1605	Choke	GAS CUT MUD ONLY								
1650	Choke	99.5	-	0.5	39	BROWN				30
1705	Choke				40					30
*1720	Choke	8	90.8	1.2		13000		8.5	150	
1747	Choke	83	17	tr						
1800	Choke	95	5	tr	40	BROWN				31
*1830	Choke	12	87.6	0.4		13000		7.4	176	
1900	Choke	95	5	tr	39					30
*1915	Choke	55	45	-		13000		7.3	200	
1950	Separator					13000		6.7	200	
20:00	Choke	52	48	tr	38					30
20:15	Separator					12000		6.8	200	
0200	Choke	95	4.5	0.5	39					30
0230	Choke	99.4	0.6	tr	38					30
0300	Choke	94.0	6.0	tr	38					31
0330	Choke	95.0	5.0	tr	38					31
0400	Choke	94	6	tr	38.5					31
0430	Choke	84	16	tr	38.5	12000		6.7	176	31
0500	Choke	98.5	1.5	tr	38	12000		7.3	176	31
0600	Choke	95	5	tr	38	12500		6.9	180	31
0630	Choke	95.5	4.5	tr	38	12000		6.5	180	30
0700	5 gal oil sample	95	5	tr	39					31
0730	5 gal oil sample	97.5	3.5	tr	37					
0750	"	95.5	4.5	tr	38					32
0750	5 gal sample of oil from choke									

N.B. Water samples are taken from separator except for those marked *

2418f

GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 5 Date 20/8/84

1	2	3	4	5	6	7	8	9	10
TIME SAMPLED	SAMPLE POINT	COMPONENTS C 1	C 2	C 3	C 4	C 5	H S 2	CO 2	C + 6
1605	Choke	41189	3956	3544	3213	2897	-	8	875
1620	Choke	52345	4216	3096	2419	713	-	18	146
1705	"	53203	4320	3137	2340	624	-	19	117
1747	"	53203	4372	3096	2221	579	-	21	131
1830	"	53203	4000	2892	2142	540	-	21	124
1930	"	48912	3487	2526	2062	847	-	25	219
2000	Separator	44622	3747	2851	2261	2229	4	26	642
August 21, 1984									
0300	Choke	53095	3435	2525	1824	758	tr	24	175
0330	Choke	50709	3747	2688	2213	891	4	24	223
0400	Separator	52344	3955	2933	2379	1504	2	26	325
0430	"	52400	3372	2625	2062	1218	2	26	570
0500	"	49770	3990	3340	2776	2139	2	26	623
0600	"	50709	3955	2770	2221	1961	7	26	710
0630	"	53202	5829	3747	3093	2187	6	26	554
0700	"	53031	4830	3742	3054	2362	7	27	612
0730	"	52376	3800	2647	2142	2180	6	26	597

(2418f/14)

COMPLETION DATA

Well TUNA-4 Test 5 CONT. Date 23rd August, 1984

Company Supervisor Tom Rees, Jim Cusack

Test Engineer JD/D J Wright

1. Interval 2469.5 - 2477.0 m
2. Well loading fluid DIESEL (70 Bbl), WATER (2 Bbl)
3. Approximate Differential (p_{f-Pw}) - (psi)
4. Type of perforating gun - Previously perforated (see Test 5)
5. Perforation density - (spf)
6. Mud weight 9.6 (ppg)
7. Cl^- of filtrate (ppm)
8. Cl^- of mud filtrate at time of drilling (ppm)

9. Casing:	10. Liner:	11. Tubing:
Size 9-5/8 (in.)	Size 7 (in.)	Size 3-1/2 (in.)
Weight 47 (lb/ft)	Weight 26 (lb/ft)	Inside Diameter 2.992 (in.)
Grade N-80	Grade N-80	Weight 9.3 (lb/ft)
Capacity 0.0732 (bbl/ft)	Capacity 0.0382 (bbl/ft)	Grade L-80 + J-55
Shoe 2434	Top 2227	Capacity 0.0087 (bbl/ft)
Burst: 6870 psig	Shoe 3219	Connections EUE A.B. Modified
		Burst pressure 15000 psig

12. Plugged back total depth 2519 (m)
13. Depth of packer 2447
14. Tubing volume 69.8 (bbl)
15. Volume between packer and lowest perforation 3.8 (bbl)
16. Rathole volume 1.6 (bbl)
17. Depth of tailpipe 2449.96 * (Muleshoe)
18. Location of pressure gauges: depth 2441.7 (ft) gauge number H.P.
    depth ____ (ft) gauge number ____
19. Initial WHP before well 0 psig

* Estimated

(2418f/16)

RIG-FLOOR AND BOTTOMHOLE DATA D-5A

STATIC PRESSURE BEFORE RESTART

Well TUNA-4 Test 5 CONT. Perforations 2469.5 - 2477 Date 23/8/84 Page 1 of 3

1 TIME LOCAL	2 REMARKS	3 WHP PSIG	4 WHT DEG.F	5 CAS. PRESS	6 CHOKE 64TH	BHP PSIA	BHT °C
0322	DHSIT at Depth (2443.3)	2015	45	280		4964.6	
0327	S/I tool broke after latch	1500	45	280		4699.0	
0332	Relatching DHSIT		45	280		4333.0	
0334	Bleed off 500 psig at 16/64V	1000	45	280		4305.0	
0354	Open DHSIT		45	280		3988.0	
0355	Flow to burner for 8 minutes at 48/64V	0	45	280		2864	3793
0403	Shut in DHSI, Shut in choke	0	45	260			2864
0405			45	260		3527.1	
0406			45	260		3532.7	
0407			45	260		3533.6	
0409			45	260		3533.0	
0410			45	270		3532.7	
0411			45	270		3533.4	
0412			45	270		3533.5	
0414	Clamped DHSIT line to lubricator		49	270		3533.3	
0417			49	270		3535.3	
0419			49	287		3535.3	
0422			49	270		3537.0	
0422			49	270		3537.0	
0424			49	270		3537.7	
0426						3540.9	
0428						3544.0	
0430			49	270		3546.6	
0432						3550.0	
0434							3552.3
0436							3552.5
0438							3551.1
0440			49	270			3554.9
0445							3561.1
0450			49	270			3562.2
0455							3564.1
0503			49	270			3566.0
0508							3569.5
0510			49	270			3570.6
0520			48	270			3573.4
0503			47	480			3575.1
0540			47	280			3577.7
0545	Tbh = 102.5°C						3578.3
0550			47	280			3578.8
0555							3579.5
0600			47	280			3579.6
0605							3579.7
0610			46	280			3579.8
0610			46	280			3579.8
0615							3579.6
0620							3579.2
0622	Open DHSIT						3579.2

