



Attachment to WCR  
Orange Roughy  
(W1121)

ORANGE ROUGHY-1.



**CORELAB**

**CORE  
LABORATORIES**

**PETROLEUM DIVISION**

**13 NOV 1995**



CORE LABORATORIES

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*A Routine Core Analysis  
Of Selected Samples From  
Well Orange Roughy # 1*

Prepared for  
ESSO AUSTRALIA LIMITED

September 1995

File: PRP-95040

Rock Properties  
Core Laboratories  
Perth  
Australia



## CORE LABORATORIES

September 28th, 1995

**ESSO AUSTRALIA LIMITED**

360, Elizabeth Street  
Melbourne 3000

**Attention : Mr. A.A.Mills**

Subject : Routine Core Analysis  
Well : Orange Roughy # 1  
File : PRP-95040

Dear Andy,

Presented herein are the final results of the routine core analysis conducted on selected samples from the Well Orange Roughy # 1.

This analysis study was initiated by a letter from you dated 31st July 1995 with reference to the covering Contract No. 2710081 RFS 3. I hope the two-three week turnaround time for plug sample data is acceptable.

Thank you for the opportunity to have been of service to Esso Australia Ltd. Please do not hesitate to contact us if you have any questions regarding this report or if we can be of any further assistance to you.

Yours sincerely,  
**CORE LABORATORIES**

Rossini Silveira  
Supervisor - Rock Properties Perth

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**SECTION 1**

Company :ESSO AUSTRALIA Ltd.  
Well :ORANGE ROUGHY # 1

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## INTRODUCTION

This report contains the results of a routine core analysis study performed by Core Laboratories Perth (Corelab) on 92 plug samples and 91 plug trim-ends from the Well Orange Roughy # 1. The study was conducted on behalf of Esso Australia Ltd.

Analyses selected were:

- Porosity and permeability at a net overburden pressure of 4000 psi.
- Absolute grain density measurements on plug trim-ends.

**SECTION 3**



COMPANY : ESSO AUSTRALIA LTD.  
WELL : ORANGE ROUGHY # 1

**Table 1.**  
**Porosity and permeability determined by CMS-300 at a NOB of 4000 psi.**

Sample ID	Depth (metres)	Permeability to air (md)	Klinkenberg Permeability (md)	Porosity (%)	Grain density (gm/cc)
3A	2313.75	0.041	0.018	6.80	2.72
5A	2314.00	0.022	0.008	7.80	2.68
7A	2314.25	<0.01	-	6.45	2.69
V9A	2314.33	<0.01	-	5.62	2.68
11A	2314.50	<0.01	-	5.38	2.69
13A	2314.75	<0.01	-	4.45	2.75
15A	2315.00	0.052	0.029	7.60	2.85
17A	2315.25	3.08	2.46	11.6	2.71
V19A	2315.30	0.569	0.385	11.4	2.71
21A	2315.55	19.1	16.3	12.9	2.69
23A	2315.75	12.2	10.4	12.3	2.68
25A	2316.00	16.1	13.5	12.3	2.69
27A	2316.25	8.94	7.25	11.2	2.69
V29A	2316.31	7.37	6.09	12.4	2.69
31A	2316.50	50.2	40.9	13.0	2.70
33A	2316.75	14.91	11.98	12.5	2.70
35A	2317.00	61.1	53.6	12.7	2.69
37A	2317.25	4.80	3.76	11.1	2.69
V39A	2317.32	5.55	4.43	11.0	2.68
41A	2317.50	14.1	11.0	11.8	2.67
43A	2317.75	1.15	0.865	8.90	2.69
45A	2318.00	7.96	6.68	10.4	2.68
47A	2318.25	95.5	80.8	13.9	2.66
V49A	2318.31	0.081	0.045	8.90	2.68
51A	2318.60	83.5	72.3	14.1	2.68
53A	2318.75	195	167	14.6	2.67
55A	2319.00	88.1	78.7	14.1	2.67
57A	2319.25	329	291	14.7	2.67
V59A	2319.31	186	155	15.1	2.66
61A	2319.50	253	201	14.9	2.67
63A	2319.75	110	95.0	14.2	2.68
65A	2320.00	74.2	63.0	13.8	2.68
67A	2320.25	0.099	0.068	10.6	2.70
V69A	2320.30	9.56	6.91	10.5	2.72
71A	2320.50	131	112	15.0	2.67
73A	2320.75	292	244	14.9	2.66

