



ATTACHMENT TO WCR
FERGUSSENS HILL - 1
W480

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FERGUSSONS HILL-1

W480

CONTENTS:

- 1) Well Card
- 2) Shot Hole Information Sheet
- 3) Gas Analysis
- 4) Water Analysis
- 5) Geochemistry

APPENDIX 1:

WELL FERGUSONS HILL No 1 TYPE N.F.W. W480 17 BASIN W.D.
 TEN. HOLDER Frome Broken Hill Co. Ltd. Lat. 38° 37' 20" S Ph. Latrobe
 OPERATOR " " " LOCATION. Long. 143° 09' 41" E
 TENEMENT P.E.P. 6 Military Map. State Aerial Survey Prince Town A-99 Zone B, Ref. 054366
 ELEVATION 638 G.L. 651 R.T. (Datum) T.D. 11,616 Driller Schlumberger STATUS.
 SPUD. 24 Dec. 1963 COMPL. 6 May 1964 11,622 Driller 5 1/2" at 11,580' ADD. 3 June 1964
 CASING 13 3/8" @ 1049' ~~1550'~~ C. to 5 5/8" @ 5825' 20" cond at 26'. Cntri. Drilling Contractors.

STRATIGRAPHY.

AGE	FORMATION	Depth	E-log	Thickness
Eocene - U. Cretaceous	Wangerrip Group (= Pebble Point Fm)	0 - 7651 670-1050	0	1464
U. Cretaceous	Paaratte Fm. (Possibly incl. undiff. 'Belfast-Flaxmans equivalents')	1464 - 813	1580	584'
L. Cretaceous	Waarre Fm. transition fm.	2048 - 1397	2040 2400	354
L. Cretaceous	Otway Group.	2402 - 1751	2520	
	Bonnet	11500		

FORMATION TESTS

D.S.T. 2450 - 2092 Dec 370' mud
 D.S.T. 4293 - 4350 Dec 90' mud
 " 1108 - 6570 Dec 30' mud
 " 7288 - 7330 Dec 30' mud

LOG SUMMARY and INTERPRETATION

See W.C.R. of Card Index

Type	Run	Interval	Date	Type	Run	Interval	Date	Interval	Q	Sw	
E-Log	1	1050 - 68	25 Dec '63	Microlog	1	3084 - 1050	2 Jan '64	C.P.M. 1	1050 - 3085		
	2	3082 - 1049	2 Jan '64		2	5841 - 2884	19 Jan '64	2	3060 - 5834		
	3	5937 - 2882	19 " '64		3	7345 - 6300	19 Feb '64	3	5825 - 6650		
	4	7345 - 5825	19 Feb '64		4	8931 - 7147	13 Mar '64	4	6650 - 10200		
	5	8674 - 7146	12 Mar '64		5	10,356 - 8731	6 Apr '64	Conduct Band	5	5840 - 3740	
	6	10396 - 8474	4 Apr '64		6	11488' - 10293	25 Apr '64		6	1400 - 2600	
	Laterolog	7	11626' - 10196'		30 Apr '64	Sonic C.V.L. - G.R.	7	11606' - 9500	2 May '64	Sonic - G.R.	5
1		5830' - 6700	13 Mar '64	1	7042 - 70		25 Dec '63	6	8712 - 10389		
2		8450 - 8931		2	3074 - 1050		2 Jan '63	7	8700 - 11596		
2		10500 - 11614		2 May '64	3		5925 - 3074	19 Jan '64			
				4	7330 - 5825	19 Feb '64					