(2418f/15)

MAJOR FLOW PERIOD

Well TUNA-4 Test 5 CONT. Perforations 2469.5 - 2477 Date 23/8/84 Page 2 of 3

1 TIME LOCAL	2 REMARKS	3 WHP PSIG	4 WHT DEG.F	5 CAS. PRESS	6 CHOKE 64TH	BHP PSIA	BHT °C
0627	Well open at choke	50	47	290	22V	3495.4	
0628		25	47	290	22		
0629		25	47	290	32V		
0630		10	47	290	32	2467.6	
0635		7	47	290	32	2932.1	
0636		3	47	290	40V		
0637		3	47	290	40		
0638		3	47	290	40		
0639		3	47	290	40		
0640		3	47	300	40	2911.8	
0645	.519 bbl/in 18"	3	47	300	40	2889.9	
0650	(#3) 24	3	50	300	40	2867.8	
0651		3	50	300	56V		
0655	30	3	50	360	56	2850.7	
0700	36	3	50	360	56	2823.9	
0705	42	5	55	360	56	2789.6	
0710	48	6 1/2	57	360	56	2767.0	
0715	55	12	62	430	56	2725.5	
0720	64	19	63	430	56	2677.2	
0725	75	26	64	480	56	2600.3	
	#4 13						
0730	24	60	68	500	56	2515.9	
0735	38	165	76	240	56	2404.4	
0740	48	465	85	280	56	2333.0	
	FLARE (MUD) BYPASS TANK						

1 TIME LOCAL	2 REMARKS	3 WHP PSIG	4 WHT DEG.F	5 CAS. PRESS	6 CHOKE 64TH	BHP PSIA
0745	Oil to surface	440	88	310	56	2255.7
0750		500	90	310	56	2200.2
0755		495	92	360	56	2153.5
0800		510	95	360	56	2121.3
0807		515	95	360	44V	2089.2
0810		515	95	380	44	2110.8
0815		528	95	380	44	2123.1
0824	to fixed choke	528	96	380	40F	3566.0
0830		555	96	380	40F	2172.2
0835						2179.8
0840						2182.7
0845		566	97	360	40F	2175.8
0900		578	97	500	40F	2174.6
0905						2163.1
0907	Diverted to Separator					
0910						2144.2
0915		570	97	210	40F	2140.9
0920						2138.2
0925						2139.6
0930						2136.96
0935						2134.2
0940		572	98	220	40F	2124.4
0945		575	99	220	40F	2119.2
0950						2119.2
0955						2112.1
1000		571	100	230	40F	2126.2
1005						2127.4

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Well TUNA-4 Test 5 CONT. Perforations 2469.5 - 2477 Date 23/8/84 Page 3 of 3

1	2	3	4	5	6		
TIME	REMARKS	WHP	WHT	CAS.	FIXED CHOKE	BHP	BHT
LOCAL		PSIG	DEG.F	PRESS	64TH	PSIA	°C
1010						2131.3	
1015		580	103	250	40	2132.0	
1030		582	104	220	40	2123.0	
1045		582	105	230	40	2108.6	
1100		575	107	260	40	2099.4	
1115		581	107	260	40	2096.4	
1130		589	110	260	40	2093.3	
1145		583	111	260	40	2085.8	
1200		583	111	300	40	2070.0	
1215		583	112	300	40	2081.2	
1230		588	112	290	40	2078.8	
1245						2075.3	
1300		585	114	280	40	2067.4	
1315						2059.2	
1330		585	114	280	40	2044.0	
1345						2040.0	
1400		580	115	310	40	2036.3	
1415						2032.0	
1430		582	116	320	40	2013.1	
1445		575	117	330	40	2011.4	
1500		580	117	340	40	2003.9	
1515		580	117	340	40	2007.2	
1552	Well S/I. Lower rig air pressure	S/I at SSV				2525.9	
1600	Well to flare. Lower rig air pressure					2414.1	
1615		590	112	350	40	2085.8	

1	2	3	4	5	VARIABLE 6	
TIME	REMARKS	WHP	WHT	CAS.	FIXED CHOKE	BHP
LOCAL		PSIG	DEG.F	PRESS	64TH	PSIA
16-30		582	117	350	40	2035.4
16-45		582	117	360	40	2011.6
1700		582	118	370	40	2008.7
1715						2011.7
1730		590	119	370	40	2009.5
1740	Separator shut	590	119	370	40	
1745	down				40	2030.8
1800		585	118	380	40	1994.6
1801	S/I with DHSIT					
1804	S/I with mainfold	540	118	380	40	

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SEPARATOR DATA SHEET

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Well TUNA-4 Test 5 CONT. Date 23/8/84 Page 1 of 2

DATE	SEPARATOR		OIL METER		WATER METER		GAS METER DATA (Gas Meter Dia. 3826, Type)				GAS	
TIME	PRESS PSIG	TEMP °F	READING BBLS	DIFF. BBLS	READING BBLS	DIFF. BBLS	STATIC PSIA	DIFF. IN.H2O	TEMP °F	PLATE IN.	GRAVITY	REMARKS
0930	110	124	20.98		399.96		125	62	107	1.76	.95	
0945	108	124	47.90		399.96		123	62	118	1.75		
1000	105	126			"		120	63	120	1.75		
1015	105	125			"		120	64	120	1.75		
1030	105	128			"		120	64	122	"		
1100	105	130			"		120	64	123	"		
1130	105	131			"		120	65	124	"		
1200	105	131			"		120	65	126	"		
1230	110						125	67	128	"		
1300	110	132		NO WATER METERED FROM SEPARATOR			125	67	130	"		
1330	110	132					125	67	131	"		
1400	180	138					195	158	132	1.25		P raised to take gas and oil samples
1430	180	138					195	158	135	"		
1445										"		
1500	180	133					195	159	130	"		
1515												
1530					399.96		190	160	130	1.25	.95	
						BYPASS SEPARATOR						
1700					NO WATER		200	146	135	1.25		
1730					METERED		205	148	138	1.25		

(2418f/18)