COMPANY : ESSO AUSTRALIA LTD.  
WELL : ORANGE ROUGHY # 1

**Table 1.**  
**Porosity and permeability determined by CMS-300 at a NOB of 4000 psi.**

Sample ID	Depth (metres)	Permeability to air (md)	Klinkenberg Permeability (md)	Porosity (%)	Grain density (gm/cc)
75A	2320.95	274	230	14.9	2.66
77A	2321.20	148	120	14.3	2.67
V79A	2321.31	49.9	42.7	13.8	2.66
81A	2321.45	76.5	63.3	14.1	2.66
83A	2321.77	57.1	47.3	13.4	2.67
85A	2321.98	191	154	13.0	2.67
87A	2322.25	244	196	14.0	2.66
V89A	2322.29	70.2	58.3	14.5	2.67
91A	2322.50	142	117	13.9	2.66
93A	2322.75	136	114	14.9	2.67
95A	2323.00	460	387	13.7	2.62
97A	2323.25	56.4	49.1	12.8	2.67
V99A	2323.31	36.2	31.3	14.0	2.66
101A	2323.58	29.0	24.4	12.4	2.68
103A	2323.75	17.3	14.9	12.0	2.68
105A	2324.00	7.79	6.66	12.0	2.69
107A	2324.25	0.794	0.599	8.90	2.68
V109A	2324.31	0.199	0.124	9.90	2.67
111A	2324.50	0.104	0.064	7.40	2.69
113A	2324.75	0.075	0.044	7.40	2.69
115A	2325.00	2.74	2.21	11.4	2.65
117A	2325.25	19.6	17.2	14.6	2.65
V119A	2325.31	12.60	11.0	15.1	2.65
121A	2325.54	4.62	3.78	13.4	2.67
123A	2325.75	0.559	0.393	10.7	2.68
125A	2326.00	1.11	0.834	11.8	2.68
127A	2326.25	0.786	0.547	11.2	2.67
V129A	2326.31	1.02	0.802	11.3	2.67
131A	2326.50	0.570	0.379	10.6	2.67
133A	2326.75	0.274	0.162	10.4	2.69
135A	2327.00	0.060	0.031	9.50	2.70
137A	2327.25	0.041	0.021	7.80	2.71
V139A	2327.31	0.088	0.051	8.30	2.70
141A	2327.50	0.025	0.012	7.60	2.71
143A	2327.75	0.069	0.035	8.90	2.70
145A	2328.00	1.35	1.09	10.4	2.67

COMPANY : ESSO AUSTRALIA LTD.  
WELL : ORANGE ROUGHY # 1

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**Table 1.**  
**Porosity and permeability determined by CMS-300 at a NOB of 4000 psi.**

Sample ID	Depth (metres)	Permeability to air (md)	Klinkenberg Permeability (md)	Porosity (%)	Grain density (gm/cc)
147A	2328.25	2.44	1.98	11.5	2.65
V149A	2328.31	0.985	0.733	11.4	2.65
151A	2328.50	0.334	0.216	9.80	2.66
153A	2328.75	0.016	0.005	5.90	2.66
155A	2329.00	0.260	0.163	9.80	2.66
157A	2329.25	10.0	8.51	14.0	2.65
V159A	2329.32	2.30	1.77	14.5	2.65
161A	2329.50	1.15	0.879	11.9	2.65
163A	2329.75	0.516	0.350	10.7	2.65
165A	2330.00	0.038	0.016	7.50	2.65
167A	2330.25	0.026	0.011	5.90	2.67
V169A	2330.30	0.230	0.136	9.50	2.68
171A	2330.45	123	112	15.8	2.65
173A	2330.75	391	377	16.8	2.64
175A	2331.00	265	252	17.8	2.64
177A	2331.25	335	325	17.5	2.64
V179A	2331.30	305	296	18.9	2.64
181A	2331.50	440	427	19.0	2.64
183A	2331.75	428	418	18.8	2.65
V185A	2331.90	172	163	18.2	2.65

POROSITY FOR SAMPLES 7A,V9A,11A,13A MEASURED AT AMBIENT.

COMPANY : ESSO AUSTRALIA LTD.  
WELL : ORANGE ROUGHY # 1

Table 2. Grain density measured on the Orange Roughy # 1 samples.