Frome - Broken Hill No 1

CORES

No	Interval	Rec	No	Interval	Rec	No	Interval	Rec	No	Interval	Rec
1	1554-1574		16			S.W. 1			16		
2	1762-1787		17			2			17		
3	2020-2031		18			3			18		
4	2090-2110		19	7037-7047		4			19		
5	2427-2437		20	7220-7237		5			20		
6	2437-2449		21	7330-7345		6			21		
7	2741-2760		22	7818-7832		7					
8	3085-3105		23	8247-8262		8					
9	3105-3111		24	8758-8774		9					
10	3449-3430		25	9195-9211	16' 0"	10					
11	3732-3752		26	9626-9631	5' 0"	11					
12	4092-4112		27	10092-10101	4' 0"	12					
13	4514-4534		28	10574-10588	1' 0"	13					
14	5077-5097		29	10660-10668	5' 0"	14					
15	5554-5569	14' 0"	30	11080-11094	12' 0"	15					

CHEMICAL ANALYSES (OIL, WATER, GAS)

GENERAL (Conclusions, structure, abandonment programme, etc)

Reforations for testing purposes.

5 $\frac{1}{2}$ " Casings :- 11490'-11514'; 11380'-11416'.

9 $\frac{5}{8}$ " Casings :- 5660'-5690'; 5436'-5464'; 2096'-2106'.

For isolation squeeze cementing purposes

9 $\frac{5}{8}$ " Casings :- 5600'-5601'; 5410'-5411'.

Plugging back & Squeeze cementation jobs - See Well Completion Report.

Plugging - Abandonment - After cutting 5 $\frac{1}{2}$ " casing at 9,000' & recovering it

Plugs set. 5807'-5858'

5600'-5700'

2510'-2610'

2050'-2148'

Surface with 10 sacks.

(cont.)

CORES

No	Interval	Rec	No	Interval	Rec	No	Interval	Rec	No	Interval	Rec
31	11419-11432	12'0"									
32	11519-11534	5'0"									
33	11582-11593	2'0"									

CHEMICAL ANALYSES (OIL, WATER, GAS)

GENERAL (Conclusions, structure, abandonment programme, etc)

APPENDIX 2:

PE905759

This is an enclosure indicator page.
The enclosure PE905759 is enclosed within the
container PE905760 at this location in this
document.

The enclosure PE905759 has the following characteristics:

ITEM_BARCODE = PE905759
CONTAINER_BARCODE = PE905760
NAME = Shot Hole Information Sheet for
Fergusons Hill-1
BASIN = OTWAY BASIN
PERMIT = PEP/6
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Shot Hole Information Sheet (from
attachment to WCR) for Fergusons Hill-1
REMARKS =
DATE_CREATED = 4/03/64
DATE_RECEIVED =
W_NO = W480
WELL_NAME = FERGUSONS HILL-1
CONTRACTOR =
CLIENT_OP_CO = FROME-BROKEN HILL CO. PTY. LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 3:



COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

TELEPHONE: 4-4261
FACSIMILE: 4-4261
PO BOX 378
CANBERRA CITY

BUREAU OF MINERAL RESOURCES,
GEOLOGY AND GEOPHYSICS,
MLC BUILDING,
LONDON CIRCUIT,
CANBERRA CITY,
A.C.T.



62/318

Case Quote.....

The General Manager,
Frome-Broken Hill Company Pty.Ltd.,
P.O. Box 384D,
MELBOURNE. VIC.

Dear Sir,

- Port Campbell No.1
- Flaxman's No. 1
- Ferguson's Hill No.1

Enclosed for your information are the results of analyses, by gas chromatography, of gas samples from D.S.T. Nos. 12 and 16 and Production Test No. 8 respectively, in the above wells.

Yours faithfully,

A. J. Arnold

for (J. M. RAYNER)
Director

The Secretary for Mines,
Department of Mines,
Treasury Place,
MELBOURNE. VIC.