TANK: 0.519 BBL/per inch

OIL RATE CALCULATIONS

Well TUNA-4 Test 5 CONT. Date 23/8/84

1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0.519 B/in			OIL					CORRECTED VALUES 14.73 psia			
DATE TIME	TIME	TEMP °F		TANK READING ins.	INS		SHRINKAGE	TEMP. CORR.	BSW 1- %	CUM.PROD STB	RATE STB/D	GOR kSCF/STB	REMARKS
								IN T		IN T			
0930													
0945	15 min	124	38°	38.0	38			.9693	1	19.1181	1835.3	.721	
1000	15 "	126		68.0	30			.9684	1	15.0783	1447.5	.908	
1015	15 "	125		99.0	31			.9689	1	15.5886	1496.5	.886	
1030	15 "	128		137.0	38			.9674	1	19.0803	1831.7	.722	
1100	30 "	130		204.0	67			.9665	1	33.6084	1613	.819	
1130	30 "	131		264.0	60			.9660	1	30.0822	1443.9	.922	
1200	30 "	131		334.0	70			.9660	1	35.0959	1684.6	.788	
		TANK BY-PASSED											
1245		132		334.0									
1300	15 "	132		364.0	30			.9655	1	15.0336	1443.2	.951	
1330	30 "	132		432.0	68			.9655	1	34.0763	1635.6	.838	
1400	30 "	138		491.0	59			.9626	1	29.4783	1414.9	.936	
1430	30 "	138		559.0	68			.9626	1	33.975	1630.8	.810	
1500	30 "	133		615.0	56			.9658	1	28.070	1347.4	.988	
1530	30 "	138		682.0	67			.9626	1	33.4754	1606.8	.802	
1600	30 "		BY-PASS			SEPARATOR TANKS							
1645				682.0	Initial								

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OIL RATE CALCULATIONS

Well TUNA-4 Test 5 Date 23/8/84

1	2	3	4	5	6	7	8	9	10	11	12	13	14
		OIL								CORRECTED VALUES			
DATE TIME	TIME	TEMP °F	GRAVITY °API@60°	TANK READING ins.	INS	METER FACTOR	SHRINKAGE —	TEMP. CORR.	BSW 1- %	CUM.PROD STB	RATE STB/D	GOR kSCF/STB	REMARKS
1700	15 mins	152	38°	710	28			0.9559	1	13.891	1333.5		
1730	30	144		771	61			0.9598	1	30.386	1458.5		
1800		BYPASS SEPARATOR AND TANKS											

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GAS RATE CALCULATIONS

Well TUNA - 4 Test 5 CONT. Date 23/8/84

1	2	3	4	5	6	7	8	9	10	11	12
	BARTON 202 G A S M E T E R 3.826 in meter run				BASIC	FLOWING	SPECIFIC	SUPER-	ORIGINAL	RATE	
DATE					ORIFICE	TEMP	GRAVITY	COMPRESS	CONSTANT	Q = .0240'	
TIME	STATIC (p) f	DIFF.(h) w	TEMP.	PLATE	FACTOR	FACTOR	FACTOR	IBILITY	C' =	/ h p w f	REMARKS
	PSIA	IN H O 2	°F	IN.	F b	F tf	F g	F pv	F .F .F .F b tf g pv	(Mcf/D)	Y2
0930	124.73	62	107	1.75	637.833	.9576		1.0173		1.349	1.0031
0945	122.73	62	118	1.75	637.833	.9485		1.0159		1.324	1.0031
1000	119.73	63	120	1.75	637.833	.9468		1.0153		1.315	1.0031
1015	119.73	64	120	1.75	637.833	.9468		1.0153		1.326	1.0032
1030	119.73	64	122	1.75	637.833	.9452		1.0152		1.323	1.0033
1100	119.73	64	123	1.75	637.833	.9444		1.0151		1.322	1.0033
1130	119.73	65	124	1.75	637.833	.9436		1.0150		1.331	1.0034
1200	119.73	65	126	1.75	637.833	.9420		1.0148		1.329	1.0034
1230	124.73	67	128	1.75	637.833	.9404		1.0153		1.375	1.0033
1300	124.73	67	130	1.75	637.833	.9388		1.0151		1.372	1.0033
1330	124.73	67	131	1.75	637.833	.9380		1.0150		1.371	1.0033
1400	194.73	158	132	1.25	318.031	.9372		1.0237		1.325	1.0053
1430	194.73	158	135	1.25	318.031	.9348		1.0233		1.321	1.0053
1500	194.73	159	130	1.25	318.031	.9388		1.0240		1.331	1.0053
1530	189.73	160	130	1.25	318.031	.9388		1.0234		1.318	1.0055
					BYPASS SEPARATOR						
1700	199.73	146	135	1.25	318.031	.9348		1.0239		1.286	1.0048
1730	204.73	148	138	1.25	318.031	.9325		1.0242		1.308	1.0047

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*All water samples
from separator

LIQUID SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 5 CONT. Date 23/8/84

1	2	3	4	5	6	7	8	9	10	
TIME SAMPLED	SAMPLE POINT	SHAKE OUT OIL	SHAKE OUT WATER	SHAKE OUT BS&W	API° @ 60°F	Cl⁻ (ppm)	WATER RES(m)	pH	T (°F) NO 3	POUR POINT °C
0745	Ch. man	84	15.9	1	38.5					32
0800	" "	99.2	.8	tr	37					32
0830	" "	99.6	.4	tr	37.5					31
0900	" "	95	5	tr	38					30
0930	" "	96	4	tr	38.5					30
1000	" "	96.5	3.5	tr	38					30
1030	" "	97	3	tr	38					31
1100	" "	96.5	3.5	tr	38					30
1120	Separator					5000*		6.5	40	
1130	Ch. man	96	4	tr	38					30
1200	Separator	98	2	0	39	5000*		6.7	90	30
1230	Ch. man	99.5	0.5	0	40					31
1300	Separator	98	2	0	39	5000*		6.7	90	31
1330	Ch. man	100	0	0	39	5000*		6.7	100	31
1400	Separator	100	0	0	39					31
1415						6000*		6.6	120	
1430	Ch. man	99	1	0	38					31
	Separator	98	2	0	38	7000*		6.3	130	31
1530	Ch. man	100	0	0	38	7000*		6.5	140	30
1600	Separator	100	0	0	39					31
1630	Ch. man	100	0	0	38	Mud from shale shaker				
1700	Separator	99	1	0	38	11000		7.9	0	
1730	Ch. man	99.5	0.5	0	37					
1800	Separator	100	0	0	38					

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GAS SAMPLE FIELD ANALYSIS RECORD