Sample ID	Depth (metres)	Humidity dried		hot oven dried
		Plug grain density (gm/cc)	plug end grain density (gm/cc)	plug end grain density (gm/cc)
3A	2313.75	2.72	2.72	2.73
5A	2314.00	2.68	2.68	2.68
7A	2314.25	2.69	2.70	2.72
V9A	2314.33	2.68	2.71	2.71
11A	2314.50	2.69	2.71	2.72
13A	2314.75	2.75	2.79	2.81
15A	2315.00	2.85	2.88	2.90
17A	2315.25	2.71	2.71	2.72
V19A	2315.30	2.71	2.70	2.71
21A	2315.55	2.69	2.69	2.71
23A	2315.75	2.68	2.69	2.69
25A	2316.00	2.69	2.70	2.70
27A	2316.25	2.69	2.68	2.69
V29A	2316.31	2.69	2.70	2.71
31A	2316.50	2.70	2.70	2.70
33A	2316.75	2.70	2.74	2.77
35A	2317.00	2.69	2.70	2.70
37A	2317.25	2.69	2.70	2.70
V39A	2317.32	2.68	2.71	2.72
41A	2317.50	2.67	2.69	2.70
43A	2317.75	2.69	2.68	2.68
45A	2318.00	2.68	2.67	2.69
47A	2318.25	2.66	2.67	2.69
V49A	2318.31	2.68	2.67	2.68
51A	2318.60	2.68	2.68	2.68
53A	2318.75	2.67	2.66	2.67
55A	2319.00	2.67	2.68	2.66
57A	2319.25	2.67	2.68	2.69
V59A	2319.31	2.66	2.66	2.67
61A	2319.50	2.67	2.68	2.70
63A	2319.75	2.68	2.66	2.67
65A	2320.00	2.68	2.68	2.70
67A	2320.25	2.70	2.73	2.75
V69A	2320.30	2.72	2.66	2.67
71A	2320.50	2.67	2.66	2.67

COMPANY : ESSO AUSTRALIA LTD.  
WELL : ORANGE ROUGHY # 1

Table 2. Grain density measured on the Orange Roughy # 1 samples.

Sample ID	Depth (metres)	Humidity dried		hot oven dried
		Plug grain density (gm/cc)	plug end grain density (gm/cc)	plug end grain density (gm/cc)
73A	2320.75	2.66	2.66	2.68
75A	2320.95	2.66	2.64	2.66
77A	2321.20	2.67	2.67	2.68
V79A	2321.31	2.66	2.65	2.66
81A	2321.45	2.66	2.67	2.68
83A	2321.77	2.67	2.68	2.68
85A	2321.98	2.67	2.66	2.68
87A	2322.25	2.66	2.65	2.67
V89A	2322.29	2.67	2.65	2.67
91A	2322.50	2.66	2.67	2.67
93A	2322.75	2.67	2.67	2.68
95A	2323.00	2.62	2.63	2.65
97A	2323.25	2.67	2.66	2.69
V99A	2323.31	2.66	2.66	2.68
101A	2323.58	2.68	2.67	2.68
103A	2323.75	2.68	2.70	2.70
105A	2324.00	2.69	2.69	2.69
107A	2324.25	2.68	2.68	2.68
V109A	2324.31	2.67	2.67	2.69
111A	2324.50	2.69	2.68	2.68
113A	2324.75	2.69	2.69	2.69
115A	2325.00	2.65	2.65	2.66
117A	2325.25	2.65	2.67	2.69
V119A	2325.31	2.65	2.66	2.67
121A	2325.54	2.67	2.66	2.68
123A	2325.75	2.68	2.68	2.71
125A	2326.00	2.68	2.68	2.69
127A	2326.25	2.67	2.67	2.69
V129A	2326.31	2.67	2.67	2.68
131A	2326.50	2.67	2.69	2.70
133A	2326.75	2.69	2.69	2.70
135A	2327.00	2.70	2.73	2.74
137A	2327.25	2.71	2.72	2.74
V139A	2327.31	2.70	2.69	2.71
141A	2327.50	2.71	2.70	2.71
143A	2327.75	2.70	2.70	2.71