Mr. Kerby 24/12/64

Noted R.T. 21/1/65

GAS ANALYSIS (by gas chromatography)

Date of Analyses : 14.12.1964
Analyses by : J. Puchel

SAMPLE COMPONENT	FLAXMAN'S NO.1 D.S.T.16 6575' - 6881' Packer at 6861' Sample from Wellhead	PORT CAMPBELL NO.1 D.S.T.12 5874' - 5903'	FERGUSON'S HILL NO.1 PROD. TEST 8 5436' - 5464' (Sampled 29.5.64)
H ₂ He	Nil	Nil	Nil
O + Ar	0.068%	TRACE	0.91%
N	1.48 %	2.46 %	5.73 %
CO	Nil	N.Dc.	N.Dc.
CO ₂	.137%	0.17 %	0.13 %
METHANE	95.6 %	86.7 %	83.9 %
ETHANE	2.11 %	5.38 %	5.27 %
PROPANE	0.36 %	3.03 %	1.98 %
ISOBUTANE	0.029%	0.71 %	0.77 %
NITRANE	0.047%	0.75 %	0.56 %
ISOPENTANE	0.017%	0.317%	0.324%
HEXANE	0.023%	0.226%	0.232%
HEPTANE		0.015%	0.017%
1,2-DIMETHYL BUTANE		0.115%	0.128%
3-METHYL PENTANE		0.034%	0.044%
HEXANE		0.086%	0.077%
H ₂ S	N.Dc.	N.Dc.	N.Dc.
TOTAL	99.871 ✓	99.993 ✓	100.072 ✓

NOTE: N.Dc. - NOT DETECTED

APPENDIX 4:

B.M.R.
28.8.64.

WATER ANALYSES

WELL	Flaxman's No.1		Ferguson's Hill No.1	
Sample	D.S.T. 16 (6875'-6881')		D.S.T. 11 (2096'-2106')	
Concentrations	ppm	me/l	ppm	me/l
CO ₃ ⁻	Nil	Nil	Nil	Nil
HCO ₃ ⁻	610	10	690	11.3
Cl ⁻	13,240	369	240	6.8
SO ₄ ⁻	160	3.4	Nil	Nil
SiO ₂	10	-	40	-
Total Anions	14,010	382.4	970	18.1
Na ⁺	7,360	320	345	15
K ⁺	180	4.6	16.5	0.42
Ca ⁺⁺	1,090	54.5	Nil	Nil
Mg ⁺⁺	46	3.8	27	2.2
Fe (ferric)	Nil	Nil	< 8	Nil
Fe (ferrous)	Nil	Nil	Nil	Nil
Total Cations	8,676	382.9	388.5	17.62
Total Ions	22,686	-	1,358.5	-
Soluble Solids at 20°-25°C	23,990	-	1,180	-
Insoluble Solids at 20°-25°C	0.06% w/w		0.18% w/w	
pH at 24°C	7.2		8.2	
Conductivity at 24°C	0.0332 mhos/cm		0.00225 mhos/cm	

ANALYSES BY : J. PUCHEL

NOTES ON ANALYSES : See Attached Sheet

NOTES ON THE ANALYSES

1. Analysis results are given for the solutions which may contain colloidal matter but which are free from any other suspensions.
2. The sum of ions expressed in p.p.m. and m.e./l., are arithmetic totals and are not related to an overall analytical error. Uncertain concentrations of ions are excluded from the sums.
3. Soluble and insoluble solids (at given temperatures) have been determined on the oven dry basis.
4. Concentrations in m.e./l. are not given for constituents which:
 - A. Have variable and/or indefinite ionic characteristics.
 - B. Have concentrations, in p.p.m., below the limit of analytical methods used.
5. Solutions have been analysed only for ions shown.

APPENDIX 5:

3rd August,

An. G & T/29/7

Report on Sample No. 847/64

Sample : Bare-hole Gas
 Locality : Port Campbell
 Sender : The Manager,
 Frome Broken Hill Co.Pty.Ltd.,
 99 Collins Street,
MELBOURNE.

Ferguson's Hill No.1

A sample of bare-hole gas was received for analysis. The gas was obtained during testing of the oil well, situated about eight miles east of Port Campbell.

Particulars of Sample.