Well TUNA-4 Test 5 CONT. Date 23/8/84

1	2	3	4	5	6	7	8	9	10.
TIME	SAMPLE	COMPONENTS							
SAMPLED	POINT	C 1	C 2	C 3	C 4	C 5	H S 2	CO 2	C + 6
0800	Ch. man	51486	3851	3592	2260	802	-	25%	218
0830	" "	51500	3747	2867	2253	891	-	26	294
0900	" "	51480	3414	2525	2062	847	-	26	236
0930	" "	50642	3120	2362	1938	824	-	26	227
1000	Separator	50731	3226	2514	2125	1780	-	26	562
1030	"	49770	3018	2362	1983	1827	1	26	592
1100	"	51659	2956	2444	2062	2050	2	26	440
1130	"	48912	2706	2199	1824	1783	2	26	525
1200	"	46338	3747	2851	2340	1649	2	24	262
1230	"	42906	3643	2892	2340	981	1	24	109
1300	"	41189	3331	2648	2221	1516	7	26	335
1330	"	43764	3643	2933	2499	1649	7	24	416
1400	"	43764	3383	2607	2142	1917	7	26	467
1430	"	44622	3643	2770	2340	2050	6	25	744
1500	"	47196	3539	2689	2181	2229	7	25	715
1530	"	42047	3643	2770	2261	2273	6	25	860
1600	"	48054	3851	2953	2419	2496	2	25	890
1630	"	44622	3435	2648	2142	2318	6	26	977
1700	"	47196	3539	2689	2142	2273	6	26	802
1730	"	43764	3123	2566	2102	2140	7	26	744
1800	"	47196	3747	2770	2261	1783	4	24	452

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Well TUNA-4 Test 5 CONT. Date 24/8/84

BOTTOM-HOLE TEMPERATURE: 113.2 °C

	TIME	DEPTH	PRESSURE (psi)	p (psi)	GRADIENT (psi/ft)	REMARKS
1	601pm	2425	3755.7			Unlatched DHSIT by
2	602		3682.0			pressurising tubing
3	603					with mud (16bbl, 9.6
4	604		3631.7			ppg) DHSIT had HP
5	605		3608.1			gauge at 2441.5m
6	606		3584.9			
7	607		3575.8			
8	608		3560.0			
9	609		3557.3			
10	610		3550.0			
11	611		3542.0			
12	612		3535.4			
13	615		3520.0			
14	619		3504.6			
15	620		3502.1			
16	621		3499.3			
17	622		3496.6			
18	623		3494.3			
19	624		3492.1			
20	625		3490.2			
21	628		3485.6			
22	629		3484.5			P still decreasing,
23	630		3483.8			1.2 psi/min
						Pull up to 2400 m
24	632pm	2400	3460.1			
25	633		3454.9			
26	636		3451.3			
27	637		3451.4			
28	639		3451.4			
29	640		3451.6			
30	641		3451.6			
31	642		3451.6			
32	644		3451.7			Pull up to 2375 m
33	648	2375	3421.6			T = 107.4°C
34	649		3419.3			
35	650		3419.4			
36	651		3420.2			
37	652		3421.2			
38	653		3422.0			

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Well TUNA-4 Test 5 CONT. Date 24/8/84

BOTTOM-HOLE TEMPERATURE: °C

	TIME	DEPTH m	PRESSURE (psi)	p (psi)	GRADIENT (psi/m)	REMARKS
39	654		3423.3			
40	656		3423.8			
41	657		3424.2			
42	658		3424.6			
43	659		3424.9			
45	700		3425.3			
46	701		3425.5			
47	702		3425.7			
48	703	2375	3425.9			
49	704		3426.1			
50	705		3426.3			
51	706		3426.4			
52	707		3426.4			P appears stable
53	710	2425	3486.4			down to 2425 again
54	712		3487.0			T = 108.6°C
55	713		3485.8			
56	714		3484.7			
57	715		3483.3			
58	716		3482.3			
59	717		3481.4			
60	718		3480.7			
61	719					
62	720		3479.6			
63	721		3479.3			
64	722		3479			
65	723		3478.9			
66	724		3478.6			
67	725		3478.4			
68	726		3478.5			
69	727		3478.3			
70	728		3478.3			
71	729	2425	3478.3			P appears stable
72	730					Pull out of hole
	GRADIENTS FROM "STABILISED" PRESSURES WITHOUT TIME CORRECTION					
73	630	2425	3483.3	31.6	1.26	Pressure decreasing
74	644	2400	3451.7	25.3	1.01	1 psi/min stable
75	707	2375	3426.4	51.9	1.04	stable
76	729	2425	3478.3	51.9	1.04	stable
		*CORRECTED FOR DECLINE IN P AT 2425 (630 pm)				
77	636	2400	3451.3	26.9	1.08	
78	636*	2425	3478.2			
		(see graph)				

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BOTTOM-HOLE PRESSURES D-12A

Well TUNA-4 Test 5 CONT. Date 23/8/84 Page 1 of 2

Horner Time 11.93 h Flowing BHP 1994.6 psia Initial BHP 3613 psia @ 2473 m

3581.7 @ 2441.7 m

TIME LOCAL	T		BHP PSIA	REMARKS
1801			2593.7	
1802	1	716.8	2675.3	
1803	2	358.9	2864.1	
1804	3	239.6	2934.8	
1805	4	180.0	2977.3	
1806	5	144.2	3011.3	
1807	6	120.3	3033.4	
1808	7	103.3	3050.6	
1809	8	90.5	3066.6	
1810	9	80.5	3078.1	
1811	10	72.6	3089.1	
1812	11	66.1	3100.4	
1813	12	60.7	3109.0	
1814	13	56.1	3115.7	
1815	14	52.1	3121.6	
1816	15	48.7	3127.5	
1817	16	45.7	3133.1	
1818	17	43.1	3138.5	
1819	18	40.8	3143.6	
1820	19	38.7	3147.7	
1821	20	36.8	3151.6	
1822	21	35.1	3156.3	
1823	22	33.5	3159.6	
1824	23	32.1	3161.6	
1825	24	30.8		
1826	25	29.6	3170.9	
1827	26	28.5	3174.3	
1828	27	27.5	3177.4	
1829	28	26.6	3180.1	
1830	29	25.7	3183.7	
1831	30	24.9	3186.7	
1832	31	24.1	3189.6	
1833	32	23.4	3192.1	
1834	33	22.7	3194.6	
1835	34	22.1	3197.4	
1836	35	21.5	3199.7	
1837	36	20.9	3202.5	
1838	37	20.4	3204.8	
1839	38	19.8	3207.2	
1840	39	19.4	3209.5	
1841	40	18.9	3211.7	
1842	41	18.5	3214.1	
1843	42	18.0	3216.2	
1844	43	17.7	3218.3	
1845	44	17.3	3220.2	
1846	45	16.9	3223.4	
1847	46	16.6	3224.9	
1848	47	16.2	3226.9	
1849	48	15.9	3229.0	
1850	49	15.6	3231.0	
1851	50	15.3	3233.2	
1852	51	15.0	3235.0	
1853	52	14.8	3237.1	
1854	53	14.5	3238.8	
1855	54	14.3	3240.2	
1856	55	14.0	3242.0	
1857	56	13.8	3243.9	
1858	57	13.6	3245.7	
1859	58	13.3	3248.1	
1900	59	13.1	3249.4	
1905	64	12.2	3257.8	
1910	69	11.4	3265.0	
1915	74	10.7	3270.9	
1930	89	9.0	3288.2	
1945	104	7.9	3303.4	
2000	119	7.0	3317.5	
2015	134	6.3	3330.3	
2030	149	5.8	3344.2	
2045	164	5.4	3358.4	
2100	179	5.0	3366.2	
2115	194	4.7	3330.3	
2130	209	4.4	3344.2	
2145	224	4.2	3358.4	
2200	239	4.0	3392.1	
2015	254	3.8	3398.1	
2230	269	3.7	3402.8	
2245	284	3.7	3407.3	
2300	299	3.39	3412.8	