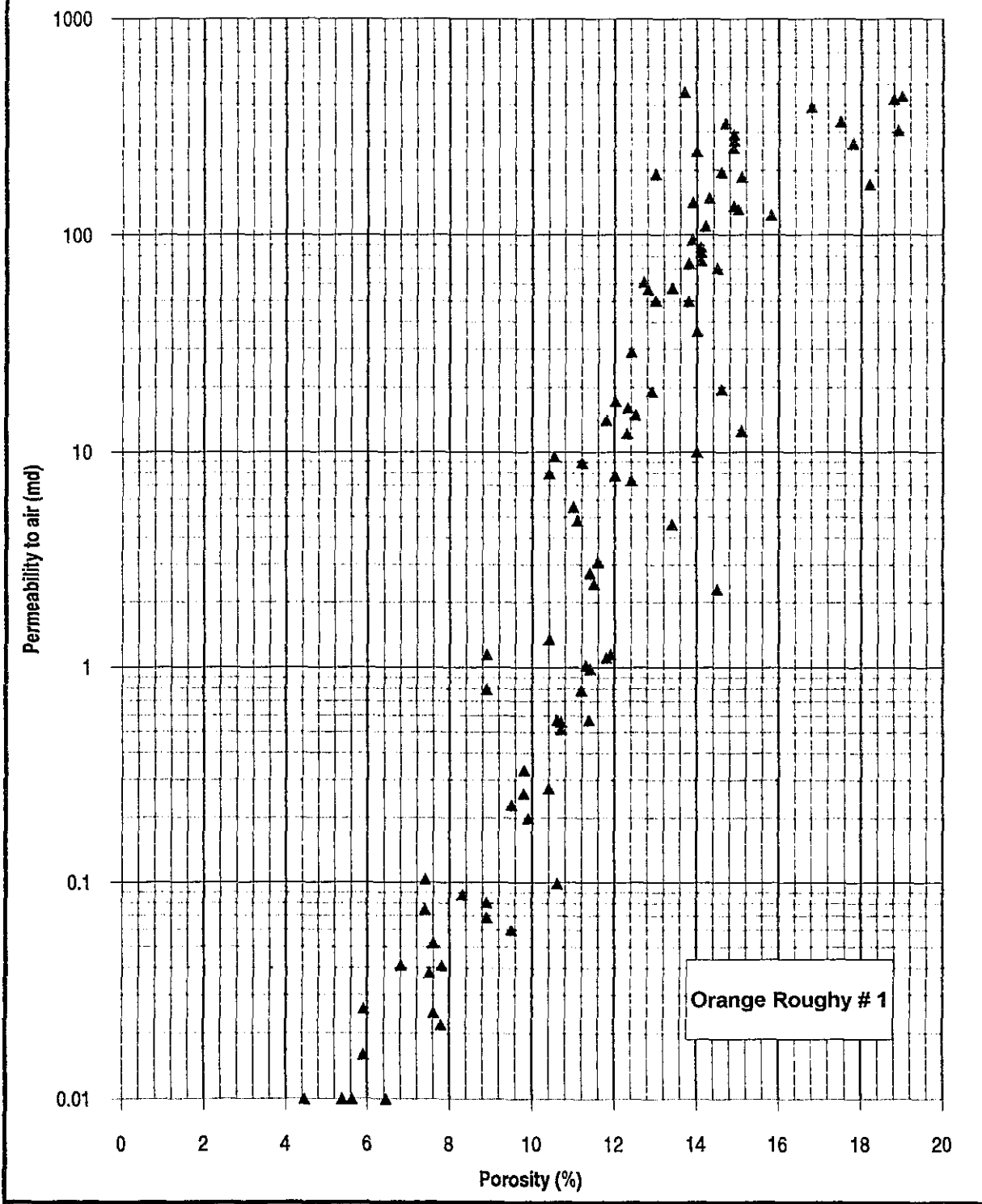
COMPANY : ESSO AUSTRALIA LTD.  
 WELL : ORANGE ROUGHY # 1

Table 2. Grain density measured on the Orange Roughy # 1 samples.

Sample ID	Depth (metres)	Humidity dried		hot oven dried
		Plug grain density (gm/cc)	plug end grain density (gm/cc)	plug end grain density (gm/cc)
145A	2328.00	2.67	2.66	2.68
147A	2328.25	2.65	2.65	2.65
V149A	2328.31	2.65	2.65	2.65
151A	2328.50	2.66	2.65	2.67
153A	2328.75	2.66	2.67	2.67
155A	2329.00	2.66	2.67	2.68
157A	2329.25	2.65	2.64	2.65
V159A	2329.32	2.65	*	*
161A	2329.50	2.65	2.65	2.65
163A	2329.75	2.65	2.65	2.65
165A	2330.00	2.65	2.65	2.65
167A	2330.25	2.67	2.68	2.68
V169A	2330.30	2.68	2.66	2.67
171A	2330.45	2.65	2.65	2.65
173A	2330.75	2.64	2.64	2.64
175A	2331.00	2.64	2.64	2.64
177A	2331.25	2.64	2.64	2.64
V179A	2331.30	2.64	2.64	2.64
181A	2331.50	2.64	2.64	2.64
183A	2331.75	2.65	2.66	2.66
V185A	2331.90	2.65	2.65	2.66

\* insufficient sample, due to resin contamination.

Porosity vs. Air permeability at 4000 psi



PE906972

This is an enclosure indicator page.  
The enclosure PE906972 is enclosed within the  
container PE906971 at this location in this  
document.

The enclosure PE906972 has the following characteristics:

ITEM\_BARCODE = PE906972  
CONTAINER\_BARCODE = PE906971  
NAME = Permiability, Porosity and Grain  
Density Depth Plot  
BASIN = GIPPSLAND  
PERMIT = VIC/L7  
TYPE = WELL  
SUBTYPE = WELL\_LOG  
DESCRIPTION = Permiability, Porosity and Grain  
Density Depth Plot (enclosure from  
attachment to WCR) for Orange Roughy-1  
REMARKS =  
DATE\_CREATED = 30/09/95  
DATE\_RECEIVED = 13/11/96  
W\_NO = W1121  
WELL\_NAME = Orange Roughy -1  
CONTRACTOR = CORE LABORATORIES  
CLIENT\_OP\_CO = ESSO

(Inserted by DNRE - Vic Govt Mines Dept)