Drilling Company	Frome-Broken Hill
Name of Well	Ferguson's Hill No.1.
Depth (feet)	5436 - 5464
Date	25th May 1964

Condition of Sample

The sample was received in a low pressure air cylinder and was under slight positive pressure.

Results:

The gas sample contained a fairly large percentage of air, considerably more than there was in another sample of gas from another, later, well (Port Campbell No.4, sampled 28.7.64).

As a matter of interest, the Ferguson's Hill sample was re-calculated on the basis of the same amount of air found in the Port Campbell No.4 gas.

The left-hand column below gives the analysis of gas as received, the middle column shows the results re-calculated to the basis of the same air content as the Port Campbell No.4 gas and the right-hand column shows, for comparison, the analysis of the gas obtained from the Port Campbell No.4 well.

OKZ.
4/8/64

	847/64 As received	847/64 Same as basis as Port Campbell No.4	848/64 Port Campbell No.4
	% V/V	% V/V	% V/V
Methane	74.1	83.3	82.2
Ethane	6.0	6.7	6.6
Propane	2.2	2.5	3.6
Isobutane	0.74	0.83	1.07
n-Butane	0.51	0.57	1.22
Neopentane	0.015	0.017	0.018
Isopentane	0.32	0.36	0.49
n-Pentane	0.19	0.21	0.40
C ₆ and higher	0.73	0.82	1.47
Oxygen	2.8		0.7
Nitrogen	12.4		2.2

COMMENT

The gas from Ferguson's Hill No.8 is a petroliferous gas and is very similar in analysis to the gas obtained from a later well (Port Campbell No.4.)

[Handwritten signature]
 Senior Geologist
 [Redacted]

An. 102/72/19/8

Report on Sample No. 856/64

: S.S.N. No. 1404
 Sample : water from Oil Well
 Locality : District : in Trade
 District : Port Campbell
 Vendor : Frank-Broken Hill Co. Pty. Ltd.,
 17 Collins Street,
 Melbourne.

Particulars :

No. 856
 S.S.N. No. 1404
 Oil Well Frank-Broken Hill Co.†
 Sample S.S.N. No. 14
 Depth (feet) 2096 - 2106
 Date 25.5.64

Results : Parts per million

Total solids in solution		1235
* * * * *		
Chloride	(Cl)	105
Carbonate	(CO ₃)	24
Bicarbonate	(HCO ₃)	612
Sulphate	(SO ₄)	11
Nitrate	(NO ₃)	511
Calcium	(Ca)	42
Magnesium	(Mg)	511
Iron-Total	(Fe)	122
Iron-Soluble	(Fe)	1.7
Sodium	(Na)	349
Potassium	(K)	4
* * * * *		
Total hardness (as CaCO ₃)		104

pH 8.7
 Resistivity (25°C. Ohm-cm.) 610

* This iron, insoluble when the oil levels are down, was probably all originally in solution as ferrous bicarbonate. However only the soluble iron figure has been used in the hypothetical calculation.

OLK
8/2/65

A hypothetical combination is given as follows :-

		<u>P.P.M.</u>
Calcium bicarbonate,	CaHCO ₃ 1/2	17
Magnesium bicarbonate,	MgHCO ₃ 1/2	311
Ironous bicarbonate,	FeHCO ₃ 1/2	5
Potassium bicarbonate,	KHCO ₃	10
Sodium bicarbonate,	NaHCO ₃	716
Sodium carbonate,	Na ₂ CO ₃	42
Sodium sulphate,	Na ₂ SO ₄	16
Sodium chloride,	NaCl	326

Comments

The water contains nearly 0.1% of dissolved mineral matter and would be described as "moderately soft".

It could be used for human consumption if no better water were available and it would also be suitable for domestic washing purposes.

The water is extremely high in sodium compared with calcium and magnesium and this could cause undesirable changes in the clay structure of soils, if the water were consistently used for irrigation.

The water would be suitable for all stock and for flushing in a septic coverage system.

John C. Kennedy

Senior Chemist,
Waste Department.