2418f:26

BOTTOM-HOLE PRESSURES

Well TUNA-4 Test 5 CONT. Date 23/8/84 Page 2 of 2

Horner Time 11.93 h Flowing BHP 1994.6 psia Initial BHP 3613 psia @ 2473 m
3581.7 @ 2441.7 m

TIME LOCAL	T		BHP PSIA	REMARKS
2315	314	3.28	3416.9	
2330	329	3.18	3420.5	
2345	344	3.08	3423.8	
2400	359	2.99	3426.8	
2415	374	2.91	3429.6	
2430	389	2.84	3432.3	
2445	404	2.77	3434.9	
0100	419	2.71	3437.8	
0115	434	2.65	3442.1	
0130	449	2.59	3444.8	
0145	464	2.54	3447.6	
0200	479	2.49	3449.6	
0215	494	2.45	3452.1	
0230	509	2.41	3453.9	
0245	524	2.37	3455.7	
0300	539	2.33	3457.9	
0315	554	2.29	3459.7	
0330	569	2.26	3461.5	
0345	584	2.238	3462.8	
0400	599	2.19	3465	
0415	614	2.17	3466.3	
0430	629	2.14	3468.1	
0445	644	2.11	3469.5	
0500	659	2.09	3470.7	
0515	674	2.06	3471.7	
0530	689	2.04	3473.2	
0545	704	2.02	3474.4	
0600	719	2.00	3475.4	
0615	734	1.98	3476.4	
0630	749	1.96	3478.0	
0645	764	1.94	3478.9	
0700	779	1.92	3480.2	
0715	794	1.90	3481.1	
0730	809	1.88	3482.1	
0745	824	1.87	3483.0	
0800	854	1.84	3484.7	
0815	854	1.84	3484.7	
0830	869	1.82	3485.7	
0845	884	1.81	3486.7	
0900	899	1.80	3487.9	
0915	914	1.78	3488.4	
0930	929	1.77	3489.2	
0945	944	1.76	3490.0	
1000	959	1.75	3491.0	
1015	974	1.73	3491.5	
1030	989	1.72	3492.5	
1045	1004	1.71	3492.9	
1100	1019	1.70	3493.9	
1115	1034	1.69	3494.4	
1130	1049	1.68	3495.1	
1145	1064	1.67	3495.7	
1200	1079	1.66	3496.2	
1215	1094	1.65	3497.0	
1230	1109	1.65	3497.8	
1245	1124	1.64	3498.3	
1300	1139	1.63	3498.7	
1315	1154	1.62	3499.2	
1330	1169	1.61	3499.9	
1345	1184	1.60	3500.4	
1400	1199	1.60	3501.0	
1415	1214	1.59	3501.5	
1430	1229	1.58	3502.3	
1445	1244	1.58	3502.6	
1500	1259	1.57	3503.2	
1515	1274	1.56	3503.7	
1530	1289	1.56	3504.1	
1545	1304	1.55	3504.5	
1600	1319	1.54	3505.1	
1615	1334	1.54	3505.4	
1630	1349	1.53	3506.0	
1645	1364	1.52	3506.4	
1700	1379	1.52	3507.0	Pull out for gradient survey

2418f:27

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 5A Date 23/8/84

Production Interval 2469.5 - 2477mkb

Initial Reservoir Pressure 3613 psia @ 2473 ft

Reservoir Temperature _____ °F @ _____ ft

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	15.00	15.00	15.00	
Length of Time Well was Produced	11 hr 26 min	11 hr 26 min	11 hr 26 min	
Container No.	OT170T	OT229T	P346514	
Container Volume	510 cc	510 cc	11 L	
Separator Pressure psig	180	180	180	
Separator Temperature (°F)	130	130	130	
Wellhead Pressure psig	580	580	580	
Wellhead Temperature (°F)	117	117	117	
Flowing Bottom-hole Pressure (psi)a	2003.9	2003.9	2003.9	
Flowing Bottom-hole Temperature (°C)	113.5	113.5	113.5	
Separator Rate (Sep. bbl/D)*	1346.3	1346.3	1346.3	
Separator Gas Rate (MSCF/D)	1331	1331	1331	
Separator GOR (SCF/Sep. bbl)	989	989	989	
Well Rate (STB/D)+	1611	1611	1611	
Well GOR (SCF/STB)+	824	824	824	
Full Wellstream Water Cut	0	0	0	

How Outage was taken on Liquid Samples Drain brine from sample container leaving about 30cc in container

Gas Sampling Method Evacuated cylinder

Liquid Sampling Method Brine displacement

Special Instruction for Lab _____

Sampled by TONY WOOLHAM

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

2418f:32

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 5A Date 23/8/84

Production Interval 2469.5 - 2477mkb

Initial Reservoir Pressure 3613 psia @ 2473 ft

Reservoir Temperature _____ °F @ _____ ft

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	15.30	15.30	15.30	
Length of Time Well was Produced	11 hr 26 min	11 hr 26 min	11 hr 26 min	
Container No.	OTO51T	OTO82T	P347786	
Container Volume	510 cc	525 cc	11 L	
Separator Pressure psig	175	175	175	
Separator Temperature (°F)	130	130	130	
Wellhead Pressure psig	585	585	585	
Wellhead Temperature (°F)	117	117	117	
Flowing Bottom-hole Pressure (psi)a	2003.2	2003.2	2003.2	
Flowing Bottom-hole Temperature (°C)	113.5	113.5	113.5	
Separator Rate (Sep. bbl/D)*	1606.8	1606.8	1606.8	
Separator Gas Rate (MSCF/D)	1318	1318	1318	
Separator GOR (SCF/Sep. bbl)	802	802	802	
Well Rate (STB/D)+	1611	1611	1611	
Well GOR (SCF/STB)+	824	824	824	
Full Wellstream Water Cut	0	0	0	

How Outage was taken on Liquid Samples Drain brine from sample container leaving about 30cc in container

Gas Sampling Method Evacuated cylinder

Liquid Sampling Method Brine displacement

Special Instruction for Lab _____

Sampled by TONY WOOLHAM

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

2418f:31

SEPARATOR SAMPLE DATA

Well TUNA - 4 Test 5A Date 23/8/84

Production Interval 2569.5 - 2477m

Initial Reservoir Pressure 3613 psia @ 2473 m

Reservoir Temperature 236 °F @ 2443.2 m

	Liquid		Gas	
	Sample No. 1	Sample No. 2	Sample No. 1	Sample No. 2
Time Sampled	17.00	17.00	17.00	
Length of Time Well was Produced	11 hr 26 min	11 hr 26 min	11 hr 26 min	
Container No.	OTO75T	OTO104T	345252	
Container Volume	505 cc	495 cc	11 L	
Separator Pressure psig	185	185	185	
Separator Temperature (°F)	135	135	135	
Wellhead Pressure psig	582	582	582	
Wellhead Temperature (°F)	118	118	118	
Flowing Bottom-hole Pressure (psi)a	2008.7	2008.7	2008.7	
Flowing Bottom-hole Temperature (°C)	113.5	113.5	113.5	
Separator Rate (Sep. bbl/D)*	1333.2	1333.2	1333.2	
Separator Gas Rate (MSCF/D)	1286	1286	1286	
Separator GOR (SCF/Sep. bbl)	964	964	964	
Well Rate (STB/D)+	1611	1611	1611	
Well GOR (SCF/STB)+	824	824	824	
Full Wellstream Water Cut	0	0	0	

How Outage was taken on Liquid Samples Drain brine from sample container leaving about 30cc in container

Gas Sampling Method Evacuated cylinder

Liquid Sampling Method Brine displacement

Special Instruction for Lab

Sampled by TONY WOOLHAM

* Rates based on Meter Readings corrected for Meter Factor Only.
\+ Rates corrected to Stock-Tank Conditions as per Form D-7.

2418f:30

APPENDIX B

CASED HOLE RFT RESULTS

TABLE 1

CASED HOLE RFT PRETEST PRESSURES

SERVICE COMPANY: Schlumberger RFT RUN NO.: 1 & 2 Cased - hole WELL: Tuna - 4

CASED - HOLE RUNS -1 DATE: 21 July, 1984

OBSERVERS: O'Byrne, Shoghi

SEAT NO.	DEPTH MDKB	DEPTH SS	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESS. psi	FORMATION PRESS. ppg	FHP psi	FHP ppg	TEST RESULT	TEMP (°F)	CASING SEAL PRESSURE
1/1	2938.8	2917.8	SPT	HP	Y	A	5455.52						No Seal	116.9	
				SCH	Y	G	5434								
1/2	2938.8	2917.8	SPT	HP	Y	A	5454						No Seal	117.1	
				SCH	Y	G	5434								
1/3	2938.8	2917.8	SPT	HP	Y	A	5439.4		4616.2		5403.6		Valid	117.2	46.2
				SCH	Y	G	5414		4648		5436				52
2/4	2940.0	2119.0	SPT	HP	Y	A	5460.3		4612.6		5400.0		Valid	117.8	137
				SCH	Y	G	5487		4706		5493				90

1. Pressure Test = PT
   Sample & Pressure Test = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

KB (Southern Cross) = 21 m

2526f/1

TABLE 1

CASED HOLE RFT PRETEST PRESSURES

SERVICE COMPANY: Schlumberger RFT RUN NO.: 3 WELL: Tuna - 4

CASED - HOLE RUNS DATE: 6/8/84

OBSERVERS: O'Byrne

SEAT NO.	DEPTH MDKB	DEPTH SS	REASON 1 FOR TEST	GAUGE 2	TEMP 3 CORR.	UNITS 4	IHP psi	IHP ppg	FORMATION PRESS. psi	FORMATION PRESS. ppg	FHP psi	FHP ppg	TEST RESULT	TEMP (°F)	CASING SEAL PRESSURE
5	2775.0	2754	SPT	HP	Y	A	4669.7		4042.6		4670		Valid	110.0	381
				SCH	Y	G	4777		11766		11791				
6	2752.0	2731.0	SPT	HP	Y	A	4611.3		4014.3		4595		Valid	111.4	370
				SCH	Y	G									
7	2768.7	2747.7	SPT	HP	Y	A	4641.0		4023.9		4590.8		Valid	113.0	270
				SCH	Y	G									

1. Pressure Test = PT
   Sample & Pressure Test = SPT

2. Gauges = SCH = Schlumberger Strain Gauge
   = HP = Hewlett Packard

3. Yes = Y
   No = N

4. PSIA = A
   PSIG = G

KB (Southern Cross) = 21 m

N.B. Strain Gauge damaged during run 3.

RFT SAMPLE TEST REPORT
CASED - HOLE RFT

WELL: TUNA-4
OBSERVER: Shoghi, O'Byrne DATE: 21/7/84 RUN: Cased-hole 1

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO.	3			
	DEPTH	2938.8			
A.	RECORDING TIMES				
	Tool Set	14:25:20			
	Pretest Open	14:33:30			
	Time Open				
	Chamber Open	14:44:40		15:14:40	
	Chamber Full	15:04:40		15:16:45	
	Fill Time				
	Start Build-up	15:05:00			
	Finish Build-up	15:12:30			
	Build-Up Time				
	Seal Chamber	15:14:00		15:20:00	
	Tool Retract			15:35:00	
	Total Time		hrs	01:09:40	hrs
B.	SAMPLE PRESSURES				
	IHP	5439.4	psig		psig
	ISIP	4616.2		3553.6	
	Initial Flowing Press.	55			
	Final Flowing Press.	2677.2		3377	
	Sampling Press. Range				
	FSIP	4603.3		4612	Not Stabilised
	FHP			5403.6	
	Form.Press.(Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	3000	m		m
	Max. Rec. Temp.	119.3	°C	119.5	°C
	Time Circ. Stopped	23:50:00	(hrs)		hrs
	Time since Circ.	19.40	hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	300	psig	350	psig
	Amt Gas	3.04	ft	1.02	ft
	Amt Oil (waxy)	-	lit	-	lit
	Amt Water filtrate	41.7	lit	9.5	lit
	Amt Others		lit		lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	46664	ppm	44442	ppm
	C2	6071	ppm	6267	ppm
	C3	2630	ppm	2981	ppm
	IC4/nC4	747	ppm	1121	ppm
	C5+	229	ppm	367	ppm
	C6+	46	ppm	114	ppm
	CO2/H2S	0.5%/0	ppm	27.3%/0	ppm
	Oil Properties	°API @	°C	°API @	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.276 @	20 °C	0.272 @	20.5 °C
	NaCl Equivalent	23000	ppm	230000	ppm
	Cl-titrated	14000	ppm	13500	ppm
	NO3/Ca^{2+}	140	ppm	100	ppm
	Est. Water Type	PH = 7.3		PH = 7.0	
	Mud Properties	@°C		@°C	
	Resistivity		@ 75°C		@ 75°C
	NO3	190	ppm	190	ppm
	Cl - titrated	17500	ppm	17500	ppm
	Calibration				
	Calibration Press.	-	psig	-	psig
	Calibration Temp.	116	°C		°C
	Hewlett Packard No.	2120A00-974			
	Mud Weight				
	Calc. Hydrostatic				
	RFT Chokesize	.03		.03	
	Remarks				

RFT strain gauge: 59491 HP No. 2120A00 - 974

RFT SAMPLE TEST REPORT

(2526f/4)

WELL: TUNA-4
OBSERVER: Shoghi, O'Byrne DATE: 21/7/84 RUN: Cased-hole 2

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO. 4	4		4	
	DEPTH 2940.0	2940.0		2940.0	
A.	RECORDING TIMES				
	Tool Set	19:37:30			
	Pretest Open	19:42:30			
	Time Open				
	Chamber Open	19:59:30		21:19:00	
	Chamber Full				
	Fill Time				
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	21:17:30		21:45:30	
	Tool Retract			22:08:50	
	Total Time		hrs	2:30	hrs
B.	SAMPLE PRESSURES				
	IHP	5460.3	psig		psig
	ISIP	4612.6			
	Initial Flowing Press.	519		358	
	Final Flowing Press.	4482		4550	
	Sampling Press. Range				
	FSIP	4571 (Not Stabilised)		4614.8	Not Stabilised
	FHP				
	Form.Press.(Horner)				
C.	TEMPERATURE				
	Depth Tool Reached	2985	m		m
	Max. Rec. Temp.	120.9	°C	120.7	°C
	Time Circ. Stopped	23:50:00	(hrs)		hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	420	psig	380	psig
	Amt Gas	3.95	ft	1.28	ft
	Amt Oil (waxy)	-	lit	100 ml	lit
	Amt Water filtrate	28.25	lit	9.0	lit
	Amt Others	Black oil scum			lit
E.	SAMPLE PROPERTIES	(Grease - like)			
	Gas Composition				
	C1	292,680	ppm	236,032	ppm
	C2	40,960	ppm	34,560	ppm
	C3	20,685	ppm	16,031	ppm
	IC4/nC4	6,872	ppm	4,229	ppm
	C5+	1,883	ppm	1,198	ppm
	C6+	455	ppm	420	ppm
	CO2/H2S	11.0%/0	ppm	6.5%/0	ppm
	Oil Properties	°API @	°C	34 °API @	°C
	Colour	Bright		Brown waxy	
	Fluorescence	white		Bright yellow-cream	
	GOR			Pour point 35°C	
	Water Properties				
	Resistivity	0.270 @	20.5 °C	0.266 @ 20.0 °C	
	NaCl Equivalent	24500	ppm	24000	ppm
	Cl-titrated	12000	ppm	13000	ppm
	NO3/Ca^{2}+	40	ppm	20	ppm
	Est. Water Type	PH = 8.4		PH = 7.9	
	Mud Properties	@°C		@°C	
	Resistivity	@ °C		@ °C	
	NO3	190	ppm	190	ppm
	Cl - titrated	17500	ppm	17500	ppm
	Calibration				
	Calibration Press.	-	psig	-	psig
	Calibration Temp.	116	°C	116	°C
	Hewlett Packard No.	2120A00-974		2120A00-974	
	Mud Weight				
	Calc. Hydrostatic				
	RFT Chokesize	.03		.03	
	Remarks				

RFT strain gauge: 59491

RFT SAMPLE TEST REPORT

(2526f/5)

WELL: TUNA-4
OBSERVER: O'Byrne
DATE: 6/8/84
RUN: 3

	CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
SEAT NO. 5	5		5	
DEPTH	2775.0		2775.0	
A. RECORDING TIMES				
Tool Set	02:37:30			
Pretest Open	02:42:45			
Time Open				
Chamber Open	02:51:30			
Chamber Full				
Fill Time	Seal and open several times			
Start Build-up				
Finish Build-up				
Build-Up Time				
Seal Chamber				
Tool Retract	03:48:45			
Total Time	71	mins		hrs
B. SAMPLE PRESSURES				
IHP	4669.7	psig		psig
ISIP	4042.6			
Initial Flowing Press.	309			
Final Flowing Press.	240			
Sampling Press. Range				
FSIP	240			
FHP	4670			
Form.Press.(Horner)				
C. TEMPERATURE				
Depth Tool Reached	2779	m	2779	m
Max. Rec. Temp.	110.9	°C		°C
Time Circ. Stopped	1215	(hrs)		hrs
Time since Circ.		hrs.		hrs.
Form. Temp. (Horner)		°C		°C
D. SAMPLE RECOVERY				
Surface Pressure	0	psig		psig
Amt Gas	2.79	ft		lit
Amt Oil (waxy)		lit	100 ml	lit
Amt Water/mud	7.7	lit		lit
Amt Others		lit		lit
E. SAMPLE PROPERTIES				
Gas Composition				
C1		ppm		ppm
C2		ppm		ppm
C3		ppm		ppm
IC4/nC4		ppm		ppm
C5+		ppm		ppm
C6+		ppm		ppm
CO2/H2S	N/A /0	ppm		ppm
Oil Properties	°API @	°C	°API @	°C
Colour				
Fluorescence				
GOR				
Water Properties				
Resistivity	1.71 @	20 °C	@	°C
NaCl Equivalent	3700	ppm		ppm
Cl-titrated	1800	ppm		ppm
NO3/Ca^{2+}	140	ppm		ppm
Est. Water Type	PH = 11.29			
Mud Properties	@°C		@°C	
Resistivity	@ °C		@ °C	
Na Cl Equivalent		ppm		ppm
Cl - titrated	11500	ppm	PH: 11.0	ppm
Calibration	Trace NO3			
Calibration Press.	-	psig	-	psig
Calibration Temp.		°C		°C
Hewlett Packard No.	974		974	
Mud Weight	9.6		9.6	
Calc. Hydrostatic				
RFT Chokesize	.03 Flow restrictor		.03 Flow restrictor	
Remarks	Strain gauge: 59491/10K			

0340 Attempt to backflush (commence retract cycle)
0345 Attempt to backflush

0343 Open again (lower chamber)
Totally plugged at probe - no response to closing chamber

RFT SAMPLE TEST REPORT

(2526f/6)

WELL: TUNA-4
OBSERVER: O'Byrne DATE: 6/8/84 RUN: 4

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO. 6	6		6	
	DEPTH	2752.0		2752.0	
A.	RECORDING TIMES				
	Tool Set	07:50:45			
	Pretest Open	07:53:00			
	Time Open				
	Chamber Open	08:01:30		08:30:30	
	Chamber Full	08:15:45		08:34:00	
	Fill Time	14:15		3:30	
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	08:19:30		08:38:22	
	Tool Retract			08:51:45	
	Total Time		hrs	61 mins	
B.	SAMPLE PRESSURES				
	IHP	4611.3	psia		psig
	ISIP	4014.3			
	Initial Flowing Press.	1700		2670	
	Final Flowing Press.	2145		2360	
	Sampling Press. Range				
	FSIP	3999 (Not stabilised)		4003.0	Not stabilised
	FHP			4595	
	Form.Press.(Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m		m
	Max. Rec. Temp.	113.8	°C	113.8	°C
	Time Circ. Stopped	1215	(hrs)	1215	hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	200	psig	200	psig
	Amt Gas	1.28	ft	0.25	ft
	Amt Oil (waxy)		lit		lit
	Amt Water/mud	45	lit	9.0	lit
	Amt Others		lit		lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	228573	ppm		ppm
	C2	26302	ppm		ppm
	C3	9100	ppm		ppm
	IC4/nC4	1853	ppm		ppm
	C5+	332	ppm		ppm
	C6+	32	ppm		ppm
	CO2/H2S	4%/Nil	ppm	Nil	ppm
	Oil Properties	°API @	°C	°API @	°C
	Colour				
	Fluorescence				
	GOR				
	Water Properties				
	Resistivity	0.278@	22 °C	0.275 @	20 °C
	NaCl Equivalent	24000	ppm	25000	ppm
	Cl-titrated	16000	ppm	13800	ppm
	NO3/Ca^{2}+	187	ppm	187	ppm
	Est. Water Type	PH = 7.5		PH = 7.5	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	11500	ppm	PH: 11.0	ppm
	Calibration	Trace No.5			
	Calibration Press.	-	psig	-	psig
	Calibration Temp.		°C		°C
	Hewlett Packard No.	974		974	
	Mud Weight				
	Calc. Hydrostatic				
	RFT Chokesize	.03		.03	
	Remarks	(i) Strain gauge not working (ii) Intermittent plugging during chamber 1			

RFT SAMPLE TEST REPORT

(2526f/7)

WELL: TUNA-4

OBSERVER: O'Byrne DATE: 6/8/84 RUN: 5

		CHAMBER 1 (45.4 lit.)		CHAMBER 2 (10.4 lit.)	
	SEAT NO. 7	7		7	
	DEPTH	2768.7		2768.7	
A.	RECORDING TIMES				
	Tool Set	12:23:30			
	Pretest Open	12:26:30			
	Time Open				
	Chamber Open	12:30:00		13:01:00	
	Chamber Full			13:03:30	
	Fill Time				
	Start Build-up				
	Finish Build-up				
	Build-Up Time				
	Seal Chamber	12:59:00		13:10:30	
	Tool Retract			13:25:35	
	Total Time	36	mins	25 mins	
B.	SAMPLE PRESSURES				
	IHP	4641.0	psig		psig
	ISIP	4023.9			
	Initial Flowing Press.	3700		3700	
	Final Flowing Press.	3986.0		3810	
	Sampling Press. Range				
	FSIP	3990.8 (Not stabilised)		4009.4 (Not stable)	
	FHP			4590.8	
	Form.Press.(Horner)				
C.	TEMPERATURE				
	Depth Tool Reached		m		m
	Max. Rec. Temp.		°C	116.4	°C
	Time Circ. Stopped	1215	(hrs)	1215	hrs
	Time since Circ.		hrs.		hrs.
	Form. Temp. (Horner)		°C		°C
D.	SAMPLE RECOVERY				
	Surface Pressure	820	psig	720	psig
	Amt Gas	1.5	ft^3	0.28	ft^3
	Amt Oil (waxy)	0.25	lit	0.18	lit
	Amt Water/mud	45.5	lit	9.2	lit
	Amt Others		lit		lit
E.	SAMPLE PROPERTIES				
	Gas Composition				
	C1	448568	ppm	244899	ppm
	C2	48591	ppm	168450	ppm
	C3	16988	ppm	84131	ppm
	IC4/nC4	4809	ppm	22443	ppm
	C5+	843	ppm	8819	ppm
	C6+	342	ppm	1028	ppm
	CO2/H2S	1%/0	ppm	1%/0	ppm
	Oil Properties	33.7% °API @ 15 °C		°API @ °C	
	Colour	Redish brown		Redish brown	
	Fluorescence	white		white	
	GOR	954		971	
	Water Properties				
	Resistivity	0.73@	22 °C	0.73 @	21 °C
	NaCl Equivalent	8500	ppm	8500	ppm
	Cl-titrated	17000	ppm	13000	ppm
	NO3	180	ppm	180	ppm
	Est. Water Type	PH = 9.5		PH = 7.5	
	Mud Properties				
	Resistivity	@ °C		@ °C	
	Na Cl Equivalent		ppm		ppm
	Cl - titrated	11500	ppm	PH: 11.0	ppm
	Calibration	Trace NO3			
	Calibration Press.	-	psig	-	psig
	Calibration Temp.		°C		°C
	Hewlett Packard No.	974		974	
	Mud Weight	9.6		9.6	
	Calc. Hydrostatic				
	RFT Chokesize	.03 flow restrictor		.03 flow restrictor	
	Remarks	Pour point 39°C		Pour point 42°C	

N.B. 1) RFT unit is being sent to town for maintenance 2) Strain gauge is